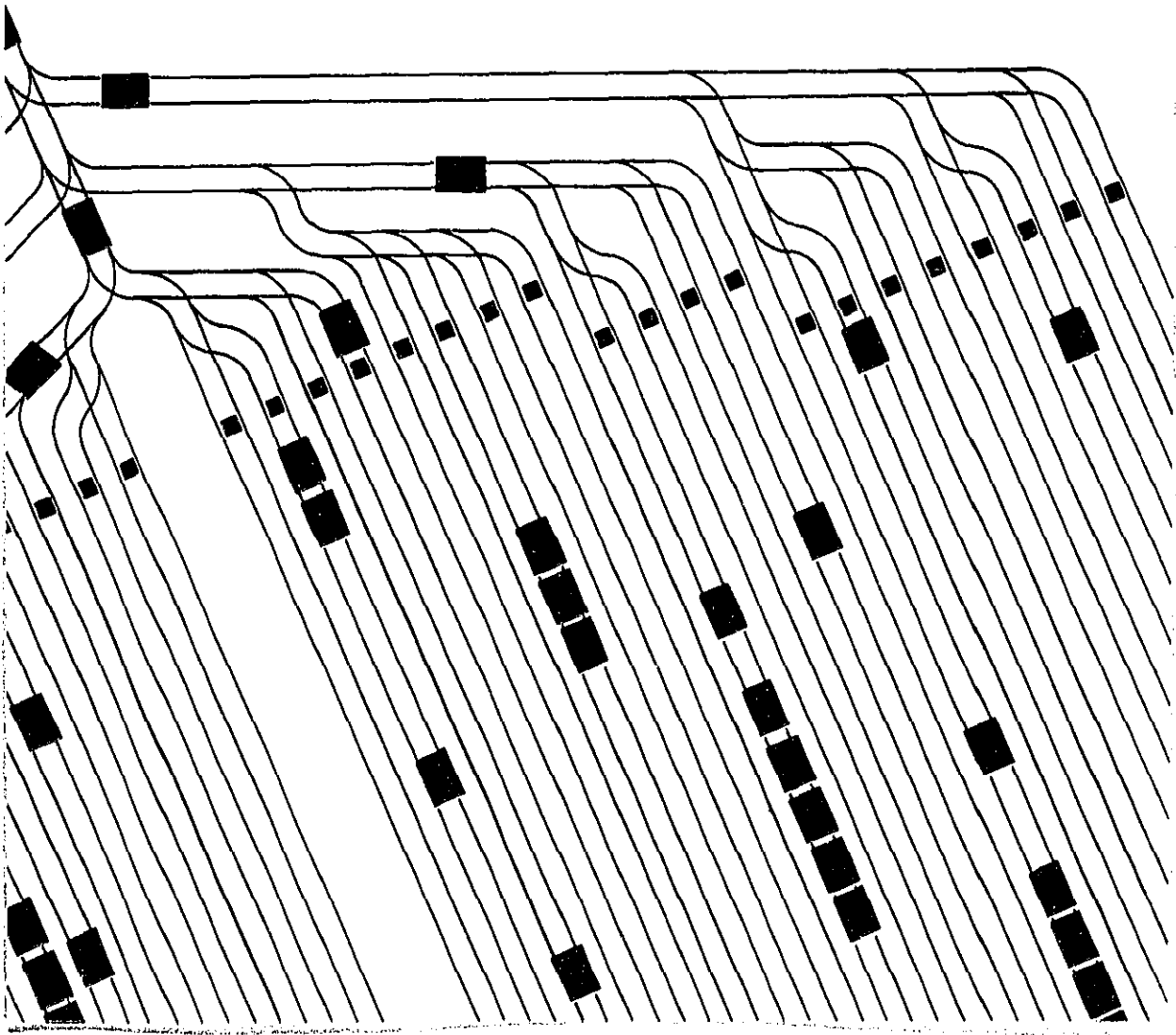


*N-96-01*  
*II-A-90*  
*Pt. 1*



# Official Docket for Proposed Revision to Rail Carrier Noise Emission Regulation

## Part I



OFFICIAL DOCKET for PROPOSED REVISION  
to RAIL CARRIER NOISE EMISSION  
REGULATION

July 1979

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CITIZENS' ADVISORY COMMITTEE  
ABATEMENT of NOISE and VIBRATIONS  
SAN BERNARDINO FREEWAY

John Palasco, Chairman  
1845 So. Chapel  
Alhambra, Calif. 91801  
213/289-8057

June 26, 1979

Rail Carrier Docket  
(ONAC 79-01)  
Office of Noise Abatement & Control AW-490  
United States Environmental Protection Agency  
Washington, D. C. 20460

Gentlemen:

To date we have been unable to find any regulations adequate to protect the health and welfare of citizens who suddenly, 5 $\frac{1}{2}$  years ago, found a main-line carrier running past their homes. Some had lived comfortably here for as much as forty years until then. It is for this reason we propose that this agency take into consideration the following problem in setting new regulations.

Before the turn of the century, a narrow gauge track was built privately to transport students to the Convent built along what is today I-10. After the turn of the century, it was sold to the Los Angeles InterUrban Railroad, again for transportation of people. In 1906, in order that this transit route could be extended, Ada B. and Marshall McCollum deeded a portion of land to said railroad with the stipulation "The land hereby conveyed is to be used as a right of way for a railroad to be operated by electricity or some motive power other than steam, provided, however, that such motive power shall not be more objectionable than electricity". Also, "To Have and to Hold the estate hereby granted in the above described premises; together with all the appurtenances unto the said party of the second part, its successors or assignees forever". This deed was registered on February 12, 1906 in Los Angeles County in Book 2726 on page 147. It would appear that there was insight, even then, into what the influence of an inadequately regulated railroad could do to the populace of cities.

The Southern Pacific Railroad Company acquired the tracks after the abandonment of the "Red Car" and until 5 $\frac{1}{2}$  years ago the only trains running along here were two or three boxcars, one engine and one caboose, half the size of those running now, and on an average of once a week.

Since the upgrading to main-line status which was done without the knowledge or approval of homeowners 100' away and without an environmental impact report, we have been subject to up to 20 trains a day, up to 8 engines and 200 boxcars. These run unscheduled over the entire twenty-four hour period, as many as six or eight between the hours of 9 P.M. and 6 A.M.

In meeting with Railroad representatives, it was established that this line is for convenience and not necessity. We believe this to be a proven fact since this ten mile stretch of track simply duplicates the original main-line owned by Southern Pacific along Mission Road, just a few blocks north, which is a direct route from California to Texas and which the I-10 track joins in Los Angeles west of us and in El Monte east of us. Trains stop for

79-01-197

CITIZENS' ADVISORY COMMITTEE  
ABATEMENT of NOISE and VIBRATIONS  
SAN BERNARDINO FREEWAY

John Palasco, Chairman  
1845 So. Chapel  
Alhambra, Calif. 91801  
213/289-8057

Rail Carrier Docket (ONAC 79-01) EPA June 26, 1979 Page 2.

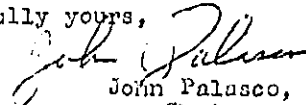
hours along here, idling for hours. When called by a resident, on one occasion, requesting that the motor be shut off, she was told it could not be done because to restart the motors would cause more pollution than if they remained idling.

We feel the noise in our homes sometimes exceeds or at least reaches the noise emission standards you have established which exceed by 26 decibels noise emissions acceptable in residential areas. According to testing criteria, there is no way to establish this fact. There should be separate testing criteria for residential areas, particularly when trains are intermingled with 10 lanes of traffic a short distance from homes. We realize that authority has been given the Federal Railroad Administration to do noise testing, but, find they do not even own the equipment with which to do this and rely on the railroads to supply them.

We feel this main-line should never have been permitted to be established through completely residential areas, not only depriving owners of the full use of their homes and property, but, also jeopardizing their health, hearing and lives. The very least we expect at this point is that stringent regulations be established, particularly in such unique cases as this. If this cannot be achieved on a Federal level, then we believe our City should be allowed to regulate pollutants which spill onto that City.

We believe that you will agree that as humans we have a right to protection from our Federal Government.

Respectfully yours,

  
John Palasco,  
Chairman.

Copy to:  
Senator Alan Cranston  
Senator S. I. Miyakawa  
Congressman John H. Rousselot  
Assemblyman Jack Fenton  
Senator Joseph B. Montoya  
Supervisor Baxter Ward

DEPARTMENT OF HEALTH SERVICES

2151 BERKELEY WAY  
BERKELEY 94704  
(415) 540-2657



June 28, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
Washington, D.C. 20460

Gentlemen:

The following comments regarding EPA's proposed railroad noise emission standards (40 CFR Part 201 - 44 FR 22960, April 17, 1979) reflect the views of the Office of Noise Control, State of California Department of Health Services. All legal opinions expressed in these comments pertaining to EPA's authority under the Noise Control Act of 1972 have been reviewed by counsel. Those instances where our recommendations go beyond the proposed regulations and deal with proposed amendments to the Noise Control Act itself are so indicated.

Yours truly,

*A. E. Lowe*  
A. E. Lowe  
Chief, Office of Noise Control

79-01-147

cc: Mr. James Cutright  
Legal Affairs Division  
Department of Health Services

Mr. Timothy R. Patterson  
Deputy Attorney General  
State of California

Enclosure

AEL:JHS:dn

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3



Comments By  
The California Office of Noise Control  
Pertaining To  
EPA PROPOSED RAIL CARRIER NOISE EMISSION REGULATIONS  
(40 CFR Part 201 - 44 FR 22960, April 17, 1979)

1. Basic Approach - Receiving Property Standards

EPA should orient regulatory efforts towards reducing the noise impact on persons in the vicinity of railroad facilities and operations through the achievement of noise compatible land uses. Such an approach calls for the identification of the relative noise sensitivity of adjacent lands as a function of their respective land uses, with residential land use and schools being considered most sensitive and industrial operations least sensitive. We support the concept of a receiving property noise standard because it protects people where they are and provides the greatest flexibility to the railroad industry in terms of the number of options available to them for reducing impact (excessive noise exposure). Defining a noise impact situation as one in which noise adversely affects or impairs some mode of human activity, the degree of impact depends on the degree of impairment of specific human activities. Accordingly, the proposed property standards ( $L_{dn}$ ) need be applied only in those instances where people are impacted and the regulatory levels should be dependent on the nature of the receiving land use.

The industry desires to be held to a noise standard covering only railroad-owned property and may argue that EPA's "receiving property" standard, which controls noise levels on developed adjoining property, is invalid because it goes beyond the technology-oriented scope of the Noise Control Act. The Act does not limit EPA to setting standards applicable to railroad-owned property. Section 17(a)(1) directs EPA to set limits on the noise "resulting from" the operation of equipment and facilities. Section 2 defines the noise problem as "... a growing danger .... particularly in urban areas".

2. Excessive Delay in Applicability to Developed Property (Section 201.10)

There is a three-year lag time between a change in land use from undeveloped to developed and the applicability of the standards. Such a period is unnecessary in a state such as California which requires local governments to engage in extensive long-range land use planning. Railyard owners can determine when adjacent property will be allowed to be developed, with a great deal of accuracy. Possibly a shorter lag period is in order. At least a definition is needed of when property actually is "developed".

### 3. Achievement of Noise-Compatible Land Use

Based upon California's experiences in attempting to achieve compatible land use around its airports and the constraint on EPA that its regulations recognize the "cost of compliance"; it appears that in order to achieve the goal of noise-compatible land use in a cost-effective manner, consideration to other than just limitations on noise emitted from railroad operations must be made. Such considerations include treatment of receptor dwellings or replacing sensitive receptors with less sensitive ones and affecting the intervening path between noise source and receiver (either through increasing the distance to sensitive receivers or blocking the path; i.e., barriers, or inserting less sensitive uses).

Achievement of noise compatible land use around railroad operations must, of necessity, involve a cooperative effort between the railroads and the local governmental agencies (i.e., planning commissions) in order that the burden of resolving conflicting land uses (both present and future) be rightfully shared. In order for local government to sensibly zone around railroad operations, it is mandatory that the railroads, in turn, provide these local agencies with some indication of the noise levels emitted by their operations and what these levels are in the surrounding community ( $L_{dn}$  noise contours). Clearly, the railroads must play an active role in these efforts and not simply hide behind their boundaries and conduct business-as-usual.

### 4. Nondegradation of Existing Noise Levels

An essential component in controlling railroad noise emissions and achieving land use compatibility is the controlled growth or expansion of existing railroad operations. The railroads should be required to periodically report their levels of noise emissions and any significant changes in their operational procedures or activity levels which would increase the noise impact in the surrounding community.

Our interpretation of the Noise Control Act suggests that EPA is not limited in their authority to require the railroads to submit such information to local, state or federal agencies.

The State of California is concerned that without such controls as outlined above which would prevent the relatively quiet operations from increasing their noise levels up to the maximum allowed, the EPA proposed regulations would constitute an open license to pollute!

Despite EPA's statements to the contrary, the proposed property line standards appear to be "lowest common denominator standards", whereas Section 17(a) of the Act requires EPA to create regulations which "... *reflect the degree of noise reduction achievable ...*" (emphasis added). Clearly, the emphasis is on noise reduction, not maintaining the status quo and not allowing further increases in noise emissions.

5. Hourly Noise Emission Standards (Section 201.17)

While proposed receiving property standards of 65 and 70  $L_{dn}$  for Humpyards and all other facilities respectively do not seem unreasonable in light of the cost considerations, the allowance of hourly  $L_{eq}$  values of up to 84 dB and 74 dB for daytime and nighttime respectively, seems totally out of line in terms of the potential adverse effects of such high noise levels on the health and well-being of affected residents. The use of such hourly levels [and those levels presented in Table 2.1(c) and (d)] to facilitate measurement of  $L_{dn}$  levels is acceptable; however, maximum hourly  $L_{eq}$  levels on the order of 5 dB greater than the respective  $L_{dn}$  level constitutes a much more reasonable noise standard. (This is consistent with EPA's own measurement data, presented in Appendix V, in which in 55 measurement situations, the maximum daytime hourly  $L_{eq}$  observed exceeded the respective  $L_{dn}$  for any facility (measured on the nearest receiver's property) by only 4.5 dB.)

The specification of an hourly noise standard of 84 dB ( $L_{eq}$ ) is totally inconsistent with EPA's previous recommendations concerning protection of public health and welfare as expressed in EPA's "Levels Document", and must be amended.

6. Specific Source Noise Emission Standards (Section 201.26)

- a. Enforcement actions against excessive car-coupling noise are complicated by the restriction that this standard applies only to cars coupling at velocities in excess of 4 mph. Hence, velocity measurements are required.
- b. The requirements for measurements at distances ranging from 7 to 30 m places enforcement personnel on railroad property, which in itself creates access and safety problems. These standards should be modified to allow measurement off railroad property.
- c. Reported noise levels should be the energy average of 10 or more events, all within 10 dB of the maximum level observed.
- d. EPA appears to have overlooked one method of reducing refrigeration car noise that may be of importance in their cost of compliance analysis; that of operating the electric motor/cooling compressor sets with standby electric power with the diesel engine turned off. As the common configuration for refrigeration car cooling systems incorporates a diesel-electric generator set, such operation requires no modification to the reefer cars themselves, but would require electric service to the specific set-off tracks designated for reefer car holding. Studies conducted by Wyle Laboratories in 1973 indicate that the use of auxiliary electric power under standby conditions may achieve a noise reduction on commonly used model reefer cars on the order of 5-6 dB.

## 7. Measurement Procedures

- a. The specification of Type 1 equipment seems unnecessary (and overly costly to local enforcement agencies). Rather, Type 2 instrumentation with a suitable measurement tolerance ( $\approx \pm 2$  dB) seems a reasonable alternative.
- b. The requirement to demonstrate "clear dominance" of railroad related noise levels introduces some critical problem areas:
  - (1) This is a burdensome task for enforcement personnel - the requirement to "model-out" all non-railyard and through-train passby noise levels from the measured data would require a level of expertise well beyond the majority of local personnel.
  - (2) Two noise sources, though demonstrating the same  $L_{eq}$  (or  $L_{dn}$ ) values, may be vastly different in terms of the character of their noise emissions and their relative intrusiveness in the community. The need to show that the railroad related  $L_{eq}$  ( $L_{dn}$ ) values are 6 dB above other environmental noise sources before commencing enforcement actions may allow the railroads the opportunity to produce noise levels judged excessive by the community. (This is an acknowledged failing of  $L_{eq}$  -  $L_{dn}$  metrics - their inability to adequately reflect the intrusiveness of single high noise events.)

Consider the following hypothetical example in which railroad facility noise emission levels and those of a nearby freeway may both be measured (and/or calculated) to yield 70 dB  $L_{dn}$  at a specific site. By EPA's requirement for clear dominance, no actions could be taken against the railroad until their emissions exceeded 76 dB - a 6 dB increase over current levels. This is equivalent to a four-fold increase in railroad activity levels!

## 8. Burden on Local Enforcement

The requirement for local adoption of railroad noise ordinances prior to curtailment of excessive railroad noise places an undue burden on local government and may result in virtually no enforcement of the Railroad Noise Standards. It has been stated by EPA that DOT, although required by law to adopt compliance regulations for the proposed EPA standards, will do nothing to ensure compliance with the regulations, once adopted. Section 17 of the Noise Control Act of 1972 states that: "*The Secretary of Transportation ... shall promulgate regulations to insure compliance ...*" and "*... shall carry out such regulations through the use of his powers and duties of enforcement and inspection ...*" (emphasis added).

EPA and DOT are adopting an unlawfully narrow view of their responsibilities under the Noise Control Act. Section 17(b) of the Act requires DOT to enforce the regulations promulgated by EPA, but EPA is telling the states that DOT's Federal Railroad Administration "doubts whether it has the authority or the resources for adequate national enforcement". EPA's proposed regulations should contain provisions for implementing the legislative mandate in the Noise Control Act.

Our reading of the Noise Control Act suggests that Congress did not require the states to carry out all of the enforcement; indeed, the Act expressly provides for enforcement by the federal government.

An alternative or supplemental tack which EPA should investigate in order to ease both federal and local enforcement burdens would be to require that the railroads themselves demonstrate compliance with the proposed regulations. Such a process would involve, perhaps, a quarterly reporting procedure on noise emissions and some limited community noise monitoring data similar to that presently required of airports in California.

#### 9. Preemption

From the language in Section 17, Paragraph (c) of the Noise Control Act, it is clear that state or local regulations governing noise emissions from railroad equipment and facilities are preempted "after the effective date of a regulation under this section ....". Thus, it is the legal opinion of the State of California that pre-existing state and local regulations will legally remain in effect until such time. EPA has further indicated that those railroad facilities and equipment that are specifically exempted in their regulations (warning devices, track maintenance equipment, office buildings, etc.) may be subject to local controls. EPA also expects, however, that the AAR may take exception to this, using the same logic that prevailed in the AAR vs. Costle decision which is, in effect, that the Noise Control Act requires EPA to regulate the "noise emissions resulting from operation of the equipment and facilities of surface carriers engaged in interstate commerce by railroad ....". AAR interpreted this section to mean all such "equipment and facilities". Thus, it would appear that any and all local controls over any forms of railroad activities may face challenges in the courts.

The Noise Control Act needs to be changed if the federal government plans only to set up these admittedly-minimal regulations and then fade away. The preemption language is so strong that the states, contrary to EPA's suggestion, will not be able to regulate sources not covered by the EPA regulations. The industry surely will argue (and litigate) that states cannot impose stricter controls of any sort.

Also, the "special local conditions" provision is unlikely to be given much effect. The grantor of such permission, EPA, already has admitted this. Furthermore, it is difficult to conceive of a stricter local standard which "is not in conflict" with EPA's regulations.

It is unfortunate that, while horns, whistles and bells continue to be among the highest complaint items associated with railroad operations, EPA has totally avoided regulating such devices by stating that because such devices are safety related, they are beyond the scope of their regulations and should be dealt with on a local level. To lessen the necessity of sounding audible warning devices, some alternate means of providing adequate warning of train movements or improvements in grade crossing gate design configurations should be devised. If necessary, the Noise Control Act should be amended to accomplish this end.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

31 MAY 1979

SUBJECT: Meeting on 5/23/79 Between State Officials of California and the U.S. Environmental Protection Agency on the Proposed Rulemaking: Noise Emission Standards for Transportation Equipment: Interstate Rail Carriers

FROM: Robert C. Rose, Program Manager, Railroads

*Robert C. Rose*

TO: Docket No. ONAC 79-01

The following is a general outline of the subject meeting which was held at the State Department of Health at Berkeley, California. Mr. Henry Thomas, EPA, Office of Noise Abatement and Control presented to the participants an overview of the proposed rulemaking i.e., its purpose, content, ramifications and considerations relative to state written comments that may be submitted on the proposed rule. Subsequent to Mr. Thomas' remarks various personnel from the State had individual questions/concerns relative to specific aspects of the proposed rule.

Listed below is a topical summary of the State remarks:

- (1) They were quite concerned as to the absolute preemptive nature of the rule, specifically that rail yards are not interstate in nature and that the scope of the proposed rule will give the state and local jurisdictions no control over noise. They did like the idea that we did set "maximum" allowable standards on specific equipment/operations.
- (2) They questioned the legal aspects of state and local noise abatement prior to a final rule becoming effective. They were told that state and local governments did not have to adopt Federal standards until the final rule becomes effective in the future in order to enforce at the local level now.
- (3) State personnel questioned what areas/sites/equipment constitute the "yard," i.e., are switching tracks other than main lines part of the standard for yards. They were told that switching tracks and activities associated therewith fall under the noise standards for a yard.
- (4) State personnel ~~were~~ reiterated that current local noise standards will not be enforceable after the final EPA rule. EPA personnel acknowledged that presently local rules can be enforced but after EPA's Final Rule is effective they can only adopt and enforce identical standards as the EPA rule.

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- (5) One state official indicated that the state had been successful in cutting "Reefer" noise by retrofitting the cars with electrical outlets (220V) and not using the Diesel generators at night. They questioned if we had considered this technique in our cost estimating as a means of noise abatement in the refrigerator car standard. The EPA answered negative it was not considered. However, off the top would probably be very expensive to require of all cars and facilities as cost factors must be considered in making standards as required by the Noise Act.
- (6) The state questioned the concept in the proposed rulemaking on land use, i.e., the need for noise abatement where undeveloped land was adjacent to the rail yard versus developed land. They recognized that EPA had taken into some consideration the type of land use near the rail yards, but they felt the rail yard standards could have different decibel ratings by various kinds of land use patterns. The EPA staff ask for written recommendations which we could review in order to determine its feasibility alone with time and cost constraints.

The meeting began at 9:00 a.m. PDT and ended at 1:30 p.m. PDT.

The following is a list of attendees at the meeting:

Henry E. Thomas --- EPA, Standards & Regulations Div., Washington, D.C.  
Mas Hatano --- California Department of Transportation  
Tony Garvin --- Assistant Reg. Counsel EPA, San Francisco  
Daniel Paige --- California Dept. of Transportation, Sacramento, CA  
Herm Privette --- California Public Utilities Comm, San Francisco, CA  
William A. Grottkau --- California Department of Transportation  
Tim Patterson --- Deputy California Attorney General  
Jack W. Swing --- California Office of Noise Control, Berkeley, CA  
Richard L. Roberts --- Dept Env/Health Services, San Bernardino, CA  
A. E. Lowe --- Chief Office of Noise Control, Berkeley, California  
John Gilbert --- EPA State Assignee to California Office of Noise control  
Robert C. Rose --- EPA, Surface Transportation Branch, Washington, D.C.





STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION

24 WOLCOTT HILL ROAD, P.O. DRAWER A  
WETHERSFIELD, CONNECTICUT 06109



Office of the  
Commissioner

An Equal Opportunity Employer

May 17, 1979

Rail Carrier Docket ONAC 79-1  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

The Connecticut Department of Transportation (ConnDOT) has received a copy of the expanded and revised rail carrier noise emission regulations and hereby offers a brief commentary on the proposed action.

ConnDOT's involvement with excessive noise emanating from transportation rail facilities has not been extensive. Specifically, whistle noise emanating from rail carriers as they approach highway intersections has been a major focus of ConnDOT. When local citizenry have approached legislators complaining of excessive whistle noise, the Department has been called upon to determine the sound pressure level at local residential properties. The Department believes whistle noise from rail facilities deserves the consideration of E.P.A., and seeks future guidance from your agency via legislation.

Comments concerning the proposed rail carrier regulations are limited in nature. Several state municipalities have enacted noise ordinances to protect their citizens from excessive noise levels for daytime and nighttime activity. Most ordinances do not address transportation facilities as "offenders of the quiet"; they merely state maximum allowable levels for noise exposure for the aforementioned times of day. If it is the intent of E.P.A. to preempt these local noise ordinances (as we believe it is), it should be the responsibility of the federal government to make local officials aware of the preemption in order that they may include the stated regulations in their noise ordinances. Local taxpayers should fully understand the implication of the court's decision to take away legislative powers on the local level.

ConnDOT's experience with monitoring noise on major highway transportation facilities leads us to believe that the maximum allowable noise levels for developed properties near rail yards, effective January 1, 1982, is very conservative.

19-01-045



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May 17, 1979

We realize the cost of compliance with more stringent standards might be excessive, but question the significance of the noise reduction under the 1982 regulations. An early enactment of the January 1, 1985 standards would lead to a more realistic and responsible effort to reduce noise levels at properties abutting transportation rail facilities.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Arthur B. Powers".

Arthur B. Powers  
Commissioner



STATE OF DELAWARE  
OFFICE OF THE GOVERNOR

PIERRE S. DU PONT  
GOVERNOR

LEGISLATIVE HALL  
DOVER 19901  
(609) 678-1101

June 18, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Dear Sirs:

In the past month you have received a number of comments regarding the Proposed Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers. Among the comments you have received are those from Eugene B. Ruane and the Department of Natural Resources and Environmental Control. A copy of those comments are attached for your reference. I wish to go on record in support of these two sets of comments. I think both underscore the opinion of local authorities that the proposed regulations are not adequate to protect the public from harmful noise levels associated with railroad switching operations.

I urge you to take into consideration the recommendations made by these two statements.

Sincerely,

  
Governor

cc The Honorable William V. Roth, Jr.  
The Honorable Joseph R. Biden, Jr.  
The Honorable Thomas B. Evans

79-01-114

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STATE OF DELAWARE  
DEPARTMENT OF NATURAL RESOURCES  
& ENVIRONMENTAL CONTROL  
EDWARD TATGALL BUILDING  
DOVER, DELAWARE 19901

OFFICE OF THE  
SECRETARY

PHONE: (302) 678-4403

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Gentlemen:

The State of Delaware Department of Natural Resources and Environmental Control requests that the following comments be considered in the promulgation of rail carrier noise emission standards pursuant to the notice in the federal register of April 17, 1979.

The proposed regulations, in our opinion, will be virtually ineffective toward resolving the noise problems associated with the complex and pervasive railroad industry. They are not protective of public health and welfare; they are inconsistent with the national noise policy; they are totally preemptive and; they are unenforceable. It is gratifying, however, to note that by making the proposed standards applicable at all receiving property, the regulatory approach is, in this respect, consistent with the Levels Document (EPA 550/9-74-004, March, 1974).

It is evident that the proposed regulations attempt to follow the mandate of Section 17(a)(1) of the Noise Control Act of 1972 ("the Act") requiring regulations "which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance." It is unconscionable, however, to believe, as reportedly stated by the American Association of Railroads (AAR), that the intent of Congress was to protect the railroads and interstate commerce and that any concern the Congress may have had over the impact of railroad noise upon the health and welfare of the American public was secondary at best. Indeed, this is contrary to the findings of Congress expressed in Section 2(a) of the Act: "(1) that inadequately controlled noise presents a growing danger to the health and welfare of the Nation's population, particularly in urban areas; (2) that the major sources of noise include transportation vehicles and equipment, machinery, appliances, and other products in commerce." In Section 2(b), "The Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare." The sound level measurements reported in the Background Document make it abundantly clear that railroad noises substantially impact public health and welfare. This data notwithstanding, the AAR reportedly has issued

statements to the effect that there is no available evidence that a health and welfare problem exists and, hence, there is no justification for crippling the nation's rail network through imposition of a standard penalizing night-time operations or requiring the expenditure of hundreds of million of dollars for noise control. This Department does not advocate crippling the railroad industry, but, as in most efforts to protect health and welfare, an expenditure is required which must be factored into the cost of doing business. Certainly, this cost must be considered in the development of regulations, but the regulations can be structured in a manner which will allow the industry to absorb these costs over a period of time. But, there can be no doubt about the fact that the corrective actions will be costly, but cost per se should not forever preclude the public from the healthy environment to which it is entitled.

Clearly, as EPA acknowledges, "The Agency has been extremely sensitive to costs and potential effects on railroad operations in setting its standards." Apparently, as evidenced by AAR statements, the industry considers public health and welfare secondary to its own interests.

The limited concern over public health and welfare is further evidenced by the fact that in a Background Document measuring 1-1/8 inches in thickness, EPA has devoted only nine pages to the health and welfare impact of the proposed regulations, and much of this is an explanation of how the Agency approached the subject. Our understanding of EPA's statistical impact analysis is that some 830,000 persons may expect an environment free from railroad noise as a result of these regulations, leaving over three million persons exposed to average daytime-nighttime sound levels of 75 decibels.

The Background Document also is deficient in documenting the extent of public participation in the rule-making process. A statement in one of the accompanying fact-finding sheets indicates that numerous local officials and media representatives were contacted, but we could find no documentation of the names of persons contacted and their reactions or inputs to the proposed regulations. Unquestionably, in developing these regulations EPA has failed to follow its plans for implementing Executive Order No. 12044 for assuring that all interested parties have an opportunity at a very early stage to participate in the development of federal regulations. We strongly urge EPA to seek a further extension of the date for final promulgation of these regulations to allow participation by interested parties.

Because of obvious limitations in the provisions for enforcement, it is questionable whether the public will accrue any benefit from the proposed regulations. The Act requires the Federal Railroad Administration (FRA) to issue rules to assure compliance with the EPA regulations, but the FRA reportedly doubts that it has the authority or the resources for adequate national enforcement. Thus, EPA expects that those State and local governments encountering noise problems covered by federal regulations will adopt and actively enforce standards identical to those in the federal regulations. However, State and

Local officials may have little incentive for adopting the federal standards. The measurement criteria are far too complex to be workable, and in many instances the standards will do nothing to alleviate a local problem. Although the Act provides for waivers of preemption, the proposed regulations do not set forth the necessary ground rules and procedures for considering such actions. It is clear, however, that the preemptive nature of the Act will not be compromised by the waiver proceedings. Thus, there appears to be no mechanism for dealing with those local noise problems which impact on public health and welfare, but will not be alleviated even by effective enforcement of an applicable standard.

To provide some measure of relief through the proposed regulations, we recommend the following actions:

(1) Amend the proposed standard for car coupling operations to provide State and local officials with a more effective enforcement tool. The stated technology for controlling noise from this source is speed control, requiring only a measure of self-discipline on the part of the railroads. The industry incurs no cost and no disruption of operations from enforcement of this regulation. Therefore, there is no apparent reason why this standard should not be effective immediately upon promulgation. However, since it represents current practice it should be included as a minimum standard. We recommend that the standard be reworded as follows:

"Effective immediately, the sound level for car coupling operations shall not, at any receiving property, exceed an A-weighted sound level of 55 dB between the hours of 11:00 p.m. and 7:00 a.m. and a level of 65 dB at any other time. Whenever any State or local government has determined by measurement that the sound level of car coupling operations exceeds this standard, it may require the railroad to implement one or more noise abatement techniques to achieve this standard. Such techniques include, but are not limited to, the rescheduling, relocating or cessation of the non-complying car coupling operations. In the event that the railroad can demonstrate to the satisfaction of such government that there is no available noise abatement technique which can achieve the standard, no car coupling operation shall be performed at speeds greater than four miles per hour at the point of impact or in such manner as to cause a sound level of 95 dB at 30 meters from the center line of the track on which the coupling occurs.

(2) Simplify the measurement criteria using simple statistical procedures based upon the use of the Type II sound level meter.

(3) Specify ground rules and procedures which would allow State and local governments to apply for waivers of preemption so they can deal effectively with "special local conditions" without jeopardizing the basic areas of preemption set forth in the Act.

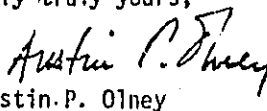
(4) Include, as a minimum, a statement of intent to the effect that as future regulations are developed, EPA will give increasingly greater consideration to alleviating the public health and welfare impact of railroad noises consistent with the findings of the Congress.

(5) In the development of these and any future railroad noise regulations, adhere strictly to the procedures set forth in EPA's plans for implementing Executive Order No. 12044. It is essential that citizen groups, the general public, and federal, state and local agencies have opportunity for input at the earliest stages of the regulatory development procedure.

(6) To the extent that any of these recommendations is contrary to provisions of the Noise Control Act of 1972, begin immediately to prepare appropriate recommendations for amendments to the statute for consideration by the Congress.

We have reviewed and concur with the statements submitted by the City of Dover, Delaware, and by Mr. Eugene B. Ruane, who resides in Dover. We join with them in urging you to reject the proposed regulations and to enlist the aid of the public, state and local governments and other interested groups in formulating a regulatory strategy which is both effective and oriented in larger measure toward the protection of the public health and welfare.

Very truly yours,

  
Austin P. Olney  
Secretary

APD/RRF/rdr

cc: The Honorable William V. Roth, Jr.  
The Honorable Joseph R. Biden, Jr.  
The Honorable Thomas B. Evans  
The Honorable Charles Legates  
Mr. Eugene B. Ruane

122 Shadow Court  
Dover, DE 19901  
May 24, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and Control (AIR-490)  
U. S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Sirs:

As one of more than 800 families living near the Conrail marshalling and switching yard adjoining New Burton Road in the City of Dover, Delaware, I wish to take strong exception to the Proposed Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers published in the Federal Register, April 17, 1979. My objections and comments are summarized as follows:

#### HEALTH AND WELFARE

The proposed regulations are not protective of public health and welfare and are inconsistent with your own findings, your own national noise strategy, and the intent of the Noise Control Act of 1972. In your 1974 studies you have identified an outdoor Ldn value of 55 dB as the level of noise which is "still protective of health and welfare with an adequate margin of safety." And you have established the fact (which we can verify from experience here in Dover) that about four million people in this country are already exposed to day-night average levels of 75 dB, or greater from rail facility noise sources. And you know that this high noise level annoys, disturbs, injures or endangers the comfort, response, health, peace or safety of persons living in proximity to railroad noise sources. And you realize that such impacts do not become negligible until outdoor values of 55 Ldn are reached. Nevertheless, none of your proposed standards is below an Ldn value of 65 dB, and many of your standards are even much higher than average current rail facility levels. For example, your standard for car coupling operations is "an A-weight sound level of 95 dB at 30 meters" (201.15), and your standard for mechanical refrigerator cars under stationary condition is "an A-weighted sound level of 78 dB at 7 meters" (201.14).

Instead of offering relief and promoting "an environment for all Americans free from noise that jeopardizes their health or welfare" (Noise Control Act of 1972), these proposed



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Page 2  
May 24, 1979

regulations stop far short of the degree of protection clearly needed and mandated by the Congress.

Your final version of these regulations should adopt the Ldn 55 dBA criterion for all railyard noise sources and a maximum hourly Leq of 60 dBA (day) and 50 dBA (night).

#### PREEMPTION AND STATE AND LOCAL ENFORCEMENT

Because these proposed standards are also totally preemptive, you will be prohibiting State and local governments from enforcing their own more stringent standards which are now or could be protective of public health and welfare. State/local freedom to independently solve railroad noise problems will be essentially eliminated and control of railroad noise sources at the local level will be allowed only to the degree and levels allowed under your own final regulations. Isn't this an added reason for you to re-examine the high noise levels you have allowed in these regulations and reducing them at least to outdoor values of 55 Ldn?

Moreover, your measurement criteria are extremely complex and will result in little, if any, enforcement by State and local noise control agencies. Adoption of identical regulations at the State/local level will be a lengthy, if not impossible, task. No State or local noise control agency will be able to enforce them. They are too complex and require sophisticated techniques and equipment which State and local programs can little afford. A more simple statistical measurement procedure with less sophisticated equipment should be developed instead.

And the final regulations should also include procedures to operationalize the "waiver of preemption" provision which the Noise Control Act permits if a local rule is necessitated by "special local conditions" and is "not in conflict" with Federal regulations. Although your agency has given some attention to this provision, you are apparently reconsidering your current guidelines and you have apparently not settled on a procedure and a method for judging any such waivers. Otherwise, you would have responded by now to the waiver petition which the City of Dover filed with your agency on October 31, 1977. Shouldn't these regulations, therefore, also establish once and for all your procedures for initiating action on the waiver provision?

#### FLAT YARDS AND SUBCATEGORIZATION

These proposed regulations do not recognize the fact that railyards vary in size, shape, and special characteristics, and that the noises produced there are diverse. Moreover, they

do not recognize that the communities which neighbor these yards are equally diverse, varying in distance from the yards and land zoning, population density, and distribution. I, therefore, believe an appropriate subcategorization of flat yards should be made so that at least some of these yards could be required to attain an Ldn of 55 or lower. This possibility is referenced on page 22,964 of the April 17th Federal Register, and I believe it could reasonably be made to offer some additional relief to a larger number of persons currently affected by noise intrusion from these yards. Possible criteria for such a subcategorization could include distance variations between receiving "developed" property and rail yard facilities and the number of people in proximity to the yard. In other words, lower Ldn levels should be required in yards that are closer to residential property and/or larger numbers of people. The Conrail yard here in Dover, for example, is only 100 feet from several residential developments that include about 800 families. Allowable noise levels from a yard this close to a large number of people should certainly not be as high as a similar yard which exists within a large industrial park complex, or is located near only one or two houses.

#### AVAILABLE TECHNOLOGY FOR NOISE ABATEMENT

The techniques for noise abatement prescribed in these proposed regulations seem to preclude the use of other controls, such as refrigerator and idling locomotive relocation, or shut down requirements, or the possibility of rescheduling of night-time activities. In my judgment, these are also workable and reasonable techniques and should be recognized and published for use by the railroads and enforcing agencies as part of the final regulations. The allowable noise levels should be lowered based on the assumption that these kind of controls are both available and reasonable.

#### EFFECTIVE DATE/EXISTING PRACTICE

While I do not concede that something you have identified as "existing practice" is in fact the case, I do believe that there should be an immediate effective date for compliance with any standards which merely codify existing practice. For example, if in fact the car coupling standard will not result in additional costs to rail carriers, nor the application of new technology, then that specific standard requires no lead time and should be complied with on the date on which you publish the final rules on this matter.

#### HORNS AND WHISTLES

Your decision not to set standards affecting these devices through this regulation is based on the assumption that horns and whistles are "intended to be heard for safety reasons." While that may be the purpose for having these devices, it is not always the purpose for which they are utilized. Here in Dover, for example, the whistle is simply used to communicate with a worker on the ground or to simply "wake up the community." Two-way radio hook-ups are available and inexpensive, but the local Conrail operation does not use them here. Moreover, we have heard and watched some operators simply sit in the yard and operate the whistles on their locomotives repeatedly without any reason that we can determine, except to disturb us. That may seem unbelievable to you, but it is a fact to us.

I would, therefore, recommend that you propose some standard to control these devices in situations where safety reasons are absent.

#### PUBLIC PARTICIPATION

Although there is a statement in your "Background" document that you "consulted with over 100 local officials to gain a better perspective of railroad noise problems as they directly affect the public," there is no documentation that you have in fact implemented Executive Order No. 12044, and afforded all interested parties an opportunity at a very early stage to participate in the development of these regulations. I know of no State or local official or citizen in Delaware whom you have contacted about these regulations prior to their issuance, in spite of the fact that you were obviously aware of the fact that the City of Dover was relegated "to the rulemaking process as a means of achieving its relief" by Judge Steel in the U.S. District Court for the District of Delaware on April 26, 1978, in its case with Conrail concerning the Dover switch yard. I would, therefore, urge you to seek still a further extension of the date for final promulgation of these regulations to allow for participation by interested parties.

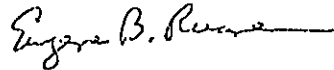
#### CONCLUSION

It is apparent from these very limited proposed regulations and from what has occurred to date in the matter of your attempting to implement the railroad noise section of the

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Noise Control Act of 1972, that your agency should take responsibility for preparing appropriate recommendations for amendments to the statute for consideration by the Congress. You will hopefully get that process started now, and especially address the question of the total preemption provisions of Section 17, as it has been interpreted by the U.S. Court of Appeals (D.C. Circuit) so that State/local governments might once again be free to set their own standards for railroad equipment and facilities.

Sincerely,



Eugene B. Ruane

EBR/ed

cc: The Honorable William V. Roth, Jr.  
The Honorable Joseph R. Biden, Jr.  
The Honorable Thomas B. Evans  
The Honorable Pierre S. du Pont  
The Honorable Austin P. Olney  
The Honorable Kermit Justice  
The Honorable Edwin D. Steel, Jr.  
The Honorable Charles L. Legates  
The Honorable Robert D. Bewick, Jr.  
The Honorable Joseph McDonough



STATE OF DELAWARE  
 DEPARTMENT OF NATURAL RESOURCES  
 & ENVIRONMENTAL CONTROL  
 1000 MARKET STREET  
 WILMINGTON, DELAWARE 19801

OFFICE OF THE  
 SECRETARY

PHONE: 338-2444

May 29, 1979

Rail Carrier Docket Number ONAC 79-01  
 Office of Noise Abatement and Control (ANR-490)  
 U. S. Environmental Protection Agency  
 Washington, D. C. 20460

Gentlemen:

The State of Delaware Department of Natural Resources and Environmental Control requests that the following comments be considered in the promulgation of rail carrier noise emission standards pursuant to the notice in the federal register of April 17, 1979.

The proposed regulations, in our opinion, will be virtually ineffective toward resolving the noise problems associated with the complex and pervasive railroad industry. They are not protective of public health and welfare; they are inconsistent with the national noise policy; they are totally preemptive and; they are unenforceable. It is gratifying, however, to note that by making the proposed standards applicable at all receiving property, the regulatory approach is, in this respect, consistent with the Levels Document (EPA 550/9-74-004, March, 1974).

It is evident that the proposed regulations attempt to follow the mandate of Section 17(a)(1) of the Noise Control Act of 1972 ("the Act") requiring regulations "which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance." It is unconscionable, however, to believe, as reportedly stated by the American Association of Railroads (AAR), that the intent of Congress was to protect the railroads and interstate commerce and that any concern the Congress may have had over the impact of railroad noise upon the health and welfare of the American public was secondary at best. Indeed, this is contrary to the findings of Congress expressed in Section 2(a) of the Act: "(1) that inadequately controlled noise presents a growing danger to the health and welfare of the Nation's population, particularly in urban areas; (2) that the major sources of noise include transportation vehicles and equipment, machinery, appliances, and other products in commerce." In Section 2(b), "The Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare." The sound level measurements reported in the Background Document make it abundantly clear that railroad noises substantially impact public health and welfare. This data notwithstanding, the AAR reportedly has issued

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statements to the effect that there is no available evidence that a health and welfare problem exists and, hence, there is no justification for crippling the nation's rail network through imposition of a standard penalizing nighttime operations or requiring the expenditure of hundreds of million of dollars for noise control. This Department does not advocate crippling the railroad industry, but, as in most efforts to protect health and welfare, an expenditure is required which must be factored into the cost of doing business. Certainly, this cost must be considered in the development of regulations, but the regulations can be structured in a manner which will allow the industry to absorb these costs over a period of time. But, there can be no doubt about the fact that the corrective actions will be costly, but cost per se should not forever preclude the public from the healthy environment to which it is entitled.

Clearly, as EPA acknowledges, "The Agency has been extremely sensitive to costs and potential effects on railroad operations in setting its standards." Apparently, as evidenced by AAR statements, the industry considers public health and welfare secondary to its own interests.

The limited concern over public health and welfare is further evidenced by the fact that in a Background Document measuring 1-1/8 inches in thickness, EPA has devoted only nine pages to the health and welfare impact of the proposed regulations, and much of this is an explanation of how the Agency approached the subject. Our understanding of EPA's statistical impact analysis is that some 830,000 persons may expect an environment free from railroad noise as a result of these regulations, leaving over three million persons exposed to average daytime-nighttime sound levels of 75 decibels.

The Background Document also is deficient in documenting the extent of public participation in the rule-making process. A statement in one of the accompanying fact-finding sheets indicates that numerous local officials and media representatives were contacted, but we could find no documentation of the names of persons contacted and their reactions or inputs to the proposed regulations. Unquestionably, in developing these regulations EPA has failed to follow its plans for implementing Executive Order No. 12044 for assuring that all interested parties have an opportunity at a very early stage to participate in the development of federal regulations. We strongly urge EPA to seek a further extension of the date for final promulgation of these regulations to allow participation by interested parties.

Because of obvious limitations in the provisions for enforcement, it is questionable whether the public will accrue any benefit from the proposed regulations. The Act requires the Federal Railroad Administration (FRA) to issue rules to assure compliance with the EPA regulations, but the FRA reportedly doubts that it has the authority or the resources for adequate national enforcement. Thus, EPA expects that those State and local governments encountering noise problems covered by federal regulations will adopt and actively enforce standards identical to those in the federal regulations. However, State and

local officials may have little incentive for adopting the federal standards. The measurement criteria are far too complex to be workable, and in many instances the standards will do nothing to alleviate a local problem. Although the Act provides for waivers of preemption, the proposed regulations do not set forth the necessary ground rules and procedures for considering such actions. It is clear, however, that the preemptive nature of the Act will not be compromised by the waiver proceedings. Thus, there appears to be no mechanism for dealing with those local noise problems which impact on public health and welfare, but will not be alleviated even by effective enforcement of an applicable standard.

To provide some measure of relief through the proposed regulations, we recommend the following actions:

(1) Amend the proposed standard for car coupling operations to provide State and local officials with a more effective enforcement tool. The stated technology for controlling noise from this source is speed control, requiring only a measure of self-discipline on the part of the railroads. The industry incurs no cost and no disruption of operations from enforcement of this regulation. Therefore, there is no apparent reason why this standard should not be effective immediately upon promulgation. However, since it represents current practice it should be included as a minimum standard. We recommend that the standard be reworded as follows:

"Effective immediately, the sound level for car coupling operations shall not, at any receiving property, exceed an A-weighted sound level of 55 dB between the hours of 11:00 p.m. and 7:00 a.m. and a level of 65 dB at any other time. Whenever any State or local government has determined by measurement that the sound level of car coupling operations exceeds this standard, it may require the railroad to implement one or more noise abatement techniques to achieve this standard. Such techniques include, but are not limited to, the rescheduling, relocating or cessation of the non-complying car coupling operations. In the event that the railroad can demonstrate to the satisfaction of such government that there is no available noise abatement technique which can achieve the standard, no car coupling operation shall be performed at speeds greater than four miles per hour at the point of impact or in such manner as to cause a sound level of 95 dB at 30 meters from the center line of the track on which the coupling occurs.

(2) Simplify the measurement criteria using simple statistical procedures based upon the use of the Type II sound level meter.

Office of Noise Abatement and Control  
May 29, 1979  
Page Four

(3) Specify ground rules and procedures which would allow State and local governments to apply for waivers of preemption so they can deal effectively with "special local conditions" without jeopardizing the basic areas of preemption set forth in the Act.

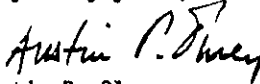
(4) Include, as a minimum, a statement of intent to the effect that as future regulations are developed, EPA will give increasingly greater consideration to alleviating the public health and welfare impact of railroad noises consistent with the findings of the Congress.

(5) In the development of these and any future railroad noise regulations, adhere strictly to the procedures set forth in EPA's plans for implementing Executive Order No. 12044. It is essential that citizen groups, the general public, and federal, state and local agencies have opportunity for input at the earliest stages of the regulatory development procedure.

(6) To the extent that any of these recommendations is contrary to provisions of the Noise Control Act of 1972, begin immediately to prepare appropriate recommendations for amendments to the statute for consideration by the Congress.

We have reviewed and concur with the statements submitted by the City of Dover, Delaware, and by Mr. Eugene B. Ruane, who resides in Dover. We join with them in urging you to reject the proposed regulations and to enlist the aid of the public, state and local governments and other interested groups in formulating a regulatory strategy which is both effective and oriented in larger measure toward the protection of the public health and welfare.

Very truly yours,

  
Austin P. Olney  
Secretary

APO/RRF/rdr

cc: The Honorable William V. Roth, Jr.  
The Honorable Joseph R. Biden, Jr.  
The Honorable Thomas B. Evans  
The Honorable Charles Legates  
Mr. Eugene B. Ruane  
The Honorable Pierre S. du Pont





STATE OF DELAWARE  
DEPARTMENT OF TRANSPORTATION

DOVER, DELAWARE 19901

June 13, 1979

OFFICE OF THE  
SECRETARY

PHONE (302) 678-4303

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

Federal Law and Court Action have resulted in the issuing of proposed Federal Noise Emission Regulations for railroad yards. We consider your approach of providing federal regulations without provision for adequate federal enforcement to be unacceptable. One cannot expect compliance unless there is an inspection and enforcement program, and the government which sets regulation, be it federal, state or local, must also enforce it!

We do believe that the noise levels proposed are reasonable, but, the location for measurement - at a variable residential property line - is not! Railroad yards cannot be made equal to living areas (55dB). Therefore, noise railroad levels should be established for a fixed distance from the yard.

The elimination of noise complaints will then remain essentially to be solved locally by land use controls. Rail yards should not be introduced into established residential areas and residential areas should be held sufficiently far from the yards so that their noise levels are adequate (55dB).

Essentially, we suggest that the federal government should control railroad noise and local governments should control land use.

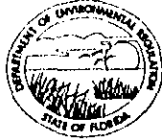
Sincerely,

Kermit H. Justice  
Secretary

KHJ/JER/cd

cc: The Honorable Pierre S. du Pont IV  
The Honorable William V. Roth, Jr.  
The Honorable Joseph R. Biden  
The Honorable Thomas B. Evans, Jr.  
The Honorable Austin P. Olney

TWIN TOWERS OFFICE BUILDING  
2000 BLAIR STONE ROAD  
TALLAHASSEE, FLORIDA 32301



BOB GRAHAM  
GOVERNOR  
JACOB D. VARN  
SECRETARY

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

May 25, 1979

Mr. Henry E. Thomas  
Director  
Standards and Regulations Division  
U. S. Environmental Protection  
Agency  
Washington, D. C.

Dear Mr. Thomas:

Attached are our comments on the proposed revision to the rail carrier noise emission regulation. Copies of our comments are being sent under separate cover to the docket (ONAC 79-01).

We have addressed those issues which we think will directly affect the State of Florida and its noise control programs. Although some form of noise abatement from railroad noise is needed in the State of Florida, our comments indicate that we believe that the regulations as proposed will be limited in effectiveness. Our concerns are in the areas of implementation of enforcement and uniformity of regulation.

We appreciate the opportunity for review of these proposed revisions to the rail carrier noise emission regulation and hope that our comments will be helpful to your agency in developing and promulgating an effective regulation.

Sincerely,

*Jacob D. Varn*  
Jacob D. Varn  
Secretary

JDV/bs

Attachment

cc: Honorable Bob Graham

~BARD ARR-190

31 MAY 1979 11: 36

original typed on 100% recycled paper

79-01-034

COMMENTS ON PROPOSED REVISIONS TO RAIL CARRIER  
NOISE EMISSIONS REGULATIONS SUBMITTED BY  
FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

1) National Uniformity of Treatment

The federal railroad noise standards as proposed should be enforced by the federal government, since according to the Noise Control Act of 1972, "while primary responsibility for control of noise rests with state and local governments, federal action is essential to deal with major noise sources in commerce, control of which requires national uniformity of treatment."

A lot of state and local governments do not have the resources for adequate enforcement to control major noise sources in commerce as railroad noise, control of which is highly technical in nature. Furthermore, for those state and local governments which do have resources, the emphasis on local initiatives may only result in proliferating state/local regulations which are not desirable to industry. Thus, for such major noise sources as railroad noise, federal action is essential not only in the establishment of noise standards, but also in the enforcement of the established standards to provide the required national uniformity of treatment.

2) Type of Standard

The federal Environmental Protection Agency was authorized to establish noise emission standards for products distributed in commerce by the Noise Control Act of 1972. In the past, EPA has established specific source standards for products such as air compressors, heavy/medium trucks and locomotives. The proposed revisions to the rail carrier noise emission regulations not only address specific source standards, but also introduce property line regulations under which a number of specific sources contribute. Property line type regulation has traditionally been in use by state and local governments as a method to control noise at the community level. State and local governments have depended upon EPA to promulgate specific source regulation for products which can be used to meet community property line regulations. EPA might consider deleting the property line standards in the proposed revision to the rail carrier noise emission regulation in order to be consistent with past national noise control strategy.

3) Warning Devices

EPA has excluded warning devices from the proposed revision to the rail carrier noise emission regulation because such warning devices generate a noise intended to be heard for safety reasons. Florida has recently had a large number of complaints regarding the sounding of warning devices. If EPA does not establish a sound level limit for warning devices, state or local governments may establish a number of different regulations to cover the maximum permissible sound levels for this portion of rail operation. Although safety is paramount in the issue, the establishment of a national regulation to provide a maximum sound level for rail warning devices with due regard to safety would be in the best interest of the people and the industry. The establishment of such a "cap" level would insure a national uniform coherence to sound levels for rail warning devices that takes into account both safety and annoyance from noise.

4) Complexity of Measure

The proposed revision to the rail carrier noise emission regulation uses  $L_{dn}$  as the descriptor for property line standards.  $L_{dn}$  is a highly technical statistical descriptor for noise and may not be appropriate for enforcement. Most state and local governments do not have the resources available to determine  $L_{dn}$ . Also, in the determination of  $L_{dn}$  it would be necessary to delete the periods when warning devices are sounded and through trains are passing. This type of determination would require a noise expert which is not available to most state and local governments.

The acquisition of resources required to measure  $L_{dn}$  would require a large investment in equipment and manpower. EPA might consider  $L_{10}$  (hourly) or  $L_{50}$  (hourly) as a descriptor for the property line standards. Measures such as these can be accomplished with conventional sound level meters and present personnel now trained in sound measurement. A standard with a workable and enforceable descriptor will provide for greater enforcement of the proposed property line standards if such standards are implemented.

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NOISE EMISSIONS REGULATIONS SUBMITTED BY  
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-PART ANR-490

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4) Complexity of Measure

The proposed revision to the rail carrier noise emission regulation uses  $L_{dn}$  as the descriptor for property line standards.  $L_{dn}$  is a highly technical statistical descriptor for noise and may not be appropriate for enforcement. Most state and local governments do not have the resources available to determine  $L_{dn}$ . Also, in the determination of  $L_{dn}$  it would be necessary to delete the periods when warning devices are sounded and through trains are passing. This type of determination would require a noise expert which is not available to most state and local governments.

The acquisition of resources required to measure  $L_{dn}$  would require a large investment in equipment and manpower. EPA might consider  $L_{10}$  (hourly) or  $L_{50}$  (hourly) as a descriptor for the property line standards. Measures such as these can be accomplished with conventional sound level meters and present personnel now trained in sound measurement. A standard with a workable and enforceable descriptor will provide for greater enforcement of the proposed property line standards if such standards are implemented.

**ILLINOIS  
POLLUTION CONTROL BOARD  
RULES AND REGULATIONS**

**CHAPTER 8:  
NOISE REGULATIONS**

**Note:** This printing of the Illinois Pollution Control Board Rules and Regulations for Noise Pollution includes Noise Regulations as adopted by the Illinois Pollution Control Board through July 31, 1977



**Illinois Pollution Control Board**

**Rules and Regulations**

**Chapter 8: Noise Regulations**

**Printed by Authority of the State of Illinois**



ILLINOIS POLLUTION CONTROL BOARD  
RULES AND REGULATIONS

CHAPTER 8: NOISE REGULATIONS

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1. Part 1 and 2  
Adopted July 26, 1973 8 Ill. P.C.B.Op. 653  
Formal opinion July 31, 1973, IPCB #R72-2 8 Ill. P.C.B.Op. 703  
Filed with Secretary of State July 31, 1973,  
except for Standard Land Use Coding System
2. Appendix A Standard Land Use Coding System  
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3. Amendment to Rule 209(j)  
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4. Part 3 plus Amendment to Part 1  
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5. Amendment to Rule 301  
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Filed with Secretary of State July 29, 1977

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**FOOTNOTES**

<sup>1</sup> The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

<sup>2</sup> Code 9100—"Undeveloped and unused land area (excluding non-commercial forest development)" identifies those parcels of land that appear to be undeveloped or if previously developed, are presently vacant and unused. This category includes such areas as vacant lands that once were farms, as well as vacant parcels where structures have been demolished. Vacant nonresidential buildings are coded 9400, "Vacant floor area."

<sup>3</sup> Code 921—"Forest reserves" are forested areas withdrawn from commercial utilization, and which are reserved through statute or administrative regulation for specific conservation purposes. Forested areas designated as park sites may also be restricted from commercial forestry production, but because of their designation for recreational activity they should be identified and coded as "Parks" (code 76).

<sup>4</sup> Code 9220—"Noneserve forests (undeveloped)" are major forested areas not on a farm, ranch, or large estate with no commercial use made of the trees. It is recognized that other activities such as recreation or the grazing of livestock may also be taking place within these forested areas. However, these types of activities are considered secondary in nature and not coded. Activities such as mining (code 85), permanent camping areas (code 7491), and logging camps (code 2410), located within these forested areas should be separately identified.

<sup>5</sup> Code 9320—"Lakes" include permanent lakes (natural or manmade) with a minimum size of 1 acre. Impounded surface water areas used for storage should be identified as "Water storage," code 4833.

<sup>6</sup> Code 9510—"Residential facilities under construction are considered to be completed when all exterior windows and doors are installed and the usable floors are in place. If construction has not reached this point, the parcel should be identified as "Under construction (residential)," code 9510.

<sup>7</sup> Code 9520—"Under construction (nonresidential)" is used only if there is no means of identifying the activity or activities that will occupy the structure when it is completed.

ILLINOIS POLLUTION CONTROL BOARD  
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CHAPTER 8: NOISE REGULATIONS

PART 1 -- GENERAL PROVISIONS

Rule 101: DEFINITIONS

EXCEPT AS HEREINAFTER STATED AND UNLESS A DIFFERENT MEANING OF A TERM IS CLEAR FROM ITS CONTEXT, THE DEFINITIONS OF TERMS USED IN THIS CHAPTER SHALL BE THE SAME AS THOSE USED IN THE ENVIRONMENTAL PROTECTION ACT.

ALL DEFINITIONS OF ACOUSTICAL TERMINOLOGY SHALL BE IN CONFORMANCE WITH THOSE CONTAINED IN ANSI S1.1 - 1960 "ACOUSTICAL TERMINOLOGY."

ANSI: American National Standards Institute or its successor bodies.

Antique vehicle: a motor vehicle that is more than 25 years of age or a bona fide replica thereof and which is driven on the highways only going to and returning from an antique auto show or an exhibition, or for servicing or demonstration, or a fire-fighting vehicle more than 20 years old which is not used as fire-fighting equipment but is used only for the purpose of exhibition or demonstration.

Bus: every motor vehicle designed for carrying more than 10 passengers and used for the transportation of persons; and every motor vehicle, other than a taxicab, designed and used for the transportation of persons for compensation.

Construction: on-site erection, fabrication, installation, alteration, demolition or removal of any structure, facility, or addition thereto, including all related activities, including, but not restricted to, clearing of land, earth-moving, blasting and landscaping.

Daytime hours: 7:00 a.m. to 10:00 p.m., local time.

dB(A): sound level in decibels determined by the A-weighting of a sound level meter.

Dealer: every person engaged in the business of selling vehicles to persons who purchase such vehicles for purposes other than resale, and who has an established place of business for such activity in this state.

Decibel (dB): a unit of measure, on a logarithmic scale to the base 10, of the ratio of the magnitude of a particular sound pressure to a standard reference pressure, which, for purposes of this Chapter, shall be 20 micronewtons per square meter ( $\mu\text{N}/\text{m}^2$ ).

Exhaust system: the system comprised of a combination of components which provides for the enclosed flow of exhaust gas from engine parts to the atmosphere.

Existing property-line-noise-source: any property-line-noise-source, the construction or establishment of which commenced prior to the effective date of this Chapter. For the purposes

of this sub-section, any property-line-noise-source whose A, B or C land use classification changes, on or after the effective date of this Chapter, shall not be considered an existing property-line-noise-source.

Farm Tractor: every motor vehicle designed and used primarily as a farm implement for drawing wagons, plows, mowing machines and other implements of husbandry, and every implement of husbandry which is self propelled (sic).

Fast meter response: as specified by American National Standards Institute in document S1.4-1971, or subsequent revisions.

Gross Vehicle Weight (GVW): the maximum loaded weight for which a motor vehicle is registered or, for vehicles not so registered, the value specified by the manufacturer as the loaded weight of the vehicle.

Highway: the entire width between the boundary lines of every way publicly maintained when any part thereof is open to the use of the public for purposes of vehicular travel.

Impulsive sound: either a single pressure peak or a single burst (multiple pressure peaks) for a duration less than one second.

Motorcycle: every motor vehicle having a seat or saddle for the use of the rider and designed to travel on not more than 3 wheels in contact with the ground, but excluding a tractor.

Motor driven cycle: every motorcycle, motor scooter, or bicycle with motor attached, with less than 150 cubic centimeter piston displacement.

Motor vehicle: every vehicle which is self-propelled and any combination of vehicles which are propelled or drawn by a vehicle which is self-propelled.

Muffler: a device for abating the sounds of escaping gases of an internal combustion engine.

New motor vehicle: a motor vehicle the equitable or legal title to which has never passed to a person who purchases it for purposes other than resale.

New property-line-noise-source: any property-line-noise-source, the establishment of which commenced on or after the effective date of this Chapter.

Nighttime hours: 10:00 p.m. to 7:00 a.m., local time

Noise pollution: the emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity.

Octave band sound pressure level: the sound pressure level for the sound being measured contained within the specified octave band. The reference pressure is 20 micronewtons per square meter.

Passenger car: a motor vehicle designed for the carrying of not more than ten persons, including a multi-purpose passenger vehicle, except any motor vehicle of the second division as defined in I.R.S. ch. 95-1/2, Section 1-146, and except any motorcycle or motor driven cycle.

Person: any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, agency, political subdivision of this State, any other State or

political subdivision or agency thereof or any legal successor, representative, agent or agency of the foregoing.

Preferred frequencies: those frequencies in Hertz preferred for acoustical measurements which, for the purposes of this Chapter, consist of the following set of values: 20, 25, 31.5, 40, 50, 63, 80, 100, 125, 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600, 2000, 2500, 3150, 4000, 5000, 6300, 8000, 10,000, 12,500.

Prominent discrete tone: sound, having a one-third octave band sound pressure level which, when measured in a one-third octave band at the preferred frequencies, exceeds the arithmetic average of the sound pressure levels of the two adjacent one-third octave bands on either side of such one-third octave band by:

(a) 5 dB for such one-third octave band with a center frequency from 500 Hertz to 10,000 Hertz, inclusive. Provided: such one-third octave band sound pressure level exceeds the sound pressure level of each adjacent one-third octave band, or;

(b) 8 dB for such one-third octave band with a center frequency from 160 Hertz to 400 Hertz, inclusive. Provided: such one-third octave band sound pressure level exceeds the sound pressure level of each adjacent one-third octave band, or;

(c) 15 dB for such one-third octave band with a center frequency from 25 Hertz to 125 Hertz, inclusive. Provided: such one-third octave band sound pressure level exceeds the sound pressure level of each adjacent one-third octave band.

Property-line-noise-source: any equipment or facility, or combination thereof, which operates within any land used as specified by Rule 201 of this Chapter. Such equipment or facility, or combination thereof, must be capable of emitting sound beyond the property line of the land on which operated.

Registered: a vehicle is registered when a current registration certificate or certificates and registration plates have been issued for it under the laws of any state pertaining to the registration of vehicles.

SLUCM: the Standard Land Use Coding Manual (1969, United States Government Printing Office) which designates land activities by means of numerical codes.

Snowmobile: a self-propelled device designed for travel on snow or ice or natural terrain steered by skis or runners, and supported in part by skis, belts, or cleats.

Sound: an oscillation in pressure in air.

Sound level: in decibels, a weighted sound pressure level, determined by the use of metering characteristics and frequency weightings specified in ANSI S1.4 - 1971 "Specification for Sound Level Meters."

Sound pressure level: in decibels, 20 times the logarithm to the base 10 of the ratio of the magnitude of a particular sound pressure to the standard reference pressure. The standard reference pressure is 20 micronewtons per square meter.

Special mobile equipment: every vehicle not designed or used primarily for the transportation of persons or property and only incidentally operated or moved over a highway, including but not

limited to: ditch digging apparatus, well boring (sic) apparatus and road construction and maintenance machinery such as asphalt spreaders, bituminous mixers, bucket loaders, tractors other than truck tractors, levelling graders, finishing machines, motor graders, road rollers, scarifiers, earth-moving carryalls and scrapers, power shovels and drag lines, and self-propelled cranes and other earth-moving equipment.

Tactical military vehicle: every vehicle operated by any federal or state military organization and designed for use in field operations, but not including vehicles such as staff cars and personnel carriers designed primarily for normal highway use.

Unregulated safety relief valve: a safety relief valve used and designed to be actuated by high pressure in the pipe or vessel to which it is connected and which is used and designed to prevent explosion or other hazardous reaction from pressure build-up, rather than being used and designed as a process pressure blowdown.

Used motor vehicle: a motor vehicle that is not a new motor vehicle.

Vehicle: every device in, upon, or by which any person or property is or may be transported or drawn upon a highway.

**Rule 102: PROHIBITION OF NOISE POLLUTION**

No person shall cause or allow the emission of sound beyond the boundaries of his property, as property is defined in Section 25 of the Illinois Environmental Protection Act, so as to cause noise pollution in Illinois, or so as to violate any provision of this chapter.

**Rule 103: MEASUREMENT PROCEDURES**

**(a) Procedures Applicable to All of Chapter 8**

The Agency may adopt procedures which set forth criteria for the measurement of sound. Such procedures shall be in substantial conformity with standards and recommended practices established by the American National Standards Institute, Inc. (ANSI) or the Society of Automotive Engineers, Inc. (SAE), and the latest revisions thereof, including ANSI S1.1-1960, ANSI S1.8-1969, ANSI S1.2-1962, and SAE J-184. Such procedures shall be revised from time to time to reflect current engineering judgment and advances in noise measurement techniques. Such procedures, and revisions, thereof, shall not become effective until filed with the Index Division of the Office of the Secretary of State as required by "An Act Concerning Administrative Rules," Ill.Rev. Stat.1975, Ch. 127 par.266, approved June 14, 1951, as amended.

**(b) Procedures Applicable only to Part 2 of Chapter 8**

Measurement procedures to determine whether emissions of sound comply with Part 2 shall be in substantial conformity with ANSI S1.6-1967, ANSI S1.4-1971--Type I Precision, ANSI S1.11-1966, and ANSI S1.13-1971 Field Method.



(c) Procedures Applicable only to Part 3 of Chapter 8

- (1) Measurement procedures to determine whether emissions of sound comply with Rules 310-313 of Part 3 shall be in substantial conformity with ANSI S1.4-1971--Type I Precision or Type II General Purpose, and ANSI S1.13-1971 Field Method, provided that procedures for measurement under Rule 313 shall be in substantial conformity with those established by the U.S. Department of Transportation pursuant to Section 18 of the Federal Noise Control Act of 1972.
- (2) The Agency may provide for measurement at distances other than the 50 feet specified in Rules 310 through 313, provided that correction factors are applied so that the sound levels so determined are substantially equivalent to those measured at 50 feet and the measurement distance does not exceed 100 feet. The correction factors used shall be consistent with California Highway Patrol Sound Measurement Procedures HPH 83.1 (October 1, 1973, as amended November 29, 1975).

Rule 104: BURDEN OF PERSUASION REGARDING EXCEPTIONS

In any proceeding pursuant to this Chapter, if an exception stated in this Chapter would limit an obligation, limit a liability, or eliminate either an obligation or a liability, the person who would benefit from the application of the exception shall have the burden of persuasion that the exception applies and that the terms of the exception have been met. The Agency shall cooperate with and assist persons in determining the application of the provisions of this Chapter.

Rule 105: SEVERABILITY

If any provisions of these rules or regulations is (sic) adjudged invalid, or if the application thereof to any person or in any circumstance is adjudged invalid, such invalidity shall not affect the validity of this Chapter as a whole or of any part, sub-part, sentence or clause thereof not adjudged invalid.

PART 2 - SOUND EMISSION STANDARDS AND LIMITATIONS  
FOR PROPERTY-LINE-NOISE-SOURCES

ALL TERMS DEFINED IN PART 1 OF THIS CHAPTER WHICH APPEAR IN PART 2 OF THIS CHAPTER HAVE THE SAME DEFINITIONS SPECIFIED BY RULE 101 OF PART 1 OF THIS CHAPTER.

Rule 201: CLASSIFICATION OF LAND ACCORDING TO USE

- (a) Class A Land  
Class A land shall include all land used as specified by SLUCM Codes 110 through 190 inclusive, 651, 674, 681 through 683 inclusive, 691, 711, 762, 7121, 7122, 7123 and 921.

- (b) Class B Land  
Class B land shall include all land used as specified by SLUCM Codes 397, 471 through 479 inclusive, 511 through 599 inclusive, 611 through 649 inclusive, 652 through 673 inclusive, 675, 692, 699, 7124, 7129, 719, 721, 722 except 7223 used for automobile and motorcycle racing, 723 through 761 inclusive except 7311 used for automobile and motorcycle racing, 769 through 790 inclusive, and 922.
- (c) Class C Land  
Class C land shall include all land used as specified by SLUCM Codes 211 through 299 inclusive, 311 through 396 inclusive, 399, 411 except 4111, 412 except 4121, 421, 422, 429, 441, 449, 460, 481 through 499 inclusive, 7223 and 7311 used for automobile and motorcycle racing, and 811 through 890 inclusive.
- (d) A parcel or tract of land used as specified by SLUCM Code 81, 83, 91, or 922, when adjacent to Class B or C land may be classified similarly by action of a municipal government having zoning jurisdiction over such land. Notwithstanding any subsequent changes in actual land use, land so classified shall remain such B or C classification until the municipal government removes the classification adopted by it.

**Rule 202: SOUND EMITTED TO CLASS A LAND DURING DAYTIME HOURS**

Except as elsewhere in this Part 2 provided, no person shall cause or allow the emission of sound during daytime hours from any property-line-noise-source located on any Class A, B or C land to any receiving Class A land which exceeds any allowable octave band sound pressure level specified in Table 1, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

TABLE 1

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from		
	Class C Land	Class B Land	Class A Land
31.5	75	72	72
63	74	71	71
125	69	65	65
250	64	57	57
500	58	51	51
1000	52	45	45
2000	47	39	39
4000	43	34	34
8000	40	32	32

**Rule 203: SOUND EMITTED TO CLASS A LAND DURING NIGHTTIME HOURS**

Except as elsewhere in this Part 2 provided, no person shall cause or allow the emission of sound during nighttime hours from any property-line-noise-source located on any Class A, B or C land to any receiving

Class A land which exceeds any allowable octave band sound pressure level specified in Table 2, when measured at any point within such receiving Class A land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

TABLE 2

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class A Land from		
	Class C Land	Class B Land	Class A Land
31.5	69	63	63
63	67	61	61
125	62	55	55
250	54	47	47
500	47	40	40
1000	41	35	35
2000	36	30	30
4000	32	25	25
8000	32	25	25

Rule 204: SOUND EMITTED TO CLASS B LAND

Except as elsewhere in this Part 2 provided, no person shall cause or allow the emission of sound from any property-line-noise-source located on any Class A, B or C land to any receiving Class B land which exceeds any allowable octave band sound pressure level specified in Table 3, when measured at any point within such receiving Class B land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

TABLE 3

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class B Land from		
	Class C Land	Class B Land	Class A Land
31.5	80	79	72
63	79	78	71
125	74	72	65
250	69	64	57
500	63	58	51
1000	57	52	45
2000	52	46	39
4000	48	41	34
8000	45	39	32

Rule 205: SOUND EMITTED TO CLASS C LAND

Except as elsewhere in this Part 2 provided, no person shall cause or allow the emission of sound from any property-line-noise-source located on any Class A, B or C land to any receiving Class C land which exceeds

any allowable octave band sound pressure level specified in Table 4, when measured at any point within such receiving Class C land, provided, however, that no measurement of sound pressure levels shall be made less than 25 feet from such property-line-noise-source.

TABLE 4

Octave Band Center Frequency (Hertz)	Allowable Octave Band Sound Pressure Levels (dB) of Sound Emitted to any Receiving Class C land from	
	Class C Land	Class B Land and Class A Land
31.5	88	79
63	83	78
125	78	72
250	73	64
500	67	58
1000	60	52
2000	54	46
4000	50	41
8000	47	39

Rule 206: IMPULSIVE SOUND

No person shall cause or allow the emission of impulsive sound from any property-line-noise-source located on any Class A, B or C land to any receiving Class A, B, or C land which exceeds the allowable dB(A) sound level specified in Table 5, when measured at any point within such receiving Class A, B or C land, provided, however, that no measurement of sound levels shall be made less than 25 feet from the property-line-noise-source.

TABLE 5

Classification of Land on which Property-Line- Noise-Source is Located	Allowable dB(A) Sound Levels of Impulsive Sound Emitted to Designated Classes of Receiving Land			
	Class C Land	Class B Land	Class A Land	
			Daytime	Nighttime
Class A Land	57	50	50	45
Class B Land	57	57	50	45
Class C Land	65	61	56	46

Rule 207: PROMINENT DISCRETE TONES

- (a) No person shall cause or allow the emission of any prominent discrete tone from any property-line-noise-source located on any Class A, B or C land to any receiving Class A, B or C land, provided, however, that no measurement of one-third octave band sound pressure levels shall be made less than 25 feet from such property-line-source (sic).

- (b) This rule shall not apply to prominent discrete tones having a one-third octave band sound pressure level 10 or more dB below the allowable octave band sound pressure level specified in the applicable table in Rules 202 through 205 for the octave band which contains such one-third octave band. In the application of this sub-section, the applicable table for sound emitted from any existing property line noise source (sic) to receiving Class A land, for both daytime and nighttime operations shall be Table 1 (Rule 202).

Rule 208: EXCEPTIONS

- (a) Rules 202 through 207 inclusive shall not apply to sound emitted from land used as specified by SLUCM Codes 110, 140, 190, 691, 7311 except as used for automobile and motorcycle racing, and 742 except 7424 and 7425.
- (b) Rules 202 through 207 inclusive shall not apply to sound emitted from emergency warning devices and unregulated safety relief valves.
- (c) Rules 202 through 207 inclusive shall not apply to sound emitted from lawn care maintenance equipment and agricultural field machinery used during daytime hours. For the purposes of this sub-section, grain dryers operated off the farm shall not be considered agricultural field machinery.
- (d) Rules 202 through 207 inclusive shall not apply to sound emitted from equipment being used for construction.
- (e) Rule 203 shall not apply to sound emitted from existing property-line-noise-sources during nighttime hours, provided, however, that sound emitted from such existing property-line-noise-sources shall be governed during nighttime hours by the limits specified in Rule 202.
- (f) Rules 202 through 207 inclusive shall not apply to the operation of any vehicle registered for highway use while such vehicle is being operated within any land used as specified by Rule 201 of this Chapter in the course of ingress to or egress from a highway.

Rule 209: COMPLIANCE DATES FOR PART 2

- (a) Except as provided in Rules 209(f), 209(g), 209(i) and 209(j), every owner or operator of a new property-line-noise-source shall comply with the standards and limitations of Part 2 of this Chapter on and after the effective date of this Chapter.
- (b) Except as otherwise provided in this Rule 209, every owner or operator of an existing property-line-noise-source shall comply with the standards and limitations of Part 2 of this Chapter on and after twelve months from the effective date of this Chapter.
- (c) Every owner or operator of an existing property-line-noise-source who emits sound which exceeds any allowable octave band sound pressure level of Rules 202, 203, 204 or 205 by 10 dB or more in any octave band with a center frequency of 31.5 Hertz,

63 Hertz or 125 Hertz shall comply with the standards and limitations of Part 2 of this Chapter on and after eighteen months from the effective date of this Chapter.

- (d) Except as provided in Rules 209(f), 209(g) and 209(h), every owner or operator of an existing property-line-noise-source required to comply with Rule 206 of this Chapter shall comply with the standards and limitations of Part 2 of this Chapter on and after eighteen months from the effective date of this Chapter.
- (e) Every owner or operator of an existing property-line-noise-source required to comply with Rule 207 of this Chapter shall comply with the standards and limitations of Part 2 of this Chapter on and after eighteen months from the effective date of this Chapter.
- (f) Every owner or operator of Class C land now or hereafter used as specified by SLUCM Codes 852 and 854 shall have three years from the effective date of this Chapter to bring the sound from necessary explosive blasting activities in compliance with Rule 206, provided that such blasting activities are conducted between 8:00 a.m. and 5:00 p.m. local time, at specified hours previously announced to the local public.
- (g) Every owner or operator of Class C land now and hereafter used as specified by SLUCM Code 4112 shall have three years from the effective date of this Chapter to bring the sound from railroad car coupling in compliance with Rule 206.
- (h) Every owner or operator of Class C land on which forging operations are now conducted shall have three years from the effective date of this Chapter to bring sound from the impact of forging hammers into full compliance with the limits specified in Rule 206 for emissions to any receiving land.
- (i) Every owner or operator of Class C land now and hereafter used as specified by SLUCM Code 291 shall comply with the standards and limitations of Part 2 of this Chapter on and after two years from the effective date of this Chapter.
- (j) Every owner or operator of Class C land now and hereafter used as specified by SLUCM Code 7223 and 7311 when used for automobile and motorcycle racing shall comply with the standards and limitations of Part 2 of this Chapter on February 10, 1976.

### PART 3--SOUND EMISSION STANDARDS AND LIMITATIONS FOR MOTOR VEHICLES

#### SUBPART A--EQUIPMENT STANDARDS APPLICABLE TO ALL MOTOR VEHICLES

##### Rule 301: EXHAUST SYSTEM (amended July 7, 1977)

No person shall operate or cause or allow the operation of a motor vehicle on a public right of way unless it is at all times equipped with an adequate muffler or other sound dissipative device which is:

- a) In constant operation and properly maintained to prevent any excessive or unusual noise;
- b) Free from defects which affect sound reduction; and

- c) Not modified in a manner which will amplify or increase the noise of such muffler or other sound dissipative device above that emitted by the muffler originally installed on the vehicle so as to produce excessive or unusual noise.

Rule 302: TIRES

No person shall operate or cause or allow the operation of a motor vehicle with one or more tires having a tread pattern which is composed primarily of cavities in the tread (excluding sipes and local chunking) which are not vented by grooves to the tire shoulder or circumferentially to each other around the tire.

SUBPART B--OPERATIONAL STANDARDS

Rule 310: STANDARDS APPLICABLE TO ALL PASSENGER CARS AND TO OTHER MOTOR VEHICLES WITH GVW OF 8,000 POUNDS OR LESS.

(a) Applicability

This Rule 310 shall apply to all passenger cars regardless of weight and to other motor vehicles with a gross vehicle weight of 8,000 pounds or less, except motorcycles and motor driven cycles.

(b) Standards for Highway Operation

No person shall operate or cause or allow the operation of a motor vehicle subject to this Rule at any time under any conditions of highway grade, load, acceleration or deceleration in such a manner as to exceed the following limits:

- (1) On highways with speed limits of 35 miles per hour or less, 74 dB(A), or 76 dB(A) when operating on a grade exceeding 3%, measured with fast meter response at 50 feet from the centerline of lane of travel, or an equivalent sound level limit measured in accordance with procedures established under Rule 103;
- (2) On highways with speed limits of more than 35 miles per hour, 82 dB(A), or 85 dB(A) if the vehicle is equipped with two or more snow or mud/snow tires, measured with fast meter response at 50 feet from the centerline of lane of travel, or an equivalent sound level limit measured in accordance with procedures established under Rule 103.

Rule 311: STANDARDS APPLICABLE TO MOTOR VEHICLES WITH GVW IN EXCESS OF 8,000 POUNDS

(a) Applicability

This Rule 311 shall apply to motor vehicles with a gross vehicle weight in excess of 8,000 pounds, except passenger cars.

(b) Standards for Highway Operation

No person shall operate or cause or allow the operation of a motor vehicle subject to this Rule at any time under any conditions of highway grade, load, acceleration or deceleration in such a manner as to exceed the following limits:

- (1) On highways with speed limits of 35 miles per hour or less, 86 dB(A), measured with fast meter response at 50 feet from the centerline of lane of travel, or an equivalent sound level limit measured in accordance with procedures established under Rule 103;
- (2) On highways with speed limits of more than 35 miles per hour, 90 dB(A) measured with fast meter response at 50 feet from the centerline of lane of travel, or an equivalent sound level limit measured in accordance with procedures established under Rule 103.

(c) Standard for Operation under Stationary Test

No person shall operate or cause or allow the operation of a motor vehicle subject to this Rule, powered by an engine with engine speed governor, which generates a sound level in excess of 88 dB(A) measured with fast meter response at 50 feet from the longitudinal centerline of the vehicle or an equivalent sound level limit measured in accordance with procedures established under Rule 103, when that engine is accelerated from idle with wide open throttle to governed speed with the vehicle stationary, transmission in neutral, and clutch engaged.

**Rule 312: STANDARDS APPLICABLE TO MOTORCYCLES AND MOTOR DRIVEN CYCLES**

(a) Applicability

This Rule 312 shall apply to all motorcycles and motor driven cycles.

(b) Standards for Highway Operation

No person shall operate or cause or allow the operation of a motor vehicle subject to this Rule at any time or under any conditions of highway grade, load, acceleration or deceleration in such a manner as to exceed the following limits:

- (1) On highways with speed limits of 35 miles per hour or less, 80 dB(A), or 82 dB(A) when operating on a grade exceeding 3%, measured with fast meter response at 50 feet from the centerline of lane of travel, or an equivalent sound level limit measured in accordance with procedures established under Rule 103;



- (2) On highways with speed limits of more than 35 miles per hour, 86 dB(A) measured with fast meter response at 50 feet from the centerline of lane of travel, or an equivalent sound level limit measured in accordance with procedures established under Rule 103.

Rule 313: EXCEPTION FOR AND STANDARDS APPLICABLE TO MOTOR CARRIERS ENGAGED IN INTERSTATE COMMERCE WITH RESPECT TO OPERATIONS REGULATED PURSUANT TO THE FEDERAL NOISE CONTROL ACT OF 1972.

(a) Applicability

- (1) After the effective date of the federal standards contained in 40 Code of Federal Regulations (CFR) Part 202, this Rule 313 shall apply to motor carriers engaged in interstate commerce with respect to noise emissions regulated by such federal standards. Motor carrier operations determined pursuant to Rule 104 to be governed by this Rule shall be excepted from Rules 301, 302 and 311.
- (2) This Rule shall apply to motor carriers with respect only to the operation of those motor vehicles of such carriers which have a gross vehicle weight rating or gross combination weight rating in excess of 10,000 pounds, and only when such motor vehicles are operated under the conditions specified below.
- (3) Except as provided in subparagraph (4) of this paragraph (a), this Rule shall apply to the total sound produced by such motor vehicles when operating under the specified conditions, including the sound produced by auxiliary equipment mounted on such motor vehicles.
- (4) This Rule shall not apply to auxiliary equipment which is normally operated only when the transporting vehicle is stationary or is moving at a speed of 5 miles per hour or less. Examples of such equipment include, but are not limited to, cranes, asphalt spreaders, ditch diggers, liquid or slurry pumps, air compressors, welders, and refuse compactors.

(b) Equipment Standards

- (1) Visual exhaust system inspection. No motor carrier subject to this Rule shall operate any motor vehicle of a type with respect to which this Rule is applicable unless the exhaust system of such vehicle is (a) equipped with a muffler or other noise dissipative device; (b) free from defects which affect sound reduction; and (c) not equipped with any cutout, bypass or similar device.

(2) Visual tire inspection. No motor carrier subject to this Rule shall operate any motor vehicle of a type with respect to which this Rule is applicable on a tire or tires having a tread pattern which as originally manufactured, or as newly retreaded, is composed primarily of cavities in the tread (excluding sipes and local chunking) which are not vented by grooves to the tire shoulder or circumferentially to each other around the tire. This subparagraph (2) shall not apply to any motor vehicle which is demonstrated by the motor carrier which operates it to be in compliance with the noise emission standard specified in paragraph (c) of this Rule for operations on highways with speed limits of more than 35 MPH, if the demonstration is conducted at the highway speed limit in effect at the inspection location or, if speed is unlimited, the demonstration is conducted at a speed of 65 MPH.

(c) Standards for Highway Operation

No motor carrier subject to this Rule shall operate any motor vehicle of a type with respect to which this Rule is applicable and which at any time or under any condition of highway grade, load, acceleration or deceleration generates a sound level in excess of 86 dB(A) measured on an open site with fast meter response at 50 feet from the centerline of lane of travel on highways with speed limits of 35 MPH or less; or 90 dB(A) measured on an open site with fast meter response at 50 feet from the centerline of lane of travel on highways with speed limits of more than 35 MPH.

(d) Standard for Operation under Stationary Test

No motor carrier subject to this Rule shall operate any motor vehicle of a type with respect to which this Rule is applicable, and which is equipped with an engine speed governor, which generates a sound level in excess of 88 dB(A) measured on an open site with fast meter response at 50 feet from the longitudinal centerline of the vehicle, when its engine is accelerated from idle with wide open throttle to governed speed with the vehicle stationary, transmission in neutral, and clutch engaged.

(e) Additional Definitions Applicable Only to Rule 313

- (1) Common carrier by motor vehicle: any person who holds himself out to the general public to engage in the transportation by motor vehicle in interstate or foreign commerce of passengers or property or any class or classes thereof for compensation, whether over regular or irregular routes.
- (2) Contract carrier by motor vehicle: any person who engages in transportation by motor vehicle of passengers or property in interstate or foreign commerce for compensation

(other than transportation referred to in subparagraph (1) of this paragraph) under continuing contracts with one person or a limited number of persons either (1) for the furnishing of transportation services through the assignment of motor vehicles for a continuing period of time to the exclusive use of each person served or (2) for the furnishing of transportation services designed to meet the distinct need of each individual customer.

- (3) Gross combination weight rating: the value specified by the manufacturer as the loaded weight of a combination vehicle.
- (4) Gross vehicle weight rating: the value specified by the manufacturer as the loaded weight of a single vehicle.
- (5) Interstate commerce: the commerce between any place in a State and any place in another State or between places in the same State through another State, whether such commerce moves wholly by motor vehicle or partly by motor vehicle and partly by rail, express, water or air. This definition of "interstate commerce" for purposes of this Rule is the same as the definition of "interstate commerce" in Section 203(a) of the Interstate Commerce Act (49 U.S.C. Section 303(a)).
- (6) Motor carrier: a common carrier by motor vehicle, a contract carrier by motor vehicle, or a private carrier of property by motor vehicle, as those terms are defined by paragraphs (14), (15), and (17) of Section 203(a) of the Interstate Commerce Act (49 U.S.C. 303(a)). The term "motor carrier" includes those entities which own and operate the subject motor vehicles, but not the drivers thereof, unless said drivers are independent truckers who both own and drive their own vehicles.
- (7) Open site: an area that is essentially free of large sound-reflecting objects, such as barriers, walls, board fences, signboards, parked vehicles, bridges or buildings.
- (8) Private carrier of property by motor vehicle: any person not included in terms "common carrier by motor vehicle" or "contract carrier by motor vehicle", who transports in interstate or foreign commerce by motor vehicle property of which such person is the owner, lessee, or bailee, when such transportation is for sale, lease, rent or bailment, or in furtherance of any commercial enterprise.

Rule 314: HORNS AND OTHER WARNING DEVICES

- (a) No person shall sound a horn when upon a highway, except when reasonably necessary to insure safe operation. No person shall

sound any horn on any motor vehicle for an unreasonable period of time or in a manner so as to circumvent enforcement of the operational standards contained in Subpart B of this Part.

- (b) No person shall sound any siren, whistle or bell of any motor vehicle except as provided in I.R.S. ch. 95-1/2, Section 12-601(b).

Rule 315: TIRE NOISE

No person shall operate a motor vehicle in such a manner as to cause or allow to be emitted squealing, screeching or other such noise from the tires in contact with the ground because of rapid acceleration or excessive speed around corners or other such reason, except that noise resulting from emergency operation to avoid imminent danger shall be exempt from this provision.

SUBPART C -- EXCEPTIONS, COMPLIANCE DATES AND PENALTIES FOR PART 3

Rule 320: EXCEPTIONS

- (a) The standards and limitations of Part 3 shall not apply to:
- (1) any vehicle moved by human or animal power
  - (2) any vehicle moved by electric power
  - (3) any vehicle used exclusively upon stationary rails or tracks
  - (4) any farm tractor
  - (5) any antique vehicle, if licensed under Section 3-804 of the Illinois Vehicle Code
  - (6) any snowmobile
  - (7) any special mobile equipment
  - (8) any vehicle while being used lawfully for racing competition or timed racing events; and
  - (9) any lawn care maintenance equipment
- (b) Rules 302 and 313(b)(2) shall not apply to any person who can show that a tread pattern as described in those Rules was the result of wear and that the tire was not originally manufactured or newly retreaded with such a tread pattern.
- (c) The operational standards contained in Rules 310-313 inclusive shall not apply to warning devices, such as horns and sirens; or to emergency equipment and vehicles such as fire engines, ambulances, police vans, and rescue vans, when responding to

emergency calls; to snow plows when in operation; or to tactical military vehicles.

Rule 321: COMPLIANCE DATES FOR PART 3

- (a) Except as otherwise provided in this Rule 321, any person subject to the standards and limitations of Part 3 of this Chapter shall comply with such standards and limitations on and after 6 months from the effective date of this Part.
- (b) Every owner or operator of a motor vehicle subject to Rule 302 shall comply with such Rule on and after one year from the effective date of this Part.
- (c) Every owner or operator of a motor vehicle subject to Rule 310(b)(2) or 311(b)(2) shall comply with such Rule on and after one year from the effective date of this Part.
- (d) Every motor carrier subject to Rule 313 shall comply with such Rule on and after the effective date of this Part.

APPENDIX A  
STANDARD LAND USE CODING SYSTEM

U.S. Department of Transportation  
Federal Highway Administration  
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**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land <sup>2</sup> Class
11	Household units.	110	Household units.	1100	Household units. <sup>3</sup>	—	A
12	Group quarters.	121	Rooming and boarding houses.	1210	Rooming and boarding houses. <sup>4</sup>	7021	↑
		122	Membership lodgings.	1221	Fraternity and sorority houses.	<sup>5</sup> Incl. 7041	
				1229	Other membership lodgings, NEC. <sup>6</sup>	Incl. 7041	
		123	Residence halls or dormitories.	1231	Nurses' homes.	—	
				1232	College dormitories.	—	
				1239	Other residence halls or dormitories, NEC.	—	
		124	Retirement homes and orphanages.	1241	Retirement homes.	—	
				1242	Orphanages.	—	
		125	Religious quarters.	1251	Convents.	—	
				1252	Monasteries.	—	
				1253	Rectories.	—	
				1259	Other religious quarters, NEC.	—	
		129	Other group quarters, NEC.	1290	Other group quarters, NEC.	—	
13	Residential hotels.	130	Residential hotels.	1300	Residential hotels. <sup>8</sup>	Incl. 7011	
14	Mobile home parks or courts.	140	Mobile home parks or courts.	1400	Mobile home parks or courts.	7031	
15	Transient lodgings.	151	Hotels, tourist courts, and motels.	1510	Hotels, tourist courts, and motels.	7011	
		159	Other transient lodgings, NEC.	1590	Other transient lodgings, NEC. <sup>7</sup>	—	
19	Other residential, NEC.	190	Other residential, NEC.	1900	Other residential, NEC.	—	A

**FOOTNOTES**

<sup>1</sup>The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

<sup>2</sup>Code 1100—"Household units" are defined as a house, an apartment, or other group of rooms, or a single room that is intended for occupancy as separate living quarters. Occupants of "Household units" do not live and eat with other persons in the structure (such as in a boarding house), and there is either (1) direct access from the outside or through a common hall, or (2) there is a kitchen or cooking equipment for the exclusive use of the occupants of the unit. The occupants may be a family, a group of unrelated persons, or a person living alone. Mobile homes not in "Mobile home parks or courts" (code 14), but resting on a permanent type of foundation (e.g., a brick or concrete block foundation) are included as well as units that are vacant or that are used on a seasonal basis. Farm homes are also included under "Household units" and should be identified separately from the remainder of the farm which is coded under "Agriculture," code 81.

<sup>3</sup>Code 1210—"Rooming and boarding houses" are those that have 5 or more persons renting rooms, with or without board, and not related to the head or person in charge. Where there are less than 5 roomers, the total quarters are considered as one "Household unit" and is coded 1100.

<sup>4</sup>"Incl. 7041" is an abbreviation which indicates that the 4-digit land use activity category is only one of several categories of establishments that are included under SIC code 7041.

<sup>5</sup>"NEC" is an abbreviation for "not elsewhere coded."  
<sup>6</sup>Code 1300—"Residential hotels" are those that have 75 percent or more of the available accommodations occupied by permanent guests (i.e., persons who reside more than 30 days). Hotels with less than 75 percent are included under code 15. "Transient lodgings."

<sup>7</sup>Code 1590—"Other transient lodgings, NEC" includes such establishments as the YMCA, YWCA, and YMHA when 50 percent or more of the floor area is devoted to lodging and associated activities and when less than 75 percent of the accommodations are occupied by permanent guests. If 75 percent or more of the guests are permanent, use code 1300. If 50 percent or more of the floor area is devoted to recreational activity, use code 7424, "Recreation centers (general)."

<sup>8</sup>"Land Class" refers to Rule 201 Classifications. "A" denotes a Class A Land, "B" denotes a Class B Land and "C" denotes a Class C Land. "U" denotes a Land unclassified in Rule 201 (Added by IEPA.)

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
21	Food and kindred products—manufacturing.	211	Meat products—manufacturing.	2111	Meat packing—manufacturing.	2011	C
				2112	Sausages and other prepared meat products—manufacturing.	2013	
				2113	Poultry and small game dressing and packing.	2015	
		212	Dairy products—manufacturing.	2121	Creamery butter—manufacturing.	2021	
				2122	Cheese, natural and processed.	2022	
				2123	Condensed and evaporated milk—manufacturing.	2023	
				2124	Ice cream and frozen desserts—manufacturing.	2024	
				2125	Fluid milk processing.	2026	
		213	Canning and preserving of fruits, vegetables, and seafoods.	2131	Canning and curing seafoods.	2031	
				2132	Canning specially foods.	2032	
				2133	Canning fruits, vegetables, preserves, jams, and jellies.	2033	
				2134	Drying and dehydrating fruits and vegetables.	2034	
				2135	Pickling fruits and vegetables; vegetable sautes and seasonings; salad dressings—manufacturing.	2035	
				2136	Fresh or frozen packaged fish and seafoods.	2036	
				2137	Frozen fruits, fruit juices, vegetables, and specialties.	2037	
		214	Grain mill products—manufacturing.	2141	Flour and other grain mill products.	2041	
				2142	Preparing feeds for animals and fowls.	2042	
				2143	Cereal preparations.	2043	
				2144	Rice milling.	2044	
				2145	Blending and preparing flour.	2045	
				2146	Wet corn milling.	2046	
		215	Bakery products—manufacturing.	2150	Bakery products—manufacturing.	205	
		216	Sugar—manufacturing.	2160	Sugar—manufacturing.	206	
		217	Confectionery and related products—manufacturing.	2171	Candy and other confectionery products—manufacturing.	2071	
				2172	Chocolate and cocoa products—manufacturing.	2072	
				2173	Chewing gum—manufacturing.	2073	
		218	Beverage—manufacturing.	2181	Malt liquors—manufacturing.	2082	
				2182	Malt—manufacturing.	2083	
				2183	Wine, brandy, and brandy spirits—manufacturing.	2084	
2184	Distilling, rectifying, and blending liquors.			2085			
2185	Bottling and canning soft drinks and carbonated waters.			2086			
2186	Flavor extracts and flavoring sirups manufacturing, NEC.			2087			
219	Other food preparations and kindred products manufacturing, NEC.	2191	Cottonseed oil milling.	2091			
		2192	Soybean oil milling.	2092			
		2193	Vegetable oil milling (except cottonseed and soybean).	2093			
		2194	Animal and marine fats and oils (including grease and tallow)—manufacturing.	2094			
		2195	Roasting coffee and coffee products—manufacturing.	2095			
		2196	Shortening, table oils, margarine, and other edible fats and oils—manufacturing.	2096			
		2197	Ice—manufacturing.	2097			
		2198	Macaroni, spaghetti, vermicelli, and noodles—manufacturing.	2098			
		2199	Other food preparations and kindred products manufacturing, NEC.	2099			

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
22	Textile mill products—manufacturing.	221	Broad and narrow woven fabrics and other smallwares (cotton, manmade fibers, silk, and wool)—manufacturing.	2210	Broad and narrow woven fabrics and other smallwares (cotton, manmade fibers, silk, and wool)—manufacturing.	221, 222, 223 and 224	C		
		222	Knit goods—manufacturing.	2220	Knit goods—manufacturing.	225			
		223	Dyeing and finishing of textiles (except wool fabrics and knit goods).	2230	Dyeing and finishing of textiles (except wool fabrics and knit goods).	226			
		224	Floor coverings (rugs and carpets)—manufacturing.	2240	Floor coverings (rugs and carpets)—manufacturing.	227			
		225	Yarns and threads—manufacturing.	2250	Yarns and threads—manufacturing.	228			
		229	Other textile goods manufacturing, NEC.	2291	Felt goods (except woven felts and hats)—manufacturing.	2291		Felt goods (except woven felts and hats)—manufacturing.	2291
				2292	Lace goods—manufacturing.	2292		Lace goods—manufacturing.	2292
				2293	Padding and upholstery filling—manufacturing.	2293		Padding and upholstery filling—manufacturing.	2293
				2294	Processing waste and recovering fibers and flock.	2294		Processing waste and recovering fibers and flock.	2294
				2295	Artificial leather and oil cloth manufacturing and other impregnating and coating fabrics (except rubberizing).	2295		Artificial leather and oil cloth manufacturing and other impregnating and coating fabrics (except rubberizing).	2295
				2296	Tire cord and fabric—manufacturing.	2296		Tire cord and fabric—manufacturing.	2296
				2297	Wool scouring, worsted combing, and sewing to top.	2297		Wool scouring, worsted combing, and sewing to top.	2297
				2299	Other textile goods manufacturing, NEC.	2299		Other textile goods manufacturing, NEC.	2299
		23	Apparel and other finished products made from fabrics, leather, and similar materials—manufacturing.	231	Men's, youths', and boys' suits, coats, and overcoats—manufacturing.	2310		Men's, youths', and boys' suits, coats, and overcoats—manufacturing.	231
2320	Men's, youths', and boys' furnishings, work clothing, and allied garments—manufacturing.					232			
233	Women's, misses', juniors', girls', children's, and infants' outerwear—manufacturing.			2330	Women's, misses', juniors', girls', children's, and infants' outerwear—manufacturing.	233 and 236			
				2340	Women's, misses', children's, and infants' undergarments—manufacturing.	234			
235	Hats, caps, and millinery—manufacturing.			2350	Hats, caps, and millinery—manufacturing.	235			
				236	Leather and leather products—manufacturing.	2361	Leather tanning and finishing.	3111	
2362	Industrial leather belting and packing—manufacturing.					3121			
2363	Boot and shoe cut stock and findings—manufacturing.					3131			
2364	Footwear (except rubber)—manufacturing.					314			
2365	Leather gloves and mittens—manufacturing.					315			
2366	Luggage—manufacturing.					316			
2367	Handbags and other personal leather goods—manufacturing.					317			
2369	Other leather products manufacturing, NEC.			319					
237	Fur goods—manufacturing.	2370	Fur goods—manufacturing.	237	C				



**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class				
23	Apparel and other finished products made from fabrics, leather, and similar materials—manufacturing—Continued	238	Miscellaneous apparel and accessories—manufacturing.	2381	Dress and work gloves (except knit and all leather)—manufacturing.	2381	C				
				2382	Hobes and dressing gowns—manufacturing.	2381					
				2383	Raincoats and other waterproof outer garments—manufacturing.	2385					
				2384	Leather and sheep-lined clothing—manufacturing.	2386					
				2385	Apparel belts—manufacturing.	2387					
				2389	Other miscellaneous apparel and accessory manufacturing, NEC.	2389					
				239	Other fabricated textile products manufacturing, NEC.	2391		Curtains and draperies—manufacturing.	2391		
						2392		Housefurnishings (except curtains and draperies)—manufacturing.	2392		
						2393		Textile bags—manufacturing.	2393		
		2394	Canvas products—manufacturing.			2394					
		2395	Pleating, decorative and novelty stitching and tucking for the trade.			2395					
		2396	Apparel findings and related products—manufacturing.			2396					
		2399	Other fabricated textile products manufacturing, NEC.			2397 and 2399					
		24	Lumber and wood products (except furniture)—manufacturing.			241		Logging camps and logging contractors.	2410	Logging camps and logging contractors.	241
									242	Sawmills and planing mills.	2421
						2422		Hardwood dimension and flooring—manufacturing.			2426
				2429	Special sawmill products manufacturing, NEC.	2429					
				243	Millwork, veneer, plywood, and prefabricated structural wood products—manufacturing.	2431		Millwork.			2431
						2432		Veneer and plywood—manufacturing.			2432
2433	Prefabricating wooden buildings and structural members—manufacturing.					2433					
244	Wooden containers—manufacturing.			2440	Wooden containers—manufacturing.	244					
249	Other lumber and wood products (except furniture) manufacturing, NEC.			2491	Wood preserving.	2491					
				2499	Other lumber and wood products (except furniture) manufacturing, NEC.	2499					
25	Furniture and fixtures—manufacturing.	251	Household furniture—manufacturing.	2510	Household furniture—manufacturing.	251					
				2520	Office furniture—manufacturing.	252					
				2530	Public building and related furniture—manufacturing.	2531					
				2540	Partitions, shelving, lockers, and office and store fixtures—manufacturing.	254					
				2591	Venetian blinds and shades—manufacturing.	2591					
				2599	Other furniture and fixtures manufacturing, NEC.	2599					
26	Paper and allied products—manufacturing.	261	Pulp—manufacturing.	2610	Pulp—manufacturing.	261					
				262	Paper (except building paper)—manufacturing.	2620	Paper (except building paper)—manufacturing.	262			

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Class
26	Paper and allied products— manufacturing—Con.	263	Paperboard—manufacturing.	2630	Paperboard—manufacturing.	263	C
		264	Converted paper and paperboard products (except containers and boxes)—manufacturing.	2641	Paper coating and glazing.	2641	
				2642	Envelope—manufacturing.	2642	
				2643	Bags (except textile bags)—manu- facturing.	2643	
				2644	Wallpaper—manufacturing.	2644	
				2645	Die cut paper and paperboard; and cardboard—manufacturing.	2645	
				2646	Pressed and molded pulp goods— manufacturing.	2646	
				2647	Sanitary paper products—manufac- turing.	2647	
				2649	Other converted paper and paper- board products (except containers and boxes) manufacturing, NEC.	2649	
				265	Paperboard containers and boxes— manufacturing.	2650	
		266	Building paper and building board—manufacturing.	2660	Building paper and building board— manufacturing.	266	
27	Printing, publishing, and allied industries.	271	Newspapers: publishing, publish- ing and printing.	2710	Newspapers: publishing, publishing and printing.	271	
		272	Periodicals: publishing, publishing and printing.	2720	Periodicals: publishing, publishing and printing.	272	
		273	Books: publishing, publishing and printing.	2730	Books: publishing, publishing and printing.	273	
		274	Commercial printing.	2740	Commercial printing.	274	
		275	Manifold business forms—manu- facturing.	2750	Manifold business forms—manufac- turing.	275	
		276	Greeting card—manufacturing.	2760	Greeting card—manufacturing.	276	
		277	Bookbinding and related indus- tries—manufacturing.	2771	Blankbooks, looseleaf binders, and devices—manufacturing.	2771	
				2772	Bookbinding and miscellaneous re- lated work—manufacturing.	2772	
		278	Printing trade service industries.	2781	Typesetting.	2781	
				2782	Photoengraving.	2782	
		2783	Electrotyping and stereotyping.	2783			
		2789	Other printing trade service indus- tries, NEC.	2789			
		279	Other printing and publishing, NEC.	2790	Other printing and publishing, NEC.	279	
28	Chemicals and allied prod- ucts—manufacturing.	281	Industrial inorganic and organic chemicals—manufacturing.	2810	Industrial inorganic and organic chemicals—manufacturing.	281	
		282	Plastics materials and synthetic resins, synthetic rubber, syn- thetic and other manmade fibers (except glass)—manufacturing.	2820	Plastics materials and synthetic resins, synthetic rubber, synthetic and other manmade fibers (except glass)—manufacturing.	282	
		283	Drug—manufacturing.	2831	Biological products—manufacturing.	2831	
				2832	Medicinal chemicals and botanical products—manufacturing.	2832	
				2833	Pharmaceutical preparations—man- ufacturing.	2833	
		284	Soap, detergents, and cleaning preparations, perfumes, cos- metics, and other toilet prepa- rations—manufacturing.	2841	Soap and detergents (except spe- cially cleaners)—manufacturing.	2841	
				2842	Specialty cleaning, polishing, and sanitation preparations (except soap and detergents)—manufac- turing.	2842	
				2843	Surface active agents, finishing agents, sulfonated oils, and es- sentials—manufacturing.	2843	
				2844	Perfumes, cosmetics, and other toilet preparations—manufacturing.	2844	

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
28	Chemicals and allied products—manufacturing—Continued	285	Paints, varnishes, lacquers, enamels, and allied products—manufacturing.	2850	Paints, varnishes, lacquers, enamels, and allied products—manufacturing.	285	C		
		286	Gum and wood chemicals—manufacturing.	2860	Gum and wood chemicals—manufacturing.	286			
		287	Agricultural chemicals—manufacturing.	2870	Agricultural chemicals—manufacturing.	287			
		289	Other chemicals and allied products—manufacturing, NEC.	2891	Glue and gelatin—manufacturing.	2891			
				2892	Explosives—manufacturing.	2892			
				2893	Printing ink—manufacturing.	2893			
				2894	Carbon black—manufacturing.	2895			
				2899	Other chemicals and allied products manufacturing, NEC.	2899			
29	Petroleum refining and related industries.	291	Petroleum refining.	2910	Petroleum refining.	291			
		292	Paving and roofing materials—manufacturing.	2921	Paving mixtures and blocks—manufacturing.	2951			
				2922	Asphalt felts and coatings—manufacturing.	2952			
		299	Other petroleum refining and related industries, NEC.	2991	Lubricating oils and greases—manufacturing.	2992			
				2999	Other petroleum and coal products manufacturing, NEC.	2999			
31	Rubber and miscellaneous plastic products—manufacturing.	311	Tires and inner tubes—manufacturing.	3110	Tires and inner tubes—manufacturing.	301			
		312	Rubber footwear—manufacturing.	3120	Rubber footwear—manufacturing.	302			
		313	Reclaiming rubber.	3130	Reclaiming rubber.	303			
		314	Miscellaneous plastic products—manufacturing.	3140	Miscellaneous plastic products—manufacturing.	307			
		319	Other fabricated rubber products manufacturing, NEC.	3190	Other fabricated rubber products manufacturing, NEC.	306			
32	Stone, clay, and glass products—manufacturing.	321	Flat glass—manufacturing.	3210	Flat glass—manufacturing.	3211 and incl. 3231			
		322	Glass and glassware (pressed or blown)—manufacturing.	3221	Glass containers—manufacturing.	3221 and incl. 3231			
				3229	Other glass and glassware (pressed or blown) manufacturing, NEC.	3229 and incl. 3231			
		323	Cement (hydraulic)—manufacturing.	3230	Cement (hydraulic)—manufacturing.	324			
		324	Structural clay products—manufacturing.	3241	Brick and structural clay tile—manufacturing.	3241	Brick and structural clay tile—manufacturing.	3251	
						3242	Ceramic wall and floor tile—manufacturing.	3253	
						3243	Clay refractories—manufacturing.	3255	
						3249	Other structural clay products manufacturing, NEC.	3259	
		325	Pottery and related products—manufacturing.	3251	Vitreous china plumbing fixtures, china, earthenware fittings, and bathroom accessories—manufacturing.	3251	Vitreous china plumbing fixtures, china, earthenware fittings, and bathroom accessories—manufacturing.	3261	
						3252	Vitreous china table and kitchen articles—manufacturing.	3262	
						3253	Fine earthenware (white ware) table and kitchen articles—manufacturing.	3263	
				3254	Porcelain electrical supplies—manufacturing.	3264			
				3259	Other pottery and related products manufacturing, NEC.	3269			

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class			
32	Stone, clay, and glass products—manufacturing—Continued	326	Concrete, gypsum, and plaster products—manufacturing.	3261	Concrete brick and block—manufacturing.	3271	C			
				3262	Concrete products (excluding brick and block)—manufacturing.	3272				
				3263	Concrete (ready mix)—manufacturing.	3273				
				3264	Lime products—manufacturing.	3274				
				3265	Gypsum products—manufacturing.	3275				
		327	Cut stone and stone products—manufacturing.	3270	Cut stone and stone products—manufacturing.	328				
				328	Abrasive, asbestos, and miscellaneous nonmetallic mineral products—manufacturing.	3280		Abrasive, asbestos, and miscellaneous nonmetallic mineral products—manufacturing.	329	
						3311		Blast furnaces (including coke ovens), steel works, and the rolling of ferrous metals.	3312	
		33	Primary metal industries.	331	Blast furnaces, steel works, and the rolling and finishing of ferrous metals.	3312		Electrometallurgical products—manufacturing.	3313	
						3313		Steel wire drawing and steel nails and spikes—manufacturing.	3315	
3314	Cold rolled sheet, strip, and bars—manufacturing.					3316				
3315	Steel pipe and tubes—manufacturing.					3317				
332	Iron and steel foundries.					3320	Iron and steel foundries.	332		
						333	Primary smelting and refining of nonferrous metals.	3331	Primary smelting and refining of copper.	3331
3332	Primary smelting and refining of lead.							3332		
3333	Primary smelting and refining of zinc.							3333		
3334	Primary production of aluminum.							3334		
3339	Other primary smelting and refining of nonferrous metals, NEC.							3339		
334	Secondary smelting and refining of nonferrous metals and alloys.			3340	Secondary smelting and refining of nonferrous metals and alloys.	334				
				335	Rolling, drawing, and extruding of nonferrous metals.	3351	Rolling, drawing, and extruding of copper.	3351		
3352	Rolling, drawing, and extruding of aluminum.					3352				
3353	Rolling, drawing, and extruding of nonferrous metals (except copper and aluminum).					3356				
3354	Drawing and insulating of nonferrous wire.					3357				
336	Nonferrous foundries.			3360	Nonferrous foundries.	336				
				339	Other primary metal industries, NEC.	3390	Other primary metal industries, NEC.	339		
34	Fabricated metal products—manufacturing.					341	Ordnance and accessories.	3411	Guns, howitzers, mortars, and related equipment—manufacturing.	191
								3412	Ammunition (except small arms) manufacturing and complete assembling of guided missiles and space vehicles.	192
								3413	Tanks and tank components—manufacturing.	193
		3414	Sighting and fire control equipment—manufacturing.					194		
		3415	Small arms—manufacturing.					195		
		3416	Small arms ammunition—manufacturing.					196		
		3419	Other ordnance and accessories manufacturing, NEC.					199		

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
34	Fabricated metal products—manufacturing—Continued	342	Machinery (except electrical)—manufacturing.	3421	Engines and turbines—manufacturing.	351	C		
				3422	Farm machinery and equipment—manufacturing.	352			
				3423	Construction, mining, and materials handling machinery and equipment—manufacturing.	353			
				3424	Metalworking machinery and equipment—manufacturing.	354			
				3425	Special industry machinery (except metalworking machinery)—manufacturing.	355			
				3426	General industrial machinery and equipment—manufacturing.	356			
				3427	Office, computing, and accounting machines—manufacturing.	357			
				3428	Service industry machines—manufacturing.	358			
				3429	Other machinery manufacturing (except electrical), NEC.	359			
				343	Electrical machinery, equipment, and supplies—manufacturing.	3431		Electrical transmission and distribution equipment—manufacturing.	361
		3432	Electrical industrial apparatus—manufacturing.			362			
		3433	Household appliances—manufacturing.			363			
		3434	Electric lighting and wiring equipment—manufacturing.			364			
		3435	Radio and television receiving sets (except communication types)—manufacturing.			365			
		3436	Communication equipment—manufacturing.			366			
		3437	Electronic components and accessories—manufacturing.			367			
		3439	Other electrical machinery, equipment, and supplies manufacturing, NEC.			369			
		344	Transportation equipment—manufacturing.			3441		Motor vehicles and motor vehicle equipment—manufacturing.	371
						3442		Aircraft and parts—manufacturing.	372
				3443	Ship and boat building and repairing.	373			
3444	Railroad equipment—manufacturing.			374					
3445	Motocycles, bicycles, and parts—manufacturing.			375					
3449	Other transportation equipment manufacturing, NEC.			379					
349	Other fabricated metal products manufacturing, NEC.			3491	Metal cans—manufacturing.	341			
		3492	Cutlery, hand tools, and general hardware—manufacturing.	342					
		3493	Heating apparatus (except electrical) and plumbing fixtures—manufacturing.	343					
		3494	Fabricated structural metal products—manufacturing.	344					
		3495	Screw, machine products and bolts, nuts, screws, rivets, and washers—manufacturing.	345					
		3496	Metal stamping—manufacturing.	346					
		3497	Coating, engraving, and allied services.	347					
		3498	Fabricated wire products (miscellaneous products)—manufacturing.	348					
		3499	Other fabricated metal products manufacturing, NEC.	349					

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
35	Professional, scientific, and controlling instruments; photographic and optical goods, watches and clocks—manufacturing.	351	Engineering, laboratory, and scientific and research instruments and associated equipment—manufacturing.	3510	Engineering, laboratory, and scientific and research instruments and associated equipment—manufacturing.	381	C		
		352	Instruments for measuring, controlling, and indicating physical characteristics—manufacturing.	3521	Mechanical measuring and controlling instruments (except automatic temperature controls)—manufacturing.	3821			
				3522	Automatic temperature controls—manufacturing.	3822			
		353	Optical instruments and lenses—manufacturing.	3530	Optical instruments and lenses—manufacturing.	383			
		354	Surgical, medical, and dental instruments and supplies—manufacturing.	3541	Surgical and medical instruments and apparatus—manufacturing.	3841			
				3542	Orthopedic, prosthetic, and surgical appliances and supplies—manufacturing.	3842			
				3543	Dental equipment and supplies—manufacturing.	3843			
				355	Ophthalmic goods—manufacturing.	3550		Ophthalmic goods—manufacturing.	385
		356	Photographic equipment and supplies—manufacturing.	3560	Photographic equipment and supplies—manufacturing.	386			
		357	Watches, clocks, clockwork operated devices, and parts—manufacturing.	3570	Watches, clocks, clockwork operated devices, and parts—manufacturing.	387			
		39	Miscellaneous manufacturing, NEC.	391	Jewelry, silverware, and plated ware—manufacturing.	3911		Jewelry and precious metals—manufacturing.	3911
						3912		Jewelry findings and materials—manufacturing.	3912
						3913		Lapidary work.	3913
						3914		Silverware and plated ware—manufacturing.	3914
392	Musical instruments and parts—manufacturing.			3920	Musical instruments and parts—manufacturing.	393			
393	Toys, amusement, sporting, and athletic goods—manufacturing.			3930	Toys, amusement, sporting, and athletic goods—manufacturing.	394			
394	Pens, pencils, and other office and artists' materials—manufacturing.			3940	Pens, pencils, and other office and artists' materials—manufacturing.	395			
395	Costume jewelry, costume novelties, buttons, and miscellaneous notions (except precious metals)—manufacturing.			3950	Costume jewelry, costume novelties, buttons, and miscellaneous notions (except precious metals)—manufacturing.	396			
396	Tobacco—manufacturing.			3961	Cigarettes—manufacturing.	211			
				3962	Cigars—manufacturing.	212			
				3963	Tobacco (chewing and smoking) and snuff—manufacturing.	213			
				3964	Tobacco stemming and redrying.	214			
397	Motion picture production.			3970	Motion picture production.	7811	B		

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class					
39	Miscellaneous manufacturing, NEC—Continued	399	Other miscellaneous manufacturing, NEC.	3991	Brooms and brushes—manufacturing.	3981	C					
				3992	Linoleum, asphalted-felt-base, and other hard surface floor cover manufacturing, NEC.	3982						
				3993	Matches—manufacturing.	3983						
				3994	Lamp shades—manufacturing.	3987						
				3995	Barbers' goods—manufacturing.	3988						
				3996	Fur dressing and dyeing	3992						
				3997	Signs and advertising displays—manufacturing.	3993						
				3998	Umbrellas, parasols, and canes—manufacturing.	3995						
				3999	Other miscellaneous manufacturing, NEC.	3984 and 3999						
				41	Railroad, rapid rail transit, and street railway transportation.	411		Railroad transportation.	4111	Railroad right-of-way (excluding switching and marshaling yards).	—	U
4112	Railroad switching and marshaling yards.	—										
4113	Railroad terminals (passenger).	—										
4114	Railroad terminals (freight).	—										
4115	Railroad terminals (passenger and freight).	—										
4116	Railroad equipment and maintenance.	—										
4119	Other railroad transportation, NEC.	—										
412	Rapid rail transit and street railway transportation.	4121	Rapid rail transit and street railway right-of-way. <sup>2</sup>				—		U			
		4122	Rapid rail transit and street railway passenger terminals. <sup>3</sup>				—					
		4123	Rapid rail transit and street railway equipment maintenance.				—					
		4129	Other rapid rail transit and street railway transportation, NEC.				—					
		421	Bus transportation.				—			C		
42	Motor vehicle transportation.	421	Bus transportation.				4211		Bus passenger terminals (intercity). <sup>4</sup>		—	
							4212		Bus passenger terminals (local). <sup>4</sup>		—	
							4213		Bus passenger terminals (intercity and local). <sup>4</sup>		—	
				4214	Bus garaging and equipment maintenance.	—						
				4219	Other bus transportation, NEC.	—						
				422	Motor freight transportation.	4221	Motor freight terminals.	—				
						4222	Motor freight garaging and equipment maintenance.	—				
						4229	Other motor freight transportation, NEC.	—				

**FOOTNOTES**

<sup>1</sup> The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
42	Motor vehicle transportation—Continued	429	Other motor vehicle transportation, NEC.	4291	Taxicab transportation.	4121	C
				4299	Other motor vehicle transportation, NEC.	--	C
43	Aircraft transportation.	431	Airports and flying fields.	4311	Airport and flying field landing/takeoff fields.	--	U
				4312	Airport and flying field terminals (passenger).	--	↑
				4313	Airport and flying field terminals (freight).	--	↑
				4314	Airport and flying field terminals (passenger and freight).	--	↑
				4315	Aircraft storage and equipment maintenance.	--	↑
				4319	Other airports and flying fields, NEC.	--	↑
		439	Other aircraft transportation, NEC.	4391	Heliport landing/takeoff pads. <sup>3</sup>	--	U
				4399	Other aircraft transportation, NEC.	--	U
44	Marine craft transportation. <sup>4</sup>	441	Marine terminals. <sup>5</sup>	4411	Marine terminals (passenger). <sup>5</sup>	--	C
				4412	Marine terminals (freight).	--	↑
				4413	Marine terminals (passenger and freight).	--	↑
				4414	Marine terminals (commercial fishing).	--	↑
				4419	Other marine terminals, NEC.	--	↓
		449	Other marine craft transportation, NEC.	4490	Other marine craft transportation, NEC.	--	C
45	Highway and street right-of-way.	451	Freeways.	4510	Freeways. <sup>6</sup>	--	U
		452	Expressways.	4520	Expressways. <sup>6</sup>	--	↑
		453	Parkways.	4530	Parkways. <sup>11</sup>	--	↑
		454	Arterial streets.	4540	Arterial streets. <sup>12</sup>	--	↑
		455	Collector/distributor streets.	4550	Collector/distributor streets. <sup>13</sup>	--	↑
		456	Local access streets.	4560	Local access streets. <sup>14</sup>	--	↑
		457	Alleys.	4570	Alleys. <sup>15</sup>	--	↓
		459	Other highway and street right-of-way, NEC.	4590	Other highway and street right-of-way, NEC.	--	U
46	Automobile parking.	460	Automobile parking.	4600	Automobile parking. <sup>16</sup>	--	C
47	Communication.	471	Telephone communication.	4711	Telephone exchange stations.	--	B
				4712	Telephone relay towers (microwaves).	--	↑
				4719	Other telephone communication, NEC.	--	↑
		472	Telegraph communication.	4721	Telegraph message centers.	--	↑
				4722	Telegraph transmitting and receiving stations (only).	--	↑
				4729	Other telegraph communication, NEC.	--	↑
		473	Radio communication.	4731	Radio broadcasting studios (only).	--	↑
				4732	Radio transmitting stations and towers.	--	↑
				4739	Other radio communication, NEC.	--	↑
		474	Television communication.	4741	Television broadcasting studios (only).	--	↑
				4742	Television transmitting stations and relay towers.	--	↑
				4749	Other television communication, NEC.	--	↑
		475	Radio and television communication (combined systems).	4751	Radio and television broadcasting studios, only (combined systems).	--	↑
				4759	Other combined radio and television communication, NEC.	--	↑
		479	Other communication, NEC.	4790	Other communication, NEC.	--	B



**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
48	Utilities.	481	Electric utility.	4811	Electric transmission right-of-way. <sup>11</sup>	—	C
				4812	Electric generation plants.	—	
				4813	Electrically regulating substations.	—	
		482	Gas utility.	4819	Other electric utility, NEC.	—	
				4821	Gas pipeline right-of-way. <sup>11</sup>	—	
				4822	Gas production plants.	—	
				4823	Natural or manufactured gas storage and distribution points.	—	
				4824	Gas pressure control stations.	—	
				4829	Other gas utilities, NEC.	—	
		483	Water utilities and irrigation.	4831	Water pipeline right-of-way. <sup>11</sup>	—	
				4832	Water treatment plants (purification).	—	
				4833	Water storage. <sup>12</sup>	—	
				4834	Irrigation distribution channels.	—	
				4835	Water pressure control stations.	—	
				4839	Other water utilities and irrigation, NEC.	—	
		484	Sewage disposal.	4841	Sewage treatment plants.	—	
				4842	Sewage sludge drying beds.	—	
				4843	Sewage pressure control stations.	—	
				4849	Other sewage disposal, NEC.	—	
		485	Solid waste disposal.	4851	Refuse incineration.	—	
4852	Central garbage grinding stations.			—			
4853	Composting plants.			—			
4854	Sanitary land fills.			—			
4855	Refuse disposals.			—			
4856	Industrial waste disposals.			—			
4857	Active slag dumps and mineral waste disposals.			—			
4859	Other solid waste disposal, NEC.			—			
489	Other utilities, NEC.			1890	Other utilities, NEC.	—	
49	Other transportation, communication, and utilities, NEC.			491	Other pipeline right-of-way and pressure control stations, NEC.	4911	Petroleum pipeline right-of-way. <sup>11</sup>
		4912	Petroleum pressure control stations.			—	
		4919	Other pipeline right-of-way and pressure control stations, NEC.			—	
		492	Transportation services and arrangements.	4921	Freight forwarding services.	4041 and 4712	
				4922	Packing and crating services.	4713	
				4923	Travel arranging services.	472	
				4924	Transportation ticket services. <sup>13</sup>	—	
				4929	Other transportation services and arrangements, NEC.	—	
		499	Other transportation, communication, and utilities, NEC.	1990	Other transportation, communication, and utilities, NEC.	—	

**FOOTNOTES**

<sup>1</sup> The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

<sup>2</sup> Code 4121—"Rapid rail transit and street railway right-of-way" includes only that land which is not within public right-of-way (e.g., within a public street right-of-way). Railroad right-of-way used by rapid rail transit is considered to be railroad right-of-way and is coded 4111.

<sup>3</sup> Code 4122—"Rapid rail transit and street railway passenger terminals" identifies only those terminals that are not located within public right-of-way (e.g., within a public street right-of-way).

<sup>4</sup> Codes 4211, 4212, 4213—"Bus passenger terminals" identifies only those terminals that are not located on the public right-of-way (e.g., within a public street right-of-way).

<sup>5</sup> Code 1391—"Helicopter landing/takeoff path" are identified only when they are separate activities and not a part of code 431, "Airports and flying fields."

<sup>6</sup> Code 44—"Marine craft transportation." The maintenance and repair of marine craft should be coded 3443, "Ship and boat building and repairing."

<sup>7</sup> Code 41—"Marine terminals" include all docking facilities (e.g., wharves, piers, and docks) and associated areas that are used by commercial passenger, freight, and fishing craft. Docking facilities that primarily serve recreational type of marine craft are identified under code 744, "Marinas."

<sup>8</sup> Code 411—"Marine terminals (passenger)" include ferry terminals.

<sup>9</sup> Code 4510—"Freeways" are divided highways for through traffic with full control of access and no cross traffic at grade.

<sup>10</sup> Code 4520—"Expressways" are divided highways for through traffic with full or partial control of access with grade separations at major crossroads.

Footnotes continued on following page.

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

<sup>14</sup> Code 4530—"Parkways" are highways for noncommercial traffic, with full or partial control of access. They are located within a park or within a ribbon of parklike development.

<sup>15</sup> Code 4540—"Arterial streets" are those streets which serve movements of traffic and are not freeways, expressways, and parkways. Generally there is no control of access.

<sup>16</sup> Code 4550—"Collector/distributor streets" are those streets that collect traffic from the local streets and channel it into the arterial system. These streets also provide necessary cross-connections between arterials. The collector/distributor street does not handle long through trips, and it is not continuous for any great length.

<sup>17</sup> Code 4560—"Local access streets" are those used primarily for access to residences, businesses, or other abutting activities.

<sup>18</sup> Code 4570—"Alleys" are minor narrow streets usually without sidewalks and on which building adjoins from the rear.

<sup>19</sup> Code 4600—"Automobile parking" includes nonresidential off-street parking that is 5,000 square feet or greater (or approximately

17 parking spaces), and that serves no other single type of activity. This code includes parking on open lots, parking within parking structures, parking within structures that also house other activities (e.g., parking area in an office building), and the parking area at a shopping center. Parking areas of less than 5,000 square feet are not identified as a separate activity.

<sup>20</sup> Codes 4811, 4821, 4831, 4911—These codes identify those areas where the surface is devoted exclusively to the right-of-way of the respective activities and is used for no other purposes.

<sup>21</sup> Code 4833—"Water storage" includes impounded surface water areas or water tanks used for storage. Lakes or other natural water formations are identified under code 93, "Water areas."

<sup>22</sup> Code 4924—"Transportation ticket services" include the ticket offices of any of the transportation systems. The ticket offices are identified only when they are a separate and distinct activity, not located within one of the transportation terminals.

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
51	Wholesale trade. <sup>1</sup>	511	Motor vehicles and automotive equipment—wholesale.	5111	Automobiles and other motor vehicles—wholesale.	5012	B
				5112	Automotive equipment—wholesale.	5013	
				5113	Tires and tubes—wholesale.	5014	
		512	Drugs, chemicals, and allied products—wholesale.	5121	Drugs, drug proprietaries and druggists' sundries—wholesale.	5022	
				5122	Paints and varnishes—wholesale.	5028	
				5129	Other drugs, chemicals, and allied products, wholesale, NEC.	5029	
		513	Dry goods and apparel—wholesale.	5131	Dry goods, piece goods, and notions—wholesale.	5032	
				5132	Apparel and accessories, hosiery, and lingerie—wholesale.	5035	
				5133	Footwear—wholesale.	5039	
		514	Groceries and related products—wholesale.	5141	Groceries (general line)—wholesale.	5042	
				5142	Dairy products—wholesale.	5043	
				5143	Poultry and poultry products—wholesale.	5044	
				5144	Confectionery—wholesale.	5045	
				5145	Fish and seafoods—wholesale.	5046	
				5146	Meat and meat products—wholesale.	5047	
				5147	Fruits and vegetables (fresh)—wholesale.	5048	
				5149	Other groceries and related products wholesale, NEC.	5049	
				515	Farm products (raw materials)—wholesale.	5151	
		5152	Grain—wholesale.			Incl. 5051	
		5153	Hides, skins, and raw furs—wholesale.			Incl. 5051	
5154	Leaf tobacco—wholesale.	Incl. 5051					
5155	Wool and mohair—wholesale.	Incl. 5051					
5156	Livestock—wholesale.	Incl. 5051					
5157	Horses and mules—wholesale.	Incl. 5051					
5159	Other farm products wholesale, NEC.	Incl. 5051					
516	Electrical goods—wholesale.	5161	Electrical apparatus and equipment, wiring supplies, and construction materials—wholesale.	5063			
		5162	Electrical appliances, television, and radio sets—wholesale.	5064			
		5163	Electronic parts and equipment—wholesale.	5065			
517	Hardware, plumbing, heating equipment, and supplies—wholesale.	5171	Hardware—wholesale.	5072			
		5172	Plumbing and heating equipment and supplies—wholesale.	5073			
		5173	Air conditioning, refrigerated equipment, and supplies—wholesale.	5077			

3. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
51	Wholesale trade <sup>1</sup> —Continued	518	Machinery, equipment, and supplies—wholesale.	5181	Commercial and industrial machinery, equipment, and supplies—wholesale.	5082	B		
				5182	Farm machinery and equipment—wholesale.	5083			
				5183	Professional equipment and supplies—wholesale.	5086			
				5184	Equipment and supplies for service establishments—wholesale.	5087			
				5185	Transportation equipment and supplies (except motor vehicles)—wholesale.	5088			
				5189	Other machinery, equipment, and supplies—wholesale, NEC.	5089			
				519	Other wholesale trade, NEC.	5191		Metals and minerals (except petroleum products and scrap)—wholesale.	5091
						5192		Petroleum bulk stations and terminals—wholesale.	5092
						5193		Scrap and waste materials—wholesale.	5093
		5194	Tobacco and tobacco products—wholesale.			5094			
		5195	Beer, wine, and distilled alcoholic beverages—wholesale.			5095			
		5196	Paper and paper products—wholesale.			5096			
		5197	Furniture and homefurnishings—wholesale.			5097			
		5198	Lumber and construction materials—wholesale.			5098			
		5199	Other wholesale trade, NEC.			5099			
		52	Retail trade—building materials, hardware, and farm equipment.			521		Lumber and other building materials—retail.	5211
				5212	Building materials—retail.				5212
				522	Heating and plumbing equipment—retail.	5220		Heating and plumbing equipment—retail.	522
						523		Paint, glass, and wallpaper—retail.	523
524	Electrical supplies—retail.			524	524				
525	Hardware and farm equipment—retail.			5251	Hardware—retail.	5251			
		5252	Farm equipment—retail.	5252					
53	Retail trade—general merchandise.	531	Department stores—retail.	5310	Department stores—retail.	531			
				532	Mail order houses—retail.	532			
		533	Limited price variety stores—retail.	5330	Limited price variety stores—retail.	533			
		534	Merchandise vending machine operators—retail.	5340	Merchandise vending machine operators—retail.	534			
		535	Direct selling organizations—retail.	5350	Direct selling organizations—retail.	535			
				539	Other retail trade—general merchandise, NEC.	5391	Dry goods and general merchandise—retail.	5392	
5392	General stores—retail.	5392	General stores—retail.	5393					
		54	Retail trade—food.	541	Groceries (with or without meat)—retail.	5410	Groceries (with or without meat)—retail.	541	
542	Meats and fish—retail.	5421	Meats—retail.			5422			
		5422	Fish and seafoods—retail.			5423			

**D. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
54	Retail trade—food—Continued	543	Fruits and vegetables—retail.	5430	Fruits and vegetables—retail.	543	B
		544	Candy, nut, and confectionery—retail.	5440	Candy, nut, and confectionery—retail.	544	
		545	Dairy products—retail.	5450	Dairy products—retail.	545	
		546	Bakeries—retail.	5461	Bakeries (manufacturing)—retail. <sup>2</sup>	5462	
		5462	Bakeries (nonmanufacturing)—retail. <sup>4</sup>	5463			
		549	Other retail trade—food, NEC.	5491	Egg and poultry—retail.	5491	
		5499	Other retail trade—food, NEC.	5499			
55	Retail trade—automotive, marine craft, aircraft, and accessories.	551	Motor vehicles—retail.	5511	Motor vehicles (new and used cars)—retail.	551	
				5512	Motor vehicles (used cars only)—retail.	552	
		552	Tires, batteries, and accessories—retail.	5520	Tires, batteries, and accessories—retail.	553	
		553	Gasoline service stations.	5530	Gasoline service stations.	554	
		559	Other retail trade—automotive, marine craft, aircraft, and accessories, NEC.	5591	Marine craft and accessories—retail.	Incl. 5599	
		5592	Aircraft and accessories—retail.	5599	Other retail trade—automotive, marine craft, aircraft, and accessories, NEC.	Incl. 5599	
56	Retail trade—apparel and accessories.	561	Men's and boys' clothing and furnishings—retail.	5610	Men's and boys' clothing and furnishings—retail.	561	
		562	Women's ready-to-wear—retail.	5620	Women's ready-to-wear—retail.	562	
		563	Women's accessories and specialties—retail.	5630	Women's accessories and specialties—retail.	563	
		564	Children's and infants' wear—retail.	5640	Children's and infants' wear—retail.	564	
		565	Family clothing—retail.	5650	Family clothing—retail.	565	
		566	Shoes—retail.	5660	Shoes—retail.	566	
		567	Custom tailoring.	5670	Custom tailoring.	567	
		568	Furriers and fur apparel—retail.	5680	Furriers and fur apparel—retail.	568	
		569	Other retail trade—apparel and accessories, NEC.	5690	Other retail trade—apparel and accessories, NEC.	569	
		57	Retail trade—furniture, homefurnishings, and equipment.	571	Furniture, homefurnishings, and equipment—retail.	5711	Furniture—retail.
				5712	Floor coverings—retail.	5713	
				5713	Draperies, curtains, and upholstery—retail.	5714	
				5714	China, glassware, and metalware—retail.	5715	
				5719	Other furniture, homefurnishings, and equipment retail, NEC.	5719	
572	Household appliances—retail.			5720	Household appliances—retail.	572	
573	Radios, televisions, and music supplies—retail.			5731	Radios and televisions—retail.	5732	
		5732	Music supplies—retail.	5733			
58	Retail trade—eating and drinking.	581	Eating places.	5810	Eating places. <sup>3</sup>	5812	
		582	Drinking places (alcoholic beverages).	5820	Drinking places (alcoholic beverages).	5813	

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
59	Other retail trade, NEC.	591	Drug and proprietary—retail.	5910	Drug and proprietary—retail.	591	B		
		592	Liquor—retail.	5920	Liquor—retail.	592			
		593	Antiques and secondhand merchandise—retail.	5931	Antiques—retail.	5932		Secondhand merchandise—retail.	5932
				5933				5933	
		594	Book and stationery—retail.	5941	Books—retail.	5942		Stationery—retail.	5942
				5943				5943	
		595	Sporting goods and bicycles—retail.	5951	Sporting goods—retail.	5952		Bicycles—retail.	5952
				5953				5953	
		596	Farm and garden supplies—retail.	5961	Hay, grains, and feeds—retail.	5969		Other farm and garden supplies retail, NEC.	5962
				5969				5969	
		597	Jewelry—retail.	5970	Jewelry—retail.	597			
		598	Fuel and ice—retail.	5981	Fuel and ice dealers (except fuel oil and bottled gas dealers)—retail.	5982		Fuel oil—retail.	5982
				5983				5983	
				5984	Bottled gas—retail.	5984			5984
		599	Other retail trade, NEC.	5991	Florists—retail.	5992		Cigars and cigarettes—retail.	5992
				5993	Newspapers and magazines—retail.	5994		Cameras and photographic supplies—retail.	5994
				5995	Gifts, novelties, and souvenirs—retail.	5997			5997
				5996				5996	
				5997				5997	
5998	Optical goods—retail.			5999	Other retail trade, NEC.	5998			
5999					5999				
61	Finance, insurance, and real estate services.			611	Banking and bank-related functions.	6111	Banking services.	601, 602, 603, and 604	
						6112	Bank-related functions.	605	
				612	Credit services (other than banks).	6121	Savings and loan associations.	612	
		6122	Agricultural, business, and personal credit services (including credit unions).			613, 614, and 615			
		6129	Other credit services (other than banks), NEC.			611 and 616			
		613	Security and commodity brokers, dealers, exchanges, and services.	6131	Security brokers, dealers, and flotation services.	6211			
				6132	Commodity contracts brokers and dealers services.	6221			
				6133	Security and commodity exchanges.	623			
		614	Insurance carriers, agents, brokers, and services.	6141	Insurance carriers.	63			
				6142	Insurance agents, brokers, and services.	64			

**FOOTNOTES**

<sup>1</sup>The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

<sup>2</sup>Code 51—"Wholesale trade." A code of "0" is used in the auxiliary position for those wholesalers who maintain a definite storage area on

the premises. For example, 5122-0 is a wholesaler of paints and varnishes who has a definite storage area set aside for his merchandise.

<sup>3</sup>Code 5161—"Bakeries (manufacturing)—retail" include only those bakeries that produce on the premises some or all of the products sold.

<sup>4</sup>Code 5162—"Bakeries (nonmanufacturing)—retail" include only those bakeries that do not produce on the premises the products that are sold.

<sup>5</sup>Code 5810—"Eating places" include both establishments serving only food as well as those serving both food and alcoholic beverages.

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
61	Finance, insurance, and real estate services—Continued	615	Real estate and related services	6151	Real estate operators (except developers) and lessors.	651	B
				6152	Real estate agents, brokers, and management services.	653	
				6153	Title abstracting services.	654	
				6154	Real estate subdividing and developing services.	655	
				6155	Real estate operative builders.	656	
				6156	Combinations of real estate, insurance, loan, and law services.	661	
				6159	Other real estate and related services, NEC.	--	
				6160	Holding and investment services.	67	
				6190	Other finance, insurance, and real estate services, NEC.	--	
				62	Personal services.	620	
6212	Linen supply and industrial laundry services.	7213					
6213	Diaper services.	7214					
6214	Laundering and dry cleaning (self-service).	7215					
6215	Rug cleaning and repair services.	7217					
6220	Photographic services (including commercial).	722					
6231	Beauty services.	723					
6232	Barber services.	724					
6241	Funeral and crematory services; cemeteries.	726					
6242	Cemeteries.	--					
6251	Pressing, alteration, and garment repair; laundry and dry cleaning pickup services (only).	7271					
6252	Fur repair and storage services.	7272					
6253	Shoe repair, shoe shining, and hat cleaning services.	725					
6290	Other personal services, NEC.	729					
63	Business services.	631	Advertising services.				6311
				6312	Outdoor advertising services.	7312	
				6319	Other advertising services, NEC.	7319	
				6320	Consumer and mercantile credit reporting services; adjustment and collection services.	7321	
				6331	Direct mail advertising services.	7331	
				6332	Blueprinting and photocopying services.	7332	
				6339	Stenographic services and other duplicating and mailing services, NEC.	7339	
				6341	Window cleaning services.	7341	
				6342	Disinfecting and exterminating services.	7342	
				6349	Other dwelling and building services, NEC.	7349	
6350	News syndicate services.	735					
6360	Employment services.	736					

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>Code</i>	<i>Category</i>	<i>SIG Reference</i> <sup>1</sup>	<i>Land Class</i>			
63	Business services— Continued	637	Warehousing and storage services. <sup>1</sup>	6371	Farm products warehousing and storage (excluding stockyards).	4221	B			
				6372	Stockyards.	4731				
				6373	Refrigerated warehousing (except food lockers).	4222				
				6374	Food lockers (with or without food preparation facilities).	4223				
				6375	Household goods warehousing and storage.	4224				
				6376	General warehousing and storage.	4225				
				6379	Other warehousing and storage, NEC.	4226				
				639	Other business services, NEC.	6391		Research, development, and testing services.	7391	
						6392		Business and management consulting services.	7392	
						6393		Detective and protective services.	7393	
		6394	Equipment rental and leasing services.			7394				
		6395	Photofinishing services.			7395				
		6396	Trading stamp services.			7396				
		6397	Automobile and truck rental services.			7511				
		6398	Motion picture distribution and services.			7812 and 782				
		6399	Other business services, NEC.			7399				
		64	Repair services.			641	Automobile repair and services.	6411	Automobile repair services.	753
				6412	Automobile wash services.			Incl. 7541		
				6419	Other automobile services (except repair and wash), NEC.			Incl. 7541		
				649	Other repair services, NEC.			6491	Electrical repair services (except radio and television).	Incl. 7621
6492	Radio and television repair services.							7622		
6493	Watch, clock, and jewelry repair services.			763						
6494	Reupholstery and furniture repair services.			764						
6495	Armature rewinding services.			7693						
6499	Other repair services, NEC.			7699	B					
65	Professional services.			651	Medical and other health services.	6511	Physicians' services.	801, 803, and	A	
		6512	Dental services.			804				
		6513	Hospital services.			806				
		6514	Medical laboratory services.			8071				
		6515	Dental laboratory services.			8072				
		6516	Sanitariums, convalescent, and rest home services.			8092				
		6517	Medical clinics—out-patient services.			—				
		6519	Other medical and health services, NEC.			8099				
		652	Legal services.			6520	Legal services.	811		B
						659	Other professional services, NEC.	6591		
				6592	Educational and scientific research services.			892		
				6593	Accounting, auditing, and book-keeping services.			893		
				6594	Urban planning services.			Incl. 899		
		6599	Other professional services, NEC.	Incl. 899						
		66	Contract construction services.	661	General contract construction services.	6611	Building construction—general contractor services.	151		
6619	Other general construction contractor services, NEC.					16	B			

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class			
66	Contract construction services—Continued	662	Special construction trade services.	6621	Plumbing, heating, and air conditioning services.	171	B			
				6622	Painting, paper hanging, and decorating services.	172				
				6623	Electrical services.	173				
				6624	Masonry, stonework, tile setting, and plastering services.	174				
				6625	Carpentering and wood flooring.	175				
				6626	Roofing and sheet metal services.	176				
				6627	Concrete services.	177				
				6628	Water well drilling services.	178				
				6629	Other special construction trade services, NEC.	179				
				67	Governmental services.	671		Executive, legislative, and judicial functions.	6710	Executive, legislative, and judicial functions. <sup>2</sup>
672	Protective functions and their related activities.	6721	Police protection and related activities.				Incl. 919, 929, and 939			
		6722	Fire protection and related activities.				Incl. 919, 929, and 939			
		6723	Civil defense and related activities.				Incl. 919, 929, and 939			
		6729	Other protective functions and their related activities, NEC.				Incl. 919, 929, and 939			
673	Postal services.	6730	Postal services.				Incl. 919		B	
674	Correctional institutions.	6741	Prisons.				Incl. 919, 929, and 939		A	
		6749	Other correctional institutions, NEC.				Incl. 919, 929, and 939		A	
		675	Military bases and reservations. <sup>3</sup>				6751		Military training bases.	Incl. 919 and 929
6752	Military defense installations.						Incl. 919 and 929			
6753	Military storage depots and transportation centers.						Incl. 919 and 929			
6754	Military maintenance centers.						Incl. 919 and 929			
6755	Military administration or command centers.						Incl. 919 and 929			
6756	Military communication centers.						Incl. 919 and 929			
68	Educational services.	681	Nursery, primary, and secondary education.				6811		Nursery schools.	Incl. 821
				6812	Primary (elementary) schools. <sup>4</sup>	Incl. 821				
				6813	Secondary schools. <sup>5</sup>	Incl. 821				
				682	University, college, junior college, and professional school education.	6821	Universities and colleges.	Incl. 8221		
						6822	Junior colleges.	Incl. 8222		
						6823	Professional schools.	Incl. 8221		
				683	Special training and schooling.	6831	Vocational or trade schools.	8242		
						6832	Business and stenographic schools.	Incl. 8299		
						6833	Barber and beauty schools.	Incl. 723 and 724		
						6834	Art and music schools.	Incl. 8299		
6835	Dancing schools.	Incl. 7911								
6836	Driving schools.	Incl. 8299								
6837	Correspondence schools.	8241								
6839	Other special training and schooling, NEC.	Incl. 8299	A							



**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
69	Miscellaneous services.	691	Religious activities, <sup>2</sup>	6911	Churches, synagogues, and temples.	Incl. 866	A
				6919	Other religious activities, NEC.	Incl. 866	A
		692	Welfare and charitable services.	6920	Welfare and charitable services.	867	B
		699	Other miscellaneous services, NEC.	6991	Business associations.	861	B
				6992	Professional membership organizations.	862	
				6993	Labor unions and similar labor organizations.	863	
				6994	Civic, social, and fraternal associations.	864	
				6999	Other miscellaneous services, NEC.	—	
<b>FOOTNOTES</b>							
<sup>1</sup> The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.							
<sup>2</sup> Code 637—"Warehousing and storage services" include only those facilities that are used by or are open to the public. When warehousing and storage is functionally and organizationally linked to another activity (e.g., a general contractor or an apparel manufacturer), the facilities are identified and coded the same as the parent activity and with a code of 4 (warehousing and storage) in the auxiliary position. For example, 2310-4 is a warehouse and storage area of a manufacturer of men's, youths', and boys' suits, coats, and overcoats.							
<sup>3</sup> Code 6710—"Executive, legislative, and judicial functions" include only the central and administrative office activities of the agencies or special authorities involved in government functions, including the legislature and courts. All operational activities (e.g., shipbuilding, schools, or hospitals) should be identified separately under the respective activity codes.							
<sup>4</sup> Code 675—"Military bases and reservations" include the installations used by both the active military as well as the Reserve and the National Guard.							
<sup>5</sup> Code 6812—"Primary (elementary) schools" may or may not include a kindergarten, but they do include grades 1 through 6.							
<sup>6</sup> Code 6813—"Secondary schools" are schools that include grades 7 through 12, popularly known as junior and senior high schools.							
<sup>7</sup> Code 691—"Religious activities" include only those places operated for worship or for the promotion of religious activities. Activities maintained by the religious organizations (e.g., schools, hospitals, publishing houses, etc.) should be identified separately under the respective activity codes.							
71	Cultural activities and nature exhibitions.	711	Cultural activities.	7111	Libraries.	823	A
				7112	Museums.	Incl. 841	
				7113	Art galleries. <sup>3</sup>	Incl. 841	
				7119	Other cultural activities, NEC.	—	
		712	Nature exhibitions.	7121	Planetaria.	—	
				7122	Aquariums.	—	
				7123	Botanical gardens and arboretums.	Incl. 8421	
				7124	Zoos.	Incl. 842	
				7129	Other nature exhibitions, NEC.	—	
		719	Other cultural activities and nature exhibitions, NEC.	7191	Historic and monument sites. <sup>3</sup>	—	
				7199	Other cultural activities and nature exhibitions, NEC.	—	
72	Public assembly.	721	Entertainment assembly.	7211	Amphitheaters.	—	
				7212	Motion picture theaters.	—	
				7213	Drive-in movies.	Incl. 7831	
				7214	Legitimate theaters.	Incl. 7831	
				7219	Other entertainment assembly, NEC.	—	
		722	Sports assembly. <sup>4</sup>	7221	Stadiums. <sup>4</sup>	Incl. 7941	
				7222	Arenas and field houses.	—	
				7223	Race tracks. <sup>5</sup>	Incl. 7948	
				7229	Other sports assembly, NEC.	—	
		723	Public assembly, miscellaneous purposes.	7231	Auditoriums.	—	
				7232	Exhibition halls.	—	
				7239	Other miscellaneous assembly, NEC.	—	
		729	Other public assembly, NEC.	7290	Other public assembly, NEC.	—	
73	Amusements.	731	Fairgrounds and amusement parks.	7311	Fairgrounds.	Incl. 7949	B
				7312	Amusement parks.	Incl. 7949	

<sup>4</sup>Fairgrounds are Class B Land; when used for automobile and motorcycle racing, Fairgrounds are Class C Land.

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
73	Amusements—Continued	739	Other amusements, NEC.	7391	Penny arcades.	Incl. 7949	B
				7392	Miniature golf.	Incl. 7949	
				7393	Golf driving ranges.	Incl. 7949	
				7394	Go-cart tracks.	Incl. 7949	
				7399	Other amusements, NEC.	Incl. 7949	
74	Recreational activities.	741	Sports activities.	7411	Golf courses (without country club).	7942	B
				7412	Golf courses (with country club).	7947	
				7413	Tennis courts.	—	
				7414	Ice skating.	Incl. 7945	
				7415	Holler skating.	Incl. 7945	
				7416	Hiding stables.	—	
				7417	Bowling.	Incl. 7931	
				7418	Skiing and tobogganing.	—	
				7419	Other sports activities, NEC.	—	
				742	Playgrounds and athletic areas.	7421	
		7422	Playgrounds. <sup>8</sup>			—	
		7423	Playfields or athletic fields. <sup>9</sup>			—	
		7424	Recreation centers (general). <sup>10</sup>			—	
		7425	Gymnasiums and athletic clubs.			Incl. 7949	
		7429	Other playground and athletic areas, NEC.			—	
		743	Swimming areas.	7431	Swimming beaches. <sup>11</sup>	—	
				7432	Swimming pools. <sup>12</sup>	7944	
		744	Marinas. <sup>13</sup>	7441	Yachting clubs.	Incl. 7949	
				7442	Boat rentals and boat access sites.	—	
				7449	Other marinas, NEC.	—	
749	Other recreation, NEC.	7491	Camping and picnicing areas. <sup>14</sup>	—			
		7499	Other recreation, NEC.	—			
75	Resorts and group camps.	751	Resorts.	7511	General resorts. <sup>15</sup>	—	B
				7512	Spa resorts.	Incl. 7032	
				7513	Health resorts.	Incl. 8092	
				7514	Ski resorts.	—	
				7515	Hunting and fishing clubs. <sup>16</sup>	Incl. 7032	
				7519	Other resorts, NEC.	—	
				7520	Group or organized camps. <sup>17</sup>	Incl. 7032	
76	Parks.	761	Parks—general recreation.	7610	Parks—general recreation. <sup>18</sup>	—	B
				7620	Parks—leisure and ornamental. <sup>19</sup>	—	
				7690	Other parks, NEC.	—	
				7699	Other parks, NEC.	—	
790	Other cultural, entertainment, and recreational activities, NEC.	7900	Other cultural, entertainment, and recreational activities, NEC.	7900	Other cultural, entertainment, and recreational activities, NEC.	—	B

**FOOTNOTES**

<sup>1</sup> The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

<sup>2</sup> Code 7113—"Art galleries" do not include those galleries that sell art objects commercially. Commercial sales are coded 5999, "Other retail trade, NEC."

<sup>3</sup> Code 7191—"Historic and monument sites" include those locations set aside for no other purpose than to commemorate an historical event, activity, or person.

<sup>4</sup> Code 725—"Sports assembly" includes only the public assembly areas used for nonparticipating sports.

<sup>5</sup> Code 7221—"Stadiums" include those used for individual sports, e.g., baseball or football, as well as those used for several sports activities.

<sup>6</sup> Code 7223—"Race tracks" include those used for individual racing activities, e.g., horse racing and automobile racing, as well as those used for several racing activities.

<sup>7</sup> Code 7421—"Play lots or tot lots" are small areas developed especially for preschool or elementary school aged children. They may

contain such facilities as sand boxes, slides, teeters, swings, climbing apparatus, etc. They are identified and coded only when found as a separate activity and not subsidiary to or serving another activity (e.g., apartment house or playground).

<sup>8</sup> Code 7422—"Playgrounds" are areas that have been developed for active play and recreation. They are identified and coded only when found as a separate activity and not subsidiary to or serving another activity (e.g., a school).

<sup>9</sup> Code 7423—"Playfields or athletic fields" contain a playground as well as a field(s) or court(s) for competitive sports (e.g., baseball, football, or tennis). Bleachers or grandstands may be provided. They are identified and coded only when found as a separate activity and not subsidiary to or serving another activity (e.g., a school).

<sup>10</sup> Code 7424—"Recreation centers (general)" include diversified recreation for a wide variety of activities for all ages and interests. The recreation centers may contain, but are not limited to, a gymnasium, social or play rooms, game rooms, arts and craft shops, etc.

<sup>11</sup> Code 7431—"Swimming beaches" are beach areas that have been set aside specifically for the purpose of swimming. They are identified only when they are not a part of a larger activity (e.g., a park).

<sup>12</sup> Code 7432—"Swimming pools" are separately identified if they are

Footnotes continued on following page.

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

independent of other functions (e.g. code 72, "Public assembly" or code 11, "Household unit"). They may be indoor or outdoor pools.  
<sup>12</sup> Code 744—"Marinas" include marine terminals and associated areas that are primarily for recreational marine craft. The sale and repair of recreational marine craft is coded 5591, "Marine craft and accessories—retail" and code 3443, "Ship and boat building and repairing," respectively.  
<sup>13</sup> Code 7391—"Camping and picnicking areas" are separately identified if they are not a part of a larger activity (e.g., a park).  
<sup>14</sup> Code 7511—"General resorts" have rooms for 20 or more persons and have provision for at least 2 types of recreational activities, excluding lawn games, children's playgrounds, and swimming pools.

<sup>15</sup> Code 7515—"Hunting and fishing clubs" include areas on which artificially propagated game or fish are released for purposes of hunting or fishing. If there are other uses made of the property (e.g., agricultural use), these "other" uses should take priority in identifying the activity of the parcel.  
<sup>16</sup> Code 7520—"Group or organized camps" include general camps for children, as well as Boy Scout and Girl Scout camps.  
<sup>17</sup> Code 7610—"Parks—general recreation" may include, but are not limited to, picnic areas, bathing beaches, playfields, hiking trails, camping grounds, and other unimproved recreation facilities.  
<sup>18</sup> Code 7620—"Parks—leisure and ornamental" are largely for scenic or leisure purposes. They may contain beaches, children's play facilities, monuments, or statues.

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class		
81	Agriculture. <sup>3</sup>	811	Farms (predominant crop, fibers). <sup>3</sup>	8111	Farms (predominant crop, cotton).	—	C		
				8119	Farms (other type fiber crops).	—			
		812	Farms (predominant crop, cash grains). <sup>3</sup>	8120	Farms (predominant crop, cash grains).	—			
		813	Farms (field crops other than fiber or cash grain crops). <sup>3</sup>	8130	Farms (field crops other than fiber or cash grain crops).	—			
		814	Farms (predominant crop, fruits, tree nuts, or vegetables). <sup>3</sup>	8141	Farms (predominant crop, fruits).	—			
				8142	Farms (predominant crop, tree nuts).	—			
				8143	Farms (predominant crop, vegetables).	—			
		815	Farms (predominantly dairy products). <sup>3</sup>	8150	Farms (predominantly dairy products).	—			
		816	Farms and ranches (livestock other than dairy). <sup>3</sup>	8161	Farms and ranches (predominantly cattle).	—			
				8162	Farms and ranches (predominantly hog).	—			
				8163	Farms and ranches (predominantly sheep).	—			
				8164	Farms and ranches (predominantly goat).	—			
				8169	Farms and ranches (other livestock), NEC.	—			
		817	Farms (predominantly poultry). <sup>3</sup>	8170	Farms (predominantly poultry).	—			
		818	Farms (general—no predominance). <sup>3</sup>	8180	Farms (general—no predominance).	—			
		819	Other agriculture and related activities, NEC.	8191	Range and grassland pastures (not farm or ranch). <sup>3</sup>	—			
				8192	Horticultural specialties.	Incl. 0192			
				8193	Apiary farms.	Incl. 0193			
				8194	Farms or ranches (predominantly horse raising).	Incl. 0193			
		8199	Other agriculture and related activities, NEC.	—					
82	Agricultural related activities.	821	Agricultural processing. <sup>3</sup>	8211	Cotton ginning and compressing.	0712			
				8212	Grist milling services.	0713			
				8213	Corn shelling, hay baling, and threshing services.	0714			
				8214	Contract sorting, grading, and packaging services (fruits and vegetables).	0715			
				8219	Other agricultural processing services, NEC.	0719			
				822	Animal husbandry services.	8221		Veterinarian services.	Incl. 0722
						8222		Animal hospital services.	Incl. 0722
						8223		Poultry hatchery services.	0723
						8229		Other animal husbandry services, NEC.	0729

B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
82	Agricultural related activities—Continued	829	Other agricultural related activities, NEC.	8291	Horticultural services.	0731	C
				8299	Other agricultural related activities, NEC.	—	
83	Forestry activities and related services. <sup>2</sup>	831	Commercial forestry production. <sup>3</sup>	8311	Timber production—predominantly for pulp wood.	—	C
				8312	Timber production—predominantly for saw logs.	—	
				8313	Timber production—predominantly for veneer logs.	—	
				8314	Timber production—mixed uses.	—	
				8315	Tree products production—predominantly gum extracting (except pine gum) and bark.	0842	
				8316	Tree products production—predominantly pine gum extraction.	0843	
				8317	Timber and tree products production—mixed uses.	—	
				8319	Other commercial forestry production, NEC.	—	
		832	Forestry services.	8321	Forest nurseries.	0822	
				8329	Other forestry services, NEC.	0851	
		839	Other forestry activities and related services, NEC.	8390	Other forestry activities and related services, NEC.	—	
84	Fishing activities and related services.	841	Fisheries and marine products. <sup>4</sup>	8411	Finfish fisheries.	0912	
				8412	Shellfish fisheries.	0913	
				8419	Other fisheries and marine products, NEC.	0914 and 0919	
		842	Fishery services.	8421	Fish hatcheries.	Incl. 0989	
				8429	Other fishery services, NEC.	Incl. 0989	
		849	Other fishery activities and related services, NEC.	8490	Other fishery activities and related services, NEC.	—	
85	Mining activities and related services. <sup>5</sup>	851	Metal ore mining.	8511	Iron ore-mining.	101	
				8512	Copper ore-mining.	102	
				8513	Lead and zinc ore-mining.	103	
				8514	Gold and silver ore-mining.	104	
				8515	Bauxite and other aluminum ore-mining.	105	
				8516	Ferrous alloy ore (except vanadium)—mining.	106	
				8519	Other metal ore mining, NEC.	109	
		852	Coal mining.	8521	Anthracite coal-mining.	111	
				8522	Bituminous coal-mining.	1211	
				8523	Lignite coal-mining.	1212	
		853	Crude petroleum and natural gas.	8530	Crude petroleum and natural gas.	131	
		854	Mining and quarrying of non-metallic minerals (except fuels).	8541	Dimension stone.	141	
				8542	Crushed and broken stone (including riprap)—quarrying.	142	
				8543	Sand and gravel—quarrying.	144	
				8544	Clay, ceramic, and refractory minerals—mining.	145	
				8545	Chemical and fertilizers (minerals)—mining.	147	
				8549	Other mining and quarrying of non-metallic minerals (except fuels), NEC.	148	
		855	Mining services.	8551	Metal mining-services.	108	
				8552	Coal mining-services.	1112 and 1213	
				8553	Crude petroleum and gas field-services.	138	
				8554	Nonmetallic mining (except fuel)—services.	148	
				8559	Other mining services, NEC.	—	
89	Other resource production and extraction, NEC.	890	Other resource production and extraction, NEC.	8900	Other resource production and extraction, NEC.	—	C

**B. A STANDARD SYSTEM FOR IDENTIFYING AND CODING LAND USE ACTIVITIES—TWO-, THREE-, AND FOUR-DIGIT LEVELS—Continued**

**FOOTNOTES**

<sup>1</sup> The SIC codes are listed for purposes of reference. They are the codes in the SIC system that most nearly correspond to the 4-digit land use activity indicated. (See ch. III, sec. A3, "The Use of Standard Industrial Classification Nomenclature.") A dash indicates that there is no corresponding SIC code.

<sup>2</sup> Code 81—"Agriculture." A parcel of land is considered to be in agricultural use if 10 or more acres are under cultivation, in tree or bush crops, or are used for livestock or poultry purposes. The 10 acres may include the area of the residence, if there is one, and the immediate associated area surrounding the residence.

<sup>3</sup> A farm may consist of several ownership or rented parcels of land that are noncontiguous. However, each parcel should be linked together as one "farm management unit," and identified by only one 3- or 4-digit category, e.g., code 8120, "Farms (predominant crops, cash grains)."

Using the "Farm use" categories in app. 2 of this report, farms (i.e., the farm management units) are to be classified by the most predominant use made of the land (the farm use taking up the greatest percentage of farm area) excluding the areas used by farm residences and associated buildings, nonresident farm buildings, areas in feed crops, and grazed and nongrazed forested areas. Exceptions to this rule are:

a. If 50 percent or more of the value of the farm products sold in the previous year came from the sale of dairy products, or the sale of cows and calves, the farm is identified as "Farm (predominantly dairy products)," code 8150.

b. If 50 percent or more of the value of the farm products sold in the previous year came from the sale of livestock, wool, or mohair, the farm is identified as "Farms and ranches (livestock, other than dairy)," code 816.

c. If 50 percent or more of the value of the farm products sold in the previous year came from the sale of poultry and eggs, the farm is identified as "Farms (predominantly poultry)," code 8170.

d. If the percentage of dairy, livestock, and poultry products, each came to less than 50 percent of the value of the farm products sold in the previous year, and if there are 3 or more "Farm uses" (e.g., corn crop, cotton crop, etc.) within a farm, none of which take up 25 percent of the total farm area (excluding those areas referred to above), the farm is identified as "Farms (general—no predominance)," code 8180.

<sup>4</sup> Code 8191—"Range and grass land pastures (not farm or ranch)" include grasslands used for grazing purposes that are not a part of a

farm or ranch. These areas are usually part of the public domain in which grazing has been permitted.

<sup>5</sup> Code 821—"Agricultural processing" includes only preliminary processing of agricultural products. Any extensive processing, packing, canning, or manufacturing is coded 21, "Food and kindred products—manufacturing."

<sup>6</sup> Code 83—"Forestry activities and related services." The categories in this classification are based upon primary use of the land. It is recognized that other activities, e.g., recreation or the grazing of livestock may also be taking place within these forested areas. However, these types of activities are considered secondary in nature and not coded. Activities such as mining (code 85), permanent camping areas (code 7491), and logging ramps (code 2419), located within the forested areas should be separately identified.

<sup>7</sup> Code 831—"Commercial forestry production" includes those forested areas not on the farms or ranches that are being managed or have been set aside to grow tree crops for "industrial wood" or to obtain tree products such as sap, bark, or seeds. "Industrial wood" includes commercial roundwood products, such as saw logs and pulpwood, but excludes fuel wood and fence posts. "Forest reserves," i.e., areas withdrawn from any commercial use of the trees, are coded 921. "Parks," e.g., national or State parks, are also a type of forest reserve, but because of their designation for recreational activity, they should be identified as "Parks" under code 76. Forested areas not on farms, ranches, or estates with no commercial use made of the trees are coded 922, "Nonreserve forests (undeveloped)."

<sup>8</sup> Code 84—"Fisheries and marine products" include those establishments primarily engaged in commercial fishing, the catching or taking of shellfish, or the gathering of seaweed, sponges, turtles, frogs, etc. These activities may include some preliminary processing, e.g., salting. However, any extensive processing, packing, canning, or manufacturing of these products should be coded under "Food and kindred products—manufacturing," code 21. These categories also include the docking facilities and their associated areas when these facilities are an integral part of a single fishery operation. When docking facilities serve several separate fishery establishments, they are coded 844, "Marine terminals (predominantly fishing vessels)."

<sup>9</sup> Code 85—"Mining activities and related services" include those surface areas being used for mining or drilling purposes. The process may be tunnel excavation, strip mining, quarrying, or by drilling. These categories also include those areas where preliminary processing of raw materials (e.g., washing, crushing, screening, etc.) are taking place if these processes are an integral part of the mining operation.

Code	Category	Code	Category	Code	Category	SIC Reference <sup>1</sup>	Land Class
91	Undeveloped and unused land area (excluding noncommercial forest development).	910	Undeveloped and unused land area (excluding noncommercial forest development).	9100	Undeveloped and unused land area (excluding noncommercial forest development). <sup>2</sup>	—	U
92	Noncommercial forest development.	921	Forest reserves. <sup>3</sup>	9211	Forest reserves (wilderness areas).	—	A
				9212	Forest reserves (wildlife refuges).	—	C
				9219	Other forest reserves, NEC.	—	A
		922	Nonreserve forests (undeveloped).	9220	Nonreserve forests (undeveloped). <sup>4</sup>	—	B
93	Water areas.	931	Rivers, streams, or creeks.	9310	Rivers, streams, or creeks.	—	U
		932	Lakes.	9320	Lakes. <sup>5</sup>	—	
		933	Bays or lagoons.	9330	Bays or lagoons.	—	
		934	Oceans and seas.	9340	Oceans and seas.	—	
		939	Other water areas, NEC.	9390	Other water areas, NEC.	—	
94	Vacant floor area.	940	Vacant floor area.	9400	Vacant floor area.	—	
95	Under construction.	951	Under construction (residential).	9510	Under construction (residential). <sup>6</sup>	—	
		952	Under construction (nonresidential).	9520	Under construction (nonresidential). <sup>7</sup>	—	
99	Other undeveloped land and water areas, NEC.	990	Other undeveloped land and water areas, NEC.	9900	Other undeveloped land and water areas, NEC.	—	U

See footnotes on following page.



WILLIAM J. SCOTT  
ATTORNEY GENERAL  
STATE OF ILLINOIS  
SPRINGFIELD  
62708

June 29, 1979

Director  
Office of Noise Abatement and Control (AW-490)  
Attention: Rail Carrier Docket (ONAC 79-01)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Sir:

Enclosed please find the comments of the Attorney General of Illinois on the Environmental Protection Agency's Notice of Proposed Rule Making on "Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers", and a copy of the Illinois Pollution Control Board's Noise Regulations.

Sincerely,

*Reed W. Neuman*

Reed W. Neuman  
Assistant Attorney General  
Environmental Control Division  
Southern Region

RWN:dlf

Enclosure

COMMENTS OF NOTICE OF PROPOSED RULE MAKING

Interstate Rail Carrier Noise  
Emission Standards

WILLIAM J. SCOTT  
ATTORNEY GENERAL of Illinois

Introduction

The following comments are tendered in response to USEPA's recently-proposed railroad noise emission standards. In addition, several comments will be directed to USEPA's previously-proposed regulations concerning the special local determinations made for purposes of waiving preemption, as afforded by Section 17(c)(2) of the Noise Control Act, in light of the proposed emission standards.

Choice of Noise Descriptor

We support wholeheartedly USEPA's selection of "Day-night sound level" ( $L_{dn}$ ) and "Hourly equivalent sound level" ( $L_{eq(1)}$ ) as appropriate descriptors of noise impact. The 24-hour  $L_{dn}$  concept should provide an excellent basis for making a meaningful assessment of the cumulative effects of noise, which is vital in gauging the health and welfare benefits of a regulatory scheme. It is submitted that focussing on the cumulative impact of noise is at least as critical as governing episodic conditions.

Particularly important also is the 10dB weighting given to nighttime noise. In terms of the known effects of noise and the number and types of complaints received from the Illinois citizenry, disruption of sleep seems to

be the most intrusive effect of railroad noise.

The use of  $L_{eq}(1)$  (in addition to  $L_{dn}$ ) as a descriptor is desirable as providing a reliable aid in determining compliance, and should prove to be less burdensome on those agencies seeking to enforce the standards. Given that the proposed regulation counts heavily on active enforcement participation by state and local officials, the availability of a relatively more convenient descriptor is not an insignificant concern.

#### The "Receiving-Property Standards" Concept

We concur in the judgement that compliance for railroad facilities should be based upon an overall standard and measured on receiving property. Establishing such overall limits most sensibly relates the costs imposed with the benefits to be achieved by noise reduction, by necessitating compliance only where the source is actually impinging on human health and welfare.

Compared to the exclusive use of source-specific standards, the receiving-property standards most realistically account for the disparate nature of the local environments in which railroad equipment and facilities are found across the country. Thus, any costs to be borne to comply with the overall limits are tied fairly directly to the benefits to accrue in a given community.

Also, overall limits provide the railroads with the greatest flexibility in achieving compliance, especially in the consideration of operational changes. In particular, permanent equipment and facilities can be modified or arranged to comply as best suits the situation and area.



### Definition of "Receiving Property"

Despite our approval of the receiving-property concept, we believe that the advantage inherent in that concept may be largely negated by an unnecessarily broad definition of "receiving property". A more stratified definition may provide a means of further noise reduction at no additional cost.

We suggest that USEPA give serious consideration to breaking down its definition of "receiving property" beyond the proposed "developed/undeveloped property" approach. In our opinion, the proposed approach may impose costs where the incremental benefits are nil, and accordingly may give USEPA an overly large estimation of the cost of the proposed regulation. Instead, a further categorization of receiving properties based upon actual (or at least zoned) land usage, with correspondingly different noise limits, could help optimize the cost/benefit picture.

USEPA should attempt to recognize and substantiate that there may be differing effects of noise on people in different living and working environments, and that certain "developed" property may experience few if any harmful noise effects. For instance, the Illinois Pollution Control Board Noise Regulations\*, in Part 2, set specific sound levels for various categories of emitters and receivers of noise, based upon Standard Land Use Coding Manual (SLUCM) land use classifications. The distinct receiver categories recognize the varying effects noise may have in differing situations.

USEPA has set the overall receiving property standards at admittedly

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\* Attached

lenient levels, because the costs of further noise reduction are deemed unreasonable. However, this assumes these costs to be spread over facilities affecting all types of developed property. Instead, we submit that further differentiations among land uses are justifiable, i.e. a stricter standard should be imposed to govern residential receiving property than, say, industrial or agricultural uses, where benefits may be minimal.

In general, we deem it beneficial to focus the toughest standards on sources that impinge directly on residential land uses. If standards are designed to be most stringent for receiving residential property (and correspondingly looser for commercial, industrial or other uses), a regulation may not increase total costs to an unmanageable level, but may increase benefits significantly. Thus, a stratified approach may avoid unwarranted costs and impose them where the benefits are substantial. Because of the unnecessary breadth of its definition of receiving property, we feel the proposed regulation overstates the costs to be imposed.

#### "Best Available Technology"

We submit that to comply with the overall noise limits, railroads should be encouraged to pursue reasonable operational changes. In keeping with the philosophy of the receiving property concept, to impose costs where the benefits accrue, adjustments in operational practices may go a long way to achieving the desired results without necessitating large-scale, company-wide changes. As substantiated by previous comments from this office\*, the experience in

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\* See comments submitted by Larry B. Blackwood, dated January 25, 1977, pp. 12-19, in response to the Notice of Proposed Rule Making on "Special Local Determinations".

Illinois has been that there is much to be gained when railroads are encouraged (or forced) to make operational changes to relieve specific local problems.

In our view BAT should be given its plain meaning, and emitters should be encouraged to use whatever means are available to reduce noise levels. Such an approach, however, would clearly not encourage practices such as buying up property contiguous to the railroad source, and thus creating exempt receiving property. Where noise controls are mandated by specific limits, emitters should employ legitimate techniques to reduce noise. The source must be prevented from unreasonably harming the existing surrounding environment; the source should not be allowed to change the surrounding environment to avoid meeting its responsibilities. Perhaps the regulation should expressly state that buying up contiguous property or similar devices are not acceptable "technology".

#### The Proposed Noise Limits

In line with the foregoing remarks concerning the possible restructuring of the proposed regulatory scheme, we submit that the noise limits themselves as proposed are unjustifiably lenient. The proposed standards likely will not achieve significant reductions in noise, and because the costs assumed for given levels of reduction seem to be overstated, at least conceptually, the standards do not go far enough to achieve the stated goals of the Act.

First, as outlined above, the unnecessary breadth of the "receiving property" standard serves to hold back the noise limits at an artificially high level. Reclassifying receiving property into specific land uses could open the way for further noise reduction with perhaps a net decrease in costs.

Specifically, the rail yard overall limits need to be broken down. A more stringent standard than 70dB for facilities impacting residential areas, for instance, is mandatory. By the same token, placing less emphasis on industrial or agricultural receiving property would greatly restructure the cost estimates compiled by USEPA. The costs to be incurred would vary, depending on the local environment in which a given facility is found, and thus would not be spread out on the scale assumed by the regulation. As Tables 3-10 and 7-1 of the Background Document suggest, a considerable cost could be avoided by subjecting industrial unclassified and agricultural receiving land to different (higher) limits, thereby easing or avoiding altogether compliance costs in these settings. At the same time, the standards should be much more stringent as applied to residential and perhaps commercial receiving property. We submit that by realigning the standards this way (and at different levels) benefits could be increased significantly with a net savings in compliance costs from those estimated.

Also, experience and actual field data show that the proposed standards are inadequate. As Illinois EPA data indicate, the proposed limits would place some yard facilities in compliance at current emission levels, and yet such levels have impinged significantly on the neighboring communities. Similarly, we concur with Illinois EPA that USEPA's own data, as compiled in Appendix B of the Background Document, shows plainly that the proposed hourly levels will provide virtually no regulation at all for flat yards.

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\* See comments submitted on these proposed standards by the Illinois Environmental Protection Agency.

Such a prospect poses a distinct problem for Illinois. The proposed limits, both overall and for specific sources, are markedly less stringent than existing Illinois limits. Given the large railroad presence in Illinois and the state's experience with excessive railroad noise levels, the proposed limits would comprise a significant step backwards. In view of the virtually total preemptive effect of the proposed limits, Illinois will have great difficulty in making progress to curb excessive railroad noise. Illinois' current numerical noise limitations presumably will be completely superseded in regards to railroad noise, and merely adopting standards identical to the proposed federal ones would do little to alleviate what looks to be a "no enforcement" situation in Illinois.

Presumably, several other states and local jurisdictions will be similarly prevented from enforcing standards beyond the mild proposed limits. This could result in a flood of applications for waivers of preemption under the "special local determinations" process, bogging down the program and casting serious doubt on the national acceptance of the regulatory scheme. If nothing else, making the standards tougher could obviate this problem.

#### The Need For Flexibility In Waiving Preemption

It is unquestioned that the Noise Control Act envisioned a regulatory scheme whereby USEPA would establish a pervasive program for controlling noise sources which require national uniformity of treatment. In response to a court order, USEPA has proposed a broad program which encompasses virtually all major sources of railroad noise. However,

Congress also envisioned that state and local authorities maintain their traditional role as primary enforcers of noise controls.

Congress and USEPA have both acknowledged that any nationally uniform standards would in certain situations and locations be inherently unable to fully protect the public. As stated above, the emission standards as proposed may be deemed inadequate by quite a number of jurisdictions. Also, the pervasiveness of the standards, and the virtually total preemption that they impose, assures that seemingly all state and local numerical noise standards that are not identical will be "in conflict" with the federal ones and therefore unenforceable. We contend that USEPA should work a great deal of flexibility into its approach to "special local determinations" to account for special needs of particular communities.

Concomitantly we would question whether those local circumstances must be "essentially unique". We think USEPA is correct in viewing the determination contemplated under Section 17(c)(2) of the Noise Control Act as a balancing of the severity of the local conditions against the degree of interference the local control would create with the stated goal of national uniformity of treatment for certain noise sources. An individual determination would be made to judge whether a given local control is justified based on a balancing of the stated goals of the program and the realities of the local noise problem. We propose this as the test for special local determinations, and not one of "uniqueness".

Our approach implies that there may be many local jurisdictions that could be entitled to a waiver of preemption. While we feel that an individual determination is essential to a just result, the potential onslaught of applications could be alleviated somewhat by classifying types of railroad noise situations and possible local controls which would cause only minimal conflict with the goal of national uniformity of treatment. Thus, perhaps group determinations of entitlement to a waiver could be made to some extent.

As stated previously, the comparative weakness of the proposed standards vis-a-vis current Illinois standards leads us to strongly advocate flexibility in weighing special local conditions for waiver-of-preemption purposes. Also, in determining whether a local regulation is "in conflict" with federal standards, USEPA should take into account the existence of a procedure for obtaining a variance from the local rule. Illinois' Environmental Protection Act, in Section 35, authorizes the Illinois Pollution Control Board to grant variances from its regulations whenever it finds, upon adequate proof, that compliance with the regulation would impose an "arbitrary or unreasonable hardship". Also, Section 36 of that Act allows the Board to condition any such variance as the "policies of this Act" may require. Ill. Rev. Stat. 1977, ch. 111 1/2, pars. 1035, 1036.

Thus, the Illinois Pollution Control Board can address a specific railroad noise problem and create an individualized solution. A variance can accommodate various community and corporate needs, all with a local focus, without imposing an "arbitrary and unreasonable

hardship" on a railroad. Thus, many of the same concerns underlying the Noise Control Act can be addressed in a variance proceeding. The availability of a variance can significantly mitigate the problem of fully complying with a local regulation that may indeed impose an unfair burden on an interstate carrier, while still allowing the local authority to enforce a more stringent standard to correct a specific problem.

Conclusion

In general, we believe that USEPA has commendably given effect to the purposes of the Noise Control Act through the proposed regulatory framework. Save for the few refinements suggested, the proposed regulation evinces a sound conceptual approach.

However, we submit that USEPA has been unnecessarily hesitant to prescribe the degree of noise reduction needed to produce positive results from a railroad noise abatement program. The standards should be revised to tighten noise limits in certain circumstances, and should do more to provide an effective means for state and local authorities to effectuate their legitimate noise control needs.

Respectfully submitted,

William J. Scott  
Attorney General  
State of Illinois

By: Reed W. Neuman  
Reed W. Neuman  
Assistant Attorney General  
Environmental Control Division  
Southern Region

500 South Second Street  
Springfield, Illinois 62706  
(217) 782-9030

91

DATED: June 29, 1979



**Illinois Environmental  
Protection Agency**

2200 Churchill Road, Springfield, Illinois 62706



217/782-9469

June 18, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Sirs:

Re: Comments on Noise Emission Standards for Transportation Equipment;  
Interstate Rail Carriers 40 CFR Part 201

Attached to this letter are comments prepared in report form by the Illinois Environmental Protection Agency, Division of Land/Noise Pollution Control. These comments summarize the sound data obtained on retarder noise at the Terminal Railroad Association classification yard in Venice, Illinois. Further comments in addition to the attached report will be submitted at a later date.

Sincerely,

*John Paulauskis*

John Paulauskis  
Regulations Unit  
Technical Operations Section  
Division of Land/Noise Pollution Control

JP:mr/7389/10

79-01-109

RECEIVED ANR-490

20 JUN 79 14:37

## RETARDER NOISE

Subject: Sound data was obtained at the Terminal Railroad Association (TRRA) classification yard in Venice, Illinois. The yard has a single hump with a master retarder and 5 group retarders. Measurements were obtained inside railroad property lines (yard measurements) on four individual days at three different sites. Yard measurements were obtained on December 19, 1975 at Sites A and C, on June 30, 1976 at Site A, and on May 8, 1979 and May 15, 1979 at Site B. See the attached maps for site locations.

Barrier Details: Prior to construction of the barriers around the retarders a literature search was made to determine the effectiveness of other retarder barriers. It was discovered that no existing retarder barriers would achieve the required attenuation. Thus, a barrier was designed jointly by the Illinois Environmental Protection Agency (IEPA) and TRRA. The IEPA specified the barrier acoustical requirements and physical dimensions, while TRRA specified the structural requirements. TRRA constructed the resulting barriers. The barriers consist of a slanted surface lined with absorptive material which takes advantage of multiple reflections into the absorptive surface. A vertical barrier of similar design would attenuate the discreet frequencies less, since it results in fewer reflections on the absorptive surface. The barriers extend 12 feet above the retarder surface and extend parallel to the tracks a minimum of 12 feet in front and after the retarder. The barrier frame is constructed with railroad timbers and the inside is lined with 3-1/2 inch thick fiberglass. Wire mesh holds the fiberglass in place. The outside of each barrier is covered with 3/8 inch thick corrugated Transite. The total cost of five barrier sets (i.e., one barrier on both sides of each retarder) was approximately \$60,000 including labor. With the master retarder length of 80', five group retarder lengths of 72' and the additional 24 feet for each barrier length dimension; the total length of barriers is 1168'. Dividing \$60,000 by 1168', the resulting cost per linear foot is approximately \$50 per foot.

Yard Measurement Sites: On December 19, 1975 measurements were obtained at Site A on all of the retarders. Only the #1 group retarder had a barrier on both sides. Site A was 65 feet at 90° from the centerline of the track and at the midpoint of the barrier length. The ground surface was flat and consisted of fine (road pack) white rock. The area was open and free of reflective surfaces except for a single story metal building housing the retarder air compressors. This building was about 50 feet behind and to one side of the measurement site.

Site C on December 19, 1979 was 50 feet at 90° from the centerline of the track and at the midpoint of the retarder #5 length. The area was free of reflective surfaces except for railroad cars about 20 feet behind Site C. No barriers were present around the master retarder or group retarders 2 through 5 on December 19, 1979.

On June 30, 1976 measurements were obtained at Site A on all retarders. The location of Site A on June 30, 1976 was identical to Site A on December 19, 1975. All of the retarders had barriers on both sides on June 30, 1976.

On May 8 and 15, 1979 measurements were obtained on the master retarder at Site B. On these dates all retarders had barriers. Site B was 50 feet at 90° from the centerline of the track and at the midpoint of the barrier length. The ground surface was the same as around the #1 retarder. About 60 feet behind the measurement site a line of railroad cards extended parallel to the master retarder track.

Yard Measurement Procedures: On December 19, 1975 and June 30, 1976 a General Radio 1933 with a 1 inch electret microphone was used to obtain measurements. The microphone was connected to a tripod by a 50 foot cable and at a height of 4 feet above ground. Measurements were taken in the 2000 Hz octave band. Ambient sound, battery condition and environmental conditions were monitored frequently throughout the measurement period. A windscreen was used over the microphone and the measurement system was calibrated prior to and after the measurement period.

On May 8 and 15, 1979 a Bruel and Kjaer (B&K) 2206 and 2208 were used to obtain measurements. The B&K 2206 was hand held away from the body at 4 feet above ground and was mounted with a B&K 4133, 1/2 inch microphone and windscreen. The B&K 2208 was attached to a tripod 4 feet above ground, set in the "max hold" mode and was mounted with a B&K 1 inch ceramic microphone and windscreen. The B&K 2206 and 2208 were used simultaneously to obtain a 30 dB measurement range. The measurements were obtained using the A-weighted response mode. Calibration of meters and monitoring of extraneous conditions were identical to December 19, 1975.

All measurements on the four dates were taken using "fast" response.

Yard Data Analysis: All of the yard data obtained was corrected for calibration changes, windscreen effects, barrier insertion loss, and reflective surfaces. Ambient sound was sufficiently below the retarder noise so as not to affect the data. The December 19, 1975 data was corrected to equivalent A-weighted data by adding 1 dB to the 2000 Hz measurements. The data was then normalized to 100 feet in order to correlate to the proposed USEPA railroad noise regulations for retarders. Tables 1-3 show the raw data, correction factors and corrected data for May 15, 1979; May 8, 1979; December 19, 1975 and June 30, 1976 respectively.

Correction factors were obtained as follows: (a) Windscreen insertion loss or gain was based on laboratory tests (no wind condition) of IEPA windscreens, Reference: Proceedings of the Fourth Sound Measurement Workshop, Society of Automotive Engineers, April 13-14, 1978. (b) Reflective surface corrections were based on IEPA measurement procedures

for motor vehicles. Figure 3 of the measurement procedures presents a nomograph for A-weighted corrections due to reflective surfaces (copy of Figure 3 is attached). (c) Corrections are made for the B&K 2208 sound level meter which has the rms "hold" meter response. The 2208 meter response had the tendency to rise to a maximum level and then drop 1 dB and hold the lower level. Thus, there is a 1 dB correction for the meter response. (d) If the final calibration level deviated from the initial calibration level by .5 dB or more then a correction is made. Also, if the meter calibrated to a level different than the known calibrator output a correction was made. (e) Since data was obtained at distances other than 100 feet a correction for differences in barrier insertion loss is required. For example, if all data is to be normalized at 100 feet, then the barrier insertion loss at 50 feet must be corrected to the insertion loss at 100 feet. Although the TRRA barriers are 12 feet high, Figure 5-3 of the Background Document for 10 foot barriers was used in making corrections. From Figure 5-3 at 100 feet the insertion loss is 20 dB and at 50 feet the insertion loss is 22 dB. Since the 50 foot measurement is 2 dB lower because of barrier distance, 2 dB must be added to 100 feet normalized data. (f) All data was normalized to 100 feet for comparison to the proposed USEPA regulations. Spherical divergence was assumed in all calculations ( 6 dB per doubling of distance). (g) Since some of the data was obtained in the 2000 Hz octave band, it was necessary to convert the sound pressure levels into equivalent A-weighted sound levels. First it was assumed that the retarder squeal dominated the spectrum from 20 Hz to 16,000 Hz. With this assumption, an equivalent A-weighted conversion could be made by adding 1 dB to 2000 Hz measurements (See ANSI Standard S1.4-1971, Table 1). Note that for residential data this assumption is less accurate since retarder squeal levels are much lower and ambient sound levels affect the A-weighted spectrum.

The energy averages (LEA) for the four measurement dates was calculated separately. The energy average for data within 10 dB of the highest L(max) was also calculated. Attached is Table 4 indicating the results.

Other Yard Data: Raw data is also presented at Sites A and C (December 19, 1975) in Table 5 and at Site A (June 30, 1976) in Table 6. This data is presented only in raw form and has not been analyzed or corrected.

Residential Measurement Sites: Measurements were also obtained at 5 residential sites (labeled I through 5 on map). These data were obtained on 7 different days for compliance purposes. The existence of barriers on the individual days is noted in the data sheets. The residential sites ranged from approximately 650 feet to 1,100 feet from the retarders on a direct line of site. Distances were determined by scaling aerial photographs. Generally, there were railroad cars on the tracks between the retarders and the residential measurement sites so that the retarders were not visible from the measurement areas.

Residential measurements taken on November 12, 1974 and January 23, 1975 were located at Site 4. On these two dates no barriers had been constructed. Residential measurements on October 6, 1975, December 5, 1975 and December 19, 1975 were located at Site 1. On these later dates only the #1 group retarder had a barrier. Residential measurements on June 30, 1976 were located at Site 1 and all of the barriers were completed at that time. Measurements on August 18, 1976 were located at Sites 1, 2, 3 and 5.

Residential Measurement Procedures: The procedures conformed with the IEPA document "Measurement Techniques for Enforcement of Noise Pollution Control Regulations." A copy of this document is attached. All residential measurements (except for Sites 2, 3 and 5 on August 18, 1976) were taken with a General Radio 1933 and a 1 inch electret microphone. All measurements (except for Sites 2, 3 and 5 on August 18, 1976) were taken in the 2000 Hz octave band.

Measurements at Sites 2, 3 and 5 on August 18, 1976 were taken with a B&K 2203 sound level meter in the "linear" response mode. The signal from the B&K 2203 was then recorded on a Nagra, model "DJ" tape recorder. Playback of the tape was through a General Radio 1921 Real Time Analyzer and a hard copy was obtained in 1/3 octave bands on a General Radio 1522 DC Recorder. The 1/3 octave bands were summed into octave bands for comparison purposes.

Residential Data Analysis: All residential data is attached in Tables 7 through 10. The attached data has been adjusted by correcting for A-weighting (i.e., add 1 dB to 2,000 Hz measurement) and by normalizing to 1,100' (Site 1). Normalization was based on spherical divergence and the A-weighting correction was taken from ANSI Standard S1.4-1971. After construction of the barriers, much of the residential data was measured at or below ambient sound levels. This situation would affect the conversion of data from 2,000 Hz to A-weighting. (See discussion on correction factors.) However, for consistency, the same conversion was made for residential data as for near field data.

Discussion:

Note that the energy average levels (LEA) from yard measurements on individual days ranged from 76 to 78 dB when normalized to 100 feet. Energy averages for the master retarder, group #1 retarder and all data combined were 77 dB, 78 dB and 77 dB respectively. Also, if only the higher measurements (those within 10 dB of the highest measurement) are considered, the energy average (LEA<sub>10</sub>) increased to 79 dB. The proposed energy average USEPA limit of 90 dB(A) at 30 meters is significantly higher than the actual measured energy average for IEPA yard measurements. Only 2 of the raw data measurements out of 77 were equal to or greater than 90 dB(A). The IEPA believes that the retarder barriers in Venice, Illinois represent "the best available technology taking into account the costs of compliance".

Page 5

Inspection of the Residential Measurements indicates decibel reductions at 1100 feet after barrier installation. Due to the variability from weather conditions, orientation of retarders relative to measurement positions and line of site changes from railcars and barriers, the residential data was not analyzed in terms of energy average as was the Yard Data.

JP:kb/sp:7356A

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ENVIRONMENTAL PROTECTION AGENCY

**TABLE 1**

Subject YARD DATA SITE 'B'

Date DB(A)

Reviewed by JOHN PAULAWSKIS

Date MAY 15, 1979

(MASTER RETARDER)

RAW DATA L (MAX) @ 50'	CORRECTIONS				RESULTS NORMALIZED TO 100'
	WINDSCREEN	REFLECT. SURF.	METER RESA	CALIB.	
86	-5	-1	0	0	80
* < 70					64
75					69
82					76
83					77
80					74
82					76
85					79
81					75
78					72
86	-5		0	0	80
91	0		+1.0	-2.0	85
86	-5		0	0	80
80					74
* < 70					64
77					71
79					73
78					72
82					76
74					68
* < 70					64
77					71
73					67
73					67
* < 70					64
72					66
84					78
75					69
75					69
86					80
82					76
87					81
	-5	-1	0	0	

\* ASSUMED TO BE 70 FOR ANALYSIS PURPOSES

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

Subject YARD DATA SITE 'B'

# TABLE 2

Date LB(A)

Reviewed by JOHN PAULAWSKIS

Date MAY 8, 1974  
(MASTER RETARDER)

	<u>RAW DATA</u>	<u>CORRECTIONS</u>			<u>RESULTS</u>
	<u>L(MAX) @ 50'</u>	<u>WINDSCREEN</u>	<u>REFLECT. SURF.</u>	<u>BARRIER INSERT LOSS</u>	<u>NORMALIZED To 100'</u>
	79	-0.5	-1	+2	73
*	< 70				64
	85				79
	85				79
**	> 90				87
	79				73
*	< 70				64
	77				71
	80				74
	73				67
	82				76
	76				70
	73				67
	81				75
	79				73
	80				74
	78				72
	76				70
	75				69
	79				73
	85				79

\* ASSUMED TO BE 70 }  
 \*\* ASSUMED TO BE 93 } FOR ANALYSIS PURPOSES



STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

Subject YARD DATA SITE 'A' **TABLE 3**

Date dB @ 2000 HZ OCTAVE BAND

Reviewed by JOHN A. PAULASKIS Date DECEMBER 19, 1975

(#1 GROUP RETARDER)

RAW DATA L (MAX) @ 65'	CORRECTIONS				A-WTG	RESULTS NOISE 7' @ 100'
	WINDSCREEN	REFLECT. SURF.	CALIB.	BARRIER INSERT LOSS		
76	0	-1	+1.5	+1	+1	74
* <70						68
* <70						68
78						76
78						76
76						74
84						82
80						78
80						78
73						71
78						75
84						82
86						84
72						70
80						78

\* ASSUMED TO BE 70 FOR ANALYSIS PURPOSES

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 3**  
**CONT.**

Subject YARD DATA SITE A'

Date DB @ 2000 HZ OCTAVE BAND

Reviewed by JOHN A. PAULAUSKI Date JUNE 30, 1976

(#1 GROUP RETARDER)

RAW DATA L(MAX) @ 65'	CORRECTIONS					RESULTS
	WINDSCREEN	REFLECT. SURF.	CALIB.	BARRIER INSERT LOSS	A-WTG	
75	0	-1	0	+1	+1	72
70						67
67						64
80						77
70						67
* 80+						80
70						67
64						61
67						64
76						73
77						74
* 80+						80
80						77
* 80+						80
81						78
67						64
89						86
76						73
85						82
80	0	-1	0	+1	+1	77

\* ASSUMED TO BE 83 FOR ANALYSIS PURPOSES

**TABLE 4**

Subject LEA — FROM YARD DATA AT SITES 'A' & 'B'

Date ENERGY AVERAGE (LEA)

reviewed by JOHN PAULASKIS Date DEC. 19, 1975  
MAY 8, 15, 1979

(1)  $LEA = 10 \log_{10} \frac{1}{n} \sum_{i=1}^n L(\text{MAX})_i / 10$

(2)  $LEA_{10} = 10 \log_{10} \frac{1}{n} \sum_{i=1}^n L(\text{MAX})_{i,10} / 10$

LEA = ENERGY AVERAGE OF ALL L(MAX)

n = NUMBER OF L(MAX)'S

L(MAX) = dB(A) LEVELS AT 100 FEET

L = LTH dB(A) LEVEL

$L_{10}$  = LTH dB(A) LEVEL WITHIN 10 dB(A) OF THE  
MAXIMUM dB(A) LEVEL

$LEA_{10}$  = ENERGY AVERAGE OF L(MAX)'S WITHIN  
10 dB(A) OF THE MAXIMUM dB(A) LEVEL

	<u>JUNE 30, 1976</u> #1 GROUP	<u>MAY 15, 1979</u> MASTER	<u>MAY 8, 1979</u> MASTER	<u>DEC. 19, 1975</u> #1 GROUP
LEA	78 (n=20)	76 (n=32)	77 (n=21)	78 (n=15)
LEA <sub>10</sub>	(n<10)	79 (n=14)	(n<10)	79 (n=11)

LEA (TOTAL MASTER) = 77  
5-15-79 & 5-8-79 (n=53)

LEA (TOTAL #1 GROUP) = 78  
6-30-76 & 12-19-75 (n=35)

LEA (TOTAL ALL 4 DAYS) = 77  
(n = 88)

LEA<sub>10</sub> (TOTAL ALL 4 DAYS) = 81  
(n = 28)

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**TABLE 5**

Subject YARD DATA SITE 'C' (NO BARRIERS ON  
Date dB @ 2000 Hz OCTAVE BAND, GROUP RETARDERS  
Reviewed by JOHN PAWLAUSKIS Date 2 THROUGH 5)

DECEMBER 19, 1975

GROUP RETARDER #	<u>5</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>1</u>
	90	100+	-	79	<70
L(MAX)	108			90	<70
(RAW DATA)	110+				72
					68
					70
					75
					73
					<60
					<60
					62
					64

SITE 'A'

85	72	75	76
84	<70	88	76
90+	83	<70	79
85	72	84	80
90	90+	73	80
86	<70		82
<70	<70		81
86	90		<70
74	90		86
90	90+		90
75	80		74
86	71		78
<70	79		77
87	<70		85
85	72		81
90	89		84
72	84		
80	87		
90	<70		

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ENVIRONMENTAL PROTECTION AGENCY

**TABLE 6**

Subject YARD DATA SITE 'A' (BARRIERS ON ALL RETARDER)  
 Date 2000 Hz OCTAVE BAND Date JUNE 30, 1976  
 Reviewed by JOHN PAULAUSKIS

RETARDER #	1	2	3	4	5	MASTER
	80+	73	61	<60	<60	80+
	81	68	<60	63	<60	75
	67	68	64	<60	<60	70
	89	71	62	<70	<60	74
	76	78	<70	61	64	62
	85	<70	68	63	62	<60
	80	61	<70	62	61	77
	75	73	<60	<60	61	80+
	70	66	65	<60	63	<60
	67	<60	<60	<60		80
	80	73	<60			72
	70	64	<60			<60
	70	<60				68
	64	64				69
	67	66				71
	76	64				67
	77	65				67
	80+	71				80
	80	71				80+
	80+	72				80+
		69				70
		61				80+
		<60				80+
		64				63
		60				63
		61				66
		69				74
		72				77
		<60				69
		61				80+
		69				78
		71				75
		63				

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ENVIRONMENTAL PROTECTION AGENCY

# TABLE 7

Subject RESIDENTIAL DATA SITE 4 (NO BARRIERS)

Data 2000 HZ OCTAVE BAND

Reviewed by JOHN PAUL AUSKIS Date 11-12-74  
1-23-75

RAW DATA  
L(MAX) @ 800'

CORRECTIONS

RESULTS  
NORMALIZED  
TO 1100'  
DB(A)

74

80

A-WTG

+1

+1

73

79

# TABLE 8

Subject RESIDENTIAL DATA SITE 1 (BARRIER ON #1 GRP)

Date 2000 HZ OCTAVE BAND

Reviewed by JOHN PAWLUSKIS

Date 10-6-75

12-5-75

12-19-75

ALL RETARDERS EXCEPT  
#1 GROUP RETARDER

#1 GROUP  
RETARDER

DATA CORRECTED FOR  
A-WTG., L(MAX) @ 1100'

RET. #	RET. #	RET. #	RET. #	RET. #	RET. #			
5	42	3	64	2	66	M	54	49
	74		68	M	59		59	47
	61		66		56		65	52
	62		69		52		46	42
	59		57		71		59	51
	59		71		61		59	48
	62		65		56		51	49
	64		59		45		59	46
	64		43		51		66	43
	45		57		50		59	<40
	65		68		46		60	<40
	72		59		61		46	<40
	56	Y	66		46		52	<40
	62	3	61		53	Y	58	<40
	63	2	53		60	M	51	<40
	65		49		55	2	<40	<40
	50		46		46	3	<40	<40
	57		57		66	5	51	<40
	57		50		61	5	56	<40
	63		55		51	5	53	<40
	53		60		43	4	51	<40
	58		56		61		50	<40
Y	64		62		58		43	<40
4	66	Y	56	Y	55	Y	63	<40
	56	2	59	M	57	4	63	<40

<40 INDICATES AUDIBILITY, BUT SOUND  
LEVEL AT OR BELOW AMBIENT

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ENVIRONMENTAL PROTECTION AGENCY

**TABLE 8 con**

Subject RESIDENTIAL DATA SITE 1

Date 2000 Hz OCTAVE BAND

Reviewed by JOHN PAULASKIS

Date 10-6-75

12-5-75

12-19-75

ALL RETARDERS EXCEPT  
#1 GROUP RETARDER

#1 GROUP  
RETARDER

DATA CORRECTED FOR  
A-WTG., L (MAX) @ 1100'

RET.#	RET#	RET#	RET#	RET.#	RET.#	RET.#		
4	56	2	>50	5	52	4	57	<40
4	75	2	51		53		53	<40
4	71	M	>60		48		<40	<40
3	62		61		56		46	<40
	<40		61		53		<40	<40
	64		55		55		48	<40
	65		<40		<40		54	<40
	74		54		61		66	<40
	<40		53		56		61	<40
	73		<40		46		59	<40
	<40		66		<40		56	<40
	61		58		56	4	58	<40
	71		58		<40	3	<40	<40
	67		53		59		63	<40
	68		54		<40		54	<40
	71		63	Y	<40		46	
	66		60	5	61		<40	
	53		65	4	54		<40	
	64		56		<40	3	61	
	65		73		66	2	55	
	> 70		<40		46		54	
	59	Y	64		46		54	
Y	53	M	<40	Y	61	Y	54	
3	56	5	62	4	66	2	57	



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**TABLE 8<sub>CON</sub>**

Subject RESIDENTIAL DATA SITE 1

Data 2000 Hz OCTAVE BAND

Reviewed by JOHN PAUL AUSKIS

Date 10-6-75

12-5-75

12-19-75

ALL RETARDERS EXCEPT  
#1 GROUP RETARDER

#1 GROUP  
RETARDER

DATA CORRECTED FOR  
A-WTG. , L(MAX) @ 1100'

RET #	RET #
2 71	M 49
59	51
56	53
58	48
64	56
56	51
61	<40
47	<40
61	53
53	59
56	<40
56	<40
60	53
51	59
61	<40
Y 46	<40
Z 61	56
M <40	<40
<40	54
46	46
52	46
Y 56	51
M 46	M 58

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**TABLE 9**

Subject RESIDENTIAL DATA SITE 1 (BARRIERS ON ALL RETARDERS)  
 Date 2000 HZ OCTAVE BAND  
 Reviewed by JOHN PAULCAUSKIS Date 6-30-76

DATA CORRECTED FOR A-WTG.  
L(MAX) @ 1100'

RET. #		RET. #		RET. #	
M	46	5	46	2	45
	48	5	50		50
	44	5	57		52
	42	4	49		43
	50		46		45
	50		44	Y	49
	46		48	2	41
	49		43	1	43
	52		51		43
	50		50		49
	46		46		48
	49		47	Y	48
	43		51	1	43
	46		43		
	53		49		
	43		59		
	48		53		
	48		61		
	51		53		
Y	49	Y	46		
M	56	4	50		
5	51	3	43		
	48		44		
	51		47		
Y	50	Y	53		
5	57	3	43		
	56	2	45		

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 10**

Subject RESIDENTIAL DATA SITES 1, 2, 3, 5 (BARRIERS ON ALL RETARDERS)  
 Date 2000 Hz OCTAVE BAND  
 Reviewed by JOHN PAULASKIS Date 8-18-76

DATA CORRECTED FOR A-WTG.  
L(MAX) @ 1100', SITE 1

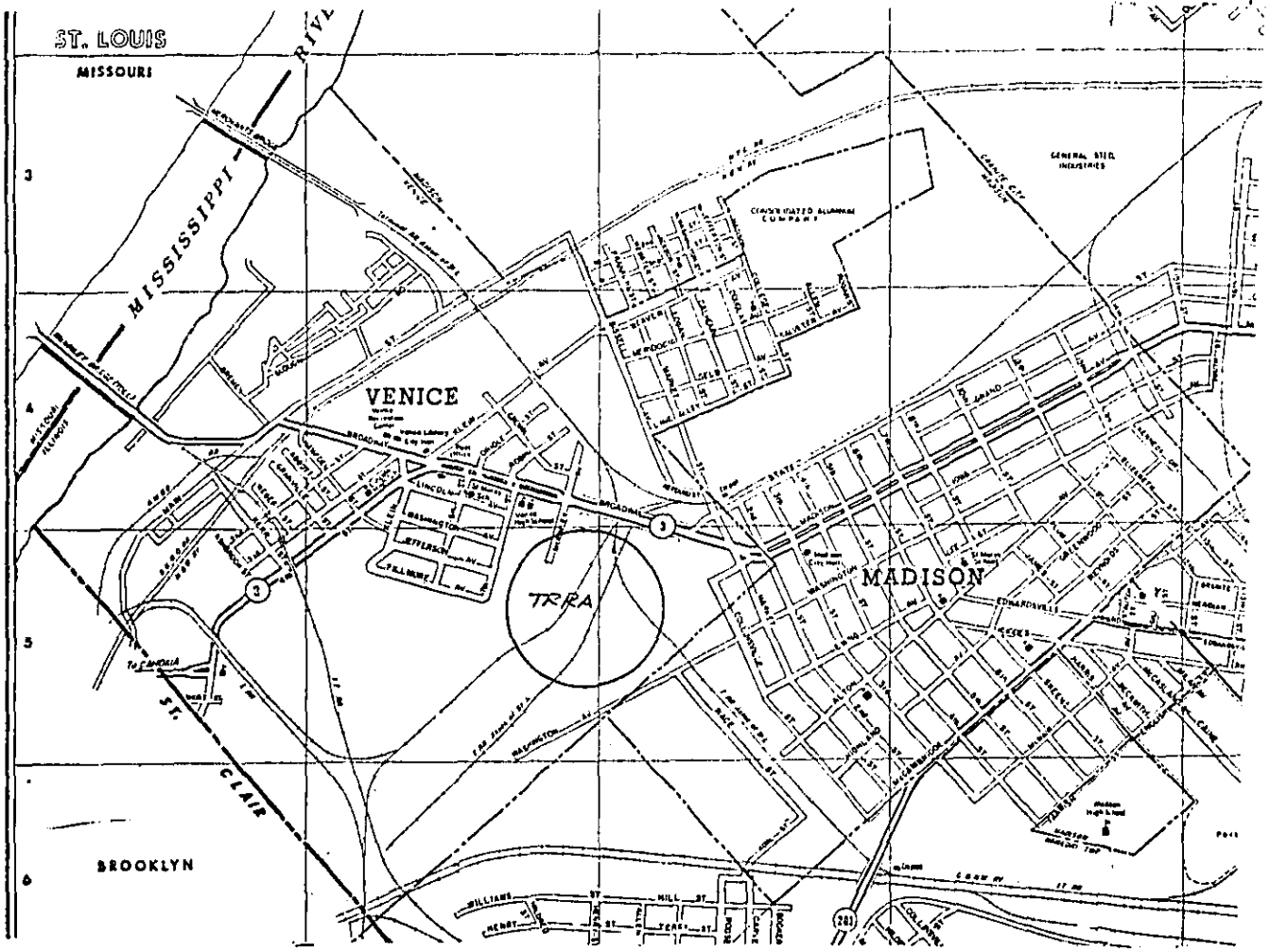
RET.#	RET.#	RET.#
M	4	1
<40	<40	<40
46	<40	<40
<40	41	<40
58	<40	<40
53	Y	1
<40	4	<40
54	3	<40
<40	3	<40
60	3	<40
<40	Y	<40
<40	3	48
41	3	54
<40	2	41
<40	2	41
<40	Y	43
56	Y	<40
49	2	56
<40	1	<40
<40	1	<40
61	Y	<40
61	Y	58
M	Y	58
5	Y	57
48	Y	59
<40	Y	52
61	Y	<40
43	Y	55
56	Y	<40
<40	Y	<40

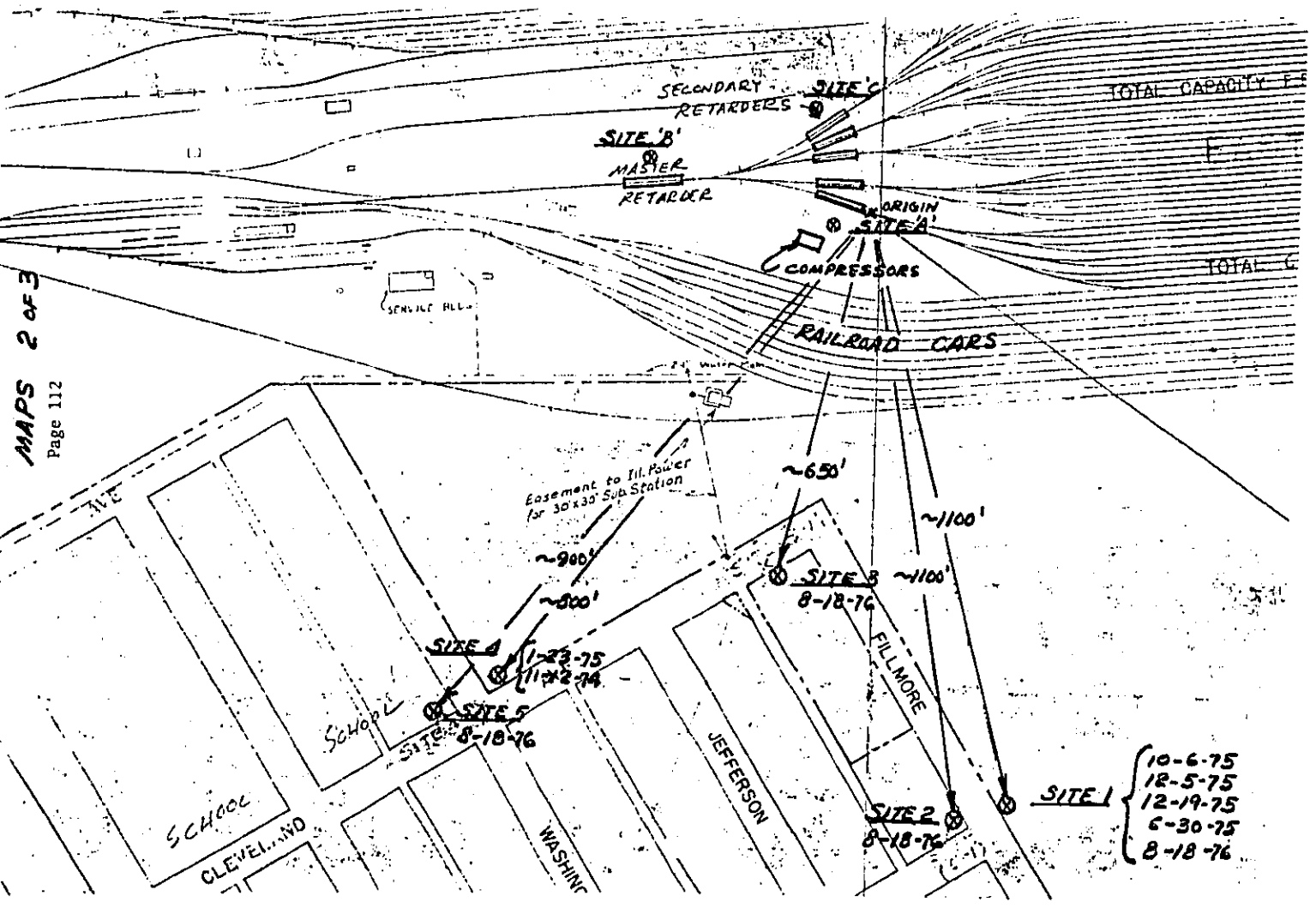
RET.#
1
<40
<40
Y
<40
1
<40

DATA CORRECTED FOR A-WTG.  
L(MAX) @ 650' (SITE 3) & 900'  
(SITE 5) ARE NORMALIZED  
TO 1100'. SITE 2 IS AT  
1100'.

SITE 2	SITE 3	SITE 5
57	57	48
57	60	48
53	57	51
65	59	51
64	58	
56	58	
	62	

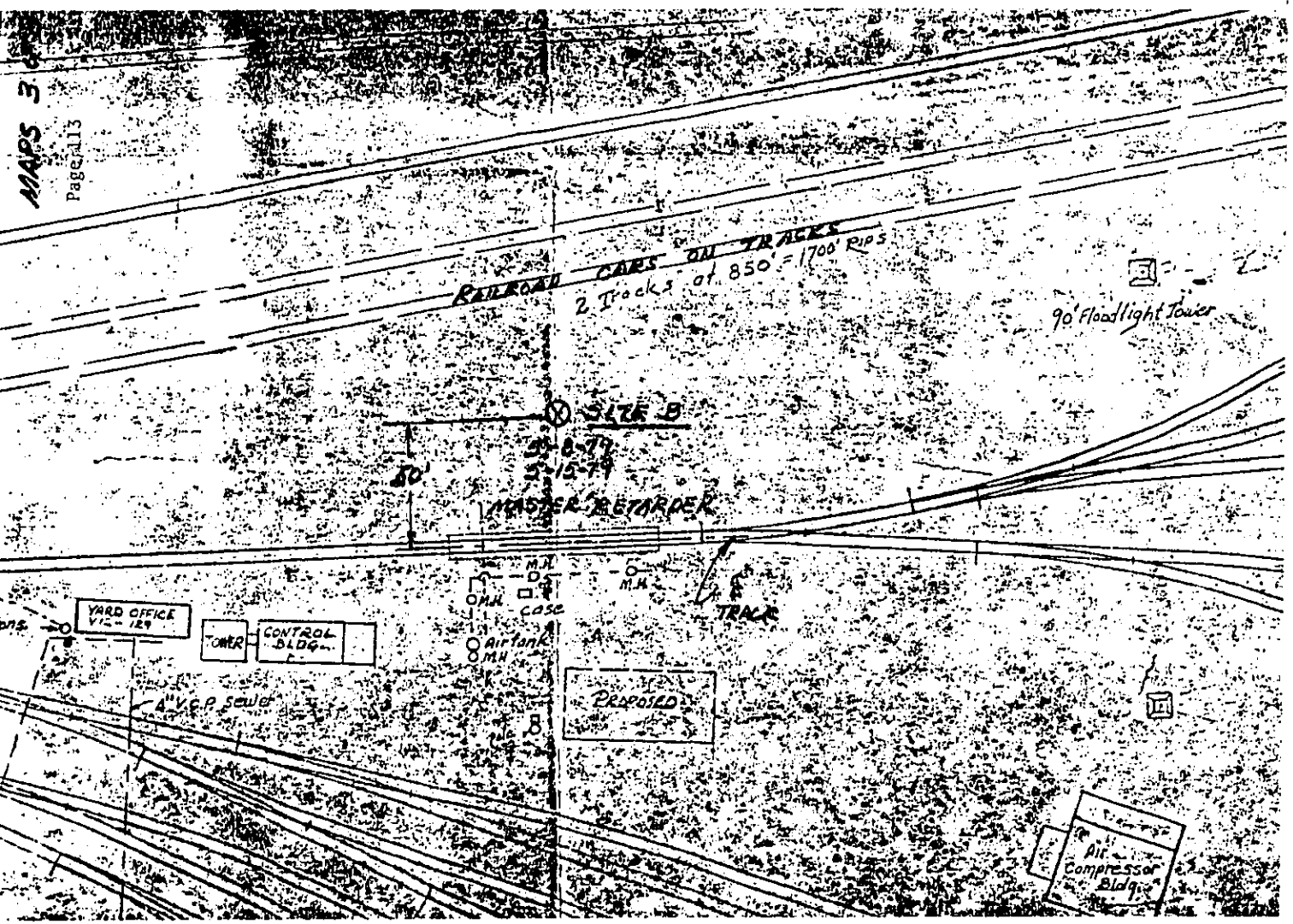
TAPE RECORDED DATA



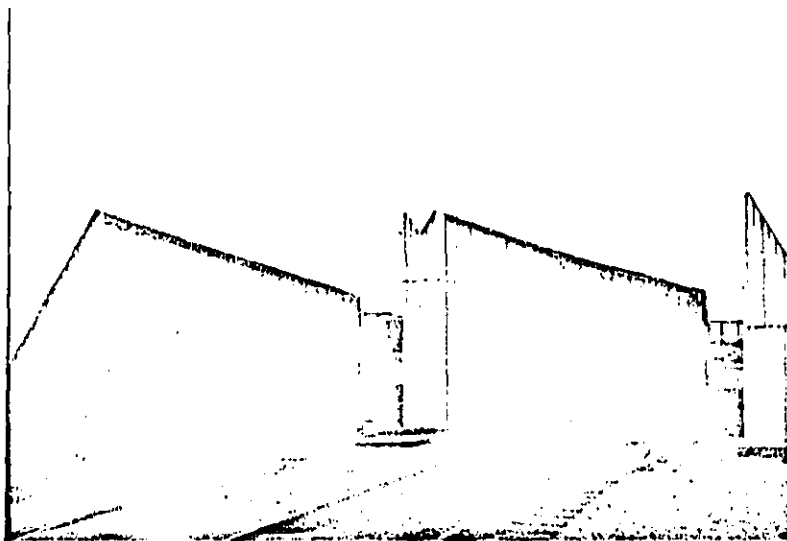


MAPS 30

PAGE 113



TERMINAL RAILROAD ASSOCIATION  
VENICE, ILLINOIS



VIEW LOOKING SOUTH AT  
BARRIERS AROUND GROUP  
RETARDERS.

Questions Directed to Officials  
of the Terminal Railroad Association  
of St. Louis

1. Q: How many retarders are in the Venice yard?  
1. A: 37
2. Q: How many are inert, group, and master retarders?  
2. A: 32 inert, 4 group, (one more to be added shortly), 1 master.
3. Q: How many cars are humped in a 24-hour period, specifically how many of these are during the day and how many at night?  
3. A: 1,200 - 1,500 in 24 hours, 600 - 750 day, 600 - 750 night, up to 2,000/24 hours planned for the future.
4. Q: Does use of the retarders vary from day to day, month to month, season to season, if so, how much?  
4. A: No variation
5. Q: What is the peak month for use of the retarders? Peak season?  
5. A: None.
6. Q: Are the active retarders controlled by a human operator or an electronic computer?  
6. A: Rarely controlled by human operator. No electronic computer used.
7. Q: Has any attempt been made to determine the percent of cars screening in retarders?  
7. A: yes 5 - 20%
8. Q: What is the number of retarders each car must pass through?  
8. A: 2
9. Q: What is the length of a retarder, are they all the same length, if not, what are the various lengths?  
9. A: MASTER, 80 feet, GROUP, 72 feet.
10. Q: How long and how high is the initial trial barrier? *FINAL BARRIER 12' HIGH*  
10. A: Retarder length 12 feet long, 7 feet high.
11. Q: Of what material is the barrier to be made of, and who is the manufacturer?  
11. A: 3/8" transite (asbestos concrete) material, U. S. Gypsum manufacturer.
12. Q: Estimated cost per linear foot?  
A: Unknown. *FINAL COST ~ \$51.37*
13. Q: Estimated cost for all retarders in yard?  
A: Unknown. *FINAL COST ~ \$60,000.00*



14. Q: Estimated down time and cost of down time?  
14. A: No down time, all prefabricated.
15. Q: How wide is the widest car run through the retarders, and how high is the highest?  
15. A: 12' 3" feet wide, 19' 1" feet high (21' 6" restriction in Illinois).
16. Q: What is the distance between each of the group retarders?  
16. A: 30' minimum, 13' between inert retarders.
17. Q: Could the railroad supply us with an accurate map of the Venice yard?  
17. A: yes.
18. Q: How old is present operation?  
18. A: Began August, '74.
19. Q: Is it operated pneumatically?  
19. A: Yes.
20. Q: What is the maximum allowable car weight and what is the optimum coupling speed for rail cars?  
20. A: 160 tons and 4.5 m.p.h.

State of Illinois  
Environmental Protection Agency

MEASUREMENT PROCEDURES FOR THE  
ENFORCEMENT OF PART 3 OF CHAPTER 8  
OF THE ILLINOIS POLLUTION CONTROL  
BOARD RULES AND REGULATIONS (SOUND  
EMISSION STANDARDS AND LIMITATIONS  
FOR MOTOR VEHICLES)

Adopted: DECEMBER 20, 1977



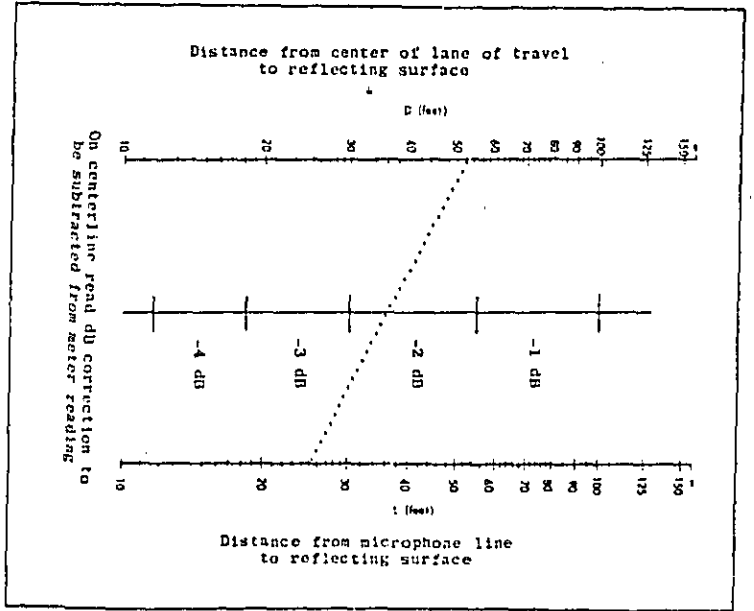


Figure 3: Kymograph to Determine Corrections for Reflective Surfaces

State of Illinois  
Environmental Protection Agency

MEASUREMENT TECHNIQUES  
FOR ENFORCEMENT OF  
NOISE POLLUTION CONTROL  
REGULATIONS

SEPTEMBER  
1973



DIVISION OF NOISE POLLUTION CONTROL  
INTERNAL REPORT NUMBER 1

"Measurement Techniques for Enforcement of  
Noise Pollution Control Regulations"

1.0 General

- 1.1 This Report, pursuant to Rule 103, Chapter 8, of the Noise Pollution Control Regulations, establishes the measurement techniques to be used by the Agency in determining compliance with the rules governing the emission of sound from property-line-noise-sources. It is recommended that persons making noise measurements employ the measurement techniques used by the Agency. The procedures and instrumentation specified herein do not establish limits on sound.
- 1.2 The procedures and instrumentation specified herein provide the methodology necessary to establish compliance with the rules governing the emission of sound from property-line-noise-sources.
- 1.3 ANSI Standards 1.4 - 1971, 1.11 - 1966 and 1.13 - 1971 listed in Rule 103, Chapter 8 of the Noise Regulations refer to specific sound measurement techniques and data gathering equipment. The sections of ANSI 1.4 - 1971, 1.11 - 1966 and 1.13 - 1971 applicable to this report are those dealing only with outdoor sound measurements (Field Method). No indoor measurements will be recorded for the purposes of determining compliance with Part 2, Chapter 8.
- 1.4 The remaining ANSI Standards referred to in Chapter 8, Rule 103, contain definitions, terminology or other acoustic data not directly related to measurement techniques but, nevertheless, of technical interest to those persons who may perform sound level measurement.

2.0 Personnel Qualifications

- 2.1 Personnel conducting sound measurements shall have been trained and experienced in the current techniques and principles of sound measurement and in the selection and operation of sound measuring instrumentation.

3.0 Instrumentation

- 3.1 A sound level meter and octave band and one-third octave band filter set shall be used for the acquisition of data. These instruments shall conform with the following standards or their later revisions:
- a) American National Standards Institute (ANSI) S1.4 - 1971 Specification for Sound Level Meters, Type 1 precision sound level meter.
  - b) American National Standards Institute (ANSI) S1.11 - 1966 Specifications for Octave, One-Half Octave and One-Third Octave Band Filter Sets.
  - c) American National Standards Institute (ANSI) S1.6 - 1967 Preferred Frequencies and Band Numbers for Acoustical Measurements.
  - d) American National Standards Institute (ANSI) S1.8 - 1969 Preferred Reference Quantities for Acoustical Levels.

If a magnetic tape recorder or a graphic level recorder or other indicating device is used, the system shall meet the requirements of:

- a) Society of Automotive Engineers (SAE) Recommended Practice J184 Qualifying a Sound Data Acquisition System.

- 3.2 An anemometer and compass or other suitable devices shall be used to measure wind speed and direction in accordance with the manufacturer's recommended limits.
- 3.3 A thermometer suitable for measurement of ambient temperature shall be used in accordance with the manufacturer's recommended limits.
- 3.4 An hygrometer suitable for the measurement of relative humidity shall be used in accordance with the manufacturer's recommended limits.
- 3.5 A barometer suitable for the measurement of barometric pressure shall be used in accordance with the manufacturer's recommended limits.

#### **4.0 Instrumentation Setup**

- 4.1 Instruments shall be set up to conform to ANSI S1.13 - 1971 Methods for the Measurement of Sound Pressure Level (Field Method), with the following additions:
  - a) Connect microphone to the sound level meter with a manufacturer's specified (10 foot minimum) extension cable.
  - b) Attach an appropriate wind screen to the microphone.

#### **5.0 Data Acquisition and Operation**

- 5.1 Following manufacturer's instructions and with the instrumentation set up as described in 4.0, the following steps will be taken to acquire and record the data:
  - a) Check condition of power supply prior to recording of data.
  - b) Calibrate the instrumentation set up with an acoustic calibrator prior to recording data.
  - c) Set meter to "fast" response and "A-weighting" network, or connect to external filter whenever octave or one-third octave analysis is being made. (Note: "Slow" response may be used if necessary to stabilize the meter needle. If "slow" response is used it shall be so noted in the data record.)
  - d) Record all pertinent atmospheric conditions, i.e., wind speed and direction, temperature, relative humidity, barometric pressure, and general weather conditions.
  - e) Record instruments used (manufacturer, model and kit number).
  - f) Record location of sound source of interest and sound measuring microphone locations relative to the sound source, and any unusual microphone positions.
  - g) Calibrate the instrumentation setup with an acoustic calibrator following the recording of data.
  - h) Check the power supply following the recording of data.

#### **6.0 General Conditions**

- 6.1 While measurements are being recorded, constant visual surveillance of extraneous sound sources should be made to insure that the measurements are of the sound being investigated.
- 6.2 If operator or instrument positions other than those specified in ANSI S1.13 - 1971 (Field Method) are employed, the reason and description shall be described in the recording of data.

#### **7.0 Impulsive Sound**

- 7.1 Impulsive sound shall be measured on the "A-weighted" scale with the meter set to "fast" response.

BRIDGE 102A

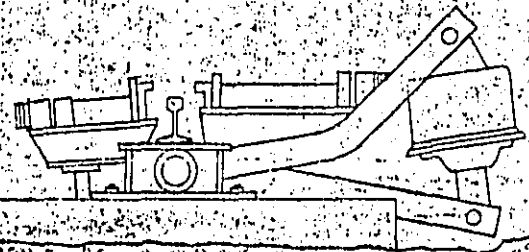
79-01-109  
info. enclosed  
more  
expl. inty.

12'-± To T/R

EXTRACTS

8'-0" MIN.

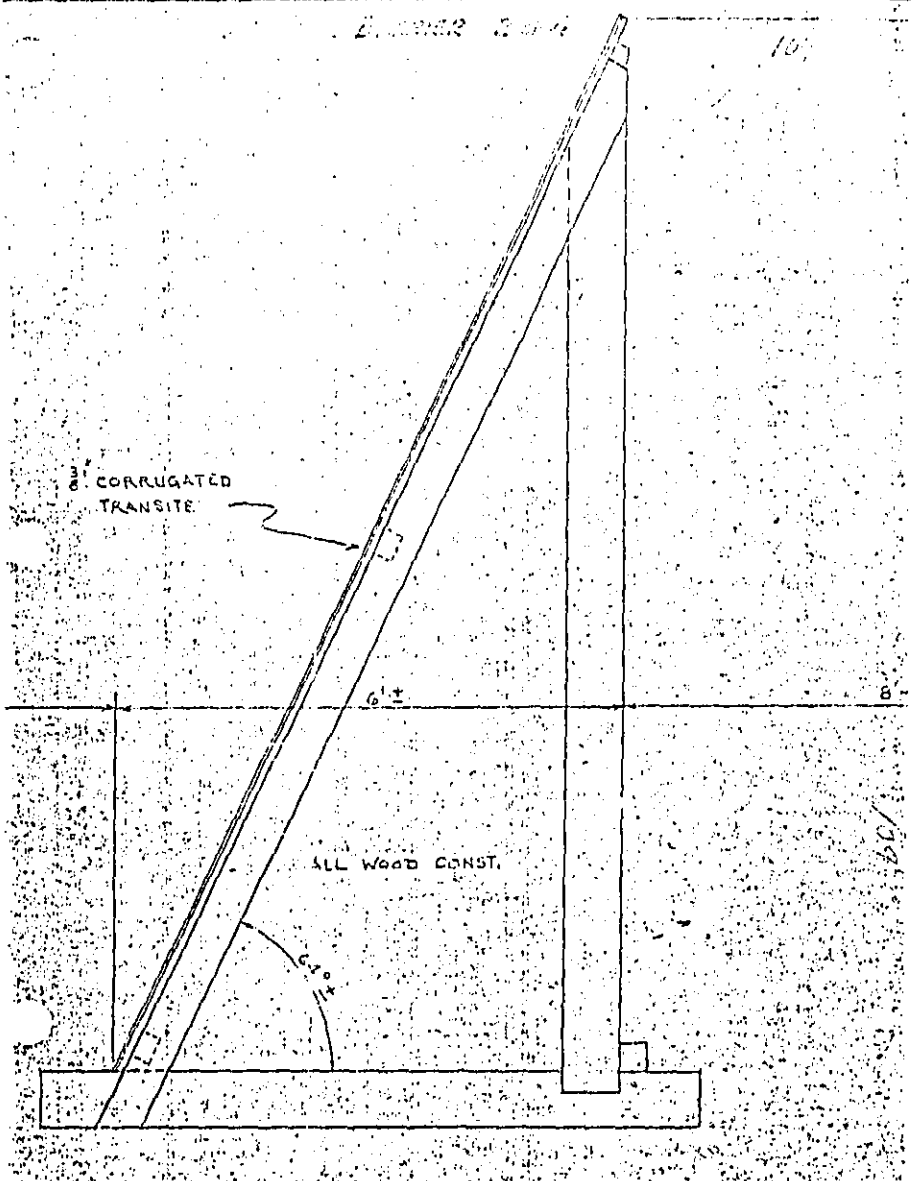
ALL V/001



CROSS SECTION

RETARDER 2004

10

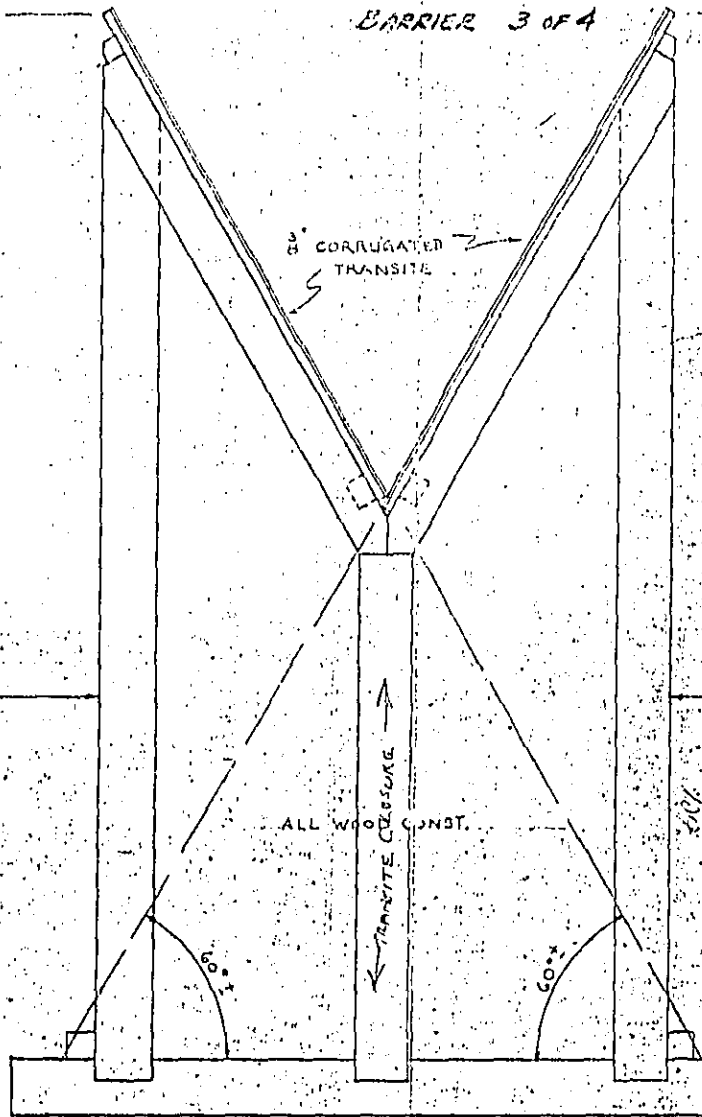


NORTH OF S BEFORE ENTERING RETARDER

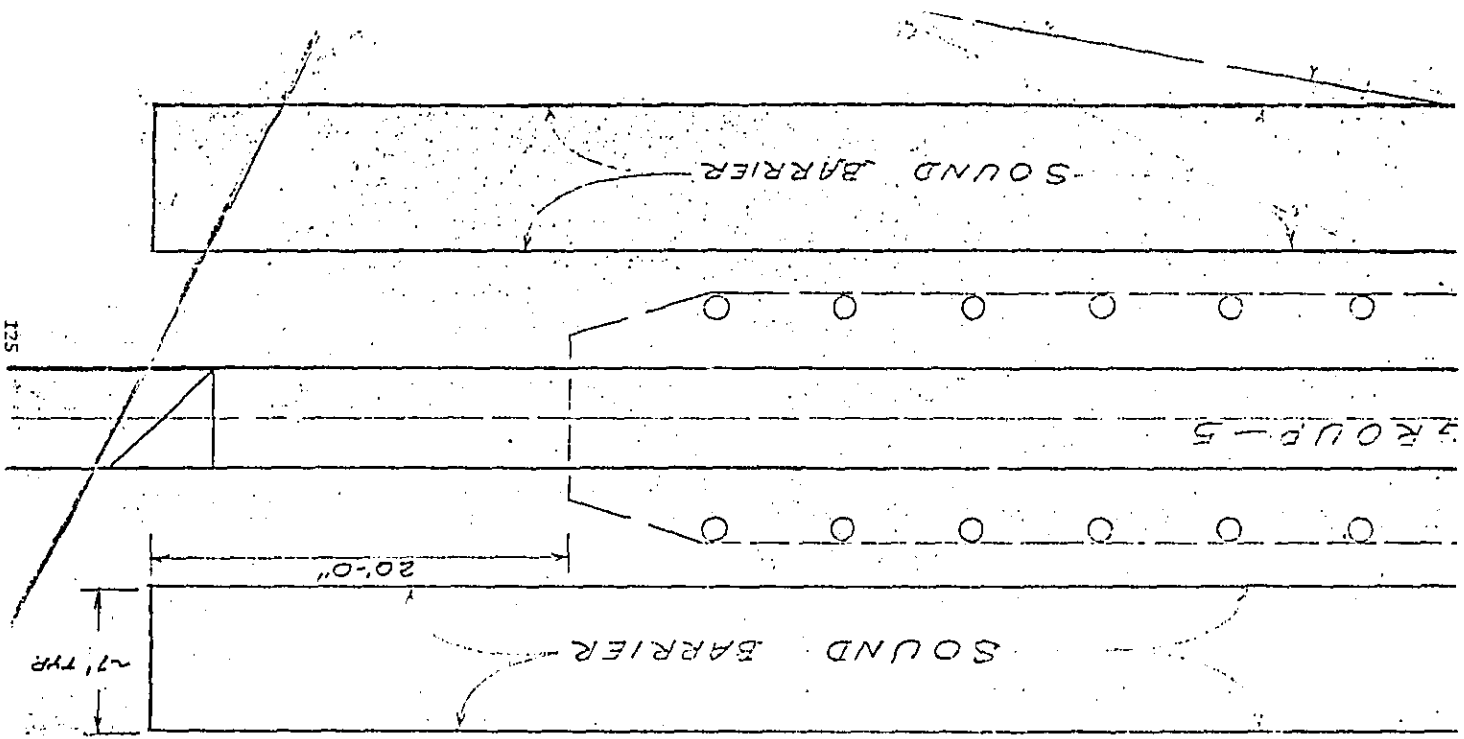




BARRIER 3 OF 4



TION WHERE BARRIERS MERGE ACCOUNT OF TRACK C



**Environmental Protection Agency**  
2200 Churchill Road, Springfield, Illinois 62706

217/782-9800

June 28, 1979

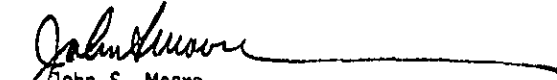
Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D. C. 20460

Gentlemen:

Re: Comments on Noise Emission Standards for Transportation Equipment;  
Interstate Rail Carriers 40 CFR Part 201

Attached to this letter are three copies of comments prepared by the Illinois Environmental Protection Agency Division of Land/Noise Pollution Control. These comments are in response to the proposed Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers as published in the Federal Register, Volume 44, Number 75, Tuesday, April 17, 1979.

Sincerely,

  
John S. Moore  
Manager  
Division of Land/Noise Pollution Control

JSM:JP:mad/7534/10

Attachment

*79-01-144*

RECORDED APR-29

3 JUL 79 10:20

Illinois Environmental Protection Agency Response to:  
Noise Emission Standards for Transportation Equipment;  
Interstate Rail Carriers (40 CFR Part 201)

Introduction:

The United States Environmental Protection Agency (USEPA) has proposed standards to limit railroad noise. The standards are comprised of two distinct parts: the first deals with railroad facilities and the limits are in terms of Equivalent Sound Level (Ldn, Leq); the second deals with specific sources such as retarders and the limits are in terms of A-weighted sound level (dBA).

The Illinois Environmental Protection Agency (IEPA) supports the USEPA in its recognition of lower nighttime standards. Experience in Illinois with citizen complaints has revealed that many of the complaints involve loss of sleep during the nighttime hours.

The limits specified in the USEPA standard are consistently equal to or greater than the noise levels measured during Illinois EPA field investigations. Therefore, from the standpoint of experience in Illinois, the USEPA limits merely reflect the present noise level emitted by the noisiest railroad facilities.

The paragraphs that follow discuss the merits of the railroad noise limits specified in the USEPA proposed standards, compare the USEPA limits to field experience in Illinois, describe additional sources of railroad noise experienced in Illinois, and make specific recommendations on the proposed standards.

I. Source Standards vs. Property Line Standards:

The IEPA encourages the USEPA to adopt only source standards for all major sources of railroad noise. Such standards should be based on the "best available" technology to abate the noise emitted by such sources. Enforcement of source standards should only take place where the public is impacted by the noise at commercial or residential receiving land. Since USEPA included costs of compliance for developed industrial lands, the cost of compliance would be significantly reduced by enforcement only where the public is impacted, i.e., at residential and commercial property.

The major sources of noise at railroad facilities are switch and road engines, railcars, retarders, refrigeration units, car coupling, and load cells. Since mufflers for all switching type engines, barriers for all retarders, acoustical absorption treatment for all refrigeration units and a speed limit for all car coupling operations are anticipated in the USEPA costs of compliance, a separate property-line-noise-regulation overlaps source standards and complicates compliance efforts. As an alternative, the source standards could be enforced at the property line. Distance corrections from noise limits at seven meters or thirty meters could be applied to specific measurements at receiving commercial or residential property, thus increasing enforcement ability.

The measurement techniques required for enforcement of an Ldn or Leq property-line-noise-regulation are extremely difficult to implement. The 24-hour Ldn or one-hour Leq measurement would have to be continually manned for litigation purposes. The IEPA does not have the manpower or funds to enforce the 24-hour standard adequately.

The one-hour Leq standard would ease the required monitoring effort, however, dominance must be shown by one of a multitude of methods (re: Background Document Appendix 'A'). In addition, one-hour Leq is not an appropriate descriptor for retarders or car coupling since Leq does not adequately measure or describe short duration tones (as from retarders, which last one to five seconds) or impulses (as from car coupling).

If the USEPA disagrees with the IEPA recommendation that major sources be regulated directly by source standards and feels that an Ldn or Leq property-line-regulation is necessary to protect to the public health and welfare then the following comments are appropriate:

A. The Proposed Property-Line-Noise Standard:

The IEPA has been enforcing property-line noise source limits for approximately six years. It has been our experience that protection of industrial property from the noise emitted by adjacent industrial property is unnecessary. By eliminating industrial receiving land from the proposal, a potential 20-30 percent compliance cost reduction exists (see Tables 3-10 and 7-1 of the Background Document) at the proposed limit of 70dB. Inspection of Table 3-10 indicates that for Hump yards 34 percent of adjacent land is commercial or residential. Similarly, for Flat yards, adjacent commercial or residential land ranges from 42 percent to 48 percent. Thus, the required borderline noise abatement will be reduced proportionally (i.e. only a portion of a facility boundary will require noise abatement).

Inspection of Table 7-1 indicates that 734 (= 3352 + 2618) additional yards are affected by a 65 dB limit for adjacent residential and commercial property. If the 70 dB limit is eliminated for industrial land, a 70 dB limit is established for commercial land and a 65 dB limit is retained for residential land, a portion of the 734 additional yards will be in compliance and probably all 734 will require compliance on less of their boundary line.

As an example, looking at the 120 facilities (both hump and flat yards) used for the "Benefits Analysis" in the Background Document, about 40 of the facilities have residential land directly abutting the railroad property. Out of the 40 facilities, the mean percentage of residential land versus other land classifications abutting the railroad boundary is 25 percent. Fifteen of the facilities fall above the mean value and 25 fall below the mean. Thus, 25 of the 120 facilities will be concerned with noise emitted to residences at 25 percent or less of their abutting boundary line. This implies that fewer technological changes may be required for compliance (i.e. fewer engine mufflers, fewer boundary-line barriers, less operational changes, etc).

B. All Railroad Facilities and Equipment:

The USEPA has specified a 24-hour limit of 70 dB (Ldn), a one-hour limit of 84 dB (Leq) daytime, and 74 dB (Leq) nighttime for all railroad facilities and equipment. Field investigations at the Haney Switchyard in South Holland, Illinois (see Exhibit A) resulted in a 24-hour Ldn = 73 dB and one-hour Leq's = 68, 72, 68, 68, 67, 67 dB (The methods used to obtain the 24-hour Ldn were different than those used to obtain the one-hour Leq's. It is anticipated that the 24-hour Ldn of 73 dB, as calculated, is higher than would be obtained if the one-hour Leq methods were used in the Ldn calculation.).

The one-hour Leq's determined at the Haney Switchyard are significantly lower than the proposed USEPA daytime limit of 84 dB and are slightly lower than the proposed nighttime limit of 74 dB. Thus, it appears that the Haney Switchyard noise levels would be in compliance with the USEPA limits. However, Illinois EPA experience indicates that the public response to such noise levels was indeed adverse and could be labeled as a "strong community reaction" with "threats of legal action". In fact, the Illinois Attorney General's office did file action against the railroad before the Illinois Pollution Control Board. A stipulated agreement between the plaintiffs and respondent was reached whereby operational changes, berms and site obstructions were agreed upon.

The IEPA recognizes the difficulties of monitoring a 24-hour noise survey for enforcement purposes. Equivalent hourly Leq measurements would relieve the problems of monitoring.

The "theoretical" equivalent Leq (1) values of 84 dB daytime and 74 dB nighttime do not reflect the "actual" hourly Leq levels measured at flat switchyards. According to the data collected by the USEPA in the Background Document Appendix "B", a daytime Leq of 84 dB would include zero percent of the hourly Leq's monitored (1073 hourly Leq's monitored at or beyond railroad property line). Similarly, a nighttime Leq of 74 dB would include less than two percent of the hourly Leq's monitored (See Exhibit B). The proposed hourly limits amount to essentially no regulation at all for the flat switchyards comprising 97 percent of the total railroad yards in the U.S. (Table 3-10, Background Document).

According to the 1073 actual measured hourly Leq's, a 64 dB limit corresponds to the mean of the Leq's for flat switchyards, as 70 dB correspond to the mean of the actual measured Ldn's (See Exhibit "B").

In establishing one-hour enforcement limits, the actual character of noise emissions from railroad yards should be considered. Data in Appendix V, Table V-2, indicate that the maximum difference between a maximum one-hour Leq and a 24-hour Ldn was only 4.5 dB and the 95 percent upper limit only 3.2 dB. For nighttime operations, the differences are 2.8 dB and 0.1 dB, respectively. Thus, a reasonable one-hour daytime limit for railroad facilities is 3 dB greater than the Ldn limit. An appropriate limit for nighttime operations, considering the nature of railroad operations but neglecting the increased impact of nighttime noise, would be a nighttime one-hour Leq equal to the Ldn limit. To set one-hour limits higher than this will not result in any "ease of enforcement".

The Illinois EPA has received many citizen complaints at approximately 52 separate railroad locations. Of the 52 locations, 16 of them (or about 30 percent) involved railroad switching operations.

#### C. Hump Yard Facilities and Equipment:

The USEPA proposed limits in this category are a 24-hour Ldn = 65 dB and one-hour Leq's = 79 dB daytime, 69 dB nighttime. Although the Illinois EPA supports the recognition of lower limits for hump facilities, we have determined from our field investigations that Ldn and Leq are inappropriate descriptors of the retarder noise at hump facilities. Therefore, we support the source type standard for retarders. The Illinois EPA has received citizen complaints at 4 hump facilities in Illinois. Extensive field measurements have been obtained at the Terminal Railroad Association facility in Venice, Illinois (see Exhibit C).

The short duration of retarder noise makes Ldn and Leq inappropriate descriptors of the noise source. The duration of each event is on the order of one to five seconds and, since Leq averages sound energy over time, little contribution is added by each event to the total Leq.

The discrete tonal qualities of retarder noise (squeal) is the largest contributor to its annoyance. The tones usually fall in the 2000-3000 Hz range and their amplitudes predominate the spectrum. Since A-weighted sound level does not appreciably discriminate those frequencies, A-weighting is an adequate descriptor of retarder noise.

In addition to retarder "squeal", release of pressurized air occurs frequently. This air release noise does not contain the discrete tone characteristics of the "squeal" and may be attenuated easily by the construction of barriers.

The "theoretical" equivalent Leq values of 79 dB daytime and 69 dB nighttime do not reflect the "actual" hourly Leq levels measured at hump switchyards. According to the data collected by the USEPA in their Background Document Appendix "B" a daytime Leq of 79 dB would include zero percent of the hourly Leq's monitored (940 hourly Leq's monitored at or beyond railroad property line (See Exhibit B)). The proposed hourly limits amount to essentially no regulation at all for hump switchyards during the daytime hours.

## II. The Proposed Source Standards:

### A. Retarders:

As stated previously, A-weighted measurements are appropriate for retarder noise. An energy average limit of 90 dBA at 100 feet, however, does not reflect the "best available technology" available in noise reduction from barriers. Illinois EPA experience has shown that energy average levels of 76-78 dBA are achievable at 100 feet for minimal costs (See Exhibit C).

The method for determining compliance with the retarder (and coupling) standards should be revised. The regulation proposes that all measured retarder sound levels be energy-averaged to determine compliance. Data available in the literature and our field experience indicate that there can be a 30-40 dB variation in retarder (and coupling) sound levels. However, the low level retarder and coupling noises do not cause adverse health and welfare effects, but will artificially lower the resulting energy average values by 3-5 dB. Therefore, to facilitate enforcement, we recommend that only sound levels greater than 10 dB below the appropriate limit be recorded and included in the energy average.

#### B. Refrigeration Cars:

The USEPA has proposed a limit of 78dBA at 7 meters for refrigeration cars. Measurements taken by the Illinois EPA on standing refrigeration cars in Brookfield, Illinois resulted in A-weighted levels of 67-71 dBA (See Exhibit D). The measurement distances from the refrigeration cars varied between 50 and 110 feet and were about 12 feet below the refrigeration units. Assuming spherical divergence in the measurement area of the refrigeration cars, levels of 73-77 dBA would be anticipated at 25 feet. Low frequency sound pressure levels of 83 dB at 31.5Hz, 77 dB at 63 Hz and 69 dB at 125 Hz were obtained at 50 feet from the refrigeration units.

The Illinois EPA believes that A-weighted sound levels do not sufficiently describe railroad refrigeration noise. Much of the adverse public reaction to refrigeration noise is due to the lower frequencies which are not easily attenuated by residential structures. C-weighted limits would more fully describe the impact of refrigeration car noise on the public and protect the public from the adverse effects of refrigeration car noise. Further studies should be made to determine the adverse health and welfare affects of low frequency noise emitted by refrigeration units.

Citizen complaints on refrigerator cars have been received by the Illinois EPA at three different locations in Illinois. These complaints comprise about six percent of the total number of railroad complaints received by the Illinois EPA.

#### C. Car Coupling:

For car coupling, the USEPA is proposing a source standard limit of 95 dBA at 30 meters. Field investigations at the Haney Switchyard in South Holland, Illinois resulted in 213 impulse measurements from car coupling over a 20-hour period (See Figure 1 of Exhibit A). The variation of source to receiver distance may be observed in the distribution of the impulse amplitudes. This variation of distance points out the difficulty of obtaining sound data at precisely 100 feet for enforcement purposes. Unless rigid measurement conditions are available, such measurements of impulsive noise are difficult. Most railroad facilities will not be able to control the exact location of coupling. A practical alternative would be to specify a range of allowable sound pressure levels at various distances.



D. Diesel Engines:

Experience by the Illinois EPA has shown that idling diesel engines are a significant noise source in Illinois. Fourteen of the 52 railroad noise complaint sites in Illinois concerned idling diesel engines. Many of the complaints involved idling diesels on sidings or in switchyards.

In canvassing the many citizens near the 14 sites, it was found that the primary complaint concerned low frequency sound penetrating residential structures. Also, secondary vibrations from windows and bric-a-brac within the structures seemed to increase annoyance significantly. Such secondary vibrations are produced by the low frequency noise emitted by the diesel engine. Further studies should be made to determine the adverse health and welfare affects of low frequency noise emitted by railroad engines.

In Illinois four different low cost abatement techniques were used to bring idling diesels into compliance with the Illinois Noise Pollution Control Regulations:

- (1) Switch engines with lower horsepower and turbocharging were substituted for larger engines. Exhibit E indicates two locations where reduced engine sizes were demonstrated to be significantly quieter. There was no undue burden placed on the switching operation since the larger horsepower engines were not actually required for the operation. Reductions of 20 dB at 31.5 and 63 Hz were obtained by the engine replacement.
- (2) Idling diesels were required to lower their throttle settings. Field measurements on an idling commuter engine with reduced throttle setting resulted in a 6-8 dB reduction in the lower frequencies (See Exhibit E).
- (3) Relocation of idling diesels to non-residential areas has eliminated several noise problems in Illinois. Such relocation only involves the cost of railroad personnel traveling farther to reach the engine.
- (4) Use of diesel engine heaters to maintain engine operating temperatures has eliminated a noise problem at one facility in Illinois. The cost of such engine heaters ranges from \$1000 to \$4000.

The Illinois EPA believes that when one of the four low cost methods of compliance is available, that such methods should be implemented in place of source modification.

When operational changes or engine heating is not technically or economically feasible, engine mufflers should be used on switching and road engines. The existing locomotive sound level limits do not take into account engine muffling.

One effect of the proposed property-line rule is to require all switch-type engines to be equipped with an effective low-frequency muffler. Instead of indirectly requiring switch-engines to be retro-fitted with mufflers, a more logical approach would be to replace the property-line-standard with a source standard including a muffler requirement for switch engines. Such a source standard should be in terms of C-weighted sound levels to insure that ineffective mufflers are not used which could meet an A-weighted standard yet fail to reduce the annoying low frequency sounds from switch engines.

### III. Specific Illinois EPA Recommendations:

- A. Lower the Retarder Standard in section 201.16 from an energy average level of 90 dBA to 78 dBA to account for best available technology.
- B. Eliminate the third sentence in 201.15 for car coupling operations which allows compliance with the sound level standard if operations are less than four mph.
- C. The compliance time for the car coupling sound level standard should be immediate since no modifications are required and since the limit is based on current industry coupling practice.
- D. Modify the measurement procedure to determine compliance with the retarder and car coupling standards (energy average of at least 10 data) to exclude data more than 10 dB below the applicable limit.
- E. In order to facilitate enforcement, allow source standards, which include correction factors for distance, to be measured at receiving property in addition to measurements near the source. Distance correction factors could be calculated as shown in Exhibit F.
- F. The proposed sound level limits for refrigeration cars under stationary conditions should be revised to include a C-weighted limit.
- G. Source standards should apply only when receiving land is adversely impacted. To determine adverse impact a single event criteria should be included in the regulation (e.g. single event exceeding 55 dBA for retarders, etc.). If the single event criteria is not exceeded at the receiving property then the sound sources are exempted from the source standard.
- H. The definition of "Receiving Property" in section 201.1 should be revised as follows:

"Receiving Property" means any property that receives the sound from railroad facility operations but is not specified in any of the following Standard Land Use Coding Manual (SLUCM) general land use classifications: 211 through 299 inclusive, 311 through 396 inclusive, 399, 411 except 4111, 412 except 4121, 421, 422, 429, 441, 449, 460, 481 through 499 inclusive, 7223 and 7311 used for automobile and motorcycle racing, 811 through 890 inclusive and

undeveloped land or property owned or controlled by a railroad; except that occupied residences located on property owned or controlled by the railroad are included in the definition of "receiving property". Railroad crew sleeping quarters located on property owned or controlled by the railroad are not considered residences. If more than one SLCUM code is deemed applicable to a receiving property the code requiring the most stringent standard shall prevail.

- I. Delete the property-line standard, i.e., Ldn of 70 and 65 dB, and replace with additional standards for major railroad noise sources:
  1. Switch engine. Source standards for switch engines should be in terms of C-weighted sound levels to ensure muffler adequacy. Compliance times for muffling should be established to allow installation of muffler during normal engine maintenance and/or overhaul.
  2. Load Cells. Source standard should be consistent with noise reduction anticipated and included in cost analysis contained in background document.
  3. Other major sources. Establish source standards when other major railroad sources have been identified and analyzed, and amend the regulations to include standards for these other major sources.
- J. If recommendation I above (to delete property-line standards and replace with additional source standards) is not accepted, modify the property line standard by:
  1. Lowering the Ldn standard to 55-60 dB.
  2. Changing the one-hour Leq to  $Leq(1) = Ldn + 3$  dB during daytime and  $Leq(1) = Ldn$  during nighttime to account for actual railroad operations. If health and welfare is considered, the nighttime level should be lowered to  $Leq(1) \text{ (nighttime)} = \text{daytime } Leq(1) - 10$  dB instead of  $Leq(1) = Ldn$ .
- K. Areas B and C of Figure 2 should be reduced in size whenever the distance between the microphone and noise source is less than 56 meters (the maximum distance permitted in Table 3) since the effect of reflective surfaces is less with the microphone closer to the source. By reducing the size of Areas B and C, the number of allowable measurement sites will increase.

EXHIBIT 'A1'  
(LON CALCULATION)

SURVEY OF THE HANEY SWITCHYARD CHICAGO & EASTERN ILLINOIS RAILROAD  
SOUTH HOLLAND, ILLINOIS  
APRIL 17 & 18, 1975

COMPLAINT #71-9

CONDUCTED BY:

DOROTHY L. JONES  
RONALD P. HUDSON  
CHARLES J. GRUNTMAN  
DAVID WORTMAN

## INTRODUCTION

The survey was conducted by the Illinois Environmental Protection Agency (IEPA), Noise Pollution Control Division (DNPC) on April 17 & 18, 1975.

Its purpose was to obtain a day - night sound level (LDN) measurement of the switchyard, Chicago & Eastern Illinois (C&E) Railroad in South Holland, Illinois.

Day - night sound level measurements may be determined from a 24-hour sampling of a noise source. The time is distributed from 7:00 AM - 10:00 PM as daytime hours and from 10:00 PM - 7:00 AM as nighttime hours. This survey was only conducted for 20 hours with a 4 hour reduction in daytime hours.

In order to account for this reduction an assumption was made that the switchyard operated continually during the rain as it had been prior to it. This assumption was verified by the IEPA personnel that were present during two (2) of the four (4) remaining hours. This enabled calculations for the daytime hours to be completed.

The equipment used consisted of precision instruments capable of recording and discerning all sound levels near the survey location conforming to ANSI standards.

Our location was the Boele residents garage, 15934 South Woodlawn Avenue, South Holland, Illinois.

### I. Measuring Technique and Equipment Used.

This survey was done for 20 hours on Thursday, April 17 and Friday, April 18, 1975. The noise levels were measured using a General Radio Graphic Level Recorder (GLR) #1523, preamplifier plug-in #1523-PIA, a Nagra Precision Tape Recorder Nagra IV-SJ, Kit #37, two (2) 1/2" condenser type microphones and a pistonphone calibrator, Kit #15. Refer to survey report for entailed description of equipment settings.

The purpose of using two (2) measuring instruments was (1) for a visual interpretation of the sound levels (i.e. A-Weighted levels), as well as the duration of each incidence; and (2) for measuring and recording the data for subsequent analysis. Both instruments provided a permanent record.

The instruments were set up in the garage with the microphones assembled 18.5' east of the northeast corner of the garage and 5' north of the driveway. Windscreens were attached to each microphone. The microphone location was approximately 75' from the source. (See Figure 6).

## 2. Data Analysis.

In order to determine the  $L_{DN}$  from the collected data, it's necessary to obtain the energy equivalent A-weighted sound level over a given time interval (i.e.  $L_{eq}$ ). The GLR chart presented an A-weighted graph of all the community noise. To determine the  $L_{eq}$  from this chart, use was made of the paper "Assessment of Community Noise", by Kenneth M. Eldred.<sup>1</sup> In this paper, Mr. Eldred documented that the level of sound exceeded ten percent (10%) of the time (i.e.  $L_{10}$ ) approximately equals the  $L_{eq}$  of suburban residential communities near the railroad tracks. (See Figure 1).

$$L_{10} \cong L_{eq} \quad (\text{Eq. 1})$$

The  $L_{10}$  calculations were accomplished as follows:

1. Chart speed equaled to 1 inch per minute.
2. There were 5 intervals in each inch.
3. Using an engineers scale (ES), 60 divisions per inch, it was possible to subdivide each interval into 12 subdivisions.
4. Determining the duration of each occurrence and dividing by ten (10) determined the  $L_{10}$  time.
5. The  $L_{10}$  number was found by moving the ES along the graph during that segment until the  $L_{10}$  was obtained and then reading the dB.

The above method was verified in two (2) ways: (1) the triangular time pattern i.e. in extreme cases where there is a series of n identical triangular time patterns having maximum levels of  $L_{max}$ . See Figures 3, 4 & 5.

$$L_{eq} = L_{max} + 10 \log \frac{n \tau}{2.3T} \quad (\text{EQ. -2})$$

Where  $L_{eq}$  = Equivalent sound level

$n$  = Number of occurrences

$\tau$  = Duration (seconds)

$T$  = Total time (seconds)

$L_{max}$  = Maximum level of each occurrence

(2) By means of actually selecting a segment of the noise source from the GLR chart, and locating the same segment on the magnetic tape, and running it through the General Radio Real-Time Analyzer (RTA) #'s 1921 & 1925 and the Wang 600 Series Programmable Computer, we were able to obtain an  $L_{eq}$ . The results were as follows:

Source	Manual Calc.	Triangular Time Pattern	Wang
Engine	$\frac{L_{10}}{77}$	$\frac{L_{eq}}{76}$	$\frac{L_{eq}}{78}$
*Knuckle	80	77	81

\*See Table 3

The proximity of the preceding calculations verifies the validity of Eq. 1.

An  $L_{eq}$  for day and night was calculated from the  $\sum L_{10}$  levels using the following equation. (See Tables 1-4 for  $L_{10}$  levels).

$$\left. \begin{matrix} L_{eqd} \\ L_{eqn} \end{matrix} \right\} = 10 \log \frac{1}{T} \left[ \sum_{i=1}^n \Delta t_i \left( 10^{L_{eqi}/10} \right) \right] \quad (\text{EQ. 3})$$

Where  $L_{eqd}$  =  $L_{eq}$  for daytime hours 7:00 AM - 10:00 PM  
 $L_{eqn}$  =  $L_{eq}$  for nighttime hours 10:00 PM - 7:00 AM  
 $L_{eqi}$  =  $L_{eq}$  for  $i$  th R/R operation  
 $*T$  = Total duration in hours (1) Daytime = 11 Hrs. (2) Nighttime = 9 Hrs.  
 $n$  = Number of occurrences  
 $*\Delta t_i$  = Duration (Hrs.) of  $i$  th R/R operation

\*The total duration does not necessarily equal the duration of  $i$  th R/R operation  
 i.e.  $T \neq \Delta t_i$

The results of the above calculations were:

Noise Source	$L_{eqd}$	$L_{eqn}$
Engine	74.16	71.25
*Knuckle	64.45	59.99

The magnetic tape was also analyzed for an  $L_{eqd}$  and an  $L_{eqn}$ . This was done by feeding the information on the tape through the RTA and the Wang. The results were:

Noise Source	$L_{eqd}$	$L_{eqn}$
Total Community Noise	70.64	65.90

From the  $L_{eq}$  figures obtained, it was possible to calculate an  $L_{dn}$  using this equation

$$L_{dn} = 10 \log \frac{1}{24} \left[ 15 \left( 10^{L_{eqd}/10} \right) + 9 \left( 10^{L_{eqn}/10} \right) \right] \quad (\text{EQ. 4})$$

These results were as follows

Noise Source	$L_{dn}$
Engine	78.21
Knuckle	67.39
Total Community Noise	73.39

Refer to Table 5 for compilation of data results. The % distribution of occurrences was determined from the data fed into the Wang (see graphs 1 and 2).

### 3. Summary

An  $L_{dn}$  may be calculated from a 24-hour sampling of noise. The survey was only conducted 20 hours due to inclement weather. The remaining 4 hours were from daytime hours. Since several members of the IEPA-DNPC were present during two (2) of the four (4) hours loss, and by use of their audiovisual skills, it was determined that the switchyard continued operations as usual in the rain. We therefore took the 11 recorded daytime hours as representative of the required 15 hours.

The results from both methods of analysis showed that the main contributor to the  $L_{dn}$  was the switchyard. (See Table 5). The  $L_{dn}$  varies between 73-78 dB for the noise from only the switchyard and that from the entire community.

It appears that the data collected is conclusive of the sound levels emitted by the switchyard during a 24-hour period.

### References.

1. Eldred, Kenneth M., "Assessment of Community Noise". Noise Control Engineer, Volume 3, No. 2, 1974, pp. 88-95.
2. Survey report graphic level recorder data accumulated on April 17 & 18, 1975.
3. Task group #3 report.
4. Survey report, April 17 & 18, 1975.
5. Ibid.
6. Ibid.



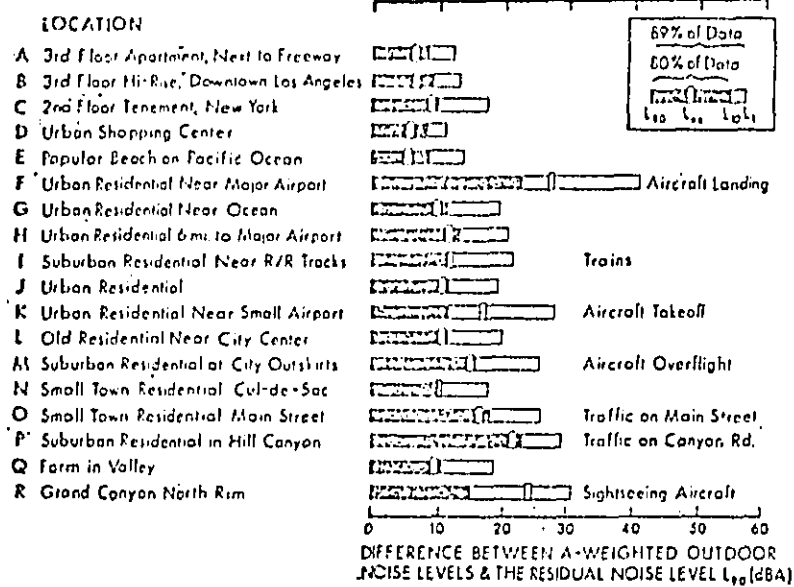


Figure 1 — Relative Daytime Outdoor Noise Levels of 18 Locations Whose Environments Range between Wilderness and Inner-City (Significant Intruding Single Event Noise Sources Noted)

Data are arithmetic averages of hourly values in daytime period (7:00 A.M. to 7:00 P.M.) of the levels exceeded 10 percent ( $L_{10}$ ) and 1 percent of the time ( $L_1$  and the energy average ( $L_{eq}$ ). All are relative to residual noise level ( $L_{90}$ ).

Figure 1 Reference. "Assessment of Community Noise", Kenneth M. Eldred

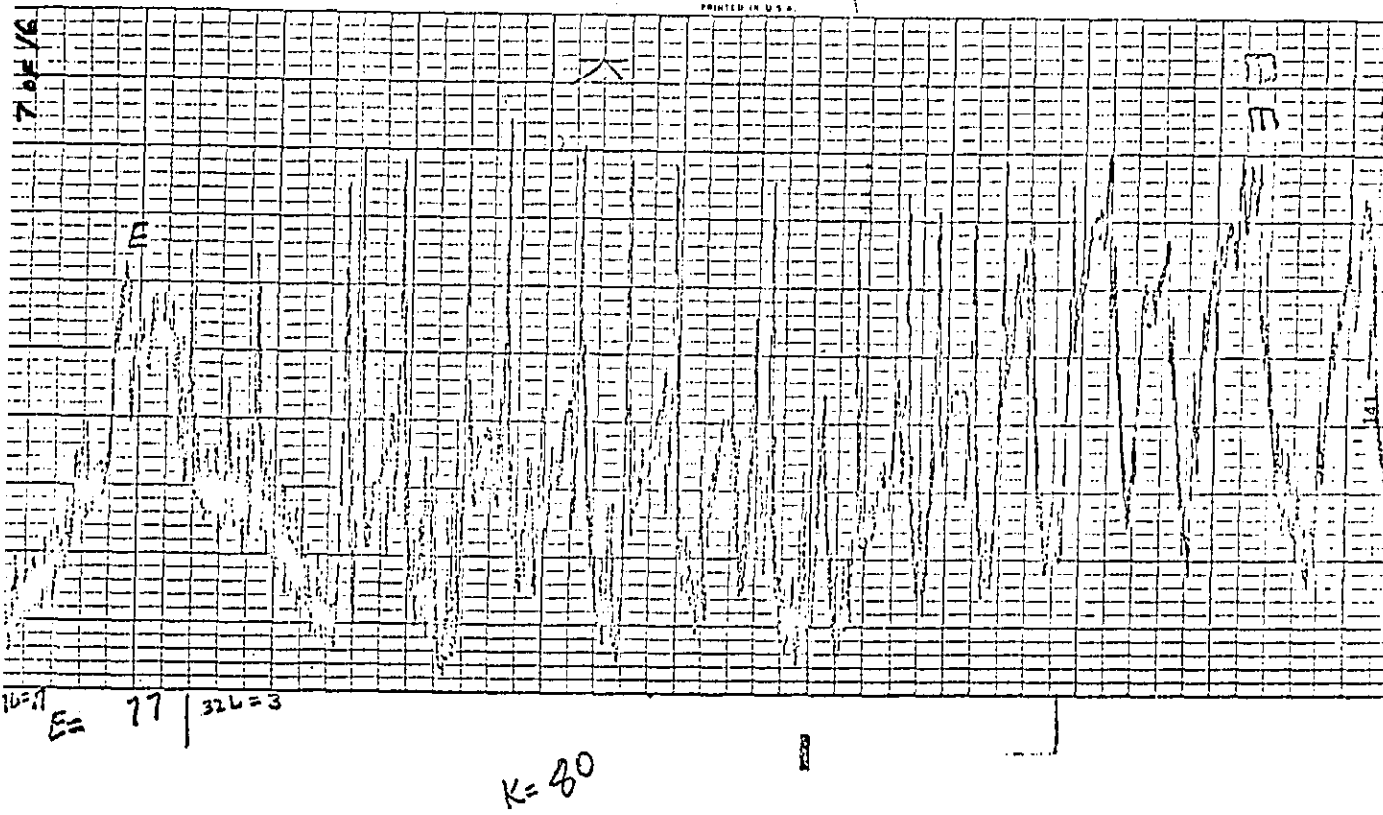


Figure 2. A portion of the GLR chart showing the "engine" and "knuckle" noise.

- Note: numbers represent the following:
- 49 - Base recording level;
  - 99 - Peak recording level;
  - 7L - % of horizontal lines used by particular noise source;
  - .7 - 10% value for the particular noise source;
  - 77 - dB level that is exceeded 10% of the time i.e. L10

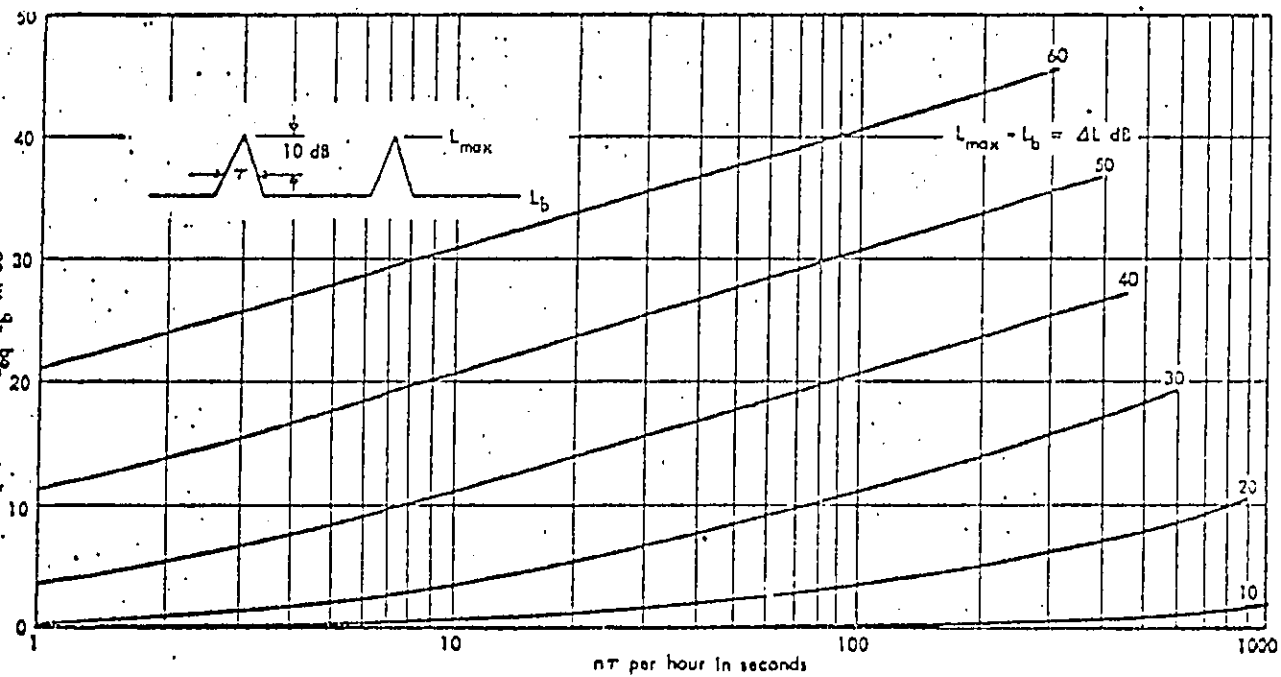
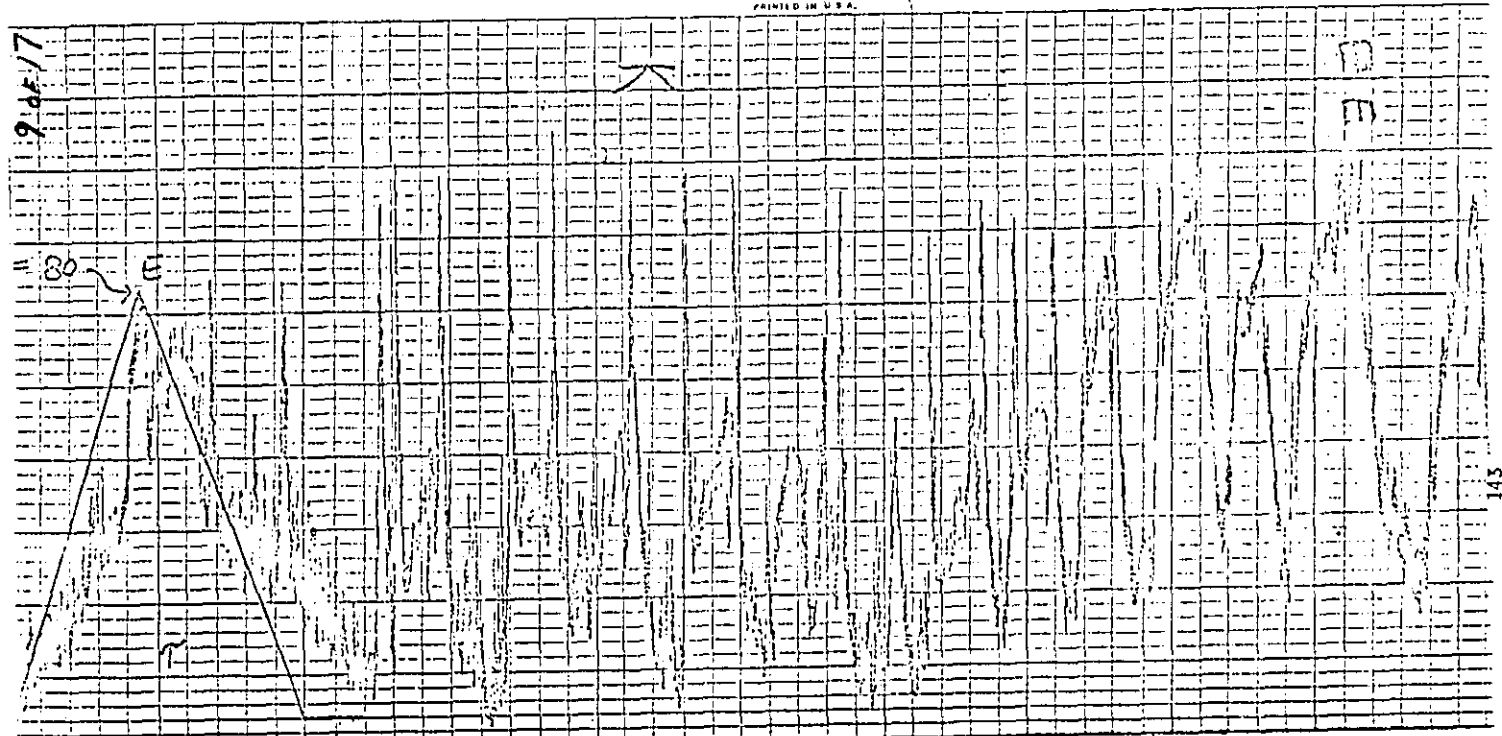


Figure 3  $L_{eq}$  for a Repeated Series of  $n$  Triangular Signals Overlaid on a Background Level of  $L_b$  dB and  $\tau$  = Duration at  $(L_{max} - 10)$  dB in Seconds  
 (REF: Task Group #3 Report and equation 2 )

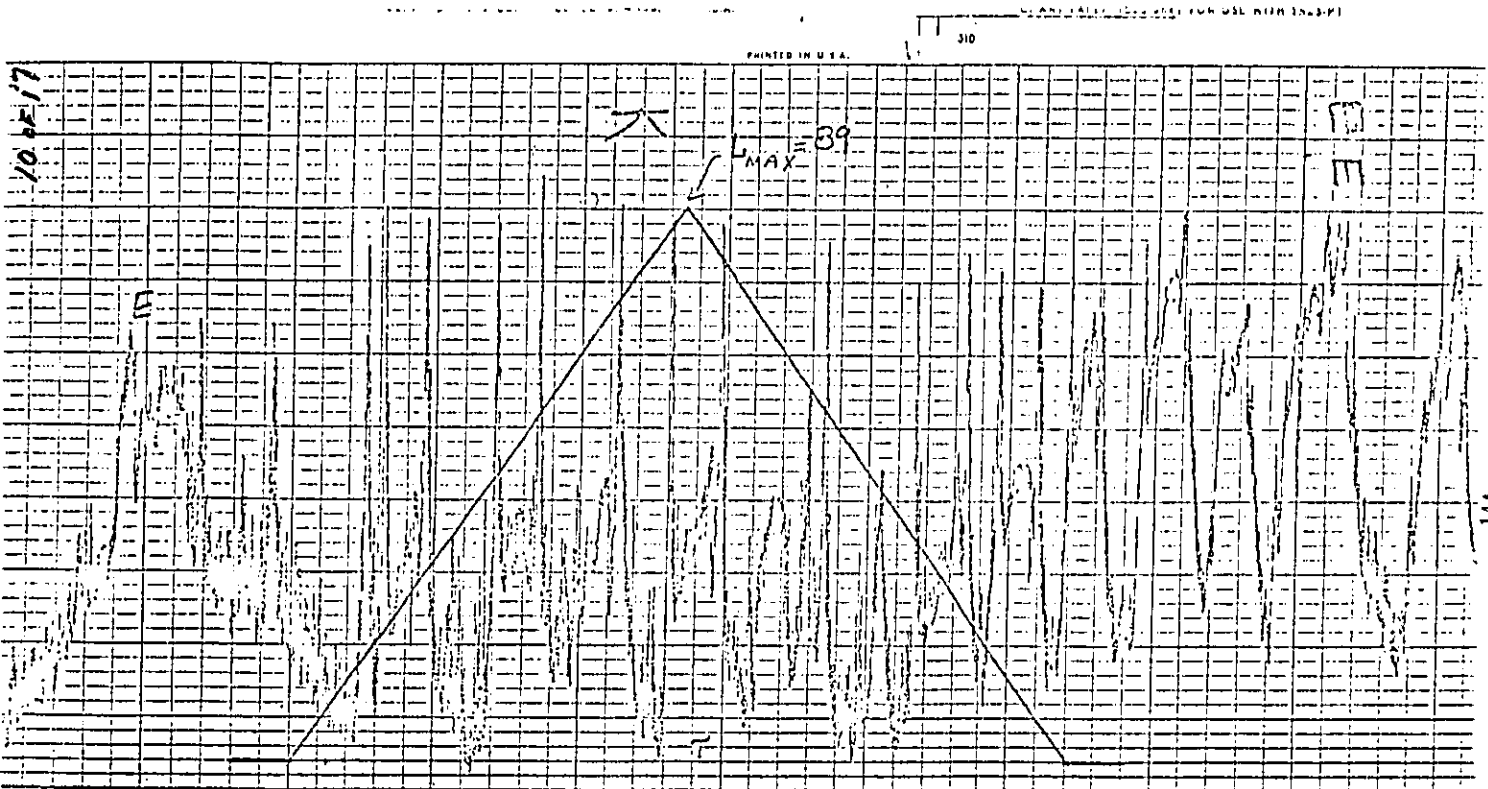


9.45/7

$E = 77$  |  $32b = 3$

$K = 80$

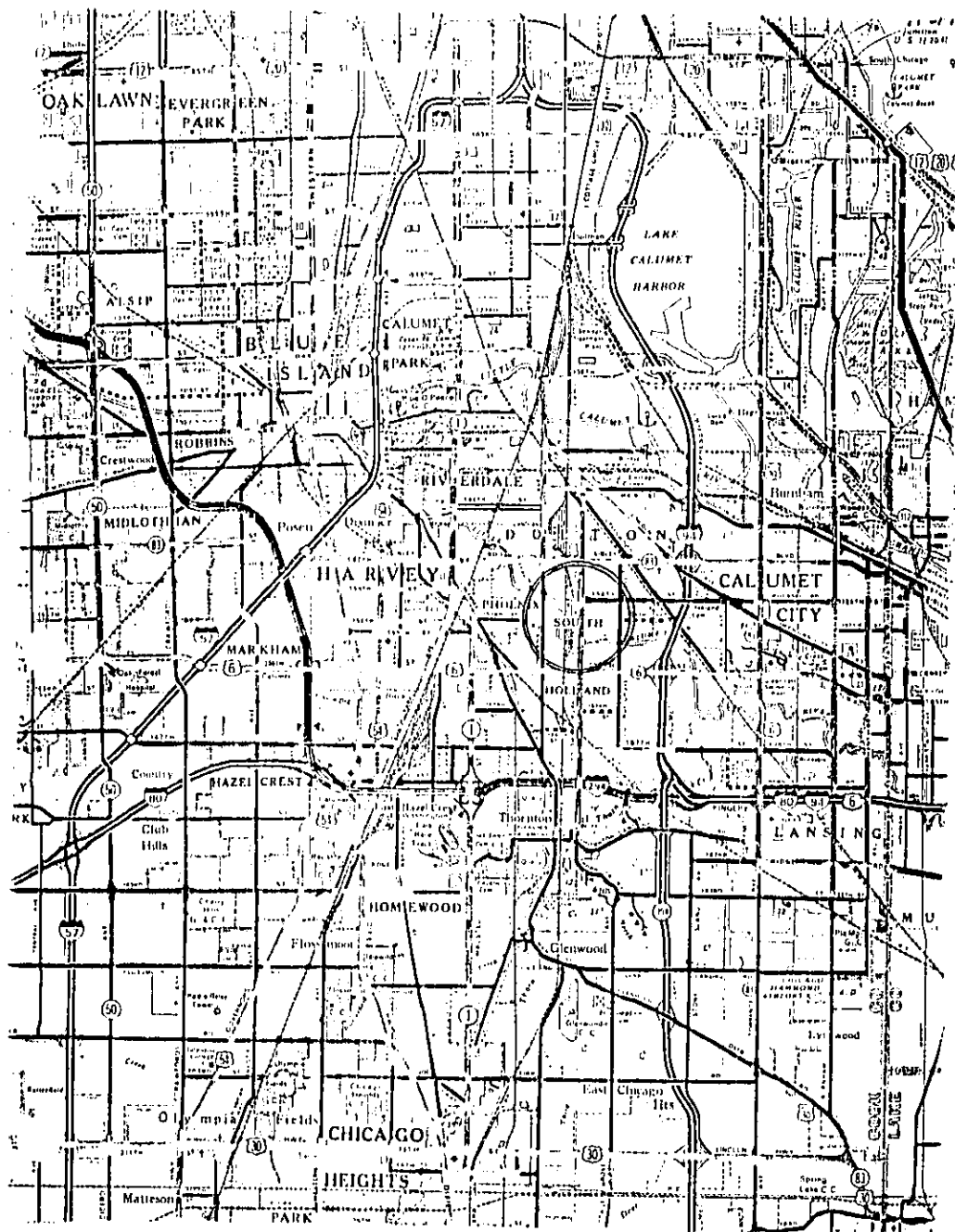
Figure 4. Triangular method of determining  $L_{eq}$  for engine noise.  
 $L_{eq} = 76.33$



$E = 77$  |  $32L = 3$

$K = 80$

Figure 5. Triangular method of determining  $L_{eq}$  and noise.  
 $L_{eq} = 77.33$



12.08.17

NO SCALE

LEGEND

BRIDGE

RESIDENTIAL AREA

159TH PL

DRIVE WAY  
RESERVE TO GARAGE

ECELE

GARAGE

15934

15868

WOODLAWN AVE.

75'

HANEY SWITCHYARD  
C&E1 RR

CONTROL TOWER

CALUMET RIVER TRIBUTARY

RESIDENTIAL AREA

RESIDENTIAL AREA

TABLE I:  $L_{10}$  LEVELS (dB) AND TIME DURATION (SECONDS) OF ENGINE NOISE DURING DAYTIME HOURS 7 AM - 10 PM

Column 1		Column 2		Column 3	
$L_{10}$	$\Delta t_i$	$L_{10}$	$\Delta t_i$	$L_{10}$	$\Delta t_i$
79	324	75	16	81	156
73	312	78	24	70	84
77	84	81	120	80	20
83	672	78	60	87	36
76	312	86	24	83	216
78	288	84	240	65	75
76	816	86	20	70	96
65	318	82	468	65	55
73	240	72	144	77	36
70	48	71	300	80	396
68	65	78	360	72	108
70	180	77	144	72	1260
62	24	68	600	84	120
77	131	79	276	81	406
76	96	82	90	75	180
76	264	89	60	83	912
68	468	76	144		
84	24	76	1080		
				Total $L_{10}$ = 79.00	
				Total $\Delta t_i$ = 3.6088 Hours	



TABLE 2: L<sub>10</sub> LEVELS (dB) AND TIME DURATION (SECONDS) OF  
ENGINE NOISE DURING NIGHTTIME HOURS 10 PM - 7 AM

L <sub>10</sub>	Δt <sub>i</sub>
80	756
75	1200
81	228
69	96
70	85
64	63
62	68
69	59
76	92
77	768
77	240
78	1008
81	564
63	528
71	264
63	216
80	804
60	300
69	132
75	389

Total L<sub>10</sub> = 77.40  
Total Δt<sub>i</sub> = 2,1833 Hours

TABLE 3: L<sub>10</sub> LEVELS (dB) AND TIME DURATION (SECONDS) OF  
 \*"KNUCKLE NOISE" DURING DAYTIME HOURS 7 AM - 10 PM

Column 1		Column 2	
L <sub>10</sub>	Δt <sub>i</sub>	L <sub>10</sub>	Δt <sub>i</sub>
80	384	64	384
71	4	69	24
80	8	84	30
80	17	84	72
76	12	75	12
71	16	74	72
71	24	83	24
79	12	69	30
93	8	74	69
82	60	62	40
89	5	71	168
73	12		

Total L<sub>10</sub> = 78.70  
 Total Δt<sub>i</sub> = .4130

\*Collision of Freight Cars Due  
 to Stopping and Starting of the  
 Engine

TABLE 4:  $L_{10}$  LEVELS (dB) AND TIME DURATION (SECONDS) OF  
\* "KNUCLE NOISE" DURING NIGHTTIME HOURS 10 PM - 7 AM

<u><math>L_{10}</math></u>	<u><math>\Delta t_i</math></u>
84	26
77	156
72	48
80	12
74	480
80	30
68	156

\*See Table 3

Total  $L_{10} = 75.51$   
Total  $\Delta t_i = .2522$

TABLE 5: RESULTS OF CALCULATIONS

NOISE SOURCE	Leq <sub>D</sub>	Leq <sub>N</sub>	L <sub>DN</sub>
ENGINE (GLR CHART)	74.16	71.25	78.21
*KNUCKLE (GLR CHART)	64.45	59.99	67.39
TOTAL NOISE IN COMMUNITY (RTA & WANG ANALYSIS)	70.64	65.90	73.39

\*See Table 3

Exhibit "A2"  
(One-Hour Leq Calculation at Haney Switchyard)

To determine one-hour Leq values a manual calculation was performed from the strip chart time history. An Leq was obtained for each event during the 6 busiest hours of the total 20 hour strip chart. If the event was triangular-shaped, then equation (1) was used to obtain the Leq.

$$\text{Leq}(i) = L_{\max} - 10 \log (.23\Delta L) \quad (1)$$

where:

$$\Delta L = L_{\max} - L_b$$

$L_{\max}$  = Maximum A-weighted sound level of the event

$L_b$  = Ambient A-weighted sound level

$i$  = the  $i$ -th event

If the event was impulsive or steady, then equation (2) was used to obtain the Leq.

$$\text{Leq}(i) = L_{\max} + 10 \log x \quad (2)$$

where:

$x$  = percent of time for the event out of one hour

All events were summed into an hourly Leq(h) by equation (3)

$$\text{Leq}(h) = 10 \log 1/T \left( \sum t_i (10)^{\text{Leq}(i)/10} \right) \quad (3)$$

where:

$T$  = 3600 seconds

$t_i$  = the time of the  $i$ -th event in seconds at 10 dB down from  $L_{\max}$ .

Using the given equations (1), (2) and (3) the following one-hour Leq's were determined: 68.29, 71.54, 68.33, 68.24, 67.17 and 66.56. It should be noted that the individual events (Leq  $i$ ) occurred at various distances from the microphone position. The range of source to receiver distance was about 75-1300 feet.

JP:nk/sp7445A/1-9

BARRIL 2 OF 4

8" CORRUGATED  
TRANSITE

6' ±

ALL WOOD CONST.

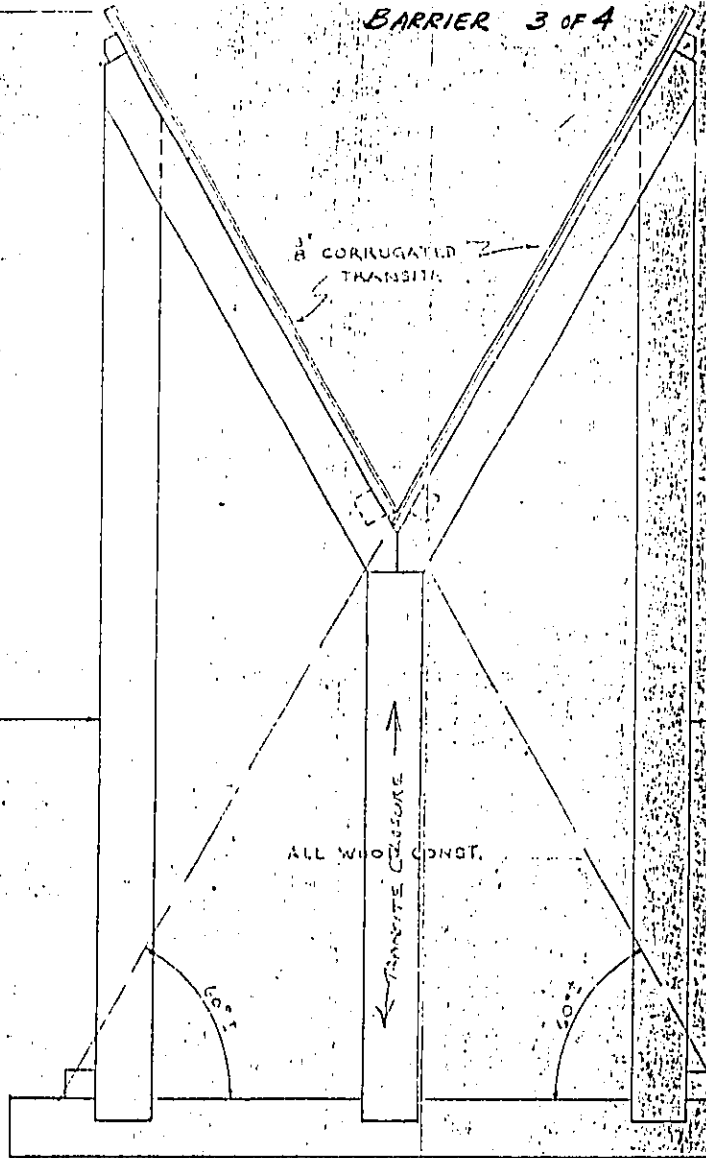
6' ±

NORTH OF 6' BEFORE ENTERING RETARDER



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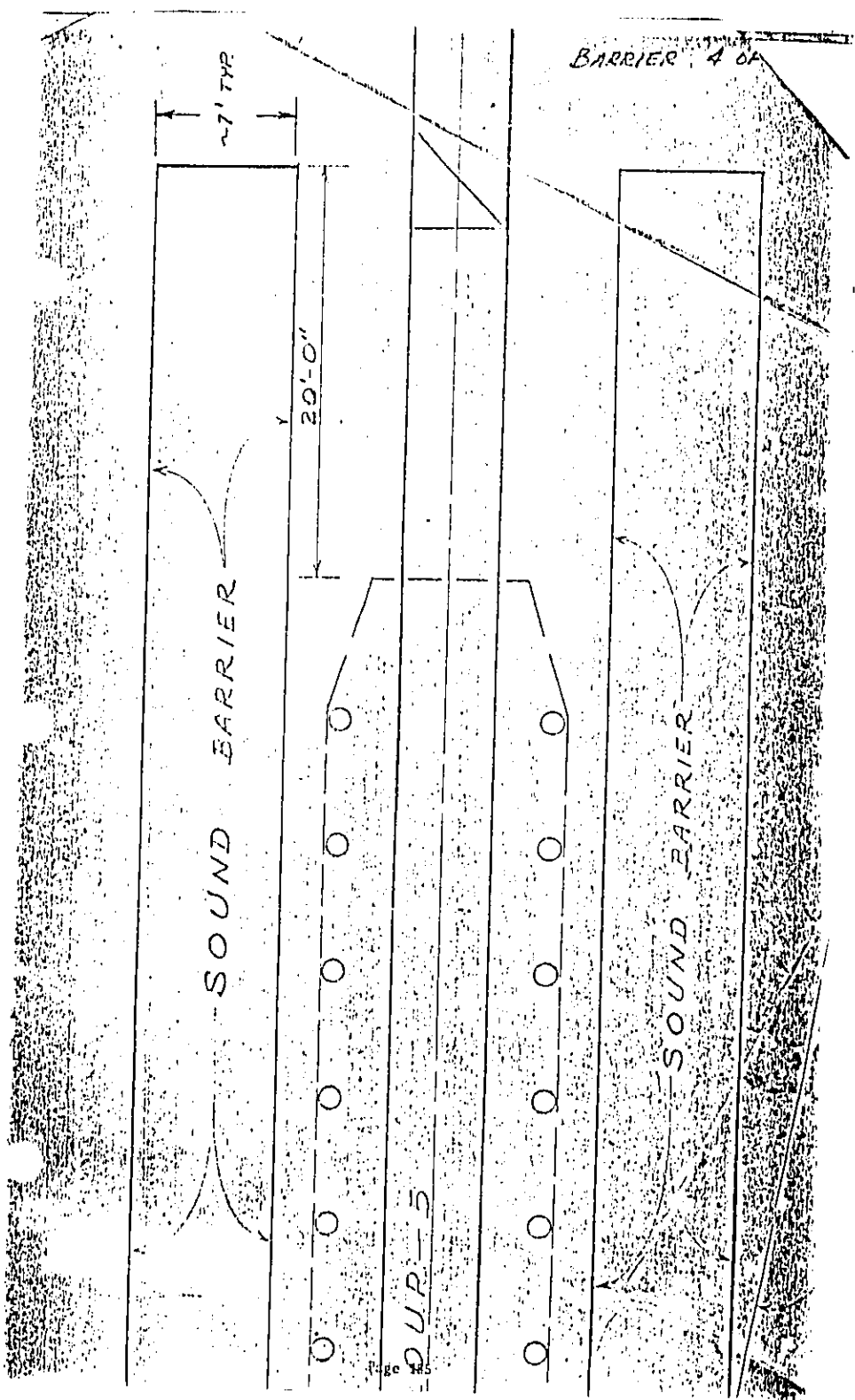
BARRIER 3 OF 4



SECTION WHERE BARRIERS MERGE ACCOUNT OF TRACK

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Page 45



QUESTIONS 1 OF 2

2-26-75

EXHIBIT 'C' CONT.

Questions Directed to Officials  
of the Terminal Railroad Association  
of St. Louis

1. Q: How many retarders are in the Venice yard?  
1. A: 37
2. Q: How many are inert, group, and master retarders?  
2. A: 32 inert, 4 group, (one more to be added shortly), 1 master.
3. Q: How many cars are humped in a 24-hour period, specifically how many of these are during the day and how many at night?  
3. A: 1,200 - 1,500 in 24 hours, 600 - 750 day, 600 - 750 night, up to 2,000/24 hours planned for the future.
4. Q: Does use of the retarders vary from day to day, month to month, season to season, if so, how much?  
4. A: No variation
5. Q: What is the peak month for use of the retarders? Peak season?  
5. A: None.
6. Q: Are the active retarders controlled by a human operator or an electronic computer?  
6. A: It is controlled by human operator. No electronic computer used.
7. Q: Has any attempt been made to determine the percent of cars screeching in retarders?  
7. A: yes 5 - 20%
8. Q: What is the number of retarders each car must pass through?  
8. A: 2
9. Q: What is the length of a retarder, are they all the same length, if not, what are the various lengths?  
9. A: Master, 80 feet, Group, 72 feet.
10. Q: How long and how high is the initial trial barrier?  
10. A: Retarder length - 12 feet long, 7 feet high. FINAL BARRIER 12' HIGH
11. Q: Of what material is the barrier to be made of, and who is the manufacturer?  
11. A: 3/8" transite (asbestos concrete) material, U. S. Gypsum manufacturer.
12. Q: Estimated cost per linear foot?  
A: Unknown. FINAL COST ~ \$51.37
13. Q: Estimated cost for all retarders in yard?  
A: Unknown. FINAL COST ~ \$60,000.00

QUESTIONS 2 OF 2

14-100  
2/26/75  
Page 2

14. Q: Estimated down time and cost of down time?  
14. A: No down time, all prefabricated.
15. Q: How wide is the widest car run through the retarders, and how high is the highest?  
15. A: 12' 3" feet wide, 19' 1" feet high (21' 6" restriction in Illinois).
16. Q: What is the distance between each of the group retarders?  
16. A: 30' minimum, 13' between inert retarders.
17. Q: Could the railroad supply us with an accurate map of the Venice yard?  
17. A: yes.
18. Q: How old is present operation?  
18. A: Began August, '74.
19. Q: Is it operated pneumatically?  
19. A: Yes.
20. Q: What is the maximum allowable car weight and what is the optimum coupling speed for rail cars?  
20. A: 160 tons and 4.5 m.p.h.

State of Illinois  
Environmental Protection Agency

MEASUREMENT PROCEDURES FOR THE  
ENFORCEMENT OF PART 3 OF CHAPTER 8  
OF THE ILLINOIS POLLUTION CONTROL  
BOARD RULES AND REGULATIONS (SOUND  
EMISSION STANDARDS AND LIMITATIONS  
FOR MOTOR VEHICLES)

Adopted: DECEMBER 20, 1977



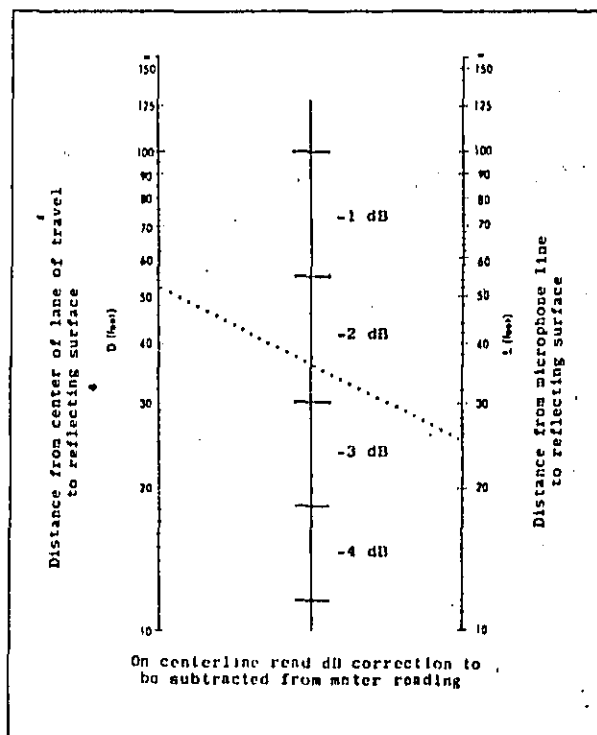


Figure 3: Nomograph to Determine Corrections For Reflective Surfaces

State of Illinois  
Environmental Protection Agency

MEASUREMENT TECHNIQUES  
FOR ENFORCEMENT OF  
NOISE POLLUTION CONTROL  
REGULATIONS

SEPTEMBER  
1973



DIVISION OF NOISE POLLUTION CONTROL  
INTERNAL REPORT NUMBER 1

"Measurement Techniques for Enforcement of  
Noise Pollution Control Regulations"

1.0 General

- 1.1 This Report, pursuant to Rule 103, Chapter 8, of the Noise Pollution Control Regulations, establishes the measurement techniques to be used by the Agency in determining compliance with the rules governing the emission of sound from property-line-noise-sources. It is recommended that persons making noise measurements employ the measurement techniques used by the Agency. The procedures and instrumentation specified herein do not establish limits on sound.
- 1.2 The procedures and instrumentation specified herein provide the methodology necessary to establish compliance with the rules governing the emission of sound from property-line-noise-sources.
- 1.3 ANSI Standards 1.4 - 1971, 1.11 - 1966 and 1.13 - 1971 listed in Rule 103, Chapter 8 of the Noise Regulations refer to specific sound measurement techniques and data gathering equipment. The sections of ANSI 1.4 - 1971, 1.11 - 1966 and 1.13 - 1971 applicable to this report are those dealing only with outdoor sound measurements (Field Method). No indoor measurements will be recorded for the purposes of determining compliance with Part 2, Chapter 8.
- 1.4 The remaining ANSI Standards referred to in Chapter 8, Rule 103, contain definitions, terminology or other acoustic data not directly related to measurement techniques but, nevertheless, of technical interest to those persons who may perform sound level measurement.

2.0 Personnel Qualifications

- 2.1 Personnel conducting sound measurements shall have been trained and experienced in the current techniques and principles of sound measurement and in the selection and operation of sound measuring instrumentation.

3.0 Instrumentation

- 3.1 A sound level meter and octave band and one-third octave band filter set shall be used for the acquisition of data. These instruments shall conform with the following standards or their later revisions:
  - a) American National Standards Institute (ANSI) S1.4 - 1971 Specification for Sound Level Meters, Type 1 precision sound level meter.
  - b) American National Standards Institute (ANSI) S1.11 - 1966 Specifications for Octave, One-Half Octave and One-Third Octave Band Filter Sets.
  - c) American National Standards Institute (ANSI) S1.6 - 1967 Preferred Frequencies and Band Numbers for Acoustical Measurements.
  - d) American National Standards Institute (ANSI) S1.8 - 1969 Preferred Reference Quantities for Acoustical Levels.

If a magnetic tape recorder or a graphic level recorder or other indicating device is used, the system shall meet the requirements of:

- a) Society of Automotive Engineers (SAE) Recommended Practice J184 Qualifying a Sound Data Acquisition System.

- 3.2 An anemometer and compass or other suitable devices shall be used to measure wind speed and direction in accordance with the manufacturer's recommended limits.
- 3.3 A thermometer suitable for measurement of ambient temperature shall be used in accordance with the manufacturer's recommended limits.
- 3.4 An hygrometer suitable for the measurement of relative humidity shall be used in accordance with the manufacturer's recommended limits.
- 3.5 A barometer suitable for the measurement of barometric pressure shall be used in accordance with the manufacturer's recommended limits.

**4.0 Instrumentation Setup**

- 4.1 Instruments shall be set up to conform to ANSI S1.13 - 1971 Methods for the Measurement of Sound Pressure Level (Field Method), with the following additions:
  - a) Connect microphone to the sound level meter with a manufacturer's specified (10 foot minimum) extension cable.
  - b) Attach an appropriate wind screen to the microphone.

**5.0 Data Acquisition and Operation**

- 5.1 Following manufacturer's instructions and with the instrumentation set up as described in 4.0, the following steps will be taken to acquire and record the data:
  - a) Check condition of power supply prior to recording of data.
  - b) Calibrate the instrumentation set up with an acoustic calibrator prior to recording data.
  - c) Set meter to "fast" response and "A-weighting" network, or connect to external filter whenever octave or one-third octave analysis is being made. (Note: "Slow" response may be used if necessary to stabilize the meter needle. If "slow" response is used it shall be so noted in the data record.)
  - d) Record all pertinent atmospheric conditions, i.e., wind speed and direction, temperature, relative humidity, barometric pressure, and general weather conditions.
  - e) Record instruments used (manufacturer, model and kit number).
  - f) Record location of sound source of interest and sound measuring microphone locations relative to the sound source, and any unusual microphone positions.
  - g) Calibrate the instrumentation setup with an acoustic calibrator following the recording of data.
  - h) Check the power supply following the recording of data.

**6.0 General Conditions**

- 6.1 While measurements are being recorded, constant visual surveillance of extraneous sound sources should be made to insure that the measurements are of the sound being investigated.
- 6.2 If operator or instrument positions other than those specified in ANSI S1.13 - 1971 (Field Method) are employed, the reason and description shall be described in the recording of data.

**7.0 Impulsive Sound**

- 7.1 Impulsive sound shall be measured on the "A-weighted" scale with the meter set to "fast" response.

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

7-10-79

Subject YARD DATA SITE 'B'

**TABLE 1**

Data JB(A)

Reviewed by JOHN PAWLUSKIS

Date MAY 15, 1979

(MASTER RETARDER)

	<u>Raw Data</u>	<u>CORRECTIONS</u>				<u>RESULTS</u>	
	<u>L (MAX) @ 50'</u>	<u>WINDSCREEN</u>	<u>REFLECT. SURF.</u>	<u>METAL AREA</u>	<u>CALIB.</u>	<u>BARRIER INSERT LOSS</u>	<u>NORMALIZED TO 100'</u>
	86	-0.5	-1	0	0	+2	80
*	< 70						64
	75						69
	82						76
	83						77
	80						74
	82						76
	85						79
	81						75
	78						72
	86	-0.5		0	0		80
	91	0		+1.0	-2.0		85
	86	-0.5		0	0		80
	80						74
*	< 70						64
	77						71
	79						73
	78						72
	82						76
	74						68
*	< 70						64
	77						71
	73						67
	73						67
*	< 70						64
	72						66
	84						78
	75						69
	75						69
	86						80
	82						76
	87						81

\* ASSUMED TO BE 70 FOR ANALYSIS PURPOSES



STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

Subject YARD DATA SITE B'

# TABLE 2

Date 4B(1)

Reviewed by JOHN PAULAVSKIS

Date MAY 8, 1979

(MASTER RETARDER)

	<u>RAW DATA</u>	<u>CORRECTIONS</u>			<u>RESULTS</u>	
	<u>L (MAX) @ 50'</u>	<u>WINDSCREEN</u>	<u>REFLECT. SURF.</u>	<u>BARRIER INSERT LOSS</u>	<u>NORMALIZED TO 100'</u>	
	79	-0.5	-1	+2	73	
*	< 70				64	
	85				79	
	85				79	
**	> 90				87	
	79				73	
*	< 70				64	
	77				71	
	80				74	
	73				67	
	82				76	
	76				70	
	73				67	
	81				75	
	79				73	
	80				74	
	78				72	
	76				70	
	75				69	
	79				73	
	85				79	

\* ASSUMED TO BE 70 }  
 \*\* ASSUMED TO BE 93 } FOR ANALYSIS PURPOSES

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

Subject YARD DATA SITE 'A'  
Data dB @ 2000 HZ OCTAVE BAND  
Reviewed by JOHN A. PAULASKIS

**TABLE 3**

Date DECEMBER 19, 1975  
(-F1) GROUP RETARDED

RAW DATA L (MAX) @ 65'	CORRECTIONS				A-WTG	RESULT NORM TO 100'
	WINDSCREEN	REFLECT. SURF.	CALIB.	BARRIER INSERT LOSS		
76	0	-1	+1.5	+1	+1	74
* <70						68
* <70						68
78						76
78						76
76						74
84						82
80						78
80						78
73						71
78						75
84						82
86						84
72						70
80	0	-1	+1.5	+1	+1	78

\* ASSUMED TO BE 70 FOR ANALYSIS PURPOSES

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 3**

Subject YARD DATA SITE 'A'  
 Date DB @ 2000 Hz OCTAVE BAND  
 Reviewed by JOHN A. PAULASKIS Date JUNE 30, 1976  
 (#1 GROUP RETARDER)

RAW DATA L(MAX) @ 65'	CORRECTIONS				RESULTS	
	LANDSCAPE	REFLECT. SURF.	CALIB.	BARRIER INSERT LOSS	A-WTG.	NOISE TO 100
75	0	-1	0	+1	+1	72
70						67
67						64
80						77
70						67
* 80+						80
70						67
64						61
67						64
76						72
77						74
* 80+						80
80						77
* 80+						80
81						77
67						64
69						67
76						72
85						77
80	0	-1	0	+1	+1	77

\* ASSUMED TO BE 85 FOR ANALYSIS PURPOSES

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

TABLE 4

Subject LEA — FROM YARD DATA AT SITES 'A' & 'B'

Data ENERGY AVERAGE (LEA)

Reviewed by JOHN PAWLUSKIS Date DEC. 19, 1975  
MAY 8, 15, 1979

(1)  $LEA = 10 \log_{10} \frac{1}{n} \sum_{i=1}^{n} L(\text{MAX})_i / 10$

(2)  $LEA_{10} = 10 \log_{10} \frac{1}{n} \sum_{i=1}^{n} L(\text{MAX})_{i10} / 10$

LEA = ENERGY AVERAGE OF ALL L(MAX)

n = NUMBER OF L(MAX)'S

L(MAX) = dB(A) LEVELS AT 100 FEET

i = LTH dB(A) LEVEL

i<sub>10</sub> = LTH dB(A) LEVEL WITHIN 10dB(A) OF THE MAXIMUM dB(A) LEVEL

LEA<sub>10</sub> = ENERGY AVERAGE OF L(MAX)'S WITHIN 10 dB(A) OF THE MAXIMUM dB(A) LEVEL

	JUNE 30, 1976 #1 GROUP	MAY 15, 1979 MASTER	MAY 8, 1979 MASTER	DEC. 19, 1975 #1 GROUP
LEA	78 (n=20)	76 (n=32)	77 (n=21)	78 (n=15)
LEA <sub>10</sub>	(n<10)	79 (n=14)	(n<10)	79 (n=11)
LEA (TOTAL MASTER) = 77 5-15-79 & 5-8-79 (n=53)		LEA (TOTAL #1 GROUP) = 78 6-30-76 & 12-19-75 (n=35)		
LEA (TOTAL ALL 4 DAYS) = 77 (n = 88)		LEA <sub>10</sub> (TOTAL ALL 4 DAYS) = 81 (n = 79)		

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 5**

Subject YARD DATA SITE 'C' (NO BARRIERS ON  
Date DB @ 2000 Hz OCTAVE BAND, GROUP RETARDERS  
Reviewed by JOHN PAULAVSKIS Date 2 THROUGH 5)

DECEMBER 19, 1975

GROUP RETARDER #	5	4	3	2	1
	90	100+	-	79	<70
L(max)	108			90	<70
(RAW DATA)	110+				72
					68
					70
					75
					73
					<60
					<60
					62
					64

SITE 'A'

85	72	75	76
84	<70	88	76
90+	83	<70	79
85	72	84	80
90	90+	73	80
86	<70		82
<70	<70		81
86	90		<70
74	90		86
90	90+		90
75	80		74
86	71		78
<70	79		77
87	<70		85
85	72		81
90	89		84
72	84		
80	87		
90	<70		

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 6**

Subject YARD DATA SITE 'A' (BARRIERS ON ALL RETARDER.  
Data 2000 H<sub>2</sub>OCTAVE SAND  
Reviewed by JOHN PAVLASKIS Date JUNE 30, 1976

RETARDER #	1	2	3	4	5	MASTER
L(MAX) (RAW DATA)	80+	73	61	<60	<60	80+
	81	68	<60	63	<60	75
	67	68	64	<60	<60	70
	89	71	62	<70	<60	74
	76	78	<70	61	64	62
	85	<70	68	63	62	<60
	80	61	<70	62	61	77
	75	73	<60	<60	61	80+
	70	66	65	<60	63	<60
	67	<60	<60	<60		80
	80	73	<60			72
	70	64	<60			<60
	70	<60				68
	64	64				69
	67	66				71
	76	64				67
	77	65				67
	80+	71				80
	80	71				80+
	80+	72				80+
		69				70
		61				80+
		<60				80+
		64				63
		60				63
		61				66
		69				74
		72				77
		<60				69
		61				80+
		69				78
		71				75
		63				

STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY

TABLE 7 <sup>0 OF 10</sup>

Subject RESIDENTIAL DATA SITE 4 (NO BARRIERS)

Date 2000 HZ OCTAVE BAND

Reviewed by JOHN PAUL AUSKIS Date 11-12-74  
1-23-75

<u>RAW DATA</u>	<u>CORRECTIONS</u>	<u>RESULTS</u>
<u>L(MAX) @ 800'</u>	<u>A-WTG</u>	<u>NORMALIZED TO 1100' DB(A)</u>
74	+1	73
80	+1	79

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 8**

Subject RESIDENTIAL DATA SITE 1 (BARRIER ON #1 GRP)

Date 2000 Hz OCTAVE BAND

Reviewed by JOHN PALLAUSKIS

Date 12-6-75  
12-5-75  
12-19-75

ALL RETARDERS EXCEPT  
#1 GROUP RETARDER

#1 GROUP  
RETARDER

DATA CORRECTED FOR  
A-WTG., L<sub>MAX</sub> @ 1100'

RET. #	RET. #	RET. #	RET. #	RET. #	RET. #			
5	42	3	64	2	66	M	54	49
	74		68	M	59		59	47
	61		66		56		65	52
	62		69		52		46	42
	59		57		71		59	51
	59		71		61		59	48
5	62		65		56		51	49
4	64		59		45		59	46
	64		43		51		66	43
	45		57		50		59	<40
	65		68		46		60	<40
	72		59		61		46	<40
	56		66		46		52	<40
	62	3	61		53	Y	58	<40
	63	2	53		60	M	51	<40
	65		49		55	2	<40	<40
	50		46		46	3	<40	<40
	57		57		66	5	51	<40
	57		50		61	5	56	<40
	63		55		51	5	53	<40
	53		60		43	4	51	<40
	58		56		61		50	<40
Y	64		62		58		43	<40
4	66	Y	56	Y	55	Y	63	<40
3	56	2	59	M	57	4	63	<40

<40 INDICATES AUDIBILITY, BUT SOUND  
LEVEL AT OR BELOW AMBIENT

298-675

(197)



STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 8 con**

Subject RESIDENTIAL DATA SITE 1

Date 2000 Hz OCTAVE BAND

Reviewed by JOHN PAULGAUSKIS

Date 10-6-75

12-5-75

12-19-75

ALL RETARDERS EXCEPT  
#1 GROUP RETARDER

#1 GROUP  
RETARDER

DATA CORRECTED FOR  
A-WTG., L (MAX) @1100'

RET.#	RET#	RET#	RET#	RET#	RET#	RET#		
4	56	2	>50	5	52	4	57	<40
4	75	2	51		53		53	<40
4	71	M	>60		48		<40	<40
3	62		61		56		46	<40
	<40		61		53		<40	<40
	64		55		55		48	<40
	65		<40		<40		54	<40
	74		54		61		66	<40
	<40		53		56		61	<40
	73		<40		46		57	<40
	<40		66		<40	Y	56	<40
	61		58		56	4	58	<40
	71		58		<40	3	<40	<40
	67		53		59		63	<40
	68		54		<40		54	<40
	71		63	Y	<40		46	
	66		60	5	61		<40	
	53		65	4	54	Y	<40	
	64		56		<40	3	61	
	65		73		66	2	55	
	> 70		<40		46		54	
	59	Y	64		46		54	
Y	53	M	<40	Y	61	Y	54	
3	56	5	62	4	66	2	57	

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

# TABLE 8 CON

Subject RESIDENTIAL DATA SITE 1

Data 2000 Hz OCTAVE BAND

Reviewed by JOHN PAULAUSKIS

Date 10-6-75

12-5-75

12-19-75

ALL RETARDERS EXCEPT  
#1 GROUP RETARDER

#1 GROUP  
RETARDER

DATA CORRECTED FOR  
A-WTG. , L(MAX) @ 1100'

RET#	RET#
2	71
	59
	56
	58
	64
	56
	61
	47
	61
	53
	56
	56
	60
	51
	61
Y	46
2	61
M	<40
	<40
	46
	52
Y	56
M	46
	M 49
	51
	53
	48
	56
	51
	<40
	<40
	53
	59
	<40
	<40
	53
	59
	<40
	56
	<40
	54
	46
	46
	51
	58

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY

**TABLE 9**

Subject RESIDENTIAL DATA SITE 1 (BARRIERS ON ALL RETARDERS)  
 Date 2000 Hz OCTAVE BAND  
 Reviewed by JOHN PAULAUERIS Date 6-30-76

DATA CORRECTED FOR A-WTG.  
L(MAX) @ 1100'

RET. #		RET. #		RET. #	
M	46	5	46	2	45
	48	5	50		50
	44	5	57		52
	42	4	47		43
	50		46		45
	50		44	Y	49
	46		48	2	41
	49		43	1	43
	52		51		43
	50		50		49
	46		46		48
	49		47	Y	48
	43		51	1	43
	46		43		
	53		49		
	43		59		
	48		53		
	48		61		
	51		53		
Y	49	Y	46		
M	56	4	50		
5	51	3	43		
	48		44		
	51		47		
Y	50	Y	53		
5	57	3	43		
	56	2	45		

**TABLE 10**

Subject RESIDENTIAL DATA SITES 1, 2, 3, 5 (BARRIERS ON ALL RETARDERS)  
 Date 2000 Hz OCTAVE BAND  
 Reviewed by JOHN FAULAUSKIS Date 8-18-76

DATA CORRECTED FOR A-WTG.  
L(MAX) @ 1100', SITE 1

RET.#	RET.#	RET.#
M	4	1
<40	<40	<40
46	<40	<40
<40	41	<40
58	<40	<40
53	Y	52
<40	4	61
54	3	53
<40		52
60		<40
<40		<40
<40	Y	48
41	3	54
<40	2	41
<40		41
<40		43
56	Y	<40
49	2	56
<40	1	<40
<40		<40
61		<40
Y		58
M		58
5		57
48		59
<40		52
61		<40
43		55
Y	Y	<40
56	1	
<40		

RET.#
1
<40
<40
<40
<40

DATA CORRECTED FOR A-WTG.  
L(MAX) @ 650' (SITE 3) & 900'  
(SITE 5) ARE NORMALIZED  
TO 1100'. SITE 2 IS AT  
1100'.

SITE 2	SITE 3	SITE 5
57	57	48
57	60	48
53	57	51
65	59	51
64	58	
56	58	
	62	

TAPE RECORDED DATA



LOCATION OF SURVEY SITE

Site #2 - on walkway of apartment building at 9509 Burlington, 14 feet from sidewalk in front of building. This site is approximately 71 feet from the railroad siding.

DESCRIPTION OF NOISE SOURCE

Site #2 - At least four refrigerator cars with compressors operating.

Major Heary, J.  
Environmental Protection Specialist IV  
Regions I & II Field Operations Office

car

STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY  
 DIVISION OF NOISE POLLUTION CONTROL



NOISE SURVEY REPORT

REGULATORY VIOLATIONS INDICATED  
 FIELD OPERATIONS: RULES 102 & 202

DATE: May 11, 1977

COMPLAINANT: Ms. Helen Brenz COMPLAINT NO. 76-79

ADDRESS: 9421 Burlington CITY Brookfield ZIP 60513

NOISE SOURCE: Refrigerator cars parked on Burlington Northern siding track  
(SIIION CODE #4112 - CLASS "C" Land)

ADDRESS: nearby Congress Park Station, South Track

Equipment Used: Kit Nos. & Model 32 (General Radio 1933 Sound Analysis System)

Microphone Orientation: 70 ° Angle of Incidence

Atmospheric Conditions: Temperature 70 °F Wind Speed to 3 MPH

Wind Direction from southwest Rel. Humidity 38 % Bar. Press. 767 mm Hg.

Time: 11:18 (1 PM) Calibration: 114 dB BEFORE SURVEY 114 dB Time 11:20  
114 dB AFTER SURVEY 114 dB Time 11:35

Battery Check: BEFORE SURVEY (X) 114 dB Time 1:15  
 AFTER SURVEY (X) 114 dB Time 1:31

Survey Site No.	d B(A)	OCTAVE BAND SOUND PRESSURE LEVEL IN dB re 20µN/m <sup>2</sup>									Time Elapsed	
		31.5	63	125	250	500	1000	2000	4000	8000		
												to
ambient 1	46	61	60.5	54.5	43	41.5	40	32	22.5	14.5	11:22	11:33
												to
												to
												to
												to
3b	69	83	77	69	65.5	67	64	60.5	51.5	39.5	1:16	1:30
												to
												to
												to
												to

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter

Data Recorded By: Thomas Courtney Witnesses \_\_\_\_\_

EPA Personnel Conducting Survey: TC Thomas Courtney

LOCATION OF SURVEY SITES

Site #1 - 3 feet south of the city sidewalk and 22 feet east of front walk at 9509 Burlington Avenue.

Site #3 - at the intersection of the city walk and the front walk, at 4006 South Blanchan Avenue. A refrigerator car was parked about 50 feet away from the site, and elevated about 12 feet.

NOISE MEASURED AT SURVEY SITES

Site #1a - measured ambient sound pressure levels.

Site #3b - parked refrigerator cars operating on siding north of survey site.

10  
Thomas P. Courtney  
Environmental Protection Engineer I  
Regions I & II Field Operations Office

car



0 or 10

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF NOISE POLLUTION CONTROL



NOISE SURVEY REPORT

ALLEGED VIOLATIONS INDICATED  
BY FIELD OPERATIONS: Rule 102 & 202

DATE May 15, 1977

COMPLAINANT: Ms. Helen Brenz COMPLAINT NO. 76-79

ADDRESS: 9417 Burlington Avenue CITY Brookfield ZIP 60513

NOISE SOURCE: Refrigerator cars parked on Burlington Northern siding track  
(SOUND CODE #4112 - Class "C")

ADDRESS: nearby Congress Park Station, South Track

Equipment Used: Kit Nos. & Model 32 (General Radio 1933 Sound Analysis System)

Microphone Orientation: 70 Angle of Incidence

Atmospheric Conditions: Temperature 70 °F Wind Speed NEG1 MPH

Wind Direction from west Rel. Humidity 48 % Bar. Press. 761 mm Hg.

Time: 10:35 11 AM Calibration: BEFORE SURVEY 114 dB Time 10:35  
8:30 PM AFTER SURVEY 114 dB Time 11:30

Battery Check: BEFORE SURVEY K3 BEFORE SURVEY \_\_\_\_\_ dB Time \_\_\_\_\_  
AFTER SURVEY K3 AFTER SURVEY \_\_\_\_\_ dB Time \_\_\_\_\_

Survey Site No.	dBA	OCTAVE BAND SOUND PRESSURE LEVEL IN dB re 20µN/m <sup>2</sup>										Time Elapsed
		31.5	63	125	250	500	1000	2000	4000	8000		
												to
3a	66.5	73	77	69.5	60.5	65	64	59	50.5	40	10:36 to 10:42	
											to	
4b	46	64	61	58	48	43	40.5	35.5	26.5	16	10:54 to 11:17	
											to	
4c	61										to	
4d	70*		off scale								11:25 to	
4e	75										11:31 to	
4f	72										11:28 to	
4g	62										11:29 to	

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter

Data Recorded By: Tom Courtney Witnesses \_\_\_\_\_

TC  
Tom Courtney

EPA Personnel Conducting Survey: \_\_\_\_\_

NPC 4

LOCATION OF SURVEY SITES

Site #3 - at the intersection of the city walk and the front walk, at 4006 Blanchan Avenue. A refrigerator car was parked about 50 feet away from the site, and elevated about 12 feet.

Site #4 - at the city walks' intersection on the southeast corner of Deyo Avenue and Burlington Avenue, northwest of the house at 9421 Burlington Avenue. This site is about 60 feet from the railroad siding track.

NOISE MEASURED AT SURVEY SITES

Survey Site #3a - noise from parked refrigerator cars operating on siding north of survey site #3.

Survey Site #4b - measured ambient sound pressure levels.

Survey Sites #4c, 4d, 4e, 4f - noise from compressed air braking system being released (impulsive).

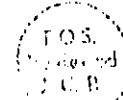
Survey Sites #4d, 4e, 4f - noise from railroad car coupling nearby survey site (impulsive).

*T. D.*  
Thomas D. Courtney  
Environmental Protection Engineer I  
Regions I & II Field Operations Office

car

STATE OF ILLINOIS  
Environmental Protection Agency  
Division of Noise Pollution Control

NOISE SURVEY REPORT  
Page 1 of 5



GENERAL INFORMATION SURVEY DATA

Date: February 2, 1979 Time: 11:35  AM  PM  
Complainant: Margaret Brock Complaint No.: 76-79  
Address: 3940 Deyo City: Brookfield, ILL. (GALLATIEN) Zip: 60513  
Noise Emitter: Burlington Northern Railroad (Siding)  
Address: Congress Park Siding City: Brookfield, Ill. Zip: 60513

Alleged Violation: Rule 102, 202

SLUCM Code: Noise Emitter #4112 - Class C Receiver #1100 - Class A

Equipment Used: Kit No.(s) 32 Model(s) GenRad 1933

Microphone Model: 1" Electret Condenser

Microphone Orientation: \_\_\_\_\_ ° Angle of Incidence

Microphone Height: 5 Feet above Ground Level

Atmospheric Conditions: Observed Weather Conditions: Partly Cloudy

Temperature: Before Survey 19 °F Wind Speed: Before Survey 5-8 MPH  
After Survey 19 °F After Survey 5-8 MPH

Rel. Humidity: Before Survey 47 % Wind Direction From: Before Survey South  
After Survey 47 % After Survey South

Bar. Press: Before Survey 762 mm Hg Windscreens Used   
After Survey 762 mm Hg

Field Calibration: Sound Level Meter Before Survey 111 dB Time 11:40  
After Survey 114 dB Time 12:06

Filter Set Before Survey \_\_\_\_\_ dB Time \_\_\_\_\_  
After Survey \_\_\_\_\_ dB Time \_\_\_\_\_

Other Before Survey \_\_\_\_\_ dB Time \_\_\_\_\_  
After Survey \_\_\_\_\_ dB Time \_\_\_\_\_

Battery Check: Calibrator Before Survey  Filter Set Before Survey   
After Survey  After Survey

Sound Level Meter Before Survey  Other Before Survey   
After Survey  After Survey

Recorded By: Ronald J. Koziol Witnesses \_\_\_\_\_

EPA Personnel Conducting Survey: Ronald J. Koziol; Charles J. Gruntman

STATE OF ILLINOIS  
Environment Protection Agency  
Division of Noise Pollution Control

NOISE SURVEY REPORT  
Page 2 of 5

SITE, LOCATION AND NOISE SOURCE DESCRIPTION

Date of Survey: Feb. 2, 1979 Complaint No. 76-79

Noise Emitter: Burlington Northern Railroad City: Brookfield, Ill.

Note: First No. of Site Denotes Location, Second No. of Site Denotes Sound Source.

Location of Survey Site(s):

Site # 5 - In the front yard of 3938 Deyo, Brookfield, Ill. This site is in a line even with the north wall of the apartment building and 21 feet east of the building.

Site # 6 - At the front (west side) of 3919 Madison, Brookfield, Ill.; at the intersection of the public sidewalk and front door walk.

Site #

Physical Description of Sound Source(s):

Site # 5a - Refrigerated railroad cars operating on Burlington Railroad siding.

Site # 6a - Neighborhood ambient sound pressure levels.

Site #

Approximate Distance(s) from Source(s) to Microphone Position(s):

Site # 5: 110 Site # 6: 2 Blks. Site # \_\_\_\_\_ Site # \_\_\_\_\_ Site # \_\_\_\_\_

Known Technical Description of Sound Source(s) (Make, Model, Serial #, etc.)

Audible Description of Sound Source:

Motor-like noise.

Description of Reflective Surfaces, Ground Surface and Natural Barriers:

Other Comments:

Prepared By: Ronald J. Koziol *RJ*

STATE OF ILLINOIS  
 Environmental Protection Agency  
 Division of Noise Pollution Control

NOISE SURVEY REPORT  
 Page 5 of 5

OCTAVE BAND SURVEY DATA

Date: Feb. 2, 1979 Complaint No. 76-79

Noise Emitter: Burlington Northern Railroad City: Brookfield, Ill.

Field Data (X) Lab Data ( ) Calculated Data ( )

Survey Site No.	dB(A)	Octave Band Sound Pressure Level in dB re 20 $\mu$ N/m <sup>2</sup>									Elapsed Time
		31.5	63	125	250	500	1000	2000	4000	8000	
											to
5	70.5	75	68	65	64	67	67	62	53	46	11:41-11:47
											to
Ambient 6	43	53	48	50	46.5	41.5	33.5	31	22	19	11:59-12:05
											to
											to
											to
											to
											to
											to
											to
											to
											to
											to
											to

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter.

Data Recorded By Ronald J. Koziol  
 Personnel Conducting Survey Ronald J. Koziol; Charles J. Gruntman

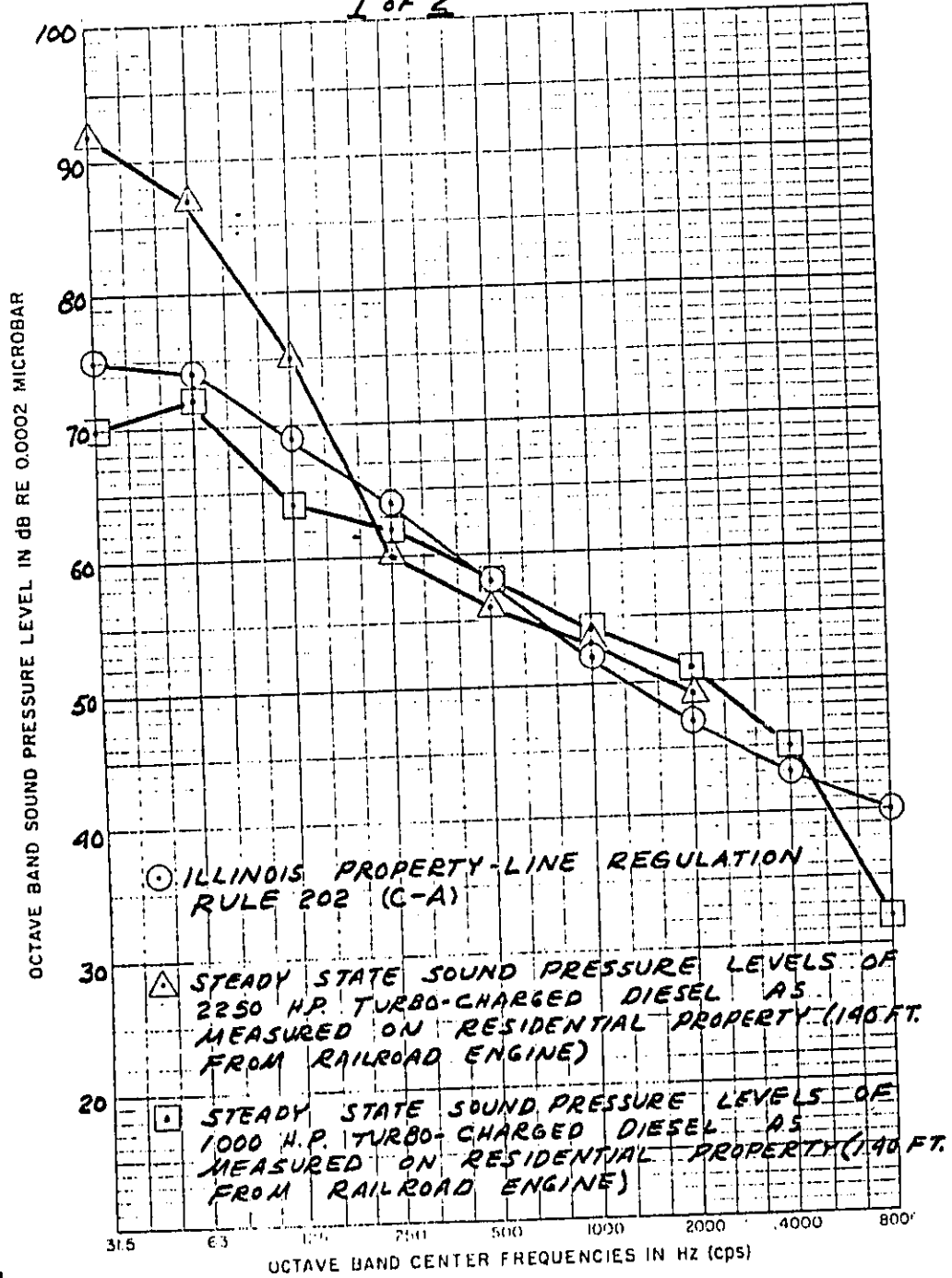


# EXHIBIT 'E1'

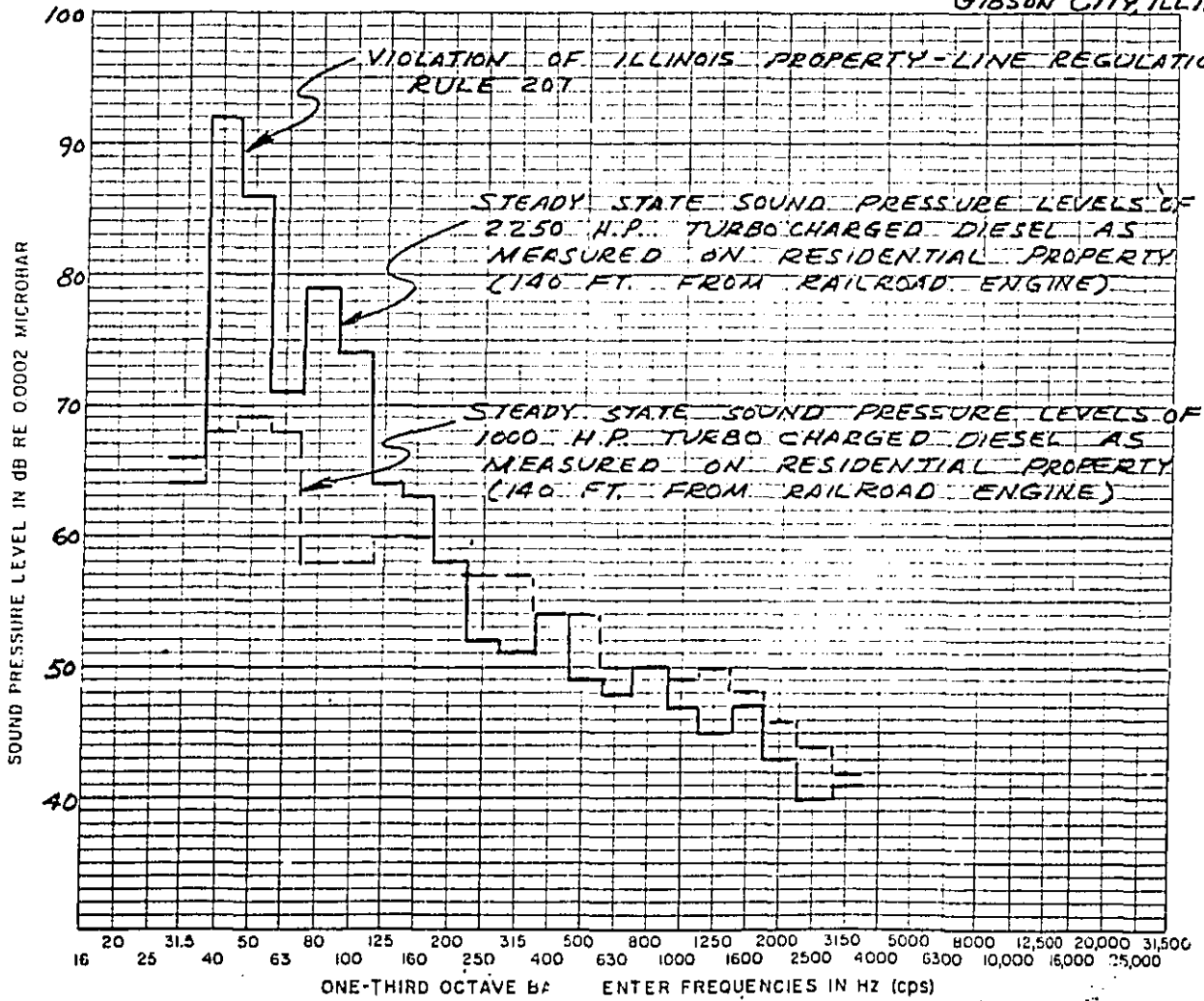
STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY  
 DIVISION OF NOISE POLLUTION CONTROL

IDLING DIESEL  
 GIBSON CITY, ILLINOIS

1 of 2



75-28  
IDLING DIESEL  
GIBSON CITY, ILLINOIS





# FIGURE 1 (EXHIBIT 'A')

CAR COUPLING IMPULSES AT HANEY SWITCHYARD DURING 20 HR. SURVEY. DISTANCE COMPARISON ASSUMES HIGHEST SOUND LEVEL OCCURRED AT 75 FT. AND SPHERICAL DIVERGENCE AT GREATER DISTANCES.

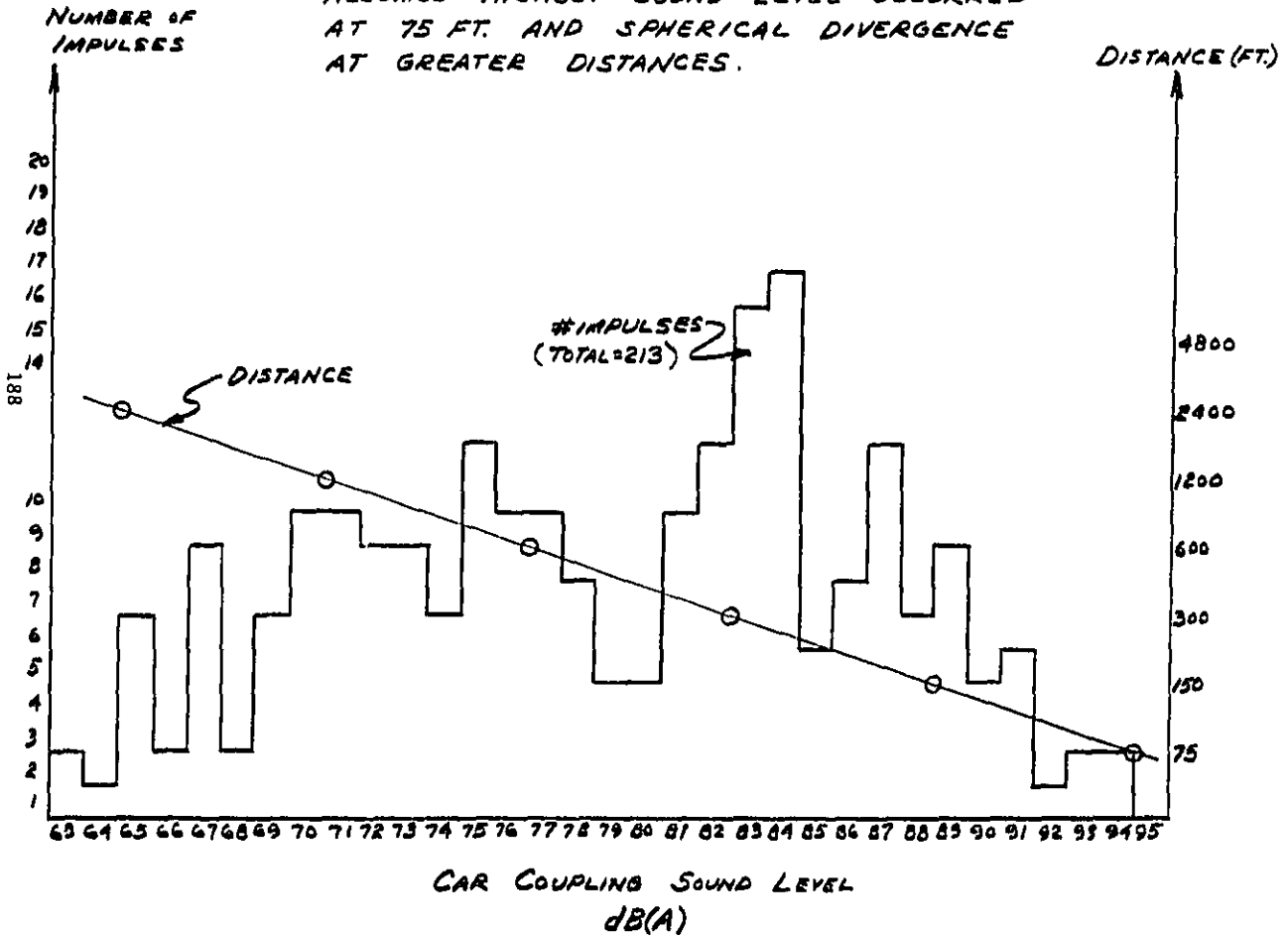
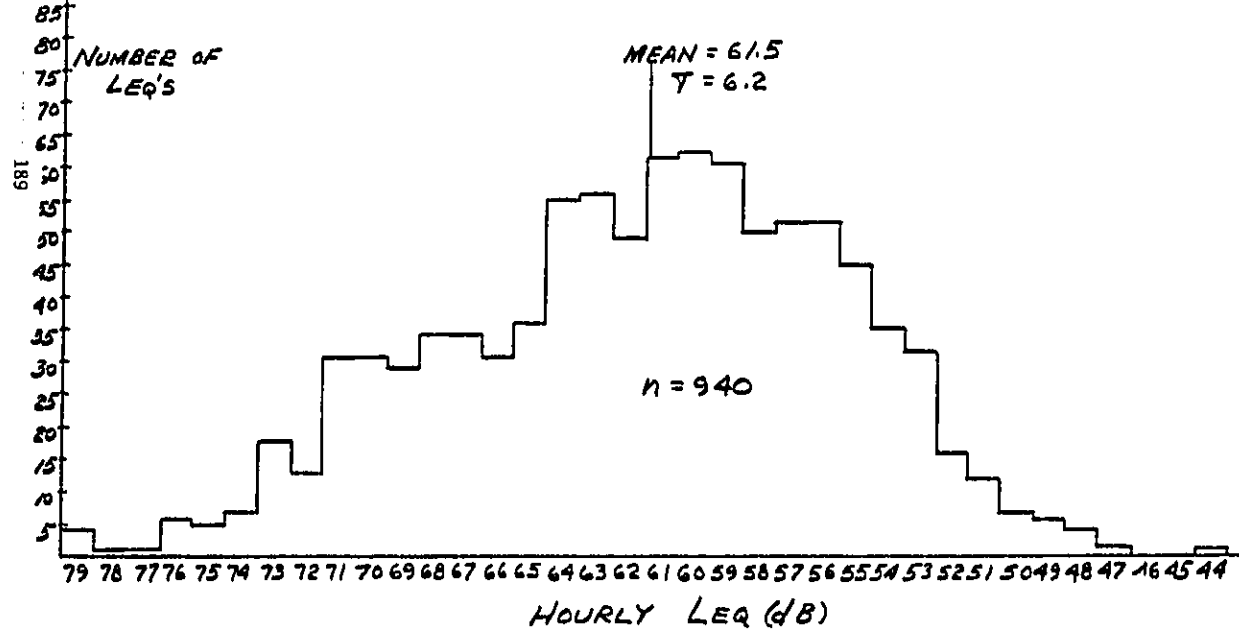
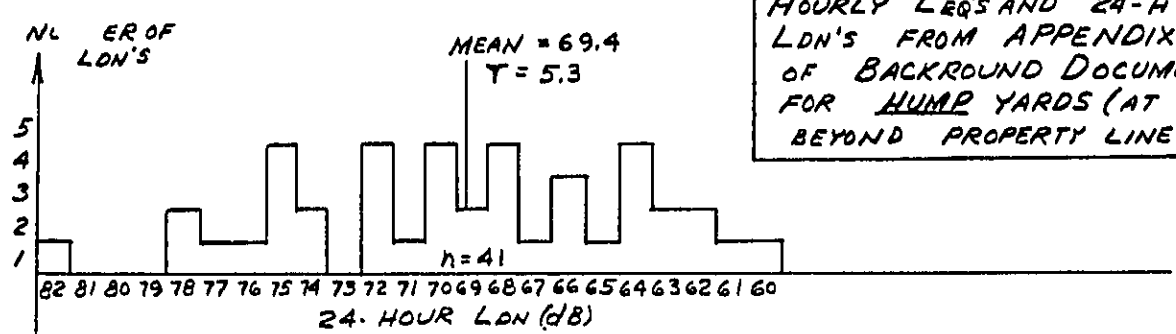


EXHIBIT 'A3'

HOURLY LEQ'S AND 24-H ?  
 LDN'S FROM APPENDIX B'  
 OF BACKGROUND DOCUMENT  
 FOR HUMP YARDS (AT OR  
 BEYOND PROPERTY LINE)

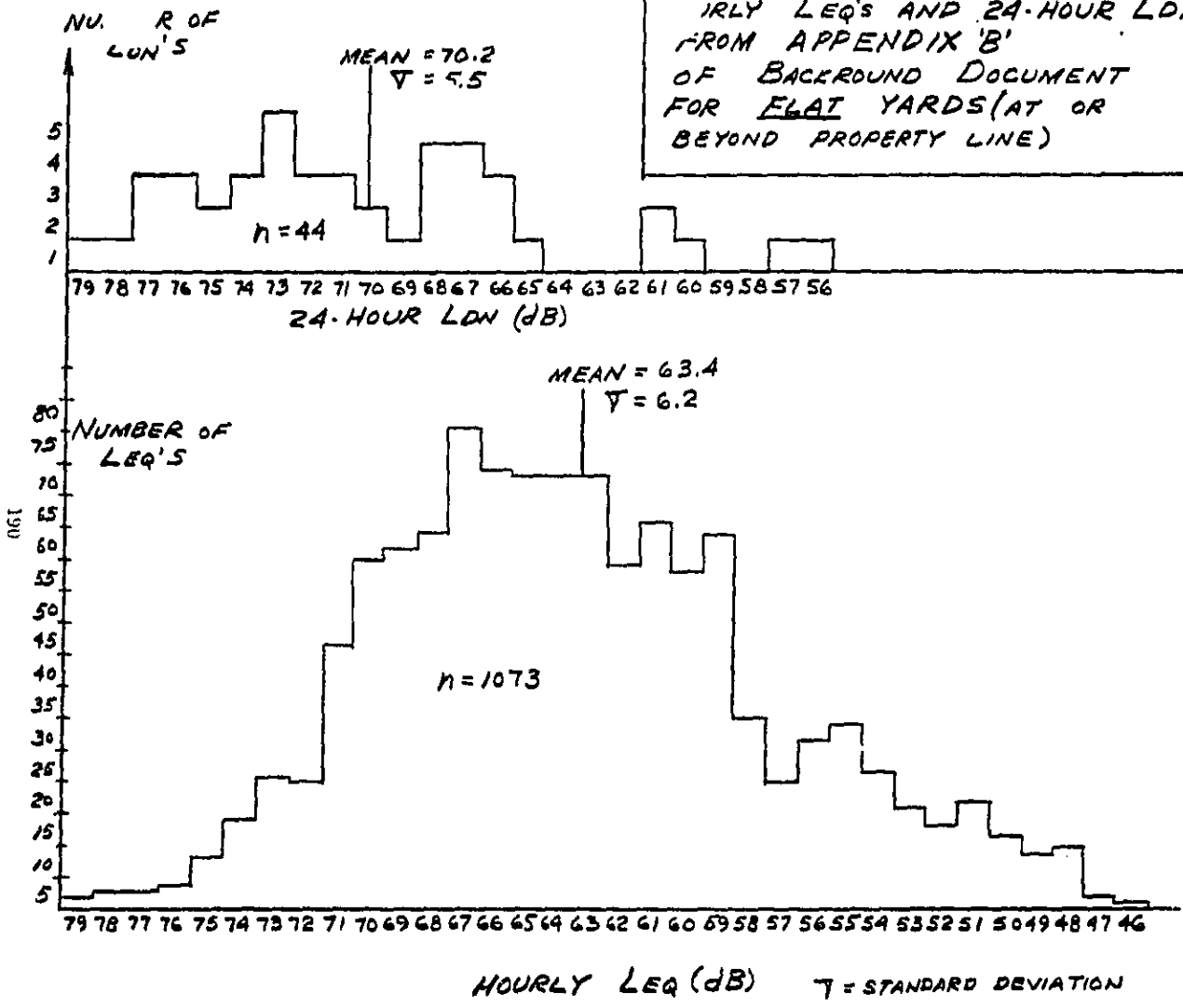


$\sigma$  = STANDARD DEVIATION

EXHIBIT 'B'

1 of 2

IRLY LEQ'S AND 24-HOUR LON FROM APPENDIX 'B' OF BACKGROUND DOCUMENT FOR FLAT YARDS (AT OR BEYOND PROPERTY LINE)



# EXHIBIT 'C'

## RETARDER NOISE

Subject: Sound data was obtained at the Terminal Railroad Association (TRRA) classification yard in Venice, Illinois. The yard has a single hump with a master retarder and 5 group retarders. Measurements were obtained inside railroad property lines (yard measurements) on four individual days at three different sites. Yard measurements were obtained on December 19, 1975 at Sites A and C, on June 30, 1976 at Site A, and on May 8, 1979 and May 15, 1979 at Site B. See the attached maps for site locations.

Barrier Details: Prior to construction of the barriers around the retarders a literature search was made to determine the effectiveness of other retarder barriers. It was discovered that no existing retarder barriers would achieve the required attenuation. Thus, a barrier was designed jointly by the Illinois Environmental Protection Agency (IEPA) and TRRA. The IEPA specified the barrier acoustical requirements and physical dimensions, while TRRA specified the structural requirements. TRRA constructed the resulting barriers. The barriers consist of a slanted surface lined with absorptive material which takes advantage of multiple reflections into the absorptive surface. A vertical barrier of similar design would attenuate the discreet frequencies less, since it results in fewer reflections on the absorptive surface. The barriers extend 12 feet above the retarder surface and extend parallel to the tracks a minimum of 12 feet in front and after the retarder. The barrier frame is constructed with railroad timbers and the inside is lined with 3-1/2 inch thick fiberglass. Wire mesh holds the fiberglass in place. The outside of each barrier is covered with 3/8 inch thick corrugated Transite. The total cost of five barrier sets (i.e., one barrier on both sides of each retarder) was approximately \$60,000 including labor. With the master retarder length of 80', five group retarder lengths of 72' and the additional 24 feet for each barrier length dimension; the total length of barriers is 1168'. Dividing \$60,000 by 1168', the resulting cost per linear foot is approximately \$50 per foot.

Yard Measurement Sites: On December 19, 1975 measurements were obtained at Site A on all of the retarders. Only the #1 group retarder had a barrier on both sides. Site A was 65 feet at 90° from the centerline of the track and at the midpoint of the barrier length. The ground surface was flat and consisted of fine (road pack) white rock. The area was open and free of reflective surfaces except for a single story metal building housing the retarder air compressors. This building was about 50 feet behind and to one side of the measurement site.

Site C on December 19, 1979 was 50 feet at 90° from the centerline of the track and at the midpoint of the retarder #5 length. The area was free of reflective surfaces except for railroad cars about 20 feet behind Site C. No barriers were present around the master retarder or group retarders 2 through 5 on December 19, 1979.

On June 30, 1976 measurements were obtained at Site A on all retarders. The location of Site A on June 30, 1976 was identical to Site A on December 19, 1975. All of the retarders had barriers on both sides on June 30, 1976.

On May 8 and 15, 1979 measurements were obtained on the master retarder at Site B. On these dates all retarders had barriers. Site B was 50 feet at 90° from the centerline of the track and at the midpoint of the barrier length. The ground surface was the same as around the #1 retarder. About 60 feet behind the measurement site a line of railroad cards extended parallel to the master retarder track.

Yard Measurement Procedures: On December 19, 1975 and June 30, 1976 a General Radio 1933 with a 1 inch electret microphone was used to obtain measurements. The microphone was connected to a tripod by a 50 foot cable and at a height of 4 feet above ground. Measurements were taken in the 2000 Hz octave band. Ambient sound, battery condition and environmental conditions were monitored frequently throughout the measurement period. A windscreen was used over the microphone and the measurement system was calibrated prior to and after the measurement period.

On May 8 and 15, 1979 a Bruel and Kjaer (B&K) 2206 and 2208 were used to obtain measurements. The B&K 2206 was hand held away from the body at 4 feet above ground and was mounted with a B&K 4133, 1/2 inch microphone and windscreen. The B&K 2208 was attached to a tripod 4 feet above ground, set in the "max hold" mode and was mounted with a B&K 1 inch ceramic microphone and windscreen. The B&K 2206 and 2208 were used simultaneously to obtain a 30 dB measurement range. The measurements were obtained using the A-weighted response mode. Calibration of meters and monitoring of extraneous conditions were identical to December 19, 1975.

All measurements on the four dates were taken using "fast" response.

Yard Data Analysis: All of the yard data obtained was corrected for calibration changes, windscreen effects, barrier insertion loss, and reflective surfaces. Ambient sound was sufficiently below the retarder noise so as not to affect the data. The December 19, 1975 data was corrected to equivalent A-weighted data by adding 1 dB to the 2000 Hz measurements. The data was then normalized to 100 feet in order to correlate to the proposed USEPA railroad noise regulations for retarders. Tables 1-3 show the raw data, correction factors and corrected data for May 15, 1979; May 8, 1979; December 19, 1975 and June 30, 1976 respectively.

Correction factors were obtained as follows: (a) Windscreen insertion loss or gain was based on laboratory tests (no wind condition) of IEPA windscreens, Reference: Proceedings of the Fourth Sound Measurement Workshop, Society of Automotive Engineers, April 13-14, 1978. (b) Reflective surface corrections were based on IEPA measurement procedures

for motor vehicles. Figure 3 of the measurement procedures presents a nomograph for A-weighted corrections due to reflective surfaces (copy of Figure 3 is attached). (c) Corrections are made for the B&K 2208 sound level meter which has the rms "hold" meter response. The 2208 meter response had the tendency to rise to a maximum level and then drop 1 dB and hold the lower level. Thus, there is a 1 dB correction for the meter response. (d) If the final calibration level deviated from the initial calibration level by .5 dB or more then a correction is made. Also, if the meter calibrated to a level different than the known calibrator output a correction was made. (e) Since data was obtained at distances other than 100 feet a correction for differences in barrier insertion loss is required. For example, if all data is to be normalized at 100 feet, then the barrier insertion loss at 50 feet must be corrected to the insertion loss at 100 feet. Although the TRRA barriers are 12 feet high, Figure 5-3 of the Background Document for 10 foot barriers was used in making corrections. From Figure 5-3 at 100 feet the insertion loss is 20 dB and at 50 feet the insertion loss is 22 dB. Since the 50 foot measurement is 2 dB lower because of barrier distance, 2 dB must be added to 100 feet normalized data. (f) All data was normalized to 100 feet for comparison to the proposed USEPA regulations. Spherical divergence was assumed in all calculations ( 6 dB per doubling of distance). (g) Since some of the data was obtained in the 2000 Hz octave band, it was necessary to convert the sound pressure levels into equivalent A-weighted sound levels. First it was assumed that the retarder squeal dominated the spectrum from 20 Hz to 16,000 Hz. With this assumption, an equivalent A-weighted conversion could be made by adding 1 dB to 2000 Hz measurements (See ANSI Standard S1.4-1971, Table 1). Note that for residential data this assumption is less accurate since retarder squeal levels are much lower and ambient sound levels affect the A-weighted spectrum.

The energy averages (LEA) for the four measurement dates was calculated separately. The energy average for data within 10 dB of the highest L(max) was also calculated. Attached is Table 4 indicating the results.

Other Yard Data: Raw data is also presented at Sites A and C (December 19, 1975) in Table 5 and at Site A (June 30, 1976) in Table 6. This data is presented only in raw form and has not been analyzed or corrected.

Residential Measurement Sites: Measurements were also obtained at 5 residential sites (labeled 1 through 5 on map). These data were obtained on 7 different days for compliance purposes. The existence of barriers on the individual days is noted in the data sheets. The residential sites ranged from approximately 650 feet to 1,100 feet from the retarders on a direct line of site. Distances were determined by scaling aerial photographs. Generally, there were railroad cars on the tracks between the retarders and the residential measurement sites so that the retarders were not visible from the measurement areas.

Residential measurements taken on November 12, 1974 and January 23, 1975 were located at Site 4. On these two dates no barriers had been constructed. Residential measurements on October 6, 1975, December 5, 1975 and December 19, 1975 were located at Site 1. On these later dates only the #1 group retarder had a barrier. Residential measurements on June 30, 1976 were located at Site 1 and all of the barriers were completed at that time. Measurements on August 18, 1976 were located at Sites 1, 2, 3 and 5.

Residential Measurement Procedures: The procedures conformed with the IEPA document "Measurement Techniques for Enforcement of Noise Pollution Control Regulations." A copy of this document is attached. All residential measurements (except for Sites 2, 3 and 5 on August 18, 1976) were taken with a General Radio 1933 and a 1 inch electret microphone. All measurements (except for Sites 2, 3 and 5 on August 18, 1976) were taken in the 2000 Hz octave band.

Measurements at Sites 2, 3 and 5 on August 18, 1976 were taken with a B&K 2203 sound level meter in the "linear" response mode. The signal from the B&K 2203 was then recorded on a Nagra, model "DJ" tape recorder. Playback of the tape was through a General Radio 1921 Real Time Analyzer and a hard copy was obtained in 1/3 octave bands on a General Radio 1522 DC Recorder. The 1/3 octave bands were summed into octave bands for comparison purposes.

Residential Data Analysis: All residential data is attached in Tables 7 through 10. The attached data has been adjusted by correcting for A-weighting (i.e., add 1 dB to 2,000 Hz measurement) and by normalizing to 1,100' (Site 1). Normalization was based on spherical divergence and the A-weighting correction was taken from ANSI Standard S1.4-1971. After construction of the barriers, much of the residential data was measured at or below ambient sound levels. This situation would affect the conversion of data from 2,000 Hz to A-weighting. (See discussion on correction factors.) However, for consistency, the same conversion was made for residential data as for near field data.

#### Discussion:

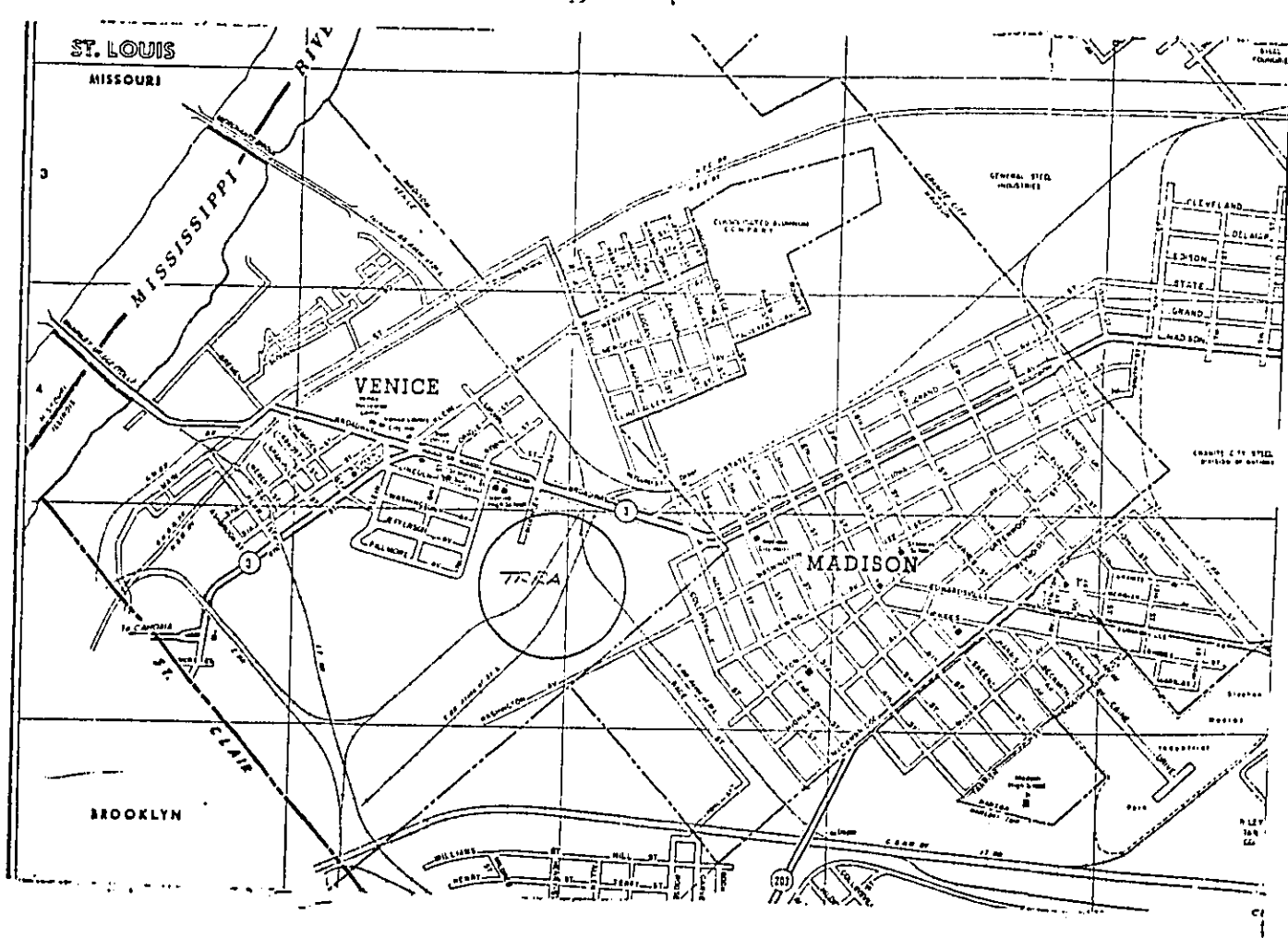
Note that the energy average levels (LEA) from yard measurements on individual days ranged from 76 to 78 dB when normalized to 100 feet. Energy averages for the master retarder, group #1 retarder and all data combined were 77 dB, 78 dB and 77 dB respectively. Also, if only the higher measurements (those within 10 dB of the highest measurement) are considered, the energy average (LEA<sub>10</sub>) increased to 79 dB. The proposed energy average USEPA limit of 90 dB(A) at 30 meters is significantly higher than the actual measured energy average for IEPA yard measurements. Only 2 of the raw data measurements out of 77 were equal to or greater than 90 dB(A). The IEPA believes that the retarder barriers in Venice, Illinois represent "the best available technology taking into account the costs of compliance".

Page 5

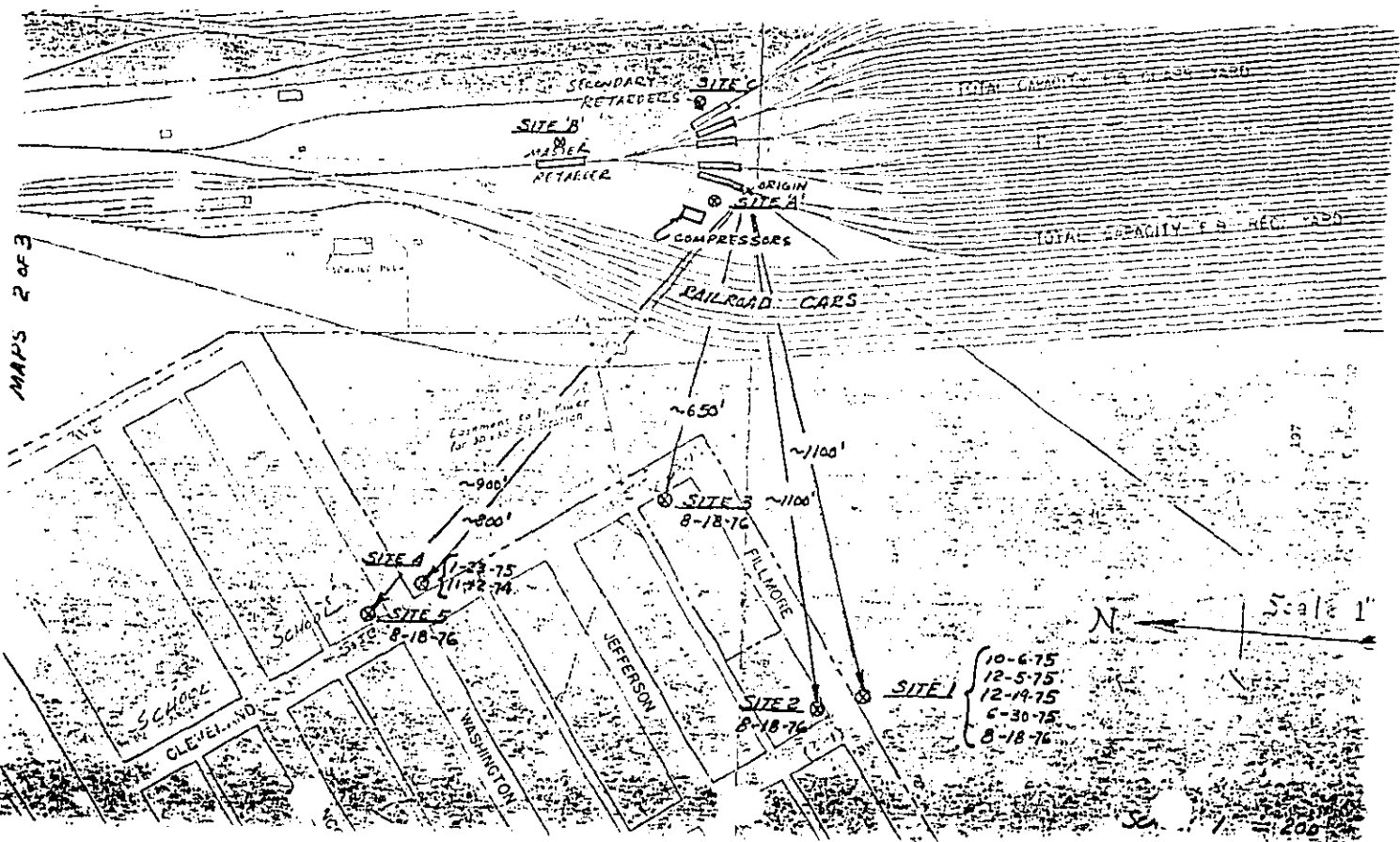
Inspection of the Residential Measurements indicates decibel reductions at 1100 feet after barrier installation. Due to the variability from weather conditions, orientation of retarders relative to measurement positions and line of site changes from railcars and barriers, the residential data was not analyzed in terms of energy average as was the Yard Data.

JP:kb/sp:7356A





MAPS 2 OF 3



Scale 1" = 200'

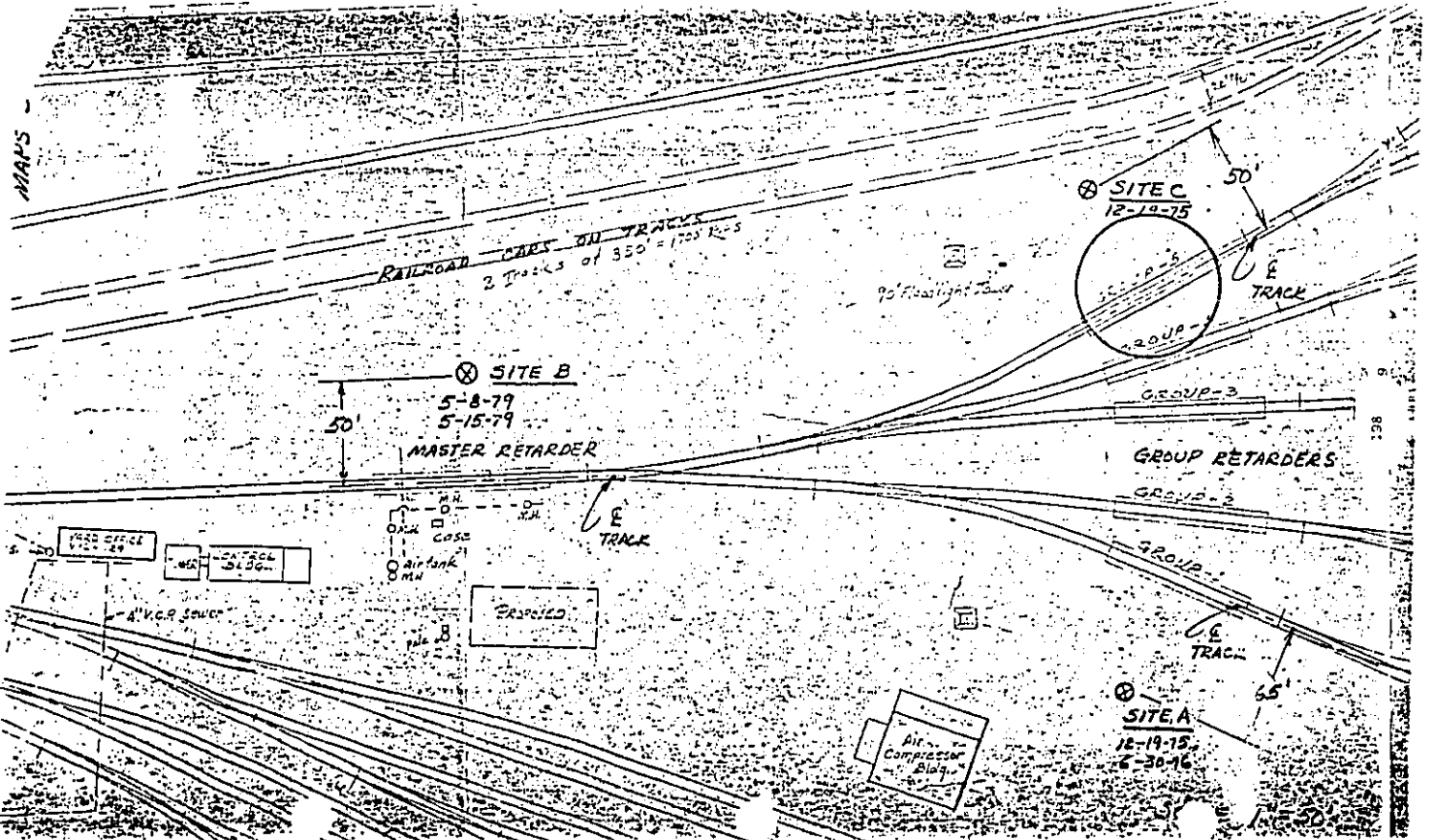
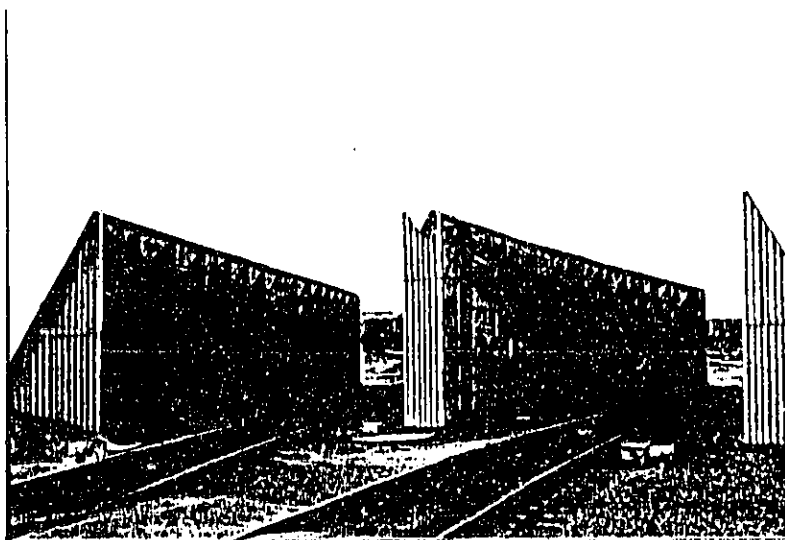


EXHIBIT C CONT. PHOTO 10F1  
TERMINAL RAILROAD ASSOCIATION  
VENICE, ILLINOIS



VIEW LOOKING SOUTH AT  
BARRIERS AROUND GROUP  
RETARDERS.

BARRIER 1 OF 4

EXHIBIT C CONT

12'± TO T/R

8'-0" MIN.

ALL WOOD

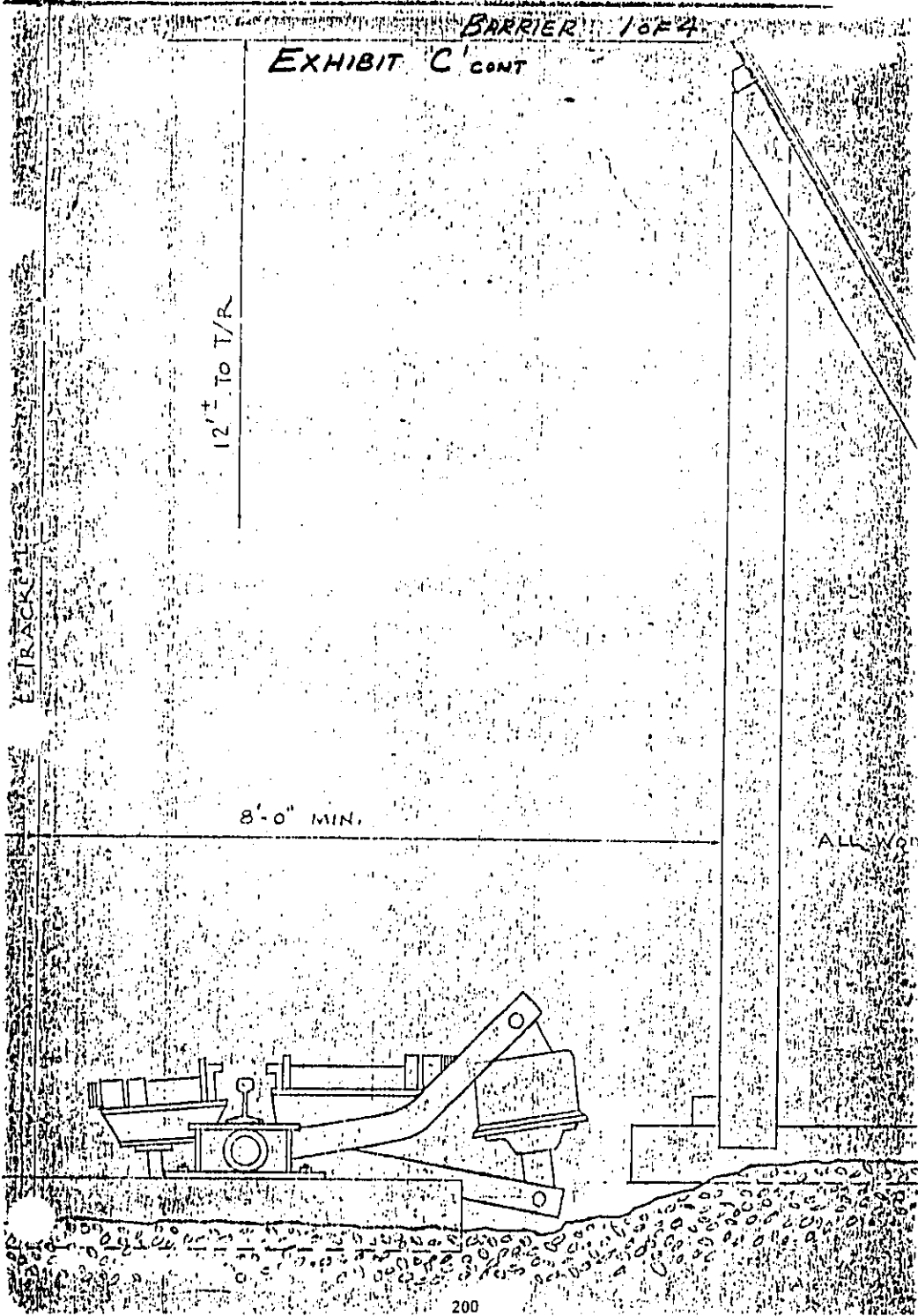


EXHIBIT 'E2'

STATE OF ILLINOIS  
ENVIRONMENTAL PROTECTION AGENCY  
DIVISION OF NOISE POLLUTION CONTROL

NOISE SURVEY REPORT

DATE March 5, 1976

COMPLAINANT: Joe Vedas COMPLAINT NO. 75-103

ADDRESS: 701 Webster CITY Taylorville ZIP \_\_\_\_\_

NOISE SOURCE: N & W Railroad

ADDRESS: Taylorville, Illinois

weather clear and sunny

Equipment Used: Kit Nos. 15 & 13  
See Attached List for Kit Contents

Microphone Orientation: 4' a.g. @ 0 °Angle of Incidence Both mics

Atmospheric Conditions: Temperature 40 °F Wind Speed Gust to 8 MPH

Wind Direction From N Rel. Humidity 75 %Bar. Press. 749 mm Hg.

Time: 2:55  AM  PM Calibration: BEFORE SURVEY 124 dB Time 2:59 3:22  
AFTER SURVEY 124 dB Time 3:12 3:42

BEFORE SURVEY

Battery Check: AFTER SURVEY

Survey Site No.	d B(A)	OCTAVE BAND SOUND PRESSURE LEVEL IN dB re 20µN/m <sup>2</sup>									Time Elapsed
		31.5	63	125	250	500	1000	2000	4000	8000	
2-1	60	85	82	71	54	52	47	48-52	44-50	26	2:50-3:00
											to
											to
											to
											to
											to
											to
											to
											to

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter

Data Recorded By: Dorothy L. Jones Witnesses Mr. & Mrs. Joe Vedas

EPA Personnel Conducting Survey: Dorothy L. Jones 201 [Signature] APR 1 1976

BEFORE SURVEY 174 dB  
 CALIBRATION: AFTER SURVEY 174 dB

TIME 3:24  
 TIME 3:42

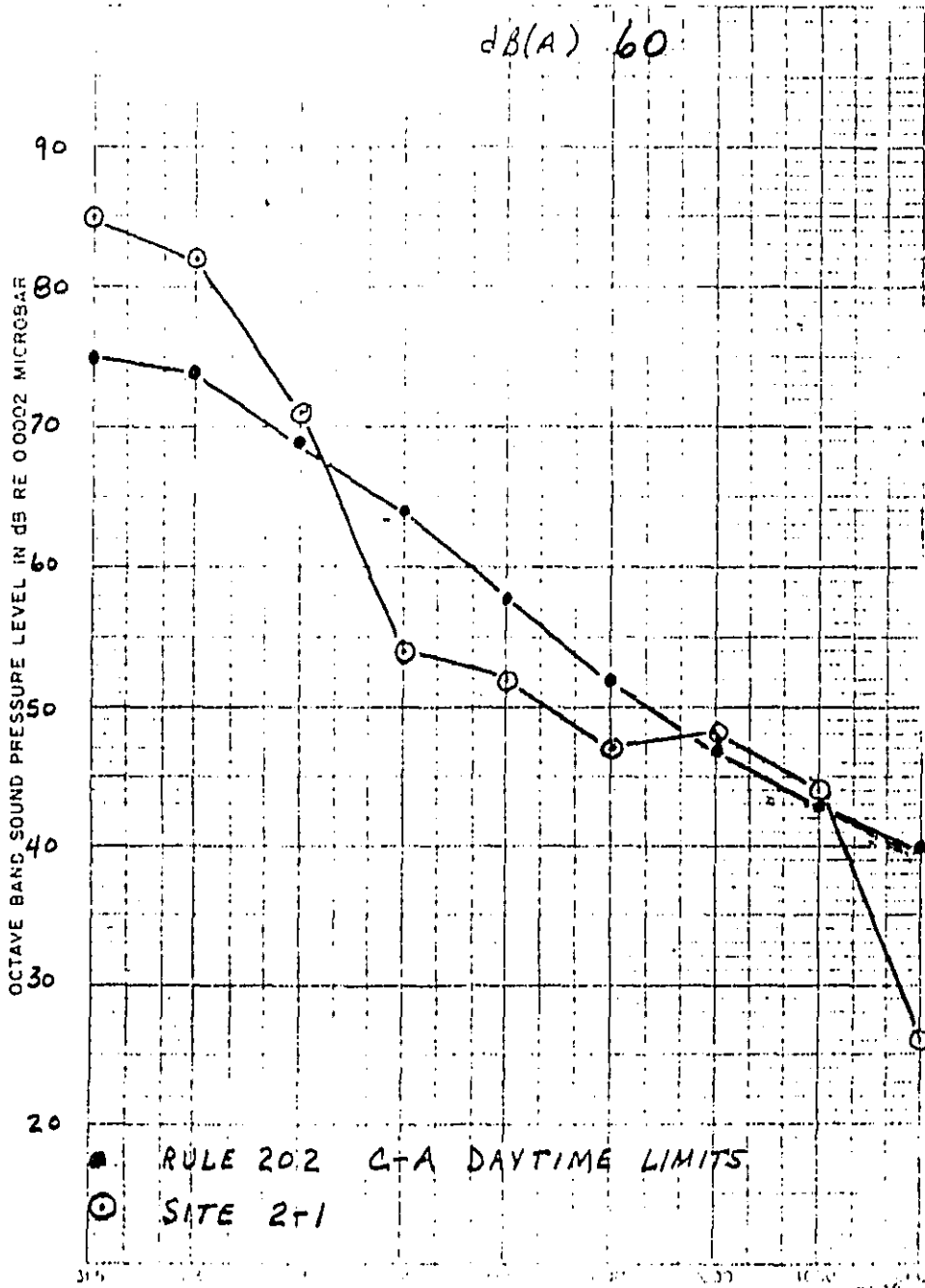
BEFORE SURVEY OK  
 BATTERY CHECK: AFTER SURVEY OK

\* = slow response

dB(A) 60 PROMINENT DISCREET TONE SURVEY DATA

1/3 Octave Band Center Frequency in Hertz	One-third Octave Band Sound Pressure Level in dB Re 20µN/m <sup>2</sup>						
	Site # 2-	Site #	Site #	Site #	Site #	Site #	Site #
20							
25	*60						
31.5	*63						
40	85						
50	75						
63	72						
80	70						
100	68						
125	57						
160	54						
200	50						
250	45						
315	46						
400	46						
500	45						
630	45						
800	43						
1000	40						
1250	43						
1600	44						
2000	40						
2500	38						
3150	37						
4000	36						
5000	34						
6300	20						
8000	Birds						
10000	Birds						
12500	Birds						
Elapsed Time	to	to	to	to	to	to	to

LOMP # 75-129  
N & W RAILROAD  
TAYLORVILLE, ILL.  
3-5-76



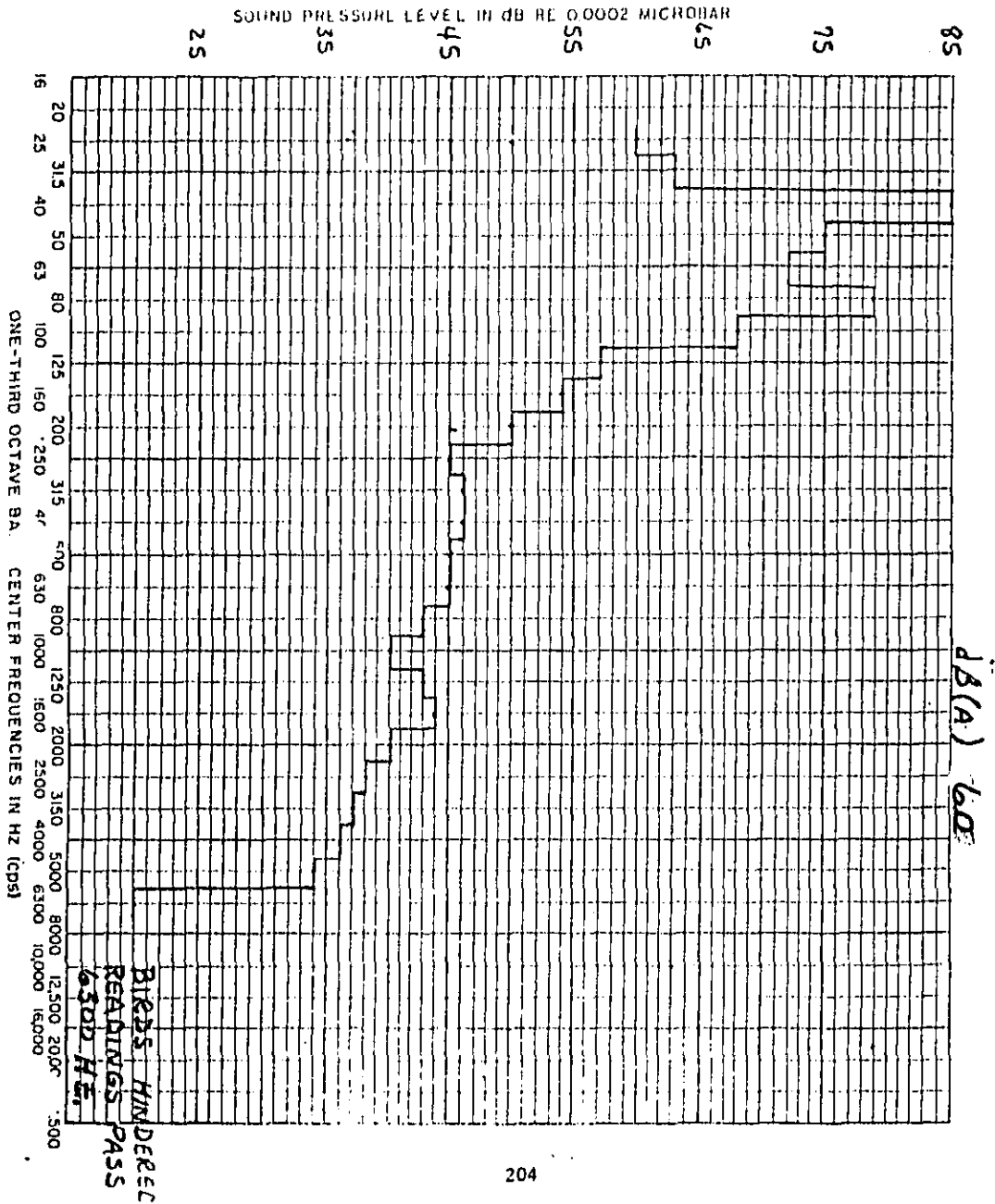
● RULE 202 C-A DAYTIME LIMITS  
○ SITE 2+1

APR 1 1976



4 of 6  
 STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY  
 DIVISION OF NOISE POLLUTION CONTROL

COMP # 75-129  
 N & W RAILROAD  
 TAYLORVILLE, ILL  
 3-5-76



5 of 6

Complaint No. 75-102 Date: March 5, 1976

Details of Complaint Investigation:

Include description of sound source, maps, survey site locations, necessary dimensions location of reflective objects, physical and topographic description of ground surface, names and addresses of all persons contacted concerning this complaint.

Correction Factors: Humidity None Temperature None  
Wind None Microphone None  
Ambient Noise None Other Add 4B @ 8KHz due to windscreen

Site Description

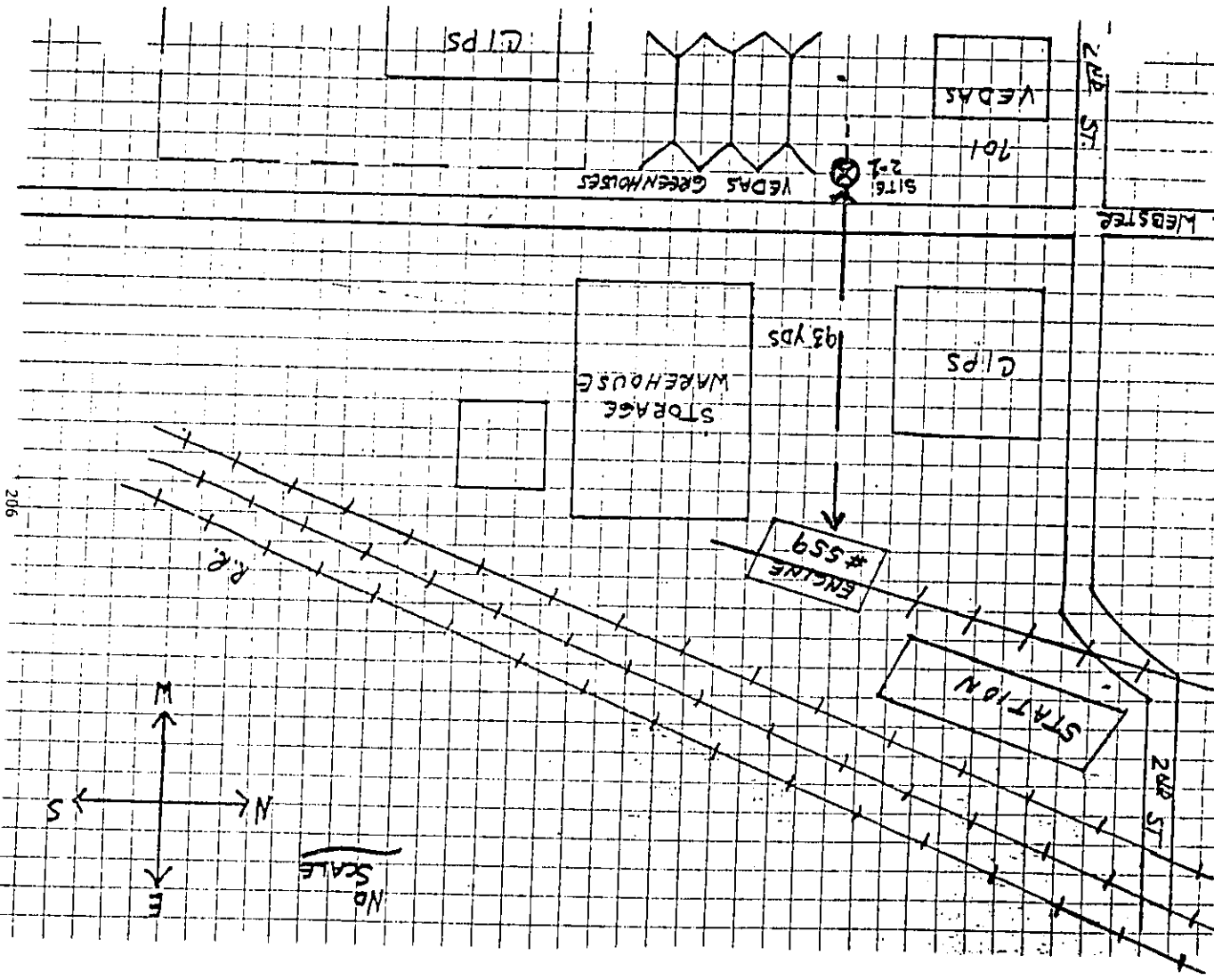
Mic was set up 11'S 31'E of the Vedas residence.

Source Description

N & W Engine #559 was located approximately 93 yards from Site 2-1 in direct line of sight of the Vedas residence. The railroad station is east of the complainant's property.

Prepared By Dorothy L. Jones







2 of 4

Complaint #75-102  
5-7-76  
Dorothy L. Jones



BEFORE SURVEY \_\_\_\_\_ dB  
LIBRATION: AFTER SURVEY \_\_\_\_\_ dB

TIME \_\_\_\_\_  
TIME \_\_\_\_\_

BEFORE SURVEY \_\_\_\_\_  
BATTERY CHECK: AFTER SURVEY \_\_\_\_\_

REAL TIME ANALYZER INPUT:  
INTEGRATION TIME \_\_\_\_\_

\* "slow response" PROMINENT DISCRETE TONE SURVEY DATA

1/3 Octave Band Center Frequency in Hertz	One-third Octave Band Sound Pressure Level in dB Re 20µN/m <sup>2</sup>						
	Site #3-1	Site #3-2	Site #4	Site #5	Site #	Site #	Site #
20							
25	*46	*42	*47	*46			
31.5	*50	*45	*46	*52			
40	72	*46	80	75			
50	67	*45	69	62			
63	60	*50	62	*60			
80	65	*47	65	*61			
100	*55	*44	*57	*57			
125	*49	*43	50	*51			
160	*44	*42		54			
200	*40	*40					
250	*36	*39					
315	*35						
400	36						
500	*37						
630	*37						
800	36						
1000	33						
1250	32						
1600	*34						
2000	*29						
2500	*27						
3150	*26						
4000	*27						
5000	*22						
6300	*19						
8000							
10000							
12500							
Elapsed Time	to	to	to	to	to	to	to

dB (A)      48      42      51      48

COMPLAINT NO. 75-102

3 of 4

DATE: 1-7-76

104

SITE DESCRIPTION:

- 3-1 Vedas ~1115 3110 of house-noise source.
- 3-2 Vedas - Ambient
- 4 407 W. 3rd
- 5 Johnson - 642 S. Webster  
SE corner of lot adjacent to alley

CORRECTION FACTORS:

None

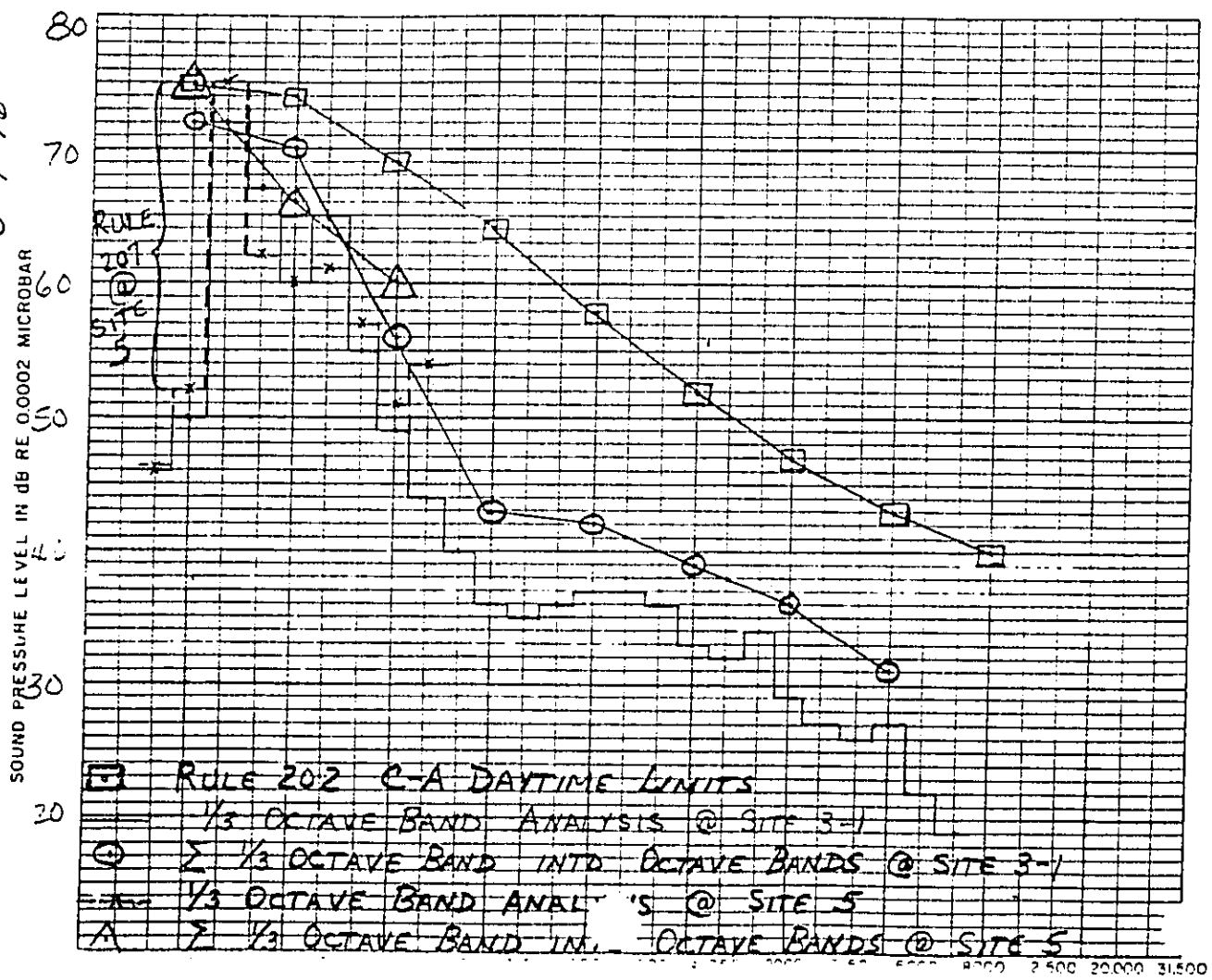
COMMENTS:

Engine #532 2250 HP Turbo-charged.

Three representatives of the railroad were present on this date.  
They were:

W.F. Steinke - Assistant Trainmaster  
Hugh Salmons - Division Road Foreman of Engines  
Jim Scott - Master Mechanic of Locomotives

ENGINE  
TAYLORVILLE, IL  
5-7-76  
A OF A







2 of 4

Complaint #75-102 - 5-12-76  
 Page 2  
 Dorothy L. Jones *DJ*

BEFORE SURVEY \_\_\_\_\_ dB  
 VIBRATION: AFTER SURVEY \_\_\_\_\_ dB

TIME \_\_\_\_\_  
 TIME \_\_\_\_\_

BEFORE SURVEY \_\_\_\_\_  
 BATTERY CHECK: AFTER SURVEY \_\_\_\_\_

REAL TIME ANALYZER INPUT:  
 INTEGRATION TIME \_\_\_\_\_

\* Slow Response

PROMINENT DISCRETE TONE SURVEY DATA

1/3 Octave Band Center Frequency in Hertz	One-third Octave Band Sound Pressure Level in dB Re 20µN/m <sup>2</sup>						
	Site # 5	Site # 6	Site #	Site #	Site #	Site #	Site #
20							
25	55	55					
31.5	56	52					
40	61	60					
50	55	52					
63	55	57					
80	63	55					
100	54	50					
125	51	45					
160	50	44					
200	46						
250	45						
315	43						
400	44						
500	40						
630	39						
800	37						
1000	34						
1250	31						
1600	27						
2000	28						
2500	26						
3150							
4000							
5000							
6300							
8000							
10000							
12500							
Elapsed Time	to	to	to	to	to	to	to

dB(A)            49            48

3054

Jerry L. Jones  
Page 3

LDJ

COMPLAINT NO. 174-102

DATE 5-12-76

SITE DESCRIPTION:

- 5 Johnson - 642 S. Weber  
SE corner of lot adjacent to alley
- 6 Veda - ~11'S 31'E of house.

CORRECTION FACTORS:

None

COMMENTS:

Engine #652 1750 HP naturally aspirated known as General Purpose (G.P.) #9  
Idling at ~300 RPM.

Distance from source ~110 yds.

The engine is supposed to remain on the 4th track known as the House track  
when not in use.

This size engine idling at 300 RPM or less meets the regulations.



**EXHIBIT 'E5'**

STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY  
 DIVISION OF NOISE POLLUTION CONTROL

PAGE 1 OF 11

NOISE SURVEY REPORT

Alleged Violations Indicated  
 by Field Operations: Rules 102 & 203

DATE February 27, 1978



COMPLAINANT: Mr. Rick Nowak, et al. COMPLAINT NO. 77-09

ADDRESS: 565 Carl Avenue CITY Barrington ZIP 60010

NOISE SOURCE: Chicago & Northwestern Company Coach Yard  
 (SLUCM Code #4119 - Class 'C' Land)  
 ADDRESS: Barrington Coach Yard, Barrington, Illinois.

Equipment Used: Kit Nos. & Model #9 (B&K 2203 Sound Level Meter & 1613 Octave Filter)

Microphone Orientation: \_\_\_\_\_ 0° Angle of Incidence

Atmospheric Conditions: Temperature 25°F Wind Speed Less than 2 MPH

Wind Direction From Northwest Rel. Humidity 92 % Bar. Press. 767 mm Hg.

Time: 11:00  AM  PM Calibration: BEFORE SURVEY 124 dB Time 11:05  
AFTER SURVEY 123.5 dB Time 12:03  
 Battery Check: BEFORE SURVEY [X] AFTER SURVEY [X]  
BEFORE SURVEY \_\_\_\_\_ dB Time \_\_\_\_\_  
AFTER SURVEY \_\_\_\_\_ dB Time \_\_\_\_\_

Survey Site No.	d B(A)	OCTAVE BAND SOUND PRESSURE LEVEL IN dB re 20µN/m <sup>2</sup>									Time Elapsed
		31.5	63	125	250	500	1000	2000	4000	8000	
1a	44.5	60	52	48	46	45	37.5	32	19	12	11:07 to 11:18
1b	52	66.5	58	54	55	52	42	38	24	13	11:20 to 11:32
1c	51	60	51	51	48	46	38	35	22	12	11:40 to 11:54
1d	43							20.5	12		11:46 to 11:49
											to
											to
											to
											to
											to

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter

Data Recorded By: Charles J. Gruntman Witnesses Robert Lindenmuth

EPA Personnel Conducting Survey: Charles 215 1, Major Hearn, & Ronald Koziol

STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY  
 DIVISION OF NOISE POLLUTION CONTROL

Page 2 of 11

Alleged Violations Indicated NOISE SURVEY REPORT  
 by Field Operations: Rules 102 & 203

DATE February 27, 1978

COMPLAINANT: Mr. Louis G. Netzel c/o Barrington Motel COMPLAINT NO. 77-09

ADDRESS: 405 Northwest Hwy. CITY Barrington ZIP 60010

NOISE SOURCE: Chicago and NorthWestern Company Coach Yard

(SLUCM Code #4119 - Class "C" Land)

ADDRESS: Barrington Coach Yard, Barrington, Illinois

Equipment Used: Kit Nos. & Model #27 (Gen. Rad. 1933 Sound Analysis System)

Microphone Orientation: \_\_\_\_\_ 70° Angle of Incidence

Atmospheric Conditions: Temperature 25°F Wind Speed Less than 2 MPH

Wind Direction Northwest Rel. Humidity 92 % Bar. Press. 767 mm Hg.

Time: 11:01  AM  PM Calibration: BEFORE SURVEY 114 dB Time 11:03 P.M.  
 AFTER SURVEY 113.5 dB Time 11:58 P.M.

Battery Check: BEFORE SURVEY  AFTER SURVEY  BEFORE SURVEY \_\_\_\_\_ dB Time \_\_\_\_\_  
 AFTER SURVEY \_\_\_\_\_ dB Time \_\_\_\_\_

Survey Site No.	d B(A)	OCTAVE BAND SOUND PRESSURE LEVEL IN dB re 20µN/m <sup>2</sup>									Time Elapsed
		31.5	63	125	250	500	1000	2000	4000	8000	
											to
3a	52.5	65	62.5	50	49	49	48.5	44.5	35	20	11:05 11:10
											to
3b	61.5	72	73	58	57	55.5	58	54	43	26	11:28 11:31
											to
*3c	55.5	65.5	62.5	51	55	53	53	49	48	21.5	11:46 11:52
											to
											to
	*Note:	Survey Site #3c using Meter #38.									to
		For Calibration Information see									to
		Sheet #3.									to
											to
											to

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter

Data Recorded By: Ronald J. Koziol Witnesses \_\_\_\_\_

216

EPA Personnel Conducting Survey: Ronald

STATE OF ILLINOIS  
 ENVIRONMENTAL PROTECTION AGENCY  
 DIVISION OF NOISE POLLUTION CONTROL

Page 3 of 11

Alleged Violations Indicated **NOISE SURVEY REPORT**  
 by Field Operations: Rule 102 & 203

DATE February 27, 1978

COMPLAINANT: Rick Nowak, et al COMPLAINT NO. 77-09

ADDRESS: 565 Carl Ave. CITY Barrington ZIP 60010

NOISE SOURCE: Chicago & NorthWestern Railroad Company Coach Yard  
 (SLUCM Code #4119 - Class C Land)

ADDRESS: Barrington, Ill.

Equipment Used: Kit Nos. & Model #38 (General Radio Type 1933 Sound Analysis System)

Microphone Orientation: \_\_\_\_\_ 70 ° Angle of Incidence

Atmospheric Conditions: Temperature 25 °F Wind Speed 0-2 MPH MPH

Wind Direction Northwest Rel. Humidity 92 % Bar. Press. 767 mm Hg.

Time: 11:07  AM Calibration:  PM  
 BEFORE SURVEY 114 dB Time 11:09  
 AFTER SURVEY 114 dB Time 12:13

Battery Check: BEFORE SURVEY  AFTER SURVEY   
 BEFORE SURVEY 114 dB Time 12:35  
 AFTER SURVEY 114 dB Time 12:43

Ambient

Survey Site No.	d B(A)	OCTAVE BAND SOUND PRESSURE LEVEL IN dB re 20µN/m <sup>2</sup>										Time Elapsed
		31.5	63	125	250	500	1000	2000	4000	8000		
												to
4a	67	78	81.5	71	68	67	60	55	48	39	11:09 11:15	
											to	
4b	75.5	82	90	81	75.5	73	66	61	54	46	11:20 11:31	
											to	
4c	71	77	79	75	72	70.5	64	59	55	45	11:39 11:44	
											to	
2	40	47	48	48	43	37	35	24	<10	<10	12:38 12:42	
											to	
											to	
											to	
											to	

Note: Unless otherwise indicated, all data is recorded using "Fast" Response of the Sound Level Meter

Data Recorded By: Major Heann Witnesses J.M. Hirschbein

217

EPA Personnel Conducting Survey: Major Heann Gruntman, Ronald Koziol

February 27, 1978

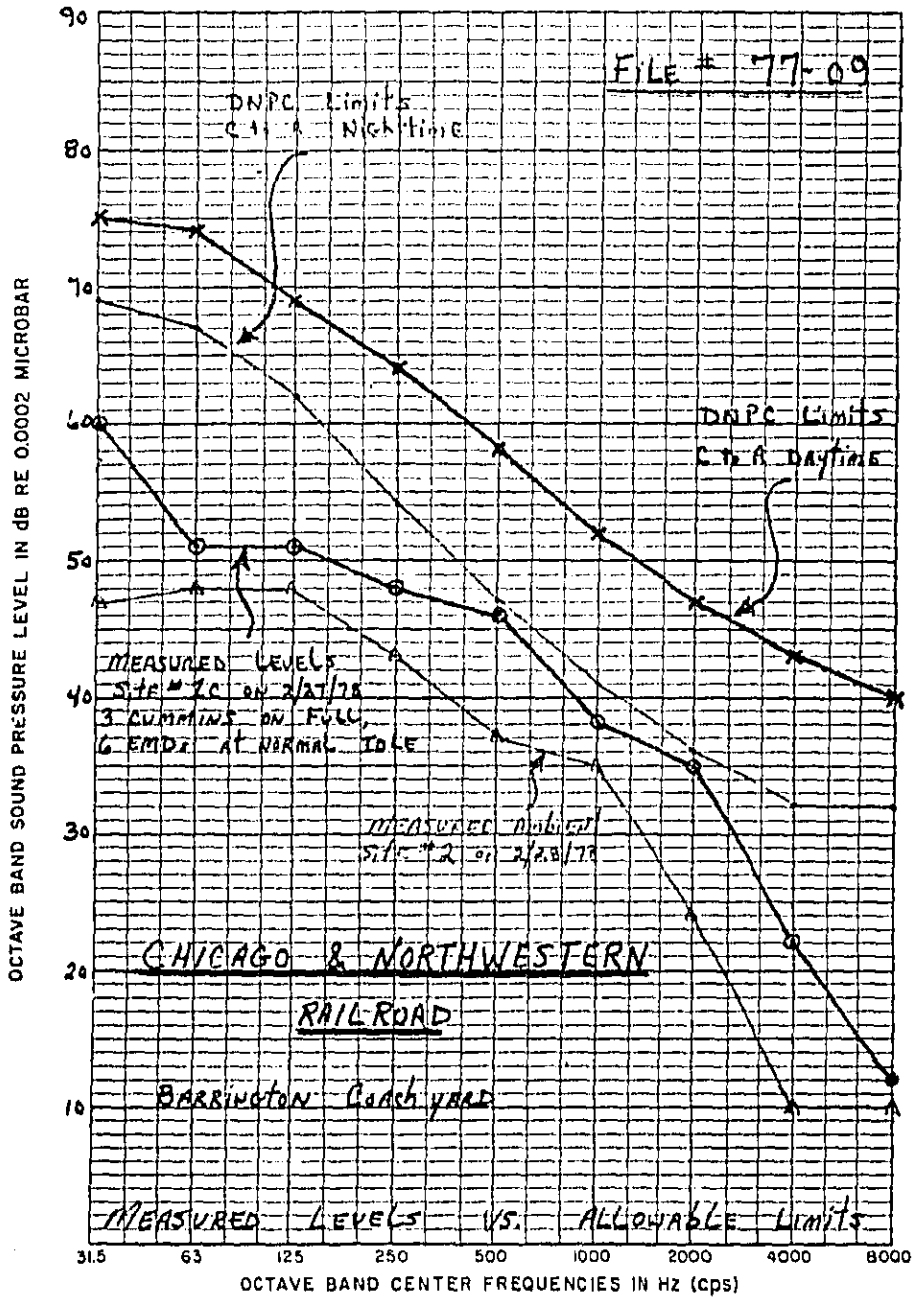
LOCATION OF SURVEY SITES

- Site #1 - In Mr. Nowak's front yard (565 Carl Ave.) - 34 ft. west of his building and 35 ft. south of his front walk.
- Site #2 - In northwest area of parking lot of Roslyn School - 75 ft. west of the mobil unit. This site is one block east of Exmoor Ave. on Merton Road. It is 4 blocks north of Site #1.
- Site #3 - In back of the Barrington Motel, 405 W. Northwest Highway - 45 feet south of the Motel and even with the west wall of the Motel.
- Site #4 - 100 feet northeast of the northeastern-most set of tracks in the CGNW Barrington Coach Yard.

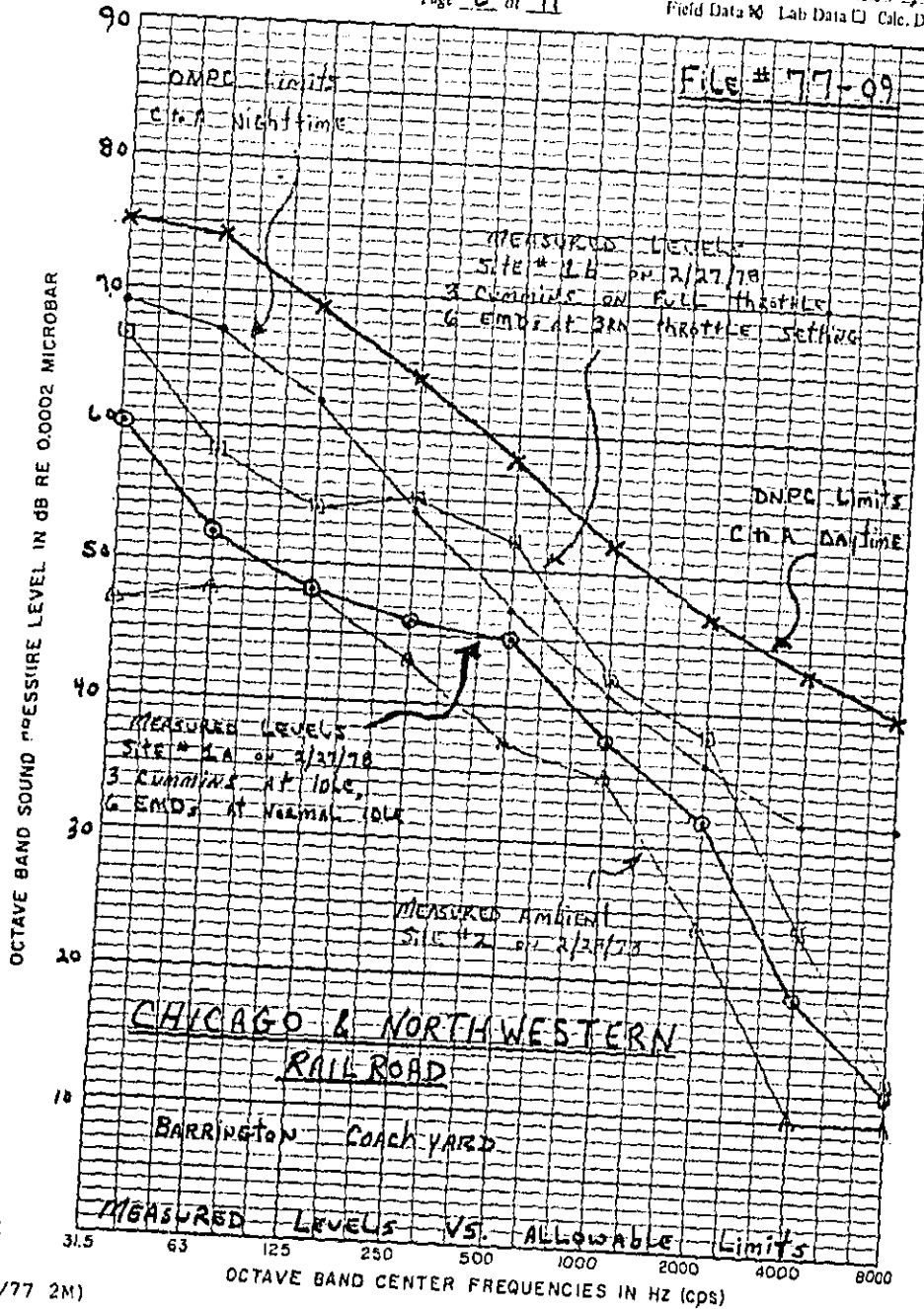
DESCRIPTION OF NOISE SOURCES

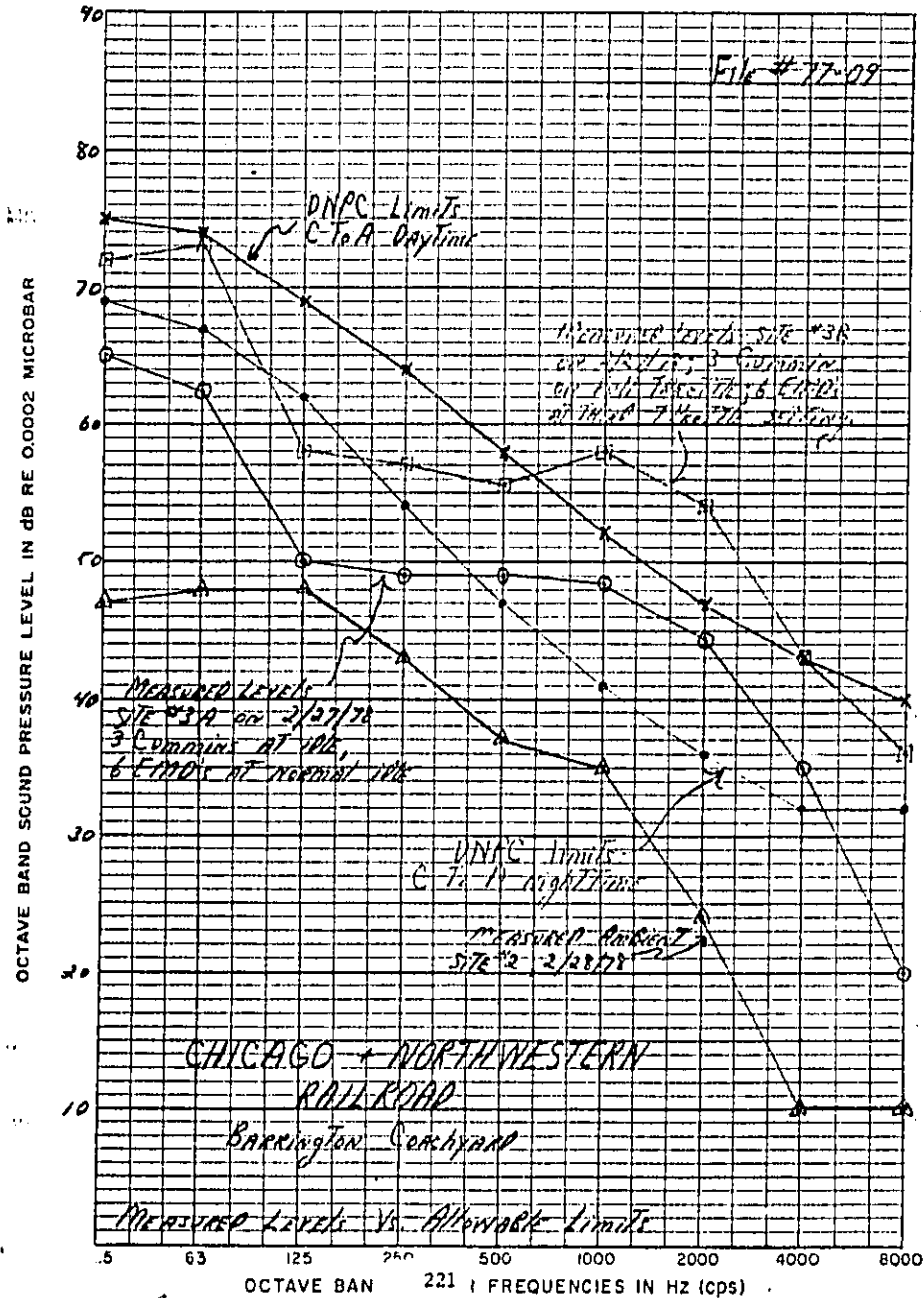
- Surveys #1a, 3a, & 4a - Noise created with three Cummins engines operating at "low" idle and 6 EMD engines operating at "normal" idle.
- Surveys #1b, 3b & 4b - Noise created with three Cummins engines at "full" throttle and 6 EMD engines operating at the "3rd" throttle position.
- Surveys #1c, 3c & 4c - Noise created with three Cummins engines at "full" throttle and 6 EMD engines at "normal" idle.
- Survey #1d - Noise created with three Cummins engines at "full" throttle and 6 EMD engines at "normal" idle. The dB values noted were recorded when the A.C. cooling fans on the engines were disengaged, \*\*.
- Survey #2 - Ambient noise levels.
- \*\* - During the operation of the locomotives, A.C. cooling fans on the engines would turn on and off. This would cause the noise emissions from the trains to fluctuate. The noise measurements noted in this report were recorded with the A.C. cooling fans engaged unless otherwise noted.

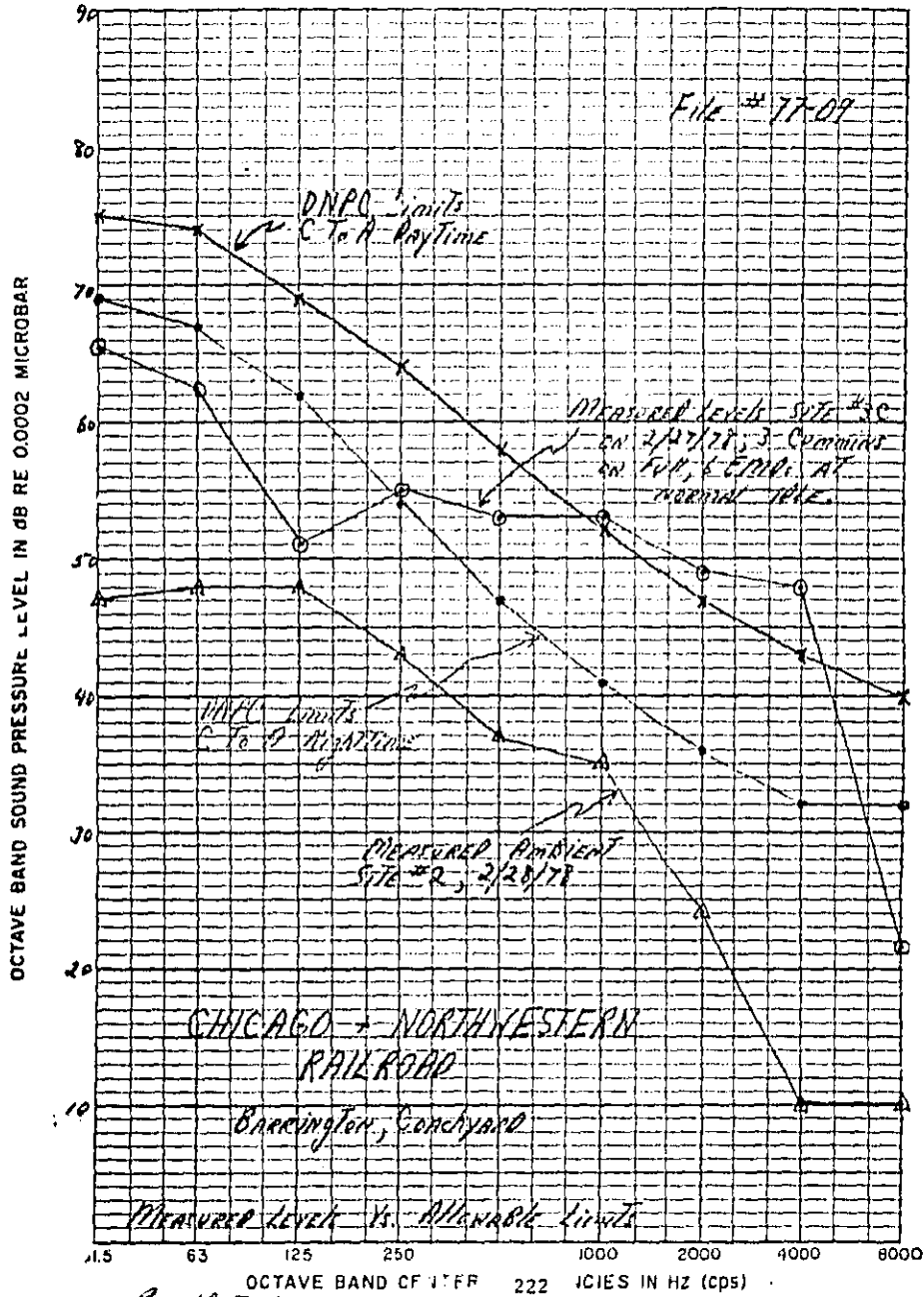
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 FEB 28 1978  
 BUREAU OF  
 NOISE POLLUTION









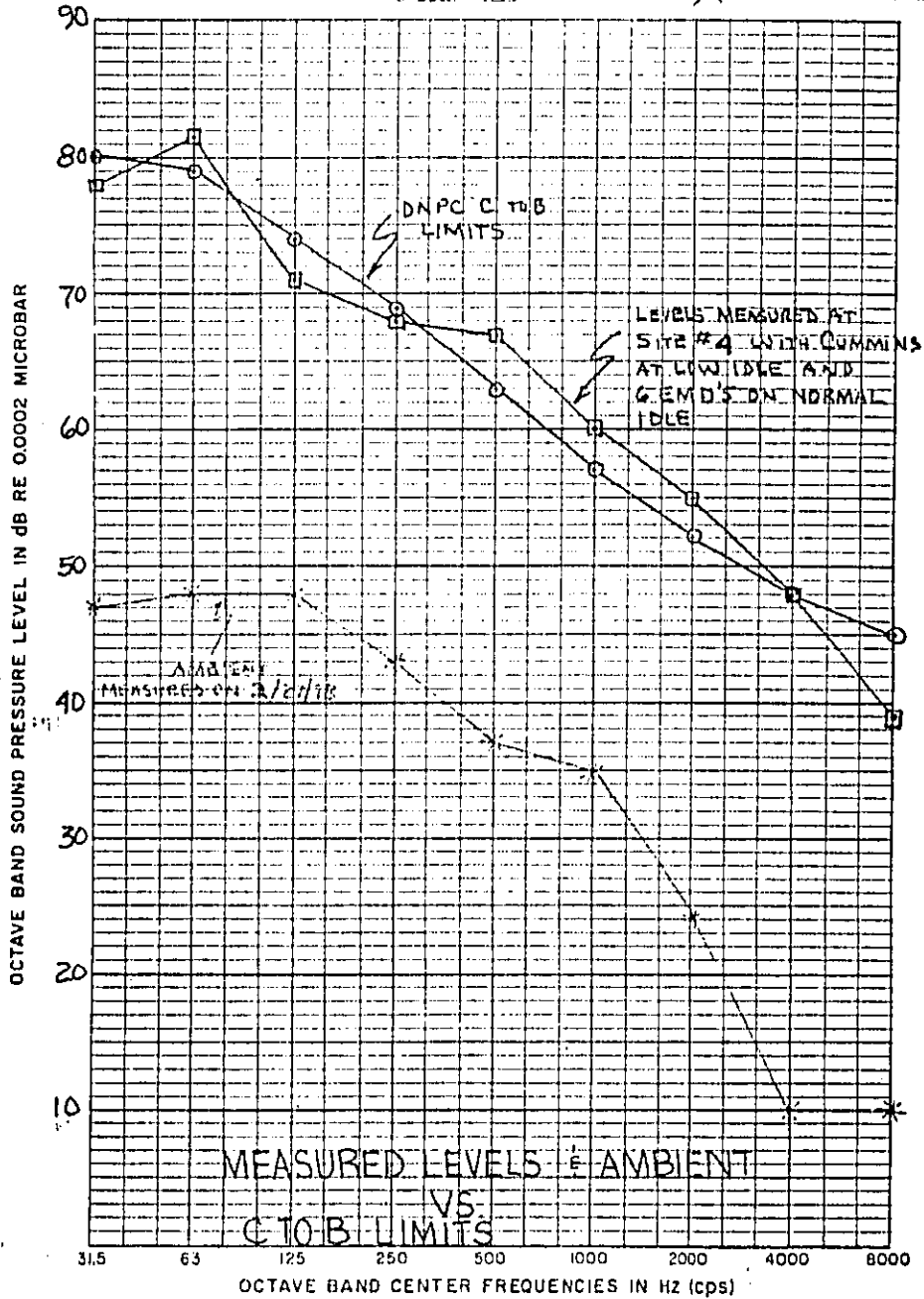


MAJOR HEARN, JR  
3/02/78

STATE OF ILLINOIS  
Environmental Protection Agency  
Division of Noise Pollution Control

Date: FEBRUARY 27, 1978  
Complaint No. 77-09  
Emitter: CHICAGO & NORTHWESTERN  
RAILROAD COACH YARD  
City: BARRINGTON, ILLINOIS  
Field Data  Lab Data  Calc. Data

NOISE SURVEY REPORT  
Page 9 of 11

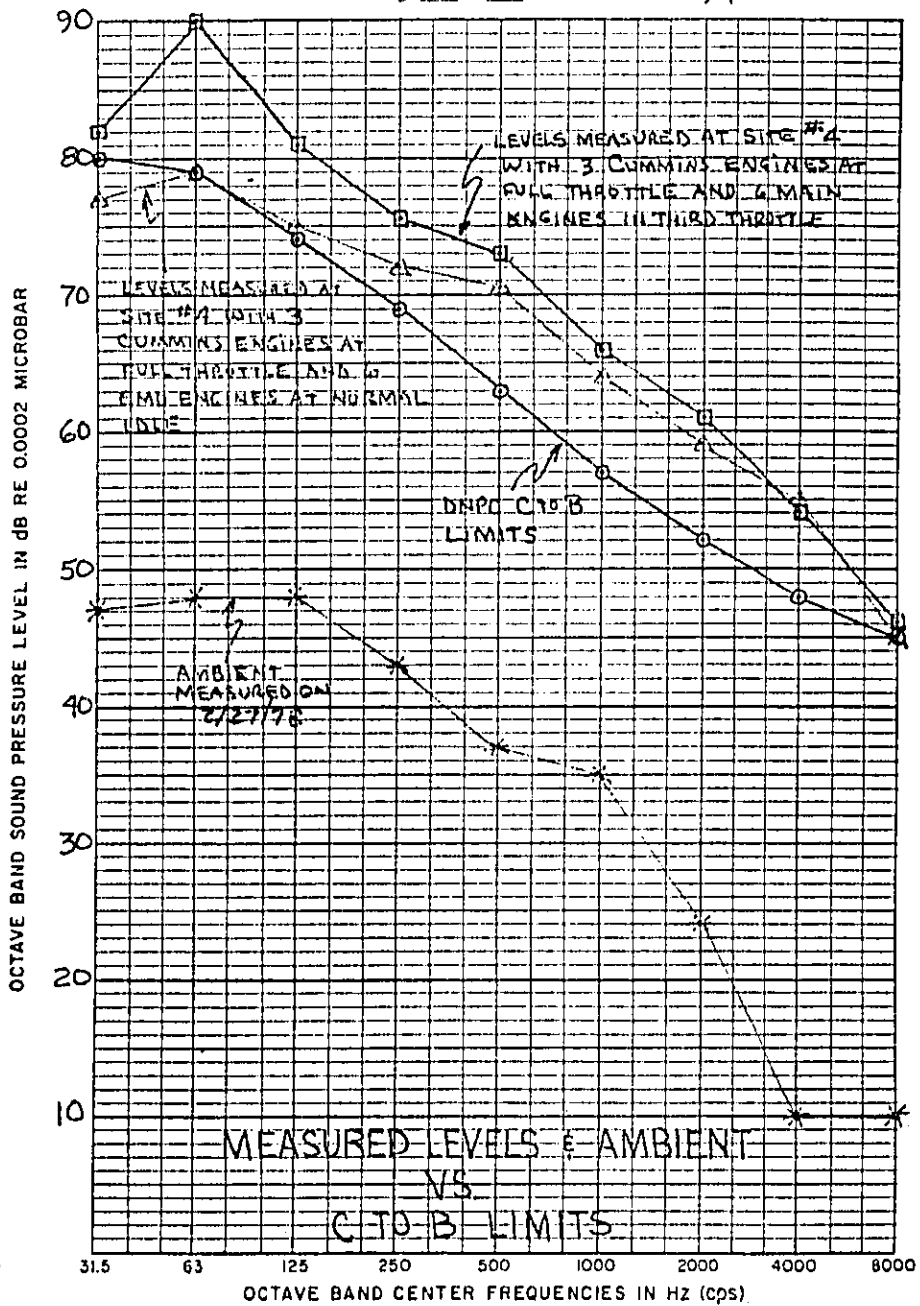


Major HEARN, JR  
3/02/78

STATE OF ILLINOIS  
Environmental Protection Agency  
Division of Noise Pollution Control

Date: FEBRUARY 27, 1978  
Complaint No: 77-09  
Emitter: CHICAGO & NORTHWESTERN  
RAILROAD COACH YARD  
City: BARRINGTON, ILLINOIS  
Field Data  Lab Data  Calc. Data

NOISE SURVEY REPORT  
Page 10 of 11



NPC-3 (11/77 2M)

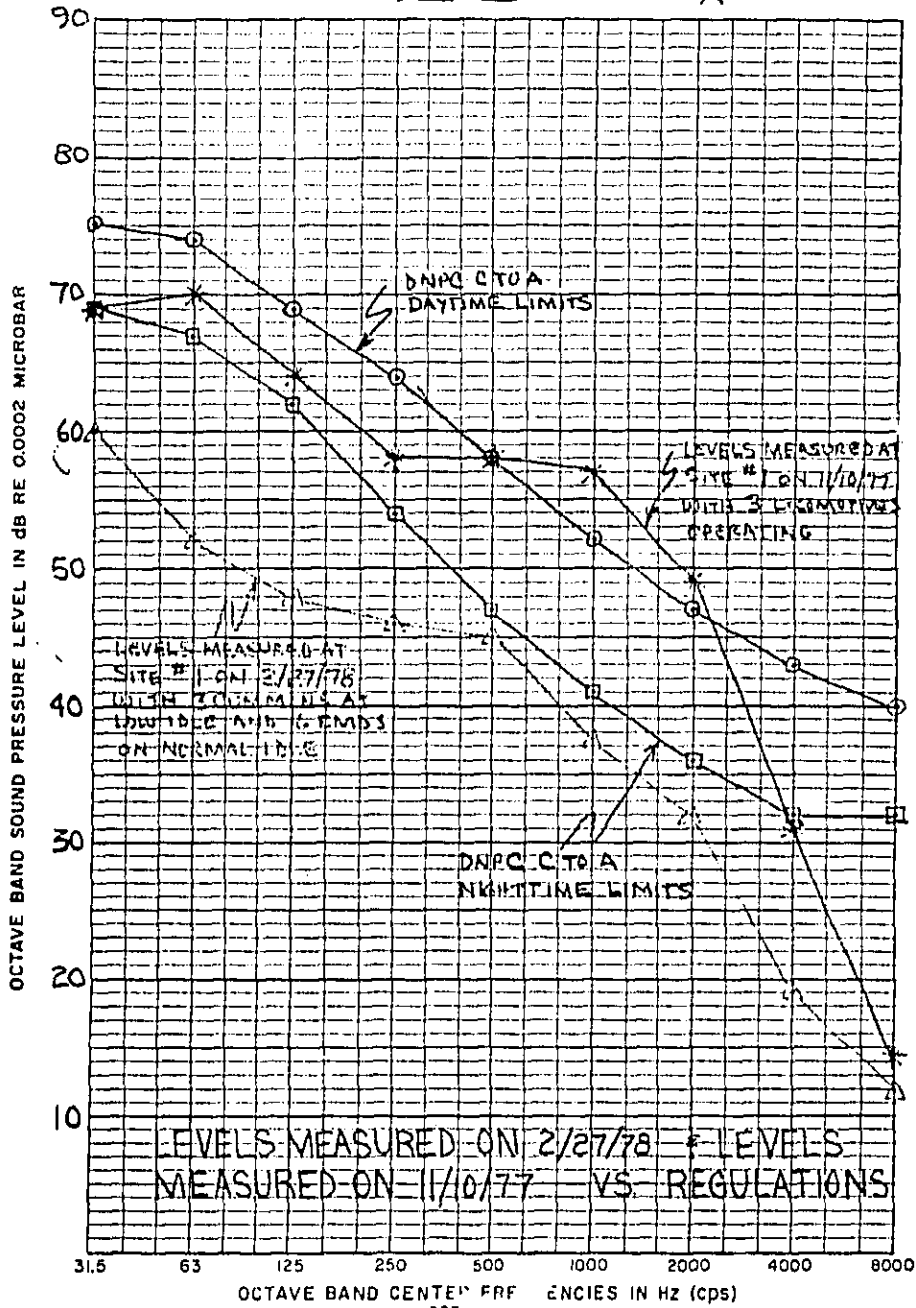
1224

MAJOR HEARN, JR.  
3/02/78

STATE OF ILLINOIS  
Environmental Protection Agency  
Division of Noise Pollution Control

Date: FEBRUARY 27, 1978  
Complaint No: 77-09  
Emitter: CHICAGO & NORTHWESTERN  
RAILROAD COACH YARD  
City: BARRINGTON, ILLINOIS  
Field Data  Lab Data  Calc. Data

NOISE SURVEY REPORT  
Page 11 of 11



DC-3(11/77) 241

225

## EXHIBIT 'F'

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TABLE 2

STEP (1) DETERMINE THE DISTANCE (R), IN METERS, FROM THE SOUND SOURCE TO THE MICROPHONE LOCATION.

STEP (2) USING 7 METERS FOR REFRIGERATION CARS OR 30 METERS FOR OTHER RAILROAD SOUND SOURCES, CALCULATE THE dB ADJUSTMENT ( $L_{AJ}$ ) TO THE APPROPRIATE SOURCE STANDARD BY THE FOLLOWING FORMULA:

$$L_{AJ} = 20 \text{ LOG}_{10} \left( \frac{R}{7 \text{ OR } 30} \right) \text{ (IN dB)}$$

ROUND OFF  $L_{AJ}$  TO THE NEAREST WHOLE DECIBEL.

STEP (3) SUBTRACT  $L_{AJ}$  FROM THE APPROPRIATE SOURCE STANDARD AND COMPARE THE RESULT WITH THE MEASURED VALUE FOR COMPLIANCE PURPOSES.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D C 20460

31 MAY 1979

SUBJECT: Meeting on 5/25/79 Between State Officials of Illinois and the U.S. Environmental Protection Agency on the Proposed Rulemaking: Noise Emission Standards for Transportation Equipment: Interstate Rail Carriers

FROM: Robert C. Rose, Program Manager, Railroads

TO: Docket No. ONAC 79-01

The following is a general outline of the subject meeting which was held at the Illinois Environmental Protection Agency, Springfield, Illinois.

Mr. Henry Thomas, EPA, Office of Noise Abatement and Control presented to the participants an overview of the proposed rulemaking. He first showed a 25 minute slide/tape show on the proposed regulations. Subsequently, the following subjects/comments constituted the interchange among attendees.

1. Mr. Thomas cited the preemptive nature of the law and subsequent rulemaking and the Association of American Railroads (AAR) filing and winning of a court order relative to rulemaking on "other than" locomotive and rail car noise standards. He also indicated that States must enact identical rules after the EPA rule becomes effective in order to enforce the standards.
2. Mr. Thomas indicated although it was tentative the comment period might be extended 30 days until July 2, 1979.
3. Mr. Thomas discussed how apparently the health and welfare aspects in Section 17 were omitted and that there was 5 minutes of floor debate on this Section before the Act passed.
4. Mr. Thomas indicated that the AAR may question the "receiving line" standard as opposed to "property line" and the Agency's methodology relative to a standard on "developed land" versus "undeveloped land." He asked if the State would care to provide written comments on this issue, but requested that they also (as EPA had done), take cost and technology into consideration as the benefit/use question and the balancing thereof is critical in establishing a practical standard.
5. An official from the State asked if acquisition of land could constitute a "technological improvement". The answer was no.
6. An official of the State questioned the use of the  $L_{dn}$  and  $L_{eq}$  concepts. EPA asked for written comments on concerns and alternatives.
7. The State questioned how various equipment was encompassed in the standard". A general answer was that only 3 specific pieces of equipment would have separate standards... all others would be under the same noise standard.

79-01-050

COPIES  
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8. The 4 mph coupling standard was discussed relative to the fact that most yards do not enforce their own industry prescribed standard of not-to-exceed 4 mph.
9. State officials discussed the preemptive nature of the law and its ramifications. EPA staff indicated that the railroad industry does not want to deal at the State and local level and effectively impacted the law making process back in 1971-72 on this issue.
10. The State and local waiver provision were discussed as to its utility. EPA personnel indicated that they felt that "specific" local circumstances will very rarely allow for deviations to Agency railroad noise standards.
11. Mr. Thomas discussed briefly the enforcement aspects of the rule-making i.e., the lack of DOT/FRA resources to enforce the rulemaking, the lack of EPA to do the same and the need for the State and local authorities to prepare for the bulk of the enforcement load. Mr. Thomas also indicated that the FRA will promulgate rules on enforcement and EPA will also do some research on how to get action/help when a violation occurs under the standard.
12. A State official outlined what he expects to be the State's comments on the rulemaking:
  - a. That by using a "property line" standard or a "receiving line" standard it will be very difficult to find violations.
  - b. Need noise standards on more sources i.e., switch engines, load cells and perhaps others.
  - c. Will concur with "receiving line" concept as oppose to "property line" but not with the classification of "developed" versus "undeveloped". Rather they wish to see industrial, residential, etc., and separate standards for each.
  - d. <sup>Agrees</sup> ~~Agrees~~ with the theory of the clear dominant sound as the measure for violations from the site.
  - e. Want major sources should be controlled? i.e. locomotives, reefers, retarders, load cells, etc.

The meeting began at 8:30 a.m. CDT and ended at 12:00 p.m CDT.

The following is a list of attendees at the meeting:

H. E. Thomas	-----	U.S. EPA, Washington, D.C.
Robert C. Rose	-----	U.S. EPA, Washington, D.C.
Reed W. Neuman	-----	Illinois Attorney General
Robert Hellweg	-----	Illinois Env. Protection Agency
James C. Reid	-----	Illinois Env. Protection Agency
Jack Moore	-----	Illinois Env. Protection Agency
William Seltzer	-----	Illinois Env. Protection Agency
John Paulwiskis	-----	Illinois Env. Protection Agency

EUGENE F. MOONEY  
SECRETARY



JULIAN M. CARROLL  
GOVERNOR

COMMONWEALTH OF KENTUCKY  
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION  
BUREAU OF ENVIRONMENTAL PROTECTION

A. L. ROARK  
COMMISSIONER

FRANKFORT, KENTUCKY 40601

June 12, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement & Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

The Kentucky Office of Noise Control welcomes the opportunity to review and comment on the proposed changes in the Railroad Regulations. Pursuant to our review of the advance copy of Notice of Proposed Rulemaking, we would respectfully offer the following comments:

1. We support the proposed limits for retarders. However, we feel that since retrofit will be required to meet these limits, only those retarders which cause impact to residential receivers should be retrofitted. To accomplish these ends, we would recommend a receiver criteria of  $L_{50} = 60$  dB(A) daytime & 50 dB(A) nighttime.
2. We very strongly disagree with the proposed establishment of receiving property line noise limits. Again, we would recommend establishment of receiving property criteria. We would recommend  $L_{dn} = 60$  dB(A) for this criteria to determine when controls should be imposed on a source. After reviewing relevant data in the background document, we also conclude that the receiving property standards for a one hour average should be no higher than 5 dB(A) above the  $L_{dn}$ , as opposed to the rather ridiculous 14 dB(A) difference proposed.
3. We support the decision to use  $L_{dn}$  instead of  $L_{eq}$  as the descriptor for property line standards. The 10 dB(A) nighttime penalty is an absolute necessity if people in the vicinity of rail-related operations are to have relief from intrusive levels which interfere with sleep and relaxation.
4. We disagree with inclusion of car speed criteria in the car coupling noise standards. A given excessive noise level created at 4 mph or slower will be just as intrusive as that same level created at higher coupling speeds. In addition, the car speed criteria will make enforcement vastly more difficult. By what means would noise control officers determine that a car's speed was less than 4 mph? Radar is useless for accurately measuring such low speeds, and it would seldom if ever be possible to make a determination using a stopwatch and a known length of rail.

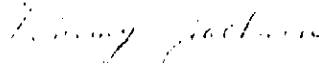
RECORD ANR-490

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5. In addressing the quieting of refrigerator cars, we feel that the most obvious approach was either overlooked or ignored. When the refrigerator car is to be stationary for long periods of time, the noisy diesel generator which powers the refrigerator compressor could be shut down and the compressor connected to a commercial AC line source. Even if this approach is not used, the proposed 78 dB(A) standard is too high. The proper use of good mufflers and acoustically absorptive foam should achieve lower levels than 78 dB(A) in most cases.
6. We would take definite issue with the assertion of Section 6 on enforcement, that the regulations have been drafted to facilitate easy enforcement by state and local agencies. On the contrary, we regard the measurement methodology to be so complex and unworkable that few state agencies and probably no local programs could enforce the standards. In order to follow the prescribed measurement procedure a program would require integrating sound level meters and access to a computer interface. Furthermore, extensive technical assistance from EPA would be required. We are not sure that EPA has sufficient manpower and technical resources to adequately provide this assistance.
7. The Noise Control Act does not permit EPA to grant variances to established standards. Therefore, if EPA should "grant" such a variance to a local jurisdiction for the purpose of allowing them to enforce a more stringent standard, such action would appear to be unlawful.
8. We recommend additional attention be directed toward through train noise. We feel that a receiving property line limit should be set to afford relief to the many impacted homeowners.

In conclusion, it appears that EPA has spent considerable time and effort to determine the average levels presently emanating from the various segments of rail-related activities and has forthwith proposed to make these levels the acceptable standards. Obviously, enforcement of such standards would result in little improvement in overall noise levels. It is hoped that the preceding comments will be viewed in a constructive manner and appropriate changes made to the final version of the regulations in order to effect meaningful noise reduction and control.

Very truly yours,



Tommy Jackson, Chief  
Office of Noise Control  
Kentucky Department of Natural Resources  
and Environmental Protection

TJ:lme

EUGENE F. MOONEY  
SECRETARY



JULIAN M. CARROLL  
GOVERNOR

COMMONWEALTH OF KENTUCKY  
DEPARTMENT FOR NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION  
BUREAU OF ENVIRONMENTAL PROTECTION

A. L. ROARK  
COMMISSIONER  
FRANKFORT, KENTUCKY 40601

May 10, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement & Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Thank you for the opportunity to review and comment on the advance copy of Notice of Proposed Rulemaking regarding changes in the Railroad Regulations. Pursuant to our review of this information, we offer the following comments:

1. We support and agree with the proposed limits for retarders. However, we feel strongly that since retrofit will be required to meet these limits, only those retarders which cause impact to residential receivers should be required to make this retrofitting. To accomplish these ends, we recommend development of receiver criteria. We recommend  $L_{eq}(1)$  of 60 dB daytime and 50 dB nighttime.
2. We strongly disagree with the receiving property standards as presently proposed. After reviewing relevant data in the background document, we have concluded that receiving property standards for a one hour average should be no higher than 5 dB above the  $L_{DN}$ , as opposed to the 14 dB difference proposed. We also propose  $L_{DN} = 60$  dBA.
3. We very strongly support the decision to use  $L_{DN}$  instead of  $L_{eq}$  as the measurement metric for property line standards. The 10 dB nighttime weighting factor is an absolute necessity if people in the vicinity of rail-related operations are to have relief from intrusive levels which interfere and sometimes completely prevent much needed sleep.
4. We disagree with the waiver of the standards for car coupling noise for coupling speeds under 4 mph. A given excessive noise level created at 4 mph will be just as intrusive as that same level created at higher coupling speeds.

BOARD ANR-490

18 MAY 79 131 40

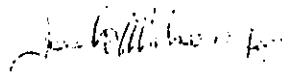
We recommend the revision of the car coupling standard to require  $L_A = 90$ dB at any speed. We feel this lower standard is technologically feasible and economically reasonable.

49-01-015

5. Regarding the refrigerator car noise problem, we recommend that the refrigerator compressors be disconnected from the diesel generators and reconnected to commercial AC line sources while refrigerator cars must sit for a long period of time. This would allow the shut-down of the noisy diesel generators during prolonged times when the rail car is not in motion. Even if this alternate approach were not taken to control this type noise, the proposed 78 dB standard is too high for this type diesel generator. The proper use of good mufflers and acoustically absorbitive foam should achieve lower levels than the proposed 78 dB in most cases.
6. We would take issue with the assertion in Section 6 on enforcement, that the regulations have been designed to allow easy enforcement by state and local agencies. The measurement methodology is such that few state agencies and probably no local programs could enforce the standards. Proper enforcement of these standards would require integrating sound level meters and some type of computer interface. Further, the execution of the proposed regulations would require extensive technical assistance from EPA to implement the complex measurement methodology required.
7. Since the noise control act does not give EPA authority to grant variances, it appears that the part of the enforcement section which states that local jurisdiction could obtain such variances for the purpose of enforcing a more stringent standard, would therefore be illegal.

In conclusion, based on our review of the proposed revisions and a study of the background document, we feel that EPA has acquiesced into proposing acceptable noise level standards which represent worst case levels from railroad activity. Obviously, enforcement of such standards would cause little improvement in ambient noise levels. We trust that the above comments will be taken in a constructive fashion and that appropriate adjustments will be made in the final version of the regulations to provide meaningful noise level control.

Sincerely,

  
Adelbert L. Roark  
Commissioner

ALR:WSC:djc



**Maryland Department of Transportation**  
State Railroad Administration

James J. O'Donnell  
Secretary

Charles H. Smith  
Administrator

May 31, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and  
Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Re: Noise Emission Standards for  
Transportation Equipment -  
Interstate Rail Carriers  
(FRL 1053-8)

Dear Sir:

Thank you for the opportunity to comment on the proposed revised and expanded railroad noise regulations. We are in general agreement with the regulations but would like to offer the following comments:

- 1) From a technical standpoint, the Environmental Protection Agency's (EPA) rationale for developing the proposed noise standards appears to be well documented and consistent with noise descriptors presently employed nationwide. However, as the regulations are presently written, they do not take into account the varying levels of activity associated with different types of land use. Subsection 201.17 Standards at Receiving Properties (a) and (b), sets one standard that is applicable for all types of receiving properties. As proposed, this would result in the application of a single noise standard to an aggregation of both noise sensitive and non-sensitive areas adjacent to railroad facilities when, in fact, it would probably be more desirable and cost effective to provide protection to noise sensitive areas only. The Federal Highway Administration is aware of this need and has taken this into account in developing design noise levels which reflect land use relationships adjacent to highway facilities (see attachment). As such, we recommend that EPA should redefine "receiving property" and adopt noise standards that reflect the varying noise sensitivities

My telephone number is (301) - 787-7210

Post Office Box 8755, Baltimore-Washington International Airport, Maryland 21240

ESRD ANR-490

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79-01-065

and impacts on residential, commercial, and industrial land use categories. For example, this would allow a rail yard adjacent to warehouse facilities to have a higher noise emission level than a rail yard adjacent to mainly residential properties. This would prevent the unnecessary expenditure of funds to control noise below a certain level which may not be benefiting the public's health and welfare.

- 2) The proposed regulations are intended to preempt the proliferation of State and local noise regulations. In Maryland, State regulations presently exempt railroads from coverage under the Environmental Noise Control Act of 1974. Based on this, no conflicts with the proposed regulations are anticipated. The Federal Noise Control Act of 1972, however, does provide State and local governments with the option for a waiver of preemption should local conditions necessitate such action. The Administration will keep abreast of any special problems encountered by the railroads in complying with the regulations so appropriate action can be initiated by the State to resolve conflicts, if needed.
- 3) As for the cost and feasibility of attaining the proposed standard, we would comment that the regulations may be too stringent and costly for the railroads to comply with. Should the regulations remain unchanged, provisions should be made by the Federal government to make funding available to railroads that would need to undertake extremely expensive alterations to bring yards into compliance. This would be extremely important in cases where critical railyard operations would be curtailed or eliminated due to enforcement of these regulations which will rest with FRA and State and local agencies.

As an alternative that would be more sensitive to the cost and feasibility of the railroads attaining the proposed standards, we propose the following revisions to the noise emission regulations:

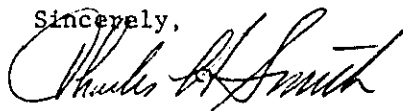
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		<u>Daytime</u>	<u>Nighttime</u>	
All Yard Facilities and Equipment	75	95	85	1985
Hump Yard Facilities and Equipment	70	85	80	1988

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Page Three  
May 31, 1979

<u>Source</u>	<u>Standards, dB (A-weighted)</u>	<u>Effective Date</u>
Retarders (Active)	100 dB at 50 meters	1988
Refrigerator Cars	88 dB at 30 meters	1988
Car Coupling	105 dB at 50 meters	1988

Again, we appreciate this opportunity to comment.

Sincerely,



Charles H. Smith  
Administrator

CHS:smi



TABLE 1  
DESIGN NOISE LEVEL/LAND USE RELATIONSHIPS

<u>Land Use Category</u>	<u>Design Noise Level - 10</u>	<u>Description of Land Use Category</u>
A	60dBA (Exterior)	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheatres, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA (Exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks.
C	75 dBA (Exterior)	Developed lands, properties or activities not included in categories A and B above.
D	--	For requirements on undeveloped lands see paragraphs 5a(5) and (6), this P/M.
E*	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

\* See paragraph 1c of this Appendix for method of application.



# Minnesota Pollution Control Agency

June 28, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Sirs:

The Minnesota Pollution Control Agency (MPCA) staff has reviewed the proposed "Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers" 44 Fed. Reg. 22960-22972 (April 17, 1979), documentation supporting the proposed regulation, and the draft "Environmental Impact Statement for Proposed Revision to Rail Carrier Noise Emission Regulation" ("Draft EIS"), EPA 550/9-78-207 (February 1979), and offers the following comments for the record.

1. Establishment of Health Standards

The U.S. Environmental Protection Agency ("EPA") cites as its statutory authority for the adoption of the proposed regulations section 17 of the Noise Control Act of 1972 P.L. 92-574 (hereinafter the "Act"), (see 44 Fed. Reg. 22961).

The proposed regulation 40 C.F.R. Section 201.17 clearly establishes "Standards at receiving properties." Such receiver, or ambient, standards are clearly not the "noise emission standards" mandated by section 17(a) of the Act and thus if adopted by the EPA would not satisfy the charge under section 17(a).

The distinction between the statutory authority to adopt emission standards as opposed to receiver standards is significant. If EPA adopts the regulations as proposed, it will establish for the first time health (ambient or receiver) standards for noise pollution control. Congress has not given EPA that authority. In adopting the Noise

79-01-140

-EARD ANR-490

3 JUL 79 10:12

Phone: 612-296-7301

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Control Act of 1972 Congress specifically recognized in section 2 that "primary responsibility for control of noise rests with State and local government." The Act leaves the setting of ambient standards to state and local government, while reserving to EPA in section 17(a) of the Act the task of setting technology-based emission limitations "which reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance." State and local governments may not under section 17(c) of the Act adopt any noise emission regulations unless they are identical to EPA's regulations. They may however, adopt receiver standards which do not conflict with EPA's emission regulations. Source and receiver standards can be enforced independently without conflict. A conflict arises only when one tries to attack a noise problem through hybridization of source and receiver regulations, as EPA is proposing in this case.

EPA itself has recognized publicly that it has no statutory authority to adopt receiver standards. In its document "Toward a National Strategy for Noise Control" (April 1977) EPA states at page 15: "EPA has no authority to regulate ambient noise levels." EPA's proposal to adopt receiver standards by its own declaration exceeds its authority under the Act.

## 2. Use of L<sub>dn</sub> as Descriptor

Section 201.17 of the proposed regulation designates the proposed standards in terms of the L<sub>dn</sub> descriptor. Use of the L<sub>dn</sub> descriptor is ineffective as a tool to protect the health and welfare of people affected by railroad facility noise.

As a part of its justification for use of the L<sub>dn</sub> descriptor applicable to a health standard, EPA cites its own publication entitled "Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," 550/9-74-004 (March 1974) (hereinafter "Levels Document") for the proposition that "An outdoor L<sub>dn</sub> value of 55 dB is the level of noise EPA has identified as being protective of public health and welfare with an adequate margin of safety." 44 Fed. Reg. at 22965. In citing the Levels Document as support for the use of the L<sub>dn</sub> descriptor, EPA misrepresents the nature of the Levels Document. The Levels Document did not identify

$L_{dn}$  as an appropriate descriptor for health standards. It used as the descriptor the yearly average  $L_{dn}$ , which differs significantly from the  $L_{dn}$ . The proposed regulation is based on the  $L_{dn}$  and not the yearly average  $L_{dn}$ .

In 1974 the MPCA adopted receiver noise standards using the hourly  $L_{10}$  and  $L_{50}$  descriptors based on the A-weighting network and has had five-and-a-half years experience in enforcing and working with its standards. In the process of adopting and enforcing these standards we have found a total lack of information to support the use of any 24-hour or yearly average descriptor as applicable to health standards. In our view the EPA has not presented a supportable case for the use of the  $L_{dn}$  descriptor for this regulation.

### 3. Use of Levels Document as Support for Health Standards

As previously noted, EPA has cited the Levels Document as support for the health-based standards it proposes to adopt under 40 CFR Section 201.17.

The Levels Document was never intended to serve as the basis for a federal health-based noise standard. The Levels Document was prepared in response to a Congressional mandate under section 5(a)(2) of the Act to "publish information on the levels of environmental noise...requisite to protect the public health and welfare with an adequate margin of safety." (Emphasis added.) The document purported to identify noise levels for the protection of public health and safety but such levels were not adopted by EPA for any regulatory purpose. They were not subject to the public scrutiny afforded regulatory actions. If EPA goes forward with adoption of the proposed receiver standards it must be able to support such standards with documentation that will stand up under such public scrutiny. In the opinion of the MPCA the Levels Document does not support the adoption of a federal health-based standard.

### 4. Car Coupling Operations Standard

The standard established by section 201.15 for car coupling operations are, in effect, impulsive noise standards. Such standards lack support and their effectiveness cannot be evaluated because EPA has not yet identified impulsive noise levels "requisite to protect health and welfare with an adequate margin of safety" as required by section 5(a)(2) of the Act. Little information is readily available on the subject. To our knowledge, work done for EPA by Wyle Labs in 1976 is yet to be published.

5. Difficulty of Enforcement of Proposed Standard

The proposed receiver standards if adopted will be unenforceable, and therefore ineffective to protect persons adversely affected by railroad facility noise.

EPA, although recognizing that "the major enforcement activity will need to be conducted by State and local agencies if the regulations are to be effective" (44 Fed. Reg. at 22967), has tied the hands of enforcement officials by the very terms of the regulation itself. Proposed 40 CFR section 201.31 specifies that measurements must be obtained using an instrument that does not presently exist. An integrating sound level meter or instrumentation system, that meets all of the requirements of American National Standard (ANSI) for Sound Level Meters SL4-1971, Type 1, does not now exist for the purpose of measuring  $L_{dn}$ . Should such an instrument become available it is likely to be exorbitantly priced. In addition, it would be required to be used for 24-hour stints in conjunction with computer programs not presently being used for enforcement purposes.

Background information to the proposed regulation does not support the need for Type I instrumentation. Few differences are found between Type I and Type II instrumentation in the real world due to the frequency components of environmental noise sources. Railroad facilities are no exception. The economic impact of requiring Type I meters for State and local programs cannot be taken lightly. The need for such requirements must be thoroughly analyzed and documented, and that has not been done in the instant case.

For enforcement actions to survive court tests, qualified technicians must be present during any data gathering effort. The 24-hour monitoring period required to enforce a standard using the  $L_{dn}$  descriptor will drain the staff resources of State and local programs in a very short period of time. Although the proposed 40 CFR section 201.17(b) provides for enforcement of the alternative  $L_{eq}$  descriptor, the hourly 84  $L_{eq}$  for daytime and 74  $L_{eq}$  for nighttime periods are so grossly inadequate as standards that they are meaningless.

In addition, enforcing the proposed regulation requires that the data be adjusted using computer programs not commonly used for enforcement purposes. For example, the "indigenous" noise level prediction [ $22 + 10 \log$  (population density)] is based on regression analyses of a minimum data base. It is our

opinion that the concept overestimates levels for background noise in Minnesota neighborhoods. Similarly, the "calculation of day-night levels resulting from civil aircraft operations" is not an easy task for specific daily operations since it is designed for an average yearly  $L_{dn}$ . This implies a requirement of having an individual present at the control tower of the nearby airport, continuously, charting the flight tracks for the day in question. EPA should itself test this requirement for the nearby National airport to assess its reasonableness. When it comes to background highway noise prediction the choice is made of a model (Mod 04, FHWA-RD-77-18) that is well known to "break down" for arterial and local traffic conditions.

Even with the best intentioned implementation a railyard operator could protect himself from any enforcement action by ringing a bell or blowing a whistle (to which the regulation does not apply--see 44 Fed. Reg. at 22963) constantly and he has sufficiently invalidated the measurement that a violation of the standard could not be proved.

EPA's decision not to regulate maintenance of way equipment (see Fed. Reg. at 22963) raises the same issue: How is the receiver limit enforced if one of those devices is operational in the yard when monitoring of the facility is being conducted?

Section 201.15 of the proposed regulation provides that "[T]he car coupling requirement can be alternatively met by demonstrating that the car coupling operations are not performed at speeds greater than four miles per hour at point of impact." This alternative should be dropped from an enforcement standpoint. As determined by EPA in the testing phase of the development of this standard, noise produced by car couplings depends mainly on the loaded condition of the cars and the speed of coupling. The speed of coupling itself is highly dependent on the care exercised by the yard crews. Knowledge that enforcement testing is being done (present test requirements does not allow for the enforcer to remain incognito) will result in 100 percent compliance under testing conditions since four miles per hour can be easily achieved under observation. The easy avoidance of finding a violation could easily make this standard meaningless in protecting the public. Section 201.26 of the proposed regulation specifies height and distance in measuring car coupling noise. For effective enforcement of the car coupling standard, measurement should be able to be done at all distances and elevations where a problem might exist. The requirement of section 201.26 that energy averages of sound levels from at least ten couplings shall take place at a specified distance and elevation makes enforcement of this standard meaningless.

In summary, the MPCA's evaluation of the regulation as proposed indicates that significant enforcement difficulties, and in many cases impossibilities, will result from promulgation of the regulation in its present form, especially in light of the fact that EPA intends for the enforcement burden to fall on State and local governments.

#### 6. EPA's Approach to Adopting Standards

Although the foregoing comments have related generally to specific sections of the proposed regulation, the MPCA wishes to comment upon the approach EPA has taken with respect to compliance with the order of the U.S. Court of Appeals for the District of Columbia which mandated adoption of regulations for railroad facilities.

A reading of the proposed regulation and the supporting documentation shows that EPA has approached the task of adopting railroad facility regulations as if the Act specifically authorized receiver standards instead of emission standards. In three instances EPA actually proposes the kind of standards authorized by the Act: sections 201.14, 201.15, and 201.16 propose emission standards for refrigerator cars, coupling operations and retarders. Rather than treating the emission standards as the norm from which the receiver standards depart, EPA takes its bizarre approach a step further by justifying the emission standards of section 201.14-201.16 as a necessary exception to the rule. In its "Background Document for Proposed Revision to Rail Carrier Noise Emission Regulation," EPA explains why these three sources should be regulated differently than other railroad facilities, using an emission limitation rather than the  $L_{dn}$  receiver standard. The document states:

The  $L_{dn}$  descriptor is inadequate for characterizing annoyance from certain types of sources. For example, sources such as retarders and refrigerator cars which have large, pure-tone components can be especially annoying even when they are not affecting ambient levels appreciably. Likewise, impact noise from car coupling can be a major cause of annoyance while contributing little to  $L_{dn}$ .

This approach is regulating railroad facilities--applying a 24-hour  $L_{dn}$  for some sources and an  $L_{max}$  for others--is not only confusing but shows EPA's <sup>lack</sup> of belief in the  $L_{dn}$  standards as an effective means of protecting the public health. EPA should confine itself to adopting the emission standards authorized by the Act to be supplemented with the establishment and enforcement of ambient standards by State and local officials.

The MPCA believes that the most troubling aspect of EPA's approach to adopting a railroad facility regulation is that the regulation proposed seems to be deliberately designed to be outside EPA's statutory authority and totally ineffective to regulate railroad facilities. Remarks by an EPA consultant at a November 2, 1977, meeting in Chicago where MPCA staff along with EPA staff and consultants and other State and local officials were present, went so far as to suggest that EPA's course of action should be to adopt regulations that would not withstand a challenge as to their effectiveness. It appears that such advice was heeded. EPA has previously stated its desire to leave the regulation of railroad facilities to State and local governments. It proposes these regulations under a court order which attempted to ascertain Congress' intent in enacting section 17 of the Act. The MPCA urges that EPA seek from Congress a clarification to the Act in view of the court imposed duty of regulating railroad facilities. Such a Congressional clarification would be far better than the proposed course of action in which EPA will adopt ineffective standards which will tie the hands of State and local noise regulatory agencies from giving the public relief from railroad facility noise.

7. Draft EIS

Staff of the MPCA have reviewed the Draft EIS and finds it to be inadequate in the following specific respects:


- a) It does not discuss why stricter limits were not considered by the EPA for new facilities.
- b) It ignores any adverse impact that ethylene glycol runoffs from retarders might have on water quality.
- c) It does not address the impact of idling locomotives (a large source of noise complaints) on energy consumption.
- d) It is well known that noise has a detrimental effect on property values. The economic impact to receiving properties left unprotected by the regulations was not discussed or even mentioned. The economic impact to industry in achieving the specified levels, on the other hand, was thoroughly investigated.



Office of Noise Abatement and Control  
Page 8  
June 28, 1979

In general terms the Draft EIS fails to be what the National Environmental Policy Act envisions: a concise, free-standing document which is helpful to the decision-maker in arriving at a conclusion on the environmental impacts of the proposed action. Instead it reads as a six-page nod to the concept of environmental impact analysis. The conclusion that the Draft EIS reaches that "compliance with the proposed standards for existing yards is expected to provide an environment free from annoying levels of railroad noise for about 830 thousand of the 4 million exposed" ought to be stated in the converse to convey the true impact of the proposed regulation. It should read: "The proposed EPA regulation will prevent 3.170 million people from obtaining relief from railroad noise."

Sincerely,



Terry Hoffman  
Executive Director

TH/rg



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF ENVIRONMENTAL QUALITY  
JOHN FITCH PLAZA, CN 027, TRENTON, N. J. 08625

June 26, 1979

GEORGE J. TYLER  
DIRECTOR

Mr. David Hawkins  
Assistant Administrator  
Air and Waste Management  
U.S. Environmental Protection Agency  
410 "M" Street, S.W.  
Washington, D.C. 20460

Dear Mr. Hawkins:

This letter is to comment on the Environmental Protection Agency's proposed Railyard Noise Regulations. It is regrettable indeed that the courts required EPA to deal with the rail facilities at all. These would clearly be better handled by state and local agencies.

Any property-line standards promulgated by EPA should be based on worst case situations. A "least common denominator" approach is unacceptable. Minimum standards would not be in the best interest of the public health and welfare. Such standards would only serve to legalize existing levels of noise and in the case of railyards, actually allow significant increases in noise emissions at yards which are currently "quiet." Conversely, it would allow intolerable conditions near rail facilities that are in close proximity to densely populated areas. New Jersey has many such sites including some with extra sensitive neighbors such as senior citizens, recuperation facilities, etc. We feel it is incumbent on EPA to protect health and well-being of all of its citizens. This proposal would be borne most heavily on those in congested urban areas since it was arrived at using the "least common denominator" approach.

As far as the issue of property line regulations in general are concerned, we feel that EPA should not establish property-line type noise emission standards for railyards or any other source of environmental noise.

Recognizing the restrictions that would be placed on establishing national property-line railroad noise emission standards and the uniqueness of local acoustic environments, we would recommend the adoption of receiving property criteria to aid in determining when source control should be imposed. The following scenario is suggested:

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- (1) EPA should establish receiving property noise impact criteria which when violated would constitute an impact on the public health and welfare and, therefore, be considered excessive. Such criteria should be established without consideration for cost of compliance or technology requirements. We would recommend  $L_{DN}$  55 dBA be adopted as the criterion for long term steady state noise exposure (based on information published by EPA) and that maximum hourly Leq's of 60 dBA (day) and 50 dBA (night) also be established to allow short-term monitoring. These hourly levels are recommended based on the need to protect against communication interference and sleep interruption, and are supported by (i) the data presented in EPA's Appendix V which shows the greatest difference between maximum measured hourly Leq values being 4.5 dBA, indicating that the daytime hourly Leq should be set no higher than 5 dBA above the  $L_{DN}$  value; and (ii) the need for a 10 dB nighttime penalty. A third set of criteria needs to be established as a measure of intrusive noise, perhaps a maximum  $L_{MAX} - L_{50}$  difference or some similar measure.
- (2) Once the above criteria are established, Federal, State and local enforcement officials can determine where noise impacts exist. When the noise emissions from a given railyard are found to be in violation of the criteria at a receiving noise sensitive site, the next step is to determine whether the noise is necessary. We would define unnecessary noise as any noise which is excessive (violates the criteria) and which has not been controlled using best available technology (BAT) as identified by EPA source standards which include administrative controls.
- (3) A railyard which is found to be generating excessive and unnecessary noise would be required to bring its noise within the criteria or comply with all EPA source standards through the application of BAT and administrative controls.

This scenario would result in noise abatement only at noise sensitive sites as opposed to requiring abatement on all sources industrywide, thereby reducing drastically the economic impact on industry and yet, be maximum control where it is needed, particularly in the more densely populated urban centers. We feel it would also encourage the use of administrative controls including cooperation with local planning officials to prevent encroachment and encourage compatible redevelopment.

With respect to emissions from rolling stock in through traffic, we feel that through train noise has not been adequately addressed. Existing source standards fail to protect the public health and welfare. We strongly urge that standards for rolling stock be reexamined.

In the area of best available technology, this definition should include administrative control. Any of these controls considered workable and reasonable should be published by EPA for use by the railroads and enforcing agencies. These administrative controls could include rescheduling of marshalling hours, positions, etc.; in short, anything that relates to the time, place or duration of activities.

As to the car coupling noise standards, we recommend the car speed criteria be dropped since it will only serve to complicate enforcement. As currently written, the regulation would require the monitoring of car speed to document it moving less than 4 mph in order to fully support a violation.

We also recommend that the standard be reduced from 95 dBA to 90 dBA at 30 meters. A minimum of 5 readings all within 10 dBA of the maximum reading should be required. It appears that the 90 dBA standard could be reached through speed controls, especially when the energy averaging of 5 readings is considered.

We support EPA's application of 12 ft. barriers with absorptive lining as BAT for retarder noise control. We support the 90 dBA standard, but suggest that the measurement criteria be amended to require a minimum of 5 readings, all within 10 dBA of the maximum reading, be used in arriving at the energy average.

The background documentation presents insufficient data to support a review of the standard on refrigerator car noise. However, it does not appear that the use of electric service for compressors as opposed to diesel-generated service was given adequate, if any, consideration. This control approach is currently being used in Orange County, California and has been considered in several cases involving our own New Jersey industrial and commercial stationary sources regulation.

The regulation dealing with acoustic environment degradation should be amended to include provisions limiting degradation of the acoustic environment surrounding railyards that currently have low level noise emissions.

With respect to land use planning, all railyards should be required to provide noise contours to local planning departments showing current and future noise impact zones, in order to encourage compatible land use planning. Copies should also be forwarded to the state agencies involved in land use and environmental controls.

The measurement criteria are extremely complex and will result in little, if any, enforcement by State and local noise control agencies. Our Office of Noise Control would not be able to participate in the enforcement of the regulation as proposed. Even if acceptable standards and measurement procedures are promulgated by EPA, State and local governments will be required to adopt identical regulations before they could become involved in enforcement. This process could prove to be a lengthy, if not impossible, task in many jurisdictions. Furthermore, we feel that without financial and technical support, (training enforcement officials, providing legal advice, equipment, technical consultation, etc.), no state or local noise control agency will be able to successfully enforce against a major rail company.

Mr. David Hawkins  
Air and Waste Management

June 26, 1979  
Page 4

The measurement criteria as proposed are too complex to be considered workable. Modeling out all non-railyard noise sources and through trains as proposed using sophisticated techniques such as the TSC Highway Noise Prediction Method is asking too much. There are currently no integrating sound level instrumentation systems that meet all ANSI Type I specifications due to the lack of specifications for digital readout. Those that meet the Type I accuracy specifications are overly expensive and not part of the equipment inventory of our State Office of Noise Control. Although we recommended earlier against the use of L<sub>DN</sub> or Leq for enforcement, if L<sub>DN</sub> and Leq metrics are adopted, a simple statistical measurement procedure using Type II sound level meters and a method of calculating Leq should be established.

The proposed regulations do not address which regulation rules when compressors, motor carriers, etc., are located on railroad property. Usually when two regulations might apply, the more stringent is preemptive.

Sincerely,



George J. Tyler, Director  
Division of Environmental Quality



Edward J. DiPolvere, Chief  
Office of Noise Control

GT:EJDP/jc

cc: Commissioner O'Hern  
Paul H. Arbesman, Asst. Commissioner  
Rail Carrier Docket ONAC 79-01

79-01-054



ROBERT F. FLACKE  
COMMISSIONER

STATE OF NEW YORK  
DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
ALBANY, NEW YORK 12233

MAY 1 1979

Dear Mr. Thomas:

Thank you for sending the advance information on the proposed noise regulations for interstate rail carriers.

As you point out, there are significant issues involved in this rulemaking action: the requirement for a national standard, countless unique problems, a potential for conflict with state and local programs and the financial status of the railroads. A thorough technical review of our noise control staff will begin immediately so that we can provide our views within the 45-day public comment period.

Sincerely,

  
Robert F. Flacke

Mr. Henry E. Thomas, Director  
Standards and Regulations Division (ANR-490)  
Office of Air, Noise and Radiation  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

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STATE OF NEW YORK  
EXECUTIVE CHAMBER  
ALBANY 12224

ROBERT J. MORGADO  
SECRETARY TO THE GOVERNOR

May 3, 1979

Dear Mr. Elkins:

Governor Carey has asked me to thank you for your letter advising of the proposed noise emission standards for interstate rail carriers.

It is apparent that your staff has worked very hard to reconcile the requirements of national standards with the reality of countless unique situations and the potential for conflict with state and local programs. The impact on New York State can best be assessed by the Environmental Conservation Department which has primary responsibility for noise control. Accordingly, I am forwarding the proposed rules and background material to that agency for appropriate technical review.

Sincerely,

Mr. Charles E. Elkins  
Deputy Assistant Administrator  
for Noise Control Programs  
United States Environmental  
Protection Agency  
Washington, D. C. 20460

SBRD ANK-190

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SBRD ANK-190

16 MAY 79 10: 23

MEMORANDUM  
OF CALL

TO:

*Bob Rose*

I WERE CALLED BY—  YOU WERE VISITED BY—

*William McCall*

OR (Organization)

*U.S. Post, Albany*

PLEASE CALL → PHONE NO. CODE/EXT.  PMS

WILL CALL AGAIN  IS WAITING TO SEE YOU

RETURNED YOUR CALL  WISHES AN APPOINTMENT

MESSAGE

*(510) 457-5672*

*Sent comment about R.R. City  
today. Should be here by  
Mon. If not, no later than  
Tues. morning.*

RECEIVED BY	DATE	TIME
<i>D. Davis</i>	<i>6/19</i>	<i>9:45</i>

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STANDARD FORM 63 (Rev. 6-76)  
Prescribed by GSA  
FPMR (41 CFR) 101-11.6

405GPO:1978:281-184/102



NEW YORK STATE  
**DEPARTMENT OF TRANSPORTATION**  
William C. Hennessy, Commissioner



1220 Washington Avenue, State Campus, Albany, New York 12232

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control  
(ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

This is in response to your request for comments on a proposed amendment to the existing railroad noise emission regulation published in the Federal Register on April 17, 1979. Standards are proposed by this amendment which would limit overall facility and equipment noise emissions and which would limit the noise caused by specific pieces of equipment on their operation.

The New York State Department of Transportation has carefully reviewed the proposed standards and has prepared the attached comments for your consideration. Please accept these recommendations for inclusion in your final version of the directive.

Should you require any additional information or clarification of the material transmitted herewith, please contact Mr. W. McColl of our Environmental Analysis Bureau, at 518-457-5672.

Sincerely,

*W. C. Hennessy*  
W. C. HENNESSY  
Commissioner

Enclosures

79-01-148

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NEW YORK STATE DEPARTMENT OF TRANSPORTATION  
COMMENTS ON U.S. ENVIRONMENTAL  
PROTECTION AGENCY NOISE EMISSION  
STANDARDS FOR TRANSPORTATION  
EQUIPMENT; INTERSTATE RAIL CARRIERS  
FEDERAL REGISTER APRIL 17, 1979

June 28, 1979

As a general comment, we do not agree that a single Federal solution is not possible to solve the many local and site-specific rail noise problems that exist nor do we believe that the standards have been developed in terms of typical and average situations. In the first instance, we realize the great range of existing noise levels in communities near railroad facilities. In New York State levels may vary from an Leq of 30 dBA in rural upstate areas to 80 dBA in New York City. We therefore appreciate the difficulty in attempting to set a single absolute standard level and effectively protect different areas with their great environmental diversity. Thus, we feel the standards have been developed in terms of at least common denominator approach rather than for typical or average situations.

It is our recommendation that a relative standard could have been developed that would satisfy the need for national uniformity of treatment. Rather than a mere single level for all receptors, a single level increase limit could be provided, e.g. existing level plus 5, 10, or 15 dB. In this manner existing quiet areas can be protected while recognizing the additional problems associated with extremely noisy areas. A relative standard need not be any more difficult to measure or enforce as well in that the existing levels can be satisfactorily calculated using the population density relationship mentioned in Section 201.33 (d)(1)(i). In the absence of any explanation to the contrary, we see no reason why this approach would not prove to be more satisfactory to all parties concerned (federal, state, local, railroads, etc.).

A second general comment involves the lack of recognition or requirement concerning local responsibilities for land use and zoning control. Some consideration should be given to adjoining land that becomes developed after the implementation dates of this directive. The railroads should not be responsible for noise impact to receivers who come into existence at some future point in time. Local government has the clear right and responsibility to provide the necessary preventive protection in these cases.

Although we fully understand the mathematics involved in converting from the day-night sound level to its equivalent hourly or cumulative hourly levels, we feel that some very excessive impacts could result that would not be considered violations of the proposed receiving property standards. Hourly Leq levels of 84 dBA are very high for any level of population density development. As a practical matter, the enforcement procedure for this or any other similar regulation will involve as many short-term screening measurements as possible at as many sites as possible rather than a few 24 hour measurements. Thus, the one hour Leq will be the prime metric in the implementation of the standard and not the Ldn. It is our opinion that the levels should have been developed based on a single worst hour condition with appropriate levels stipulate

This being the case, the day-long condition would take care of itself. Perhaps a night time level could also be stipulated (10 dB lower) to deal with the occurrence of specific night time operations.

Specific Comments:

Section 201.1 (n) - No indication is given for the purpose of the "Adjusted Measured Sound Level" or the reason one decibel is subtracted from the measurement. Perhaps it is a tolerance.

Section 201.1 (kk) - The definition of "Receiving Property" should consider our second general comment mentioned above.

Section 201.1 (qq) - We see no reason to specify Type 1 measurement equipment nor the FAST dynamic response for all cases. Type 2 instrumentation is sufficient in all situations while the SLOW response is best for all conditions save for the car coupling and retarder tests.

Section 201.25 (b) - We do not understand the reason for this provision. When the line-of-sight is broken and diffraction occurs, a similar result is usually obtained when the break is either a certain distance from the source or that same distance from the receiver.

Section 201.26 (a) - Some measurement provision and, perhaps, a standard decibel level should be given for large groups of refrigerator cars parked in one area. Although the control of the specific car correctly rests with the owner, the yard operator has other abatement measures at his disposal (such as barriers) to control the operation and cumulative effects from this source.

Section 201.26 (b) - The waiver of this standard and procedure where it is demonstrated that the cars are not travelling at a speed greater than 4 mph renders the entire section useless. The requirement to obtain ten measured maximum impact levels together with their ten measured speed levels is virtually impossible.

Section 201.31 (a) - The measurement instrumentation criteria given is much too restrictive and excessively precise. Precision instrumentation satisfying these requirements is frequently expensive, hard to operate, and hard to maintain.

Section 201.33 (d)(1)(iii) - The highway traffic component of the noise level should not be estimated by using the procedures contained in FHWA-RD-77-18. Instead, Report No. FHWA-RD-77-108 must be used. This is not a typographical error! Report 77-18 is the TSC method which is now outdated. Report 77-108 is the FHWA method which will be mandatory in federal highway work after January 1, 1980.

**OhioEPA**

April 24, 1979

Mr. Henry E. Thomas  
Director  
Standards and Regulations Division (ANR-490)  
U. S. Environmental Protection Agency  
Washington D.C. 20460

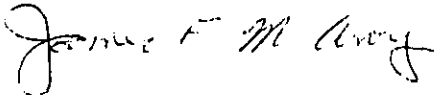
Dear Mr. Thomas:

This is in response to your letter of April 13, 1979 which was addressed to Ohio EPA's former director, Ned Williams. Your letter concerned U.S. EPA's proposed revised and expanded railroad noise regulations. Further, you informed me that by 1982 Federal noise controls will be extended to most equipment and facilities of interstate rail carrier if the revised regulations become final.

As you know, the Ohio Revised Code has not yet authorized the Ohio EPA, or any other Ohio governmental agency, to regulate outdoor noise pollution. Consequently, at present, the OEPA does not have the resources to develop its own regulations nor to enforce U.S.EPA's on the Federal Railroad Administration's rules.

Thank you for updating me in this matter.

Sincerely,



James F. McAvoy  
Director

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ANR-490  
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State of Ohio Environmental Protection Agency  
Box 1049, 361 E. Broad St., Columbus, Ohio 43216 (614) 467-8565

James A. Rhodes, Governor  
James F. McAvoy, Director



**PUBLIC UTILITY COMMISSIONER OF OREGON**

LABOR & INDUSTRIES BUILDING, SALEM OREGON 97310 PHONE (503) 378-6351

May 29, 1979

Rail Carrier Docket No. ONAC 79-01  
Office of Noise Abatement  
& Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, DC 20460

Re: ONAC 79-01 -- Noise Emission Regulations for  
Railroads

This agency's interest in the proposed noise emission regulations for railroads concerns exposure of railroad employees to noise. Noise standards should take the health and safety impact on railroad employees into consideration, particularly in hump yard facilities. The noise regulations should be drafted to assure that noise at hump yards, particularly from retarder operation, does not impair railroad employees' ability to perform their duties safely.

Extremely loud, high-frequency noise from certain types of freight car retarders may lead employees to commit some unsafe act in order to avoid the retarder noise. Further, there may be a long term hearing loss as a result of high-pitched retarder squeal.

We recommend that regulations and implementation of the program be designed to allow for local agency involvement on a regular basis, without extensive reliance on the "special local conditions" exception. We agree with the Oregon Department of Environmental Quality's contention that unless EPA provides funds for equipment to monitor noise and for training of personnel, local agencies will provide at best a minimum degree of enforcement.

*David J. Astle*  
David J. Astle  
Assistant Commissioner  
Rail-Air Program

sb/9754D  
cc: John Hector, Program Manager  
GEH, PUC  
SER 95

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*Department of Environmental Quality*

522 S.W. 5th AVENUE, P.O. BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5989

May 23, 1979

Rail Carrier Docket No. ONAC 79-01  
Office of Noise Abatement and Control  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Re: ONAC 79-01  
Rail Standards

Dear Sirs:

The Oregon Department of Environmental Quality has administrative responsibility to control excessive levels of environmental noise throughout Oregon.

Noise resulting from rail operations is included in existing regulations to the extent such operations are not regulated by preemptive federal standards. Therefore this agency believes its experience in rail noise problems will provide EPA with useful comments on the proposed standards. Please enter the attached comments to the record on this matter.

Sincerely,

John Hector  
Program Manager  
Noise Pollution Control

JH:sjt

Attachment (1)

cc: Oregon Department of Justice  
Oregon Department of Transportation  
Oregon Public Utilities Commission  
Northwest Environmental Defense Council

Contains  
Recycled  
Materials

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May 15, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Submitted By  
The Oregon Department of Environmental Quality  
Noise Pollution Control Section  
John Hector, Manager

The State of Oregon, as a whole, is not severely impacted by noise from railroad facilities and equipment. Certain communities within the state do suffer significant noise impact from railroad operations, however. The following comments are submitted as a reaction to how the proposed rules for Rail Carrier Noise Emissions will affect those discrete problem areas within Oregon, and how the proposed rules might be changed to better address those problems.

We believe that a variant of the proposed property line standards may be appropriate for regulation of railroad facilities, but the indiscriminate protection of all developed receiver property is not justified. A more precise delineation of those property uses to be protected from excessive railroad noise would narrow the scope of the proposed rule, and would obviate expenditures for needless mitigation.

The Department of Environmental Quality has proposed other administrative rules in Oregon that utilize a noise impact criterion to determine when the substantive provisions of a rule are brought into play. A source must apply mitigation measures only when receptor noise sensitive property is exposed to impacts above the criterion. It appears that a similar mechanism might be employed within the proposed railroad rule. Noise sensitive property should be carefully defined to focus protection on "priority" uses, and the criterion (since it is used for purposes of identification) should be quite stringent. Less inclusive coverage of the rule, once applied, would allow railroad mitigation efforts to focus on a smaller number of serious problems. In this manner the costs of mitigation could be kept reasonable while the standards are lowered to a level more protective than those presently proposed.

The Ldn metric alone cannot accommodate all types of noise emissions that would be expected from railroad equipment and facilities. An hourly Leq measurement alternative is a desirable addition but is not a complete solution. Metrics that address intrusive noise, both tonal and impulsive, should be employed. Whenever any of the three elements of the criterion is exceeded, best available technology should be applied, unless a lesser effort will bring the exposure below the affected criterion element.

A fundamental element of a noise control regulation is some mechanism that ensures noise-conscious planning in the future. The proposed regulation should include a non-degradation standard, linked to a rational receiver property definition. This two-step device would help ensure that future railway development will be directionalized away from noise-sensitive receiver property.

EPA has long advocated an emphasis on local control of equipment and facilities, with preemptive federal regulation only where necessary to protect the integrity of the railroad industry. The inclusion of administrative controls within the federal regulatory framework would ensure that some local adjustment, where reasonable, might be obtained without reliance on the "special local conditions" exception. In the past, railroad noise problems in Oregon have been resolved by the application of reasonable, inexpensive, administrative actions without placing an undue burden on the railroads. We believe the Oregon standards provide adequate protection of the public health and welfare. The proposed EPA regulations are not protective of



the public health and welfare and would, for all practical purpose, provide the total preemption the railroads have sought. Given the laxity of the proposed standards, the preemption of the final rules, and the diverse administrative controls that might be employed, "best available technology" should be interpreted to include "reasonable administrative controls".

It is clear that enforcement of the provisions of the proposed rule will be substantially the responsibility of state and local governments. This expectation is unrealistic, considering that most local governments have little to gain from enforcing standards not protective of noise impacted residents. Without a substantial re-emphasis of the proposed rule, EPA can expect at best a minimal enforcement effort.

The types of noise sources to be measured and the nature of the noise emitted from railroad equipment and facilities dictate some sophistication in equipment and measurement techniques. Requiring Type 1 integrating systems, however, will preclude many local entities from participating in any enforcement action even if they should so desire. EPA should seriously pursue mechanisms to provide substantial monetary support for equipment purchase, and training aid, if the present proposed procedures are retained.

Solicitation of comments on the proposed rule comes at a time when the most important element of the rule is still unresolved. Given the lax standards proposed, large numbers of communities will continue to receive unreasonably high impact from railroad noise. EPA should expect many of these communities to use the only mechanism available to them to seek relief: the special local determination clause from the Act. Until EPA publishes final proposed rules on the administration of that provision, the true impact of the proposed rules will be obscured.



*Department of Environmental Quality*

522 S.W. 5th AVENUE, P.O. BOX 1760, PORTLAND, OREGON 97207 PHONE (503) 229-5989

June 20, 1979

Rail Carrier Docket Number OIIAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Re: CNAC 79-01  
Rail Standards

Dear Sirs:

The Oregon Department of Environmental Quality submitted comments to the proposed rail standards docket on May 23, 1979. However, as the comment period has been extended, we wish to supplement our initial comments. Please enter the enclosed comments to the record on this matter.

Sincerely,

John Hector  
Program Manager  
Noise Pollution Control

JH:pw  
Enclosure

cc: Oregon Department of Justice  
Oregon Department of Transportation  
Oregon Public Utilities Commission  
Northwest Environmental Defense Council

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Materials

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June 20, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Submitted By  
Oregon Department of Environmental Quality  
Noise Pollution Control  
John Hector, Manager

The Oregon Department of Environmental Quality wishes to utilize the additional time period for submittal of comments on the U.S. EPA's proposed railyard noise regulation by offering the following addendum to the Department's earlier comments, dated May 23, 1979.

EPA clearly states in its Backgrounder that the proposed rules represent "lowest common denominator" standards. These standards reflect what EPA perceives can be achieved uniformly throughout the nation, and include only those abatement techniques with national applicability. This document admits that a proposed regulation that solves less than one third of an identified problem "stop[s] far short of the degree of protection clearly needed." Proposed Revision to Rail Carrier Noise Emission Regulations Backgrounder @ 14.

The comments of Senator Tunney, co-sponsor of the Noise Control Act, on October 18, 1972, indicate an intent at variance with EPA's position.

And, equally important [with the preemptive effect of Section 17], Mr. President, is that Federal regulations must be stringent enough to meet the varying local conditions affected by interstate carriers. Not only must the Administrator establish regulations which protect public health and welfare from noise from these interstate carriers in the average situation, but he must also design his regulations so that the public health and welfare is protected regardless of the location in which the interstate carrier is operating.

110 CONG. REC. 37318 (1972).

The limiting effect of the health and welfare/cost balancing test demanded by the Act was also explained.

The administrator will have an opportunity to assure that the best which can be done is done, while at the same time pushing the limits of technology to achieve greater noise emission control results protective of public health and welfare.

116 CONG. REC. 37319 (1972).

Two basic failings of the proposed rules are evident from these excerpts of Senator Tunney's comments on the Act's meaning. First, the EPA's responsibility goes beyond simply setting lowest common denominator standards that are applicable nationwide or not at all. Secondly, while Congress recognized that any reasonable cost/benefit analysis would yield a rule less than totally protective, Congress intended that a rule should, within the constraints of reasonableness, accomplish "the best that can be done".

There is no question that AAR v Costle 10 ERC 1529 (1977) limits the range of options that EPA might employ to accomplish the intent of the Act. While the Department does not agree with all of the dicta contained in that opinion, it recognizes that EPA is constrained to follow the court's mandate. EPA's proposed rule has extended the Costle opinion far beyond reason, however. While it can be argued that Costle and the Act are contradictory in places, it is incumbent upon EPA to construe the opinion and the legislation consistent with each other to the extent possible.

The Department believes that EPA can implement the preemption deemed necessary for protection of the railroad industry and still require the railroads to comply with reasonable regulations. The following approach is suggested for EPA's consideration:

1. EPA should designate a standard protective of the public health and welfare with which to compare any proposed rule, and by which achievements in noise reduction can be measured. EPA has designated the Ldn 55 as a goal, but that goal plays no part in the presently proposed regulation. It is futile to try to protect the public with ambient levels of Ldn 70 or Ldn 65.
2. A fairly restrictive standard, to be reasonable, and to meet cost/benefit parity, should have limited scope. An Ldn 55 standard is probably not appropriate for much of the property abutting railroad facilities. The standard should only be applied to narrowly defined noise sensitive property, so that costs imposed for meeting the standard can be fairly justified.
3. EPA should make it clear within the final rule that Best Available Technology does include reasonable administrative actions\* that the industry can utilize to meet the property line standard (Ldn 55). In those circumstances where neither technology nor reasonable administrative actions can provide a means to meet the standards, the railroad would be compelled to achieve only what "technology", in its broad sense, could provide.

The Department believes that the paramount concern of EPA should be to balance the various requirements of the Act and Costle in a more realistic fashion. The alternative approach that is briefly outlined appears to address the concerns of Congress while providing the necessary protection for the railroad industry. It certainly has a far greater chance of accomplishing tangible health and welfare benefits for the 4 million people affected by railroad noise than does EPA's proposed rule.

\* EPA's Background document includes common law definitions of "available technology" within the scope of the Act's "best available technology". The Department agrees that BAT should include "techniques", or administrative controls, but the proposed rule has not taken advantage of the flexibility that the definition offers.



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF TRANSPORTATION  
HARRISBURG, PENNSYLVANIA 17120

OFFICE OF  
SECRETARY OF TRANSPORTATION

May 4, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulations Division  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Thomas:

Thank you for the opportunity to review and comment on your agency's proposed revised railroad noise regulations. As Secretary of Transportation, I am deeply concerned with all aspects of the railroad industry and, in particular, any actions which could adversely impact its economic viability. However, as an officer of the Commonwealth, I am also committed to the improvement of the quality of the environment for the citizens of Pennsylvania.

EPA is to be commended for the reasonable and realistic approach to the rail transportation noise problem. It appears that an equitable balance has been achieved between the environmental noise impacts and the economic ramifications of noise impact abatement.

I do have some concern in two specific areas. The regulations do not address the issue of new or expanding facilities or operations in areas with ambient noise levels far below the 70 dB level.

Communities or residential areas which are now experiencing relative tranquility could be subject to a significant increase in noise levels, perhaps to the point of annoyance, even though the noise levels may not exceed the noise standards. This may be especially applicable at the time the noise standards become effective. Rail operators may choose to shift some activities from a noise problem area to a non-problem area in order to comply with the proposed standards. Some mechanism should be implemented to protect the receiving areas from increased noise intrusion. This concept is not new. The "non-degradation" policy is presently being applied to both air and water pollution abatement policies.

My second concern is in the enforcement area. Once again, federal regulations are being imposed which admittedly preempt State/local rights and are not accompanied by adequate enforcement provisions at the Federal, State or local level. This lack of enforcement provisions will inevitably lead to confrontation between powerful railroad industry and local municipal governments (who will bear the brunt of citizen complaints).


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Overall, I believe the Court decision on the American Association of Railroads suit has stabilized the competitive position of the rail industry with respect to other transport modes in the area of noise abatement, but I feel my two above stated concerns must be addressed to ensure compliance with the Noise Control Act.

Sincerely,

  
Thomas D. Larson, P.E.  
Secretary of Transportation

The State of South Carolina



Office of the Attorney General

RICHARD P. WILSON  
ASSISTANT ATTORNEY GENERAL

2600 BULL STREET  
COLUMBIA, S.C. 29201  
TELEPHONE 803-758-5658

DANIEL R. McLEOD  
ATTORNEY GENERAL

May 25, 1979

The Office of Noise Abatement  
and Control (ANR-490)  
United States EPA  
Washington, D.C. 20460

Re: Rail Carrier Dock ONAC 79-01

To Whom It May Concern:

Having reviewed the revised EPA Regulations referenced above concerning noise limitations on rail carriers, please be advised that this office has no criticisms of the new regulations to offer. It appears to us that the new regulations in their present form will be a positive contribution to the quality of the environment. Thank you for the opportunity of reviewing the new regulations and offering comments.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Richard P. Wilson".

Richard P. Wilson  
Assistant Attorney General

RPW:tr

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STATE OF SOUTH DAKOTA



OFFICE OF ATTORNEY GENERAL

STATE CAPITOL  
Pierre, South Dakota 57501  
Phone (605) 773-3215

MARK V. MEIERHENRY  
ATTORNEY GENERAL

April 25, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulations Division  
United States Environmental  
Protection Agency  
Washington, D.C. 20460

Dear Mr. Thomas:

I am most happy on behalf of the State of South Dakota to respond to the proposed regulations for railroad noise. We do have a very serious problem with noise from engines and railroad cars throughout the State of South Dakota. As you may be aware, through the adroit regulation of railroads by the United States Government, we are presently faced with the problem of no noise. We will therefore be more than happy to accept any and all railroad noise that may occur in South Dakota through 1982.

I might refer you to the federal bankruptcy trustee in Chicago, and he also would be more than happy to accept any railroad noise that would occur along the Chicago and Milwaukee lines. I have not "reviewed these proposed revised regulations carefully." In fact, I don't even intend to read any of them because our problem with railroads is the lack of them.

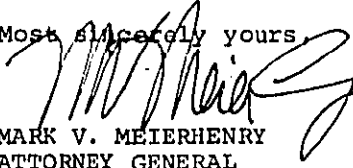
I have sent a copy of this letter to our Governor in order that he may be aware of the close working relationship that

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-SARD ANR-490  
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Mr. Henry E. Thomas  
April 25, 1979  
Page 2

federal agencies have. I am sure he will not want to pattern our state government along the same lines.

Most sincerely yours,



MARK V. MEIERHENRY  
ATTORNEY GENERAL

MVM:esp

cc: Governor Janklow  
Eric Newhouse



COMMONWEALTH of VIRGINIA

Office of the Governor

Richmond 23219

June 21, 1979

Maurice B. Rowe  
Secretary of Commerce and Resources

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
United States Environmental Protection Agency  
Washington, D. C. 20460

Attention: Mr. Charles E. Elkins

Dear Mr. Elkins:

Thank you for your letter of April 13 to Governor Dalton regarding the proposed EPA rulemaking for noise emission standards for interstate rail carriers. In the Commonwealth of Virginia, the responsibility for regulating noise emissions rests with the local municipalities; thus, part of our methodology in assembling the following comments was to request comments from local officials in the major Virginia rail centers. In addition, we requested comments from the Virginia railroad interests. Therefore, the following comments are divided into Part I, which summarizes the comments of Virginia municipalities which are rail centers, and Part II, which summarizes the comments of the various Virginia railroad interests.

79-01-116

Comments on EPA Proposed Rulemaking for Interstate Rail Carriers

Part I - Summary of Comments of Virginia Municipalities that are Rail Centers

The primary overall area of concern was in regard to finances. None of the municipalities which commented has the financial resources to undertake the large scale enforcement responsibility which would be necessitated under this proposed rulemaking in order to obtain effective enforcement. Support will be needed from the federal government for training and technical consultation as well as funding for personnel and equipment. Financial support will also be necessary to fund the probable high costs of litigation which will likely result from intensive enforcement activities.

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Municipalities also are concerned about the standards themselves. Most felt that it was inappropriate to use property line standards for railyards unless flexibility was added to allow the consideration of the varying uses of adjoining properties, the activity level of the yards, and the nature and diversity of the noise sources themselves. Some municipalities felt that for railyards which impact heavily on residential areas, the standards should be tied in some way in to the Ldn standard of 55 decibels which has been identified by EPA as adequate to protect public health and welfare in residential areas. None of the municipalities recommended this level as an overall standard, but it was felt that there may be occasions where an Ldn standard of 55 or 60 decibels might be appropriate, e. g., for a high activity humpyard which impacts heavily on a residential community with high population density.

#### Part II - Summary of Comments of Virginia Railroad Interests

A substantial part of the comments received from the Virginia railroad interests was in regard to various EPA analyses. The railroads maintain that EPA underestimated the costs and overstated the benefits associated with the proposed rulemaking on the railroad industry. They also feel that EPA failed to properly assess the availability of technology to abate railroad noise. Finally, the railroads feel that the EPA environmental impact statement should have addressed the effect of the proposed rulemaking on freight being switched to trucks with resultant increases in air pollution, fuel usage, and safety hazards.

The railroad interests also felt that there were some inadequacies in the standards themselves. The railroad interests favor the use of source standards rather than property line standards. They also oppose the use of the Ldn standard in those areas (i. e., nonresidential) where nighttime activities are no more objectionable than daytime activities.

In summary, all commenters felt that railroad noise should be reduced when it is technologically and economically feasible and needed to protect the public health and welfare. In general, it was felt that more flexibility was needed in the standards to reflect the varying character of railyards and the properties adjoining them. Finally, it was felt by the municipalities that federal funding to states and localities was needed for effective enforcement to be realized.

The position of the Commonwealth is that all environmental factors, including noise, should be controlled whenever such control is needed to protect the public health and welfare. It is particularly important that controls be placed only where

Rail Carrier Docket Number ONAC 79-01  
June 21, 1979  
Page Three

they are needed in order to allow the avoidance of unnecessary expense to industry and the consumer. Careful economic analyses must be employed in this area. In addition, it cannot be overemphasized that federal funding should be made available for enforcement and technical support of this program in order to assist the states and localities.

We appreciate the opportunity to provide these comments on this proposed rule-making.

Sincerely,

  
Maurice B. Rowe

cc: The Honorable John N. Dalton  
George M. Walters  
Stanford E. Parris  
Charles A. Christophersen  
W. R. Meyer



STATE OF  
WASHINGTON  
Dixy Lee Ray  
Governor

DEPARTMENT OF ECOLOGY  
Olympia, Washington 98504 206/753 2800  
Mail Stop PV-11

May 29, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

Comments and Questions on the Proposed EPA "Rail Carrier Noise  
Emission Regulation" to be Entered in Rail Carrier Docket ONAC 79-01

Thank you for the opportunity to review the proposed regulatory provisions. We have comments and a few questions to offer; our comments will be first.

The implication of the proposed regulations and background document is that noise near railroad facilities will be reduced to reasonable levels over the next five to ten years. In other words, it is reasonable to expect human beings to live where environmental noise levels approach Ldn 70 dBA. However, research by many people (including EPA) has shown that Ldn 70 dBA should be used as the daily exposure limit to prevent hearing loss. Speech interference occurs at levels of Ldn 55 dBA and greater, while sleep disruption can begin occurring at Ldn 45 dBA. Clearly, a noise level of Ldn 70 dBA should only be a worst case limit.

1. Many rail facilities in Washington State have a long way to go before they exceed the Ldn 70 dBA level, fortunately. But unfortunately, the proposed regulations have not provided any way to prevent the present noise levels from deteriorating to the maximum limit. The regulations, as proposed, will allow the noise levels to increase at almost every facility in Washington. Residents who now are able to rest in relative comfort, could in the future be exposed to levels which regularly preclude speaking and sleeping in their own homes. For this reason, we request that EPA include a nondegradation section to the proposed rules, or make specific provisions whereby the states could adopt such a rule.
2. We object to the concept of establishing nationwide (preemptive) property line noise standards. The concept, to date, under the "Noise Control Act of 1972" has been the establishment of source specific standards by EPA while leaving in-use property line standards to local government. We realize the complexity of establishing individual standards for the many sources

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within railway facilities, yet we also see the need for local governments to access the health and welfare needs and goals of their respective communities. Local government must be given the ability to establish property line standards with an allowance for variances when EPA source standard compliance is proven by the railroads. Local government can work out problems through administrative controls and other alternative actions which have little economic impact to the industry. An example would be parking "refer cars" away from residential receivers or providing quieter electric power hookup in noise sensitive areas.

An alternative to the totally preemptive nature of the proposed Ldn property line standards would be a nighttime measure of intrusiveness such as  $L_{max} - L_{50}$  or limit the number of SEL or  $L_{ax} 70$  at night which is protective of sleep interference in residential areas. If this is exceeded, an assessment of specific sources would be made and feasible controls investigated to meet EPA source requirements. (See No. 3 below for further requirements concerning impact noise intrusion)

3. Impact noise from car coupling operations create unacceptable intrusion at night near residences. There are locations in Washington where residences are less than 150 feet from tracks used for switching. The switching operation occurs throughout the night (10:30 p.m. to 9:00 a.m.) with a maximum of two hours shutdown during that period. Impacts are regularly observed above the 95 dBA range on a Type II meter set on fast response within 125 feet of the tracks. Ldn and Leq's recorded during this time were well below 60 dB which illustrates the inability of these descriptors to show intrusions from high sound level impact levels. All residents complain of sleep disruption from this operation. For purposes of regulation, car coupling should be measured on a peak or impulse meter. Additionally, between the hours of 10:00 p.m. to 7:00 a.m., the addition of a correction factor to the measured level should be added. This could be calculated with the formula:

$$C = 10 \log_{10}(N)$$

where C is the correction factor in dB and N is the number of impulses in any one hour period. This would help guarantee that only essential switching occurs from 10:00 p.m. to 7:00 a.m. and that speeds would be limited during that period.

Section 201.15, giving an exemption from the standards for car coupling at less than 4 mph places an unnecessary additional measurement burden on local government and should be dropped

May 29, 1979

Page three

from the proposal. If the level exceeds 95 dBA at 30 meters, that should be "proof" of noncompliance with any speed requirement.

4. Section 201.25 is totally unacceptable with its requirements concerning reflecting surfaces behind the microphone location if it is located on a residential receiving property. This also applies to the requirement that the ground elevation at the microphone location shall be within plus 5 feet or minus 10 feet of the source. If the impacted residential property is within the distance requirements and has unobstructed line-of-sight with the source there is no need for a microphone to source height requirement.
5. The tables in Section 201.17(a) and (b) would be clarified if the levels were specified as being A-weighted, as was done in Table 1 and Table 2. The remainder of this review addresses some specific questions which we have.
6. In Section 201.33(b), why was the height of the microphone limited to 7 meters for measurements at residential surfaces? This would exclude measurements in condominiums or apartments above about the second floor, yet line-of-sight (and more representative) noise levels may not occur until above this height. This also seems to conflict slightly with the directive in the same section to choose a site where dominance can be demonstrated. Dominance may not exist at a height less than 7 meters because line-of-sight with the facility is blocked, yet dominance may certainly exist somewhere above the 7 meter height once line-of-sight to the rail facility is established. In addition, it is standard practice during enforcement actions of the Washington State maximum environmental property line limits to measure anywhere within the receiving property that people are likely to inhabit. This includes measuring at any upper story windows or patios that have line-of-sight to the noise source. We feel that a maximum height of 7 meters is arbitrary and will not provide full protection under the law to residents living above this arbitrary line.
7. Is a hotel or motel considered to be a residential dwelling? If not, then measurements cannot be made at the surface of a hotel/motel structure. Since hotels/motels are often multi-story structures, and are places in which people sleep, provisions should be made for measuring at the surface of hotel/motel structures within commercial zones.

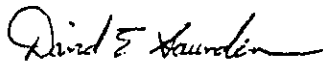


May 29, 1979  
Page four

8. Does "Receiving Property" include park lands, camping areas, picnic sites, etc.? Such lands, while technically undeveloped, rely heavily on serenity and tranquility as important to their use. Even though Ldn 70 dBA could hardly be considered tranquil, it is at least more protection than none. We feel that certain lands such as those listed above should be included as receiving properties if they presently are not.
9. Section 201.33(d)(1)(A) establishes a formula for calculating the neighborhood noise level as  $Ldn = 22 + 10 \log_{10}$  (population density), where population density equals the population divided by the portion of residential area in the neighborhood. What criteria are used to determine the residential portion? Zoning ordinances? Actual land use?
10. Modeling out nonrailyard sources and through trains using the above techniques and other such as the TSC highway noise prediction method are unreasonable to be used by local agencies. Background levels in similar areas within the respective community should be acceptable for proof of dominance.
11. Why does Section 201.26(a) state that the standard "shall not be exceeded during any thirty second period? Why is it not simply anytime after the throttle setting is established?

The requirements (measurement, equipment and documentation) proposed in this standard put it out of the reach of resources (both personnel qualifications and equipment) of state and local government. Neither the EIS or the economic analysis on costs to railroads took into account the nonenforcement by local government results of this proposal. The EIS also failed totally to address the impact on the 4 million citizens who will be subsequently impacted to a deteriorating noise environment as railroads increase their property line levels up to the allowable limits of the proposal.

Sincerely,



David E. Saunders  
Head, Noise Section  
Office of Land Programs

DES:mg  
052911

STATE OF  
WASHINGTON  
Dixy Lee Ray  
Governor

DEPARTMENT OF ECOLOGY  
Olympia, Washington 98504 206/753-2800  
Mail Stop PV-11

May 30, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulations Division (ANR-490)  
Office of Air, Noise and Radiation  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Dear Mr. Thomas:

We appreciate the opportunity to comment on your draft environmental impact statement entitled "Revision to Rail Carrier Noise Emission Regulation."

It appears that the revised noise regulations would allow a significant deterioration of existing conditions. Considering that we receive frequent complaints now, we would expect the number of complaints to increase sharply if the proposed regulations are adopted without provisions to prevent increases above existing conditions (a nondegradation clause). We believe that the EIS should address this issue by presenting a clear comparison between existing conditions and the conditions which would be allowed by the proposal. There should be an analysis of the number of persons who will be exposed to increased noise levels if a nondegradation provision is not included.

Members of our Noise Section would be pleased to assist in your analysis. If you have any questions, please contact Mr. Dave Saunders, Noise Section, Department of Ecology (phone: 206/753-6867).

Sincerely,



Elmer C. Vogel  
Deputy Director

ECV:as

cc: Mr. Mike Mills, Office of the Governor  
Mr. Dave Saunders, Dept. of Ecology

RECORD ANR-490

5 JUN 79 15: 22

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79-01-061



WYOMING  
EXECUTIVE DEPARTMENT  
CHEYENNE

ED HERSCHLER  
GOVERNOR

April 24, 1979

Charles E. Elkins  
Deputy Assistant Administrator  
for Noise Control Programs (ANR-490)  
U.S. Environmental Protection Agency  
Washington D.C. 20460

Re: Noise Emission Standards  
for Rail Carriers

Dear Mr. Elkins:

The State of Wyoming has reviewed the Draft Regulations concerning Noise Emission Regulations for Rail Carriers and believes that EPA has substantially underestimated the economic impact of the proposed rules. The Environmental Protection Agency does not recognize that the rail system is an integrated service delivery system; that is, if one part of the chain is weakened, the entire chain is weakened. The economic burden of complying with these rules will place a substantial economic burden on the less solvent railroads to the extent that they will not be able to maintain their existing rail plant and trackage. This may in turn weaken the entire system by reducing the service levels and capacity of the healthier railroads thereby allowing other surface transportation systems to siphon-off more traffic and operating revenues.

79-01-003

In addition, the costs of complying with these proposed rules are non-productive, in that they do not produce an increase in service nor do they return a marketable product. Therefore, it may be extremely difficult for some railroads to secure the needed capital to comply unless they shift funds away from necessary maintenance programs.

On a separate matter, the State of Wyoming may request a waiver of preemption on the proposed rules if local conditions are such that a waiver is necessary. Finally, the State of Wyoming would appreciate the opportunity to review the final rules and requests the EPA reevaluate the economic impact of the proposed rules.

Yours sincerely,  
*Ed Herschler*

EH:wwo

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2 MAY 79 11:55  
WARD ANR



FRANK E. MANN  
MAYOR

*City of Alexandria, Virginia*



All-America City

June 5, 1979

Mr. Charles E. Elkins  
Deputy Assistant Administrator  
For Noise Control Programs  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Elkins:

I want to take this opportunity to express my appreciation for your letter concerning the proposed noise regulations for interstate rail carriers, and encouraging comments from the City of Alexandria directed at those regulations. Concurrently with your letter the Commonwealth of Virginia requested our comments on the proposed regulation. Accordingly, the City of Alexandria recently forwarded its comments to the Virginia State Air Pollution Control Board for inclusion in a consolidated reply on behalf of all affected communities in Virginia. However, it is our desire to convey directly to you the substance of our comments to further emphasize the city's sincere concern.

The proposed Federal noise standards are wholly pre-emptive and effectively eliminate regulatory power at State and local level. On the other hand, your letter indicates that adequate enforcement at the national level may not be forthcoming due to lack of authority and resources available to Federal Railway Administration (FRA) for this purpose. This is the agency that is required to issue the rules to assure compliance with final EPA standards. It is important, therefore, that residential areas exposed to rail yard noise be protected. This can be accomplished by incorporating in the regulations noise levels which will adequately protect the health and welfare of our residents.

It is noted from data in the "Background Document" that out of the 4100 railroad yards, about 125 are hump yards and the

79-01-108

~CARD APR-490  
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June 5, 1979

remainder are flat. About 30% of the railyards have adjacent land zoned for residential use as opposed to industrial or commercial use, including those with high to low yard activity. These yards adjoin population centers of various sizes. In lieu of the "across the board approach", it is requested that EPA, which has the data on hand, review the cost benefits of lower  $L_{dn}$  values of 55 or 60 decibels on behalf of those communities where, (a) residential property is involved, (b) hump yards are located, since these tend to emit more intensive and annoying noises, and (c) where population density justifies. It appears that there are about 30 such yards with potential benefits for up to several million people. The 65 decibel level currently existing in the proposed regulations may be retained for those yards where adjacent areas are zoned commercial or industrial. This study on behalf of the select group of hump yards identified above is urgent and timely in order to be completed prior to issuance of final regulations by FRA.

I would like to express my sincere appreciation for your concern for the citizens of Alexandria which is indicated by your initiative in providing us an opportunity to express our concerns regarding the proposed railroad noise regulations.

Sincerely,

  
Frank E. Mann, Mayor

FEM/SB/ksw

cc: The Honorable Mayor and  
Members of City Council



# City of Alhambra

P. O. BOX 151

ALHAMBRA, CALIFORNIA 91802

June 27, 1979

LELAND C. DOLLEY  
CITY ATTORNEY  
CITY HALL, 111 SOUTH FIRST STREET  
282-5111 281-9877

Rail Carrier Docket  
(ONAC 79-01)  
Office of Noise Abatement and Control AW-490  
United States Environmental Protection Agency  
Washington, D. C. 20460

Re: Resolution No. R79-109 adopted by the Alhambra City Council on June 25, 1979 relating to the Proposed Environmental Protection Agency Regulations concerning Railroad Noise

Gentlemen:

During the past several years, the City of Alhambra has received a significant number of complaints from its citizens who, together with the Alhambra City Council, are deeply concerned over the increased usage of the old railroad line which was recently upgraded in the median strip of Interstate 10 (I-10).

In addition to the very real possibility of a train derailment involving hazardous materials, trains not only pass through creating noise but also stand for long periods of time, thereby disturbing the rest and comfort of a considerable number of people. The vibration from the increased use of the train tracks is damaging homes and affecting the value of the properties of a considerable number of residents of the City of Alhambra as well as neighboring cities along this main line.

The City of Alhambra has determined that Federal legislation, to a certain extent, has preempted the field of noise and vibration regulation of trains. We understand that the Environmental Protection Agency is required to adopt uniform standards which do not take into account the special plight of the City of Alhambra.

The City of Alhambra urges all of its Legislators to consider, introduce and cause the adoption of legislation which will allow states and local municipalities to regulate unreasonable, excessive and obnoxious noise and vibration in metropolitan areas served by railroads, and, in particular, in areas where there has been an

79-01-141

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June 25, 1979


upgrading of tracks and increased use in recent years of such tracks.

The City of Alhambra does understand to a certain extent that the Environmental Protection Agency can adopt regulations, nationally uniform in nature, allowing local municipalities to have some control over noise and vibration, and the attached resolution urges the Environmental Protection Agency to do so.

The Alhambra City Council also urges the Los Angeles County Board of Supervisors and all of Alhambra's neighboring cities along this main line to join with Alhambra and likewise adopt a similar resolution to forward to the Environmental Protection Agency.

In addition, would everyone to whom this letter and accompanying resolution is sent please contact the undersigned as I would appreciate receiving on behalf of the City of Alhambra your opinions, comments, input and, most importantly, your support.

Very truly yours,

  
LELAND C. DOLLEY  
City Attorney

LCD:fm

Enclosure: Resolution No. R79-109

cc - Alhambra City Council  
City Manager  
City Clerk

Mrs. Rose Janda  
& Mr. John H. Palasco, Citizens Advisory Committee

1 RESOLUTION NO. R79-109

2 A RESOLUTION OF THE ALHAMBRA CITY COUNCIL  
3 RELATING TO THE PROPOSED ENVIRONMENTAL  
4 PROTECTION AGENCY REGULATIONS CONCERNING  
5 RAILROAD NOISE

6 WHEREAS, the Environmental Protection Agency is  
7 considering the adoption of regulations to establish railroad  
8 noise emission standards on a national basis, and presently is  
9 receiving public comment on such regulations as they pertain to  
10 local operations until Monday, July 2, 1979; and,

11 WHEREAS, the City of Alhambra, which encompasses an  
12 area of 7.619 square miles, has a population of 64,500 and adjoins  
13 the City of Los Angeles on Alhambra's westerly boundary, is  
14 bisected east to west by the ten-lane Interstate 10 (I-10) which  
15 has a main-line railroad track in its median strip about 100 feet  
16 from residences on both sides; and,

17 WHEREAS, this newly rebuilt main line is approximately  
18 10 miles long and a duplication of a section of the original  
19 main line just blocks north within the City of Alhambra and other  
20 residential cities; and, therefore, it is not a necessity for the  
21 normal flow of commerce in this area; and,

22 WHEREAS, many residents of the City of Alhambra have been  
23 suffering, and continue to suffer, sever discomfort and damage to  
24 their persons and properties caused by noise and vibrations due to  
25 the excessive use of said railroad track 24 hours a day, 7 days  
26 a week; and,

27 WHEREAS, in 1975, the City of Alhambra formally  
28 recognized a Citizens Advisory Committee comprised of people living  
29 within the affected area for the express purpose of assisting them  
30 in obtaining relief from this intolerable situation; and,

31 WHEREAS, in the earlier part of this decade, the  
32 Southern Pacific Transportation Company rebuilt its little used



1 single track line running down the center of I-10; and, at  
2 the completion of this project, the Railroad increased its train  
3 traffic, the weight of loads and train speeds; and,

4 WHEREAS, since the completion of the aforesaid railroad  
5 improvement project, the residents in the area have found, and  
6 continue to find, that the swishing of cars was, and is,  
7 inconsequential compared with the thunderous noise of the trains;  
8 and,

9 WHEREAS, the homes in the vicinity have sustained, and  
10 continue to sustain, cracks in the walls and the ceilings, falling  
11 plaster, and windows and doors which do not open and close properly  
12 due to the vibration caused by the trains using this main line;  
13 and,

14 WHEREAS, in addition to the noise and vibration, the  
15 residents are extremely concerned that they may be astride another  
16 "Three Mile Island" in that trains routinely pass on this stretch  
17 of the railroad tracks carrying more than 1,000 products classified  
18 as hazardous materials by the United States Transportation  
19 Department, and the residents live in constant fear of a  
20 potentially dangerous train derailment in this heavily populated  
21 area;

22 NOW, THEREFORE, BE IT RESOLVED by the Alhambra City  
23 Council as follows:

24 SECTION ONE: This Council, on behalf of the citizens  
25 of Alhambra, hereby strongly urges the Environmental Protection  
26 Agency to meet its responsibility to protect the human environment  
27 by promulgating railroad noise standards which adequately protect,  
28 guard and shield the residents of Alhambra, as well as all other  
29 populous areas of this nation, from the adverse psychological and  
30 physiological effects of excessive noise.

31 SECTION TWO: While recognizing that the railroad noise  
32 standards which will be enacted must uniformly apply to the nation

1 as a whole, the Alhambra City Council hereby respectfully submits  
2 that the Environmental Protection Agency's first priority should,  
3 and must, be to properly and adequately safeguard the health,  
4 safety and well being of all the people of this land and their  
5 environment. Therefore, this Council hereby strongly requests  
6 the Environmental Protection Agency to adopt the strictest possible  
7 railroad noise standards to adequately protect the populated  
8 regions of our land, and to overcome the arguments voiced by the  
9 railroads of compliance costs and inconvenience in setting higher  
10 standards for the protection of the populated areas rather than  
11 lower standards which would be sufficient for non-populated regions  
12 of this nation.

13 SECTION THREE: This Council hereby requests its  
14 legislators and the Environmental Protection Agency to consider,  
15 recommend and eventually pass legislation which would make it  
16 clear that states and/or municipalities have the power to  
17 regulate railroads to the extent that such railroads create noise  
18 nuisances in populated communities.

19 SECTION FOUR: The City Clerk shall certify to the  
20 adoption of this resolution, and the City Attorney shall send five  
21 copies of the same to

22 Rail Carrier Docket  
23 (ONAC 79-01)  
24 Office of Noise Abatement and Control AW-490  
United States Environmental Protection Agency  
Washington, D. C. 20460

25 as well as a copy to our representatives in Congress and in the  
26 State Legislature; The Honorable "Bizz" Johnson, Chairman of  
27 the House Public Works and Transportation Committee; United States  
28 Department of Transportation, Office of the Assistant Secretary,  
29 for Policy, Environment and Safety Affairs; Mrs. Adriana Gianturco,  
30 California Department of Transportation; Mr. Ed Lowe, Director of  
31 State Noise Control; Los Angeles County Supervisor Baxter Ward;  
32 Cities of Los Angeles, San Gabriel, Rosemead, Temple City and El

1 Monte; National League of Cities; and the California League of  
2 Cities.

3 Signed and approved this 25th day of June, 1979.

6  
7 J. PARKER WILLIAMS  
Mayor

8 ATTEST:

11 DOROTHY OUTWATER  
City Clerk

15 I HEREBY CERTIFY that the above and foregoing resolution  
16 was duly passed and adopted by the Alhambra City Council at its  
17 regular meeting held on the 25th day of June, 1979, by the  
18 following vote, to wit:

19 AYES: COUNCILMEN HALL, MESSINA, BURKE, LETOURNEAU, WILLIAMS  
20 NOES: NONE  
21 ABSENT: NONE

23 I hereby certify that the foregoing document is a  
24 full, true, and correct copy  
25 of Resolution No R 79-109  
26 adopted 6-25-79  
on file in the office of the City Clerk of the  
City of Alhambra, California.

23 DOROTHY OUTWATER  
City Clerk

27 *Dorothy Outwater*  
City Clerk



BELLINGHAM CITY COUNCIL, 210 Lottie Street, Bellingham, Washington 98225 Telephone: 678-8970

May 24, 1979

Office of Noise Abatement & Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

MEMBERS

W. Haines Fay  
Councilmember 1st Ward  
2400 Lafayette

Dennis Braddock  
Councilmember 2nd Ward  
2720 Sunset Drive

Roma Jones  
Councilmember 3rd Ward  
1425 N. State Street

John Herrmann  
Councilmember 4th Ward  
1224 Raymond

Ann Rose  
Councilmember 5th Ward  
145 S. Garden St.

Scott Wicklund  
Councilmember 6th Ward  
1509 Mill Avenue

Charles Lancaster  
Councilmember-At-Large  
3020 Elm Street

Re: Rail Carrier Docket No. ONAC-7901

To Whom It May Concern:

As an elected official representing residents of a Bellingham, Washington neighborhood border and overlooking a railroad switching yard as well as through tracks, I am writing to express concern over and objection to any legislation or modification of regulations that would reduce control over noise levels of railroad operation.

The neighborhood peace and emotional stability is disturbed by motor noises and boxcar switch crashes under the present conditions. Any lessening of controls can only result in more loss of sleep and further contribution to the devaluation of the area by engines running and refrigerator motors left in operation on parked railroad cars overnight.

Although our city government has made repeated efforts to establish a curfew on railroad operation or place some limit on the hazards of material shipping that could be harmful to the welfare of nearby residents, we have had little success in obtaining cooperation from the railroad company. Any diminution of EPA controls over railroad noise pollution will only compound our problems and add to citizen distress.

Your attention to the above problem is sincerely requested.

Very truly yours,

W. Haines Fay, President  
Bellingham City Council

WHF:ns  
c: Mrs. Liste  
1905 Eldridge Ave.

287

79-01-052

RECORDED ANR-490

4 JUN 79 10:25 38

# City of Berkeley



CITY MANAGER'S OFFICE  
2180 MILVIA STREET  
BERKELEY, CALIFORNIA 94704

(415) 644-6580

April 27, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulations Division  
Rail Carrier Docket No. ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Dear Mr. Thomas:

The City of Berkeley is in receipt of your April 17, 1979, letter regarding the proposed revised and expanded railroad noise regulations.

As you have indicated, the proposed regulations will fall short of providing total relief due to the preemptive nature of the present Act. The existing track line crossing the residential area of Berkeley, which generates serious noise problems as well as safety hazards, will be abandoned in the next few weeks. The remaining mainline rails are within the industrial area which will have minimal impact due to noise.

Since the proposed regulations will provide no additional noise control for the mainline rail operations, we therefore have no additional comments other than offering support.

Sincerely,

MICHAEL LAWSON  
Acting City Manager

cc: Director of Public Works

79-01-008

288

—SARD ANR-490

7 MAY 79 12: 29



2215 WEST OLD SHAKOPEE ROAD-55431-(612)881-5811

May 25, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Pursuant to the proposed EPA noise emission regulations for interstate rail carriers as published in the Federal Register on Tuesday, April 17, 1979, several comments from a local viewpoint are needed. Of primary importance is the fact that these regulations will preempt local jurisdictions from protecting its constituents according to specific, local needs. In attempting to achieve national uniformity, site-specific noise problems may not be addressed in an effective manner. Indeed, the proposed regulation, in many local instances, may give the railroad operators carte blanche to increase the noise levels beyond existing conditions. Through the guise of national uniformity, effective local control over noise will be eliminated; and the protection of a healthy environment will be lost.

The proposed noise regulations will harm effective noise enforcement in the City of Bloomington for several reasons.

- 1) In 1975, the City of Bloomington enacted noise source requirements according to zoning districts. For residential zones, a noise source shall not exceed an hourly L<sub>10</sub> level of 60 dBA in the daytime (0700-2200), and 50 dBA in the nighttime (2200-0700).

The proposed property line noise limits for railroad facilities are an insult to an effective local noise enforcement effort, and will enable the railroad operator to exceed the established noise levels in Bloomington without fear of reprimand from the City.

- 2) In January of 1979, the City of Bloomington saw the need to regulate the growth of ancillary railroad lines. As a result,

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ERR: ANR-490

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May 25, 1979  
Page 2


the Bloomington City Council passed an ordinance which designated railroad lines as conditional uses in business, industrial, freeway development, institutional, commercial-recreational, and central business districts. For the purpose of the ordinance, a railroad line is defined as all railroad track, including but not limited to, spur track, industrial track, team track, switching track, and siding track.

The City of Bloomington can effectively use conditional use permits to control potential impact in specifically zoned areas. Based on noise issues, a municipality may be obligated to deny a conditional use permit for railroad activities. In other words, if an effective noise regulation is not available to local officials, the municipality will control a potential noise problem through conditional use. In this fashion, an ineffective noise regulation may backfire on the railroad industry by forcing the community to reject any conditional use proposals.

- 3) The 24-hour noise limits are difficult or impossible to enforce. As a tradeoff, 1-hour enforcement limits have been proposed. The 1-hour limit is enforceable; but the specified noise limits are unreasonably excessive.
- 4) The measurement methodology and criteria require complex instrumentation which very few local communities possess.

The proposed EPA interstate rail carrier regulation essentially ties the hands of local officials. Without reasonable noise levels as well as local control, these regulations open the door to an unhealthy and unproductive environment.

DEPARTMENT OF COMMUNITY DEVELOPMENT



Robert A. Mood, Manager  
Building and Inspection Division

cc: Lon C. Loken, City of Bloomington, Environmental Health Specialist  
Alfonso E. Perez, Chief, Noise Section, MN. Pollution Control  
Agency, 1935 W. County Rd. B2, Roseville, MN. 55113

mg



RICHARD L. WURTZ  
MAYOR

ADMINISTRATION:

- DIRECTOR & CITY ENGINEER  
JAMES H. RADTKE, M.E.
- ASSISTANT DIRECTOR  
JEFFREY M. MAJOR
- WATER SUPERINTENDENT  
RICK D. RILEY
- STREET SUPERINTENDENT  
JOHN D. HOWKER
- BUILDING SUPERINTENDENT  
D. BUNDSCHATEL
- INDUSTRIAL SUPERINTENDENT  
RALPH L. LA DUKE

AN EQUAL OPPORTUNITY  
EMPLOYER

# City of Burton

DEPARTMENT OF PUBLIC WORKS  
4000 MANDIN DRIVE  
GENESEE COUNTY • BURTON, MICHIGAN 48519

PHONE 747-9220

CD-14

April 26, 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement & Control (ANR-490)  
U.S. Environmental & Protection Agency  
Washington, D.C. 20460

Dear Sir:

In response to your April 17 correspondence to Mayor Richard L. Wurtz, I have been asked to submit the City's technical position regarding proposed revisions in the regulations addressed in this docket.

The City takes exception to the EPA approach of minimizing controls due to the economic impacts projected. The impacts at this point appear to be extremely minimal in nature while the problem is of a very major and real concern. It is our recommendation that tighter noise controls be established through a phase implementation program. We would propose that the receiving property standards for a 24 hour period, L<sub>dn</sub>, should not exceed 70 dB by January 1, 1980 and reduced to 65 dB by January 1, 1982. This would apply to all facilities and equipment including switching yards. We would further recommend that the proposed receiving 75 dB for daylight hours, and to 65 dB for night time hours. This would again apply to all facilities and equipment. Effective date again should be January 1, 1980. If these restraints were too harsh to immediately comply with, as we indicate above it should be phased in on a timeframe of progressively tighter controls by some date no later than 1985.

We would also propose that the retarder noise standard, L<sub>a</sub>, to 75 dB by 1985. Proposed refrigerator car noise standards L<sub>A</sub>, should be reduced to an aggregate car noise level not to exceed 70 dB by 1982. Provisions for car coupling noise not to exceed 95 dB is entirely unsatisfactory. While 95 dB may be acceptable, for a 1980 provision, we feel it should be reduced to no more than 75 dB by 1985. One remaining major concern not addressed directly in the standards supplied to this office was the noise generated by improper maintenance of railway roadway crossings. Poor maintenance and the use of low density materials such as creosoted wood contribute to an unnecessarily high vehicular traffic noise pollution and disrupts the orderly flow of surface vehicular traffic. Very stringent quality and maintenance standards should be implemented to eliminate this disruption.

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2 MAY 79

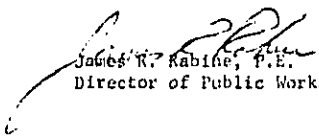


Upon adoption of the revised regulations it is our request that draft local ordinances be prepared and submitted to all communities. Further changes in the laws and regulations should also be followed by subsequent recommended amendments to those locally adopted ordinances to keep them current with federal law. Some training and equipment financing assistance should be provided to encourage local communities to enforce the provisions of the Noise Control Act of 1972. This is essential due to the inadequate personnel and financial commitment made by the federal government for the implementation of this Act.

Thank you for the opportunity to comment on this matter. Please add my name to the mailing list for further implementation and review of the standards.

Very truly yours,

CITY OF BURTON  
DEPARTMENT OF PUBLIC WORKS

  
James R. Rabine, P.E.  
Director of Public Works

cc: Mayor R. L. Wurtz  
Ass't. Director J. Major

JR:mb

City of Chicago  
Jane M. Byrne, Mayor



May 29, 1979

Department of Energy  
and Environmental Protection  
320 N. Clark St.  
Room 402  
Chicago, Illinois 60610  
312/744-4080

T. T. Kason  
Commissioner  
John T. Winkler  
First Deputy Commissioner

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

Enclosed please find five copies of "Views About Proposed EPA Revision to Rail Carrier Noise Emission Regulations". This document states the position of the Chicago Department of Energy and Environmental Protection concerning proposed regulation of rail facility noise emissions by EPA and is submitted for inclusion into the public record.

Your attention to these comments will be greatly appreciated.

Sincerely,

A handwritten signature in cursive script that reads "T. T. Kason".

Commissioner

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293

**VIEWS ABOUT PROPOSED EPA REVISION TO  
RAIL CARRIER NOISE EMISSION REGULATIONS**

**Submitted by**

**City of Chicago  
Department of Energy and  
Environmental Protection  
320 North Clark Street  
Chicago, Illinois 60610**

**To**

**Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement & Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460**

**May 29, 1979**

The Chicago Department of Energy and Environmental Protection is in receipt of the April 13, 1979 letter from Charles Elkins, EPA, to Mayor Jane M. Byrne as well as the "Background Document for Proposed Revision to Rail Carrier Noise Emission Regulation" and supporting documents. The department regrets that only 45 days have been granted for submission of written comments. This short period has not allowed adequate time for sufficient review of the anticipated impact of the proposed regulations on the environment and the department. The lack of provisions for public hearings, no matter what time constraints have been imposed on EPA by the courts, show unconcern and unwillingness by EPA to fully consider views from interested individuals, agencies and organizations on the subject. Oral testimony is a more effective means of stating views than written comments and fosters dialogue among concerned parties.

#### CHICAGO'S ORDINANCE

Chicago's present noise ordinance, enacted in 1971, has served as a model ordinance for many municipalities and states. Development of the ordinance was necessitated because of widespread public complaints about noise. Initial levels for stationary sources and vehicles resulted from a comprehensive noise study performed by the acoustical consulting firm Bolt, Beranek and Newman. Extensive public hearings were conducted by the City Council and attended by representatives from industry, conservation groups, environmental organizations, medical authorities and interested citizens prior to passage by the Council.

Stationary source regulations are divided into three classes, depending on emitting zoning classification, and noise levels are specified for each of eight octave bands. As an example, with a source emanating from a light manufacturing zone (zoning classification of most railroad yards) and impinging upon a residential zone, a violation occurs when source-produced readings exceed approximately 55 dBA as measured in the eight octaves at the district boundary. If the offending source is not detectable above the area ambient, of course no violation can occur.

The octave band method of enforcement has an advantage over many other forms (such as  $L_{eq}$  or a single A-weighted reading) in that it is quick to accomplish and utilizes readily available equipment. As serviced by this department, complaints require about 30 minutes at a site, including communication with the complainant and the alleged violator. Type I octave band portable sound measuring equipment is readily available and has been on the market for the past nine to ten years. Octave band measurements provide more information than A-weighted readings in that the presence of tones and extreme high frequency content can be adequately assessed. Violators are also provided with a rough initial frequency analysis that may be used as a tool for noise control methods.

## CHICAGO'S RAILROADS

Chicago has long been considered the rail center of the nation. Reasons for such a high level of activity in one area can be attributed to the centralized location of the city with respect to the nation, the shipping industry on the great lakes and the stock-yards which served the meat packers.

Although shipment of livestock has declined substantially, new services, such as intermodal transport (trailers that are hauled on flat cars or on public highways), have kept railroad operations at a high level in Chicago.

The City of Chicago is served by 25 freight lines and occupies the major portion of the Chicago Terminal District. Depending on the definition of a yard, the terminal district has approximately 135 yards with 76 located within the corporate limits of Chicago. Estimates from the Chicago Terminal Project place the average daily car movement at 150,000 for the terminal district and from 60-80,000 for the city. The 1975 Illinois Department of Transportation Rail Inventory Survey lists 13 yards within Chicago that have capacities in excess of 1000 cars.

Department of Energy and Environmental Protection staff estimated the population surrounding 23 of the 76 yards within the city utilizing census tract data and land use information. For these yards alone, 36,500 people live within 150 meters (m) and 80,500 live within 300 m of the yards. These figures may be projected to all yards in the city and conservatively represent more than two per cent of the city's population within 150 m of yards and five per cent within 300 m.

## DEPARTMENTAL EXPERIENCE WITH RAIL YARDS

The Chicago Department of Energy and Environmental Protection has extensive experience with noise complaints from residents about rail yards and is responsible for the resolution of complaint-producing problems at Grand Trunk; Atchison, Topeka and Santa Fe; Chessie System; Chicago and Northwestern; and Norfolk & Western rail facilities. Offending noise sources range from switch engines to car coupling to idling locomotives. Two major cases will be described below.

By far the most vigorous and organized action from residents and elected officials came in response to emissions from a trailer on flat car (TOFC-piggyback) yard. Department of Energy and Environmental Protection involvement with the railroad lasted four years, \$6000 was levied in fines, and the TOFC service was ultimately moved to another location in the city. The operations causing the complaints stemmed from an early-model

travelift (a large, straddling crane used to load or unload trailers from flat cars) and diesel refrigeration units.

The main problem at this location was the short distance between the units and residences. The TOFC travelift crane was located approximately 8-9 m from the railroad property line and less than 40 m from residence. Parked refrigerated cars were situated near the yard boundary across from residences. Even after performing travelift retrofit measures (engine and hydraulic enclosure with engine speed reduction), complaints did not cease and the yard was still in violation with the crane in operation. With the current state of technology in 1973, the only way to abate complaints was to move the travelift to a different portion of the yard (which was not possible) or to relocate piggyback facilities to another yard, which was done. Subsequent design modifications by the travelift manufacturer produced a piece of equipment that could be operated in the new location without violation of the ordinance.

Another case of organized community involvement occurred two years ago at another TOFC facility. Here, complaints were due to the operation of five travelift cranes operating in a similar situation to the previous case as well as ancillary operations in support of piggyback services such as Hostler trucks (railroad-owned diesel cabs for transporting the semi-trailers), operation of street trucks on the railroad premises and in the community, and refrigerated cars.

Following two community meetings (90 residents were present at the first), the railroad instituted abatement plans under a control program with this department. One of these plans has involved further refinement and development by the travelift manufacturer to produce a new crane that has fewer moving parts, will be easier and cheaper to service and will be substantially quieter.

This railroad has also commissioned one prototype Hostler truck that will employ an automatic fifth wheel that is not under control of the operator (to eliminate revving of the engine) and improved exhaust muffling. Following the acceptance of this unit, 20 more will be ordered.

Other abatement plans instituted by the railroad have involved moving noisy activities (such as truck parking and idling, travelift idling, and refrigerated cars) as well as curtailing activities on tracks close to residential areas. The railroad's research into new types of retarder shoes is continuing.

The two TOFC cases presented above emphasize that site-specific or local problems exist at railroad yards. In these cases, operational controls, such as moving operations within the yard and limiting hours of operation, have been adapted to specific cases

where the impact on population is greatest. Although these measures are expensive, there is no need to apply them to all railroad yards because of the unique geometry of each yard. The development of a quieter travelift stands out as one of the successful accomplishments that can be brought about when railroads are directed to meet local property line standards under a municipal ordinance. In the former case cited above, the railroad demanded that technology be advanced by informing all travelift manufacturers that no new cranes would be purchased for Chicago that did not meet the Chicago ordinance at the property line. The result of this demand was a retrofit of state-of-the-art equipment and eventual redesign of the travelift to include noise as a design consideration.

The two TOFC cases would never have been brought into the courts without a local ordinance with realistic sound level limits and an enforcement program that was easy to accomplish and provided residents with immediate action by the department.

### THE LOCAL NATURE OF RAIL FACILITY NOISE EMISSIONS

Noise emissions from rail facilities are a local problem and property line enforcement should continue to be handled by local agencies. Railroad yards, unlike locomotives and rail cars, are individual, stationary units with specific boundaries. Equipment requirements, such as cranes, Hoistler trucks, load cell testing, locomotive repair and service shops, retarders, standing refrigerated cars and car impacts are dictated by the rail yard location. It is unfair and unreasonable for EPA to regulate stationary sources where there is no possible impact on residents. Operational adjustments may be made, depending on the requirements of the surrounding land use, so that residential areas are not adversely affected by noise. Through trains, on the other hand, are directly involved in interstate commerce, and the concept of separate noise regulations for each municipality or region through which they pass would represent an undue hardship on the rail industry.

The railroad's problem is similar to the trucking industry. Consider the analogy of interstate trucks where the manufacturers are federally regulated to restrict noise emissions to remove the burden on the truck line to comply with varying local noise ordinances. These truck lines require facilities such as shipping and receiving terminals, maintenance garages, and other support operations in order to conduct business within a local municipality. Since the facilities are stationary sources, they are required to comply with all local ordinances, including those for noise, air, and water pollution. For the same reasons, rail yards should also be subjected to local regulations.

## SPECIFIC COMMENTS ON THE PROPOSED REGULATION

### Impact on the Department if Proposed Regulations are Passed

The Chicago Department of Energy and Environmental Protection feels that EPA has not considered the economic impact on local noise control agencies in its noise measurement methodology. Successful enforcement of the proposed regulations by Chicago will require purchase of new equipment, extensive training of existing personnel and hiring of technicians and engineers.

#### Equipment

Enforcement of the 24-hour standard would require procurement of new equipment by this department. Automated acquisition and analysis units currently cost \$6-7,000.

Enforcement of the one hour  $L_{eq}$  limit would require purchase of an  $L_{eq}$  meter since the automated system would be too cumbersome for short term measurements. Cost of one meter would exceed \$3,200 and more than one may be required for adequate coverage of the city's rail yards by the department's enforcement team.

#### Modelling Non-Rail Yard Sources

Modelling of non-railroad facility sources, as detailed in the noise measurement methodology, is not practical and could be adequately carried out by only a few local agencies. Chicago would require federal funding and training to handle this task, or would need to hire an acoustical consulting firm. It is conceivable that the level of enforcement action for some yards would approach the effort necessary to prepare an environmental impact assessment.

Several details about estimation of non-railroad facility component hourly equivalent or day-night sound levels should be brought to the attention of EPA. First, the Transportation Systems Center (TSC) highway noise prediction method is a computerized technique for vehicle noise prediction. Conceivably, computer time as well as training would be required for data gathering, machine input and interpretation of results. Second, the calculation of day-night levels from civil aircraft (a pervasive source in all urban situations) would also require extensive data collection efforts as well as time spent in the estimation procedure and in interpreting results. Third, levels of through trains (a source present at most yards) and other noise sources in the community require direct measurement to determine the non-yard component.



In requiring such intricate prediction methods, it is quite evident that (1) EPA considers little need for enforcement since the proposed levels are so high (topic of later section), or (2) EPA foresees a budget increase and is planning to grant large awards to municipalities for the hiring of additional personnel and purchase of equipment to aid in enforcement procedures.

#### Hiring and Training of Personnel for Yard Measurement and Non-Facility Source Prediction

At this time, it is difficult to project additional personnel needed by the department to carry out the proposed regulations, but a rough estimate will suffice to show the severity of the problem. Twenty-four hour measurements in Chicago require the presence of department personnel in order to guard against theft and vandalism of equipment and to insure that the results reflect the sound levels in the area. Shorter measurement periods, such as one hour, would require hiring and training one technician in order that existing enforcement and engineering programs not be severely affected. The methodology for prediction of non-rail yard sources is rather nebulous, but it is realistic to assume that another engineer would need to be hired to handle the work load and to supervise measurements.

Total capital impact on the department, including equipment and labor, would represent an estimated initial outlay of \$80,000. An annualized budget requirement of \$50,000 for personnel and equipment maintenance would result. These amounts represent an additional unnecessary tax burden on residents of Chicago for enforcement of a less restrictive regulation. Since Chicago has had a noise ordinance that has been successful in abating complaints since 1971, preemption by EPA represents a step backward for the city and its residents. This department is aware of no other city having the concentration of rail facilities as Chicago.

#### Criticism of Proposed Levels

EPA has not attempted to limit further degradation of the acoustical environment but instead has chosen regulations that describe emissions from the noisiest yards. There are no provisions for insuring that levels at quiet yards with minimal activities will not markedly increase. The subject of environmental degradation with an activity increase at a rail yard has been substantiated by complaints to this department. Expansion of activities usually places noise-producing operations close to property lines where these areas originally served as buffer zones, resulting in an intolerable situation for residents.

The concept of short-term measurements, such as a one-hour  $L_{eq}$ , is certainly more attractive for enforcement at the local level than is a 24 hour  $L_{eq}$  or  $L_{dn}$ . However,

the fact remains that one hour is still an unnecessarily long period of time for an inspector to spend at one location for the sole purpose of taking readings. A one hour equivalent level of 84 dBA, based on 70  $L_{dn}$ , is not relatable to any measurements of which this department is aware. From recent 24-hour measurements this department has taken and consultant data contained in Appendix B of EPA's Background Document (totalling 75 usable 24-hour studies), it appears that a one-hour  $L_{eq}$  that exceeds  $L_{dn}$  by 6 dBA represents the worst case. Mean difference between  $L_{dn}$  and  $L_{eq}$  is only 0.5 dB.

Twenty-four hour measurements, as detailed earlier, are an expensive enforcement tool which would be prohibitive for Chicago and devastating for smaller communities. Aside from the enforcement cost, the 70  $L_{dn}$  property line limit for rail facilities also appears to be unreasonable based on this department's measurements and history of complaints.  $L_{dn}$  70 is 5-10 dB in excess of a fair and reasonable property line limit (a difference of 10 dB is perceived as roughly twice as loud).

The technique for determining contribution from non-facility sources is absurdly complex and has no place in a realistic community noise enforcement program.

#### Departmental Recommendations

This department recommends that noise emissions from rail facilities not be regulated by EPA on a nationwide basis because of the local nature of rail facilities as previously described.

Chicago firmly believes that its successful noise enforcement program should continue to operate, without EPA preemption. Octave band sound level measurements have proved practical for Chicago over the past eight years because they are inexpensive, quick and easy to perform while providing a good assessment of the acoustical environment. Sound levels were assigned at the formulation of the ordinance and provide adequate protection to urban residents while not burdening industry with excessive regulations.

If the Environmental Protection Agency chooses to promulgate the revision to rail carrier noise emission regulations as proposed, Chicago will seek exemption from EPA's preemptive powers based on authority under the Noise Control Act of 1972 for special local conditions.

RECORD OF COMMUNICATION	<input checked="" type="checkbox"/> PHONE CALL <input type="checkbox"/> DISCUSSION <input type="checkbox"/> FIELD TRIP <input type="checkbox"/> CONFERENCE <input type="checkbox"/> OTHER (SPECIFY)	
	(Record of item checked above)	
TITLE: <i>Docket - case 79-01</i>	FIGURE: <i>Robert C. Ross</i> <i>Monroe - RR</i>	DATE: <i>6/12/79</i> TIME: <i>11:00 a.m.</i>
SUBJECT: <i>Winn-Dixie - Delays</i>		
SUMMARY OF COMMUNICATION <p> <i>Call from Sheila Vance (225-5006) Congresswoman Collins office regarding City of Chicago concerns on the proposed rule, i.e., comment period too short, need to hold public hearings on the rule and not let the court decide to stop the Agency from doing good job on the standard rulemaking process. I discussed with her the "retention" as to the law, court order, etc. and she would inform the city accordingly. She asked what kinds of comments we were receiving and a short history on the railroad program to date.</i> </p>		
CONCLUSIONS, ACTION TAKEN OR REQUIRED <p> <i>The City of Chicago on May 29, 1979, submitted their comments to the Docket. They indicated their concerns as Ms Vance noted to me.</i> </p>		
INFORMATION COPIES <p> <i>H. Thomas B. Pomer 1/115</i> </p>		

EPA Form 1300-6 (7-72) REPLACES EPA HQ FORM 8500-3 WHICH MAY BE USED UNTIL SUPPLY IS EXHAUSTED.

**Y**ou've heard it before: Sometimes things seem to have to get worse before they get better. That's what's happening today in our ability to hear. It's a subject that brings us bad news—and good.

Impaired hearing is already our most common chronic disability, and more older citizens are affected than any other age group.

The fact is that 60 percent of those over the age of 65 have enough hearing impairment to interfere with their hearing things going on around them. And one out of every six people this age has a hearing loss that interferes with everyday communications.

But there is a whole new world of hope for these people today as we discovered recently when we interviewed two experts in the field: Dr. Maurice H. Miller, New York University professor of audiology and chief of New York's Lenox Hill Hospital, and Dr. Elizabeth L. Allen, director of the Speech and Hearing Institute of New York's ICD Rehabilitation and Research Center.

As Dr. Miller pointed out, for example, hearing aids today "make it possible to help practically every individual with hearing difficulty. Years ago we had to say to 20 to 25 percent of patients, 'We can't help you.' But today we say this to fewer than five percent!"

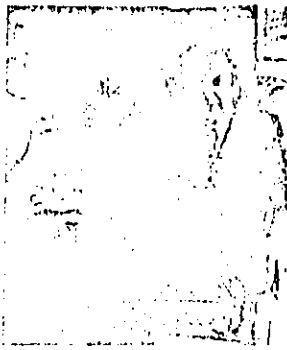
Still, there is a tragic side even to this hopeful picture. For three-quarters of the hearing aids are purchased today from a commercial hearing aid vendor without prior consultation with an audiologist or otologist—and nearly half so purchased are, in Dr. Miller's words, "unnecessary or inappropriate. Such vendors are neither equipped nor trained to do proper hearing aid evaluation, and the result is far too often a tragic disappointment—and people who could be helped give up, mistakenly assuming there is no help possible."

To cover what you should know today about your hearing, here's what we asked Drs. Miller and Allen and what they told us:

**WHAT IS IMPAIRED HEARING?** This is a matter of degree, they said, and is measured in deci-

## IF YOU CAN'T HEAR

By Arthur S. Freese



Audiologist Dr. Maurice Miller advises older people to seek annual hearing checkups

bels or dB (sound intensity relative to 0 dB or the faintest sound the normal ear can hear). A 20 dB loss is considered within normal range; and at a 40 dB loss, hearing is still serviceable. But at minus 65 or 70 dB there is difficulty in hearing speech if it can be done at all; and with a 90 dB loss the person can no longer hear even a siren.

### HOW CAN THE OLDER PERSON CHECK HIS HEARING?

When television is played so loudly it bothers others, when one's mate has to shout to be heard, when a ringing phone isn't heard, and are unmistakable warnings. Experts advise an annual hearing checkup by a specialist.

### WHO SHOULD CONDUCT HEARING EXAMINATIONS?

The doctor should be an otolaryngologist (an ear-nose-throat specialist) or an otologist (one who treats only ear problems). The audiologist is trained to perform the hearing examination. You are seated in a soundproof cubicle a

little larger than a telephone booth and you tell the audiologist when you hear the pure tones he sends through your earphones. With this information and his examination the doctor can decide whether there is a medical problem that can be treated (often as simple as wax in the ears) or a surgical one or whatever. Then the audiologist can decide from these and another examination whether a hearing aid (even what kind) will help. You can then purchase the appropriate and helpful device from a hearing aid dealer.

### HOW MUCH HEARING IS LOST IN THE OVER-65?

Dr. Miller puts it this way: "How much we lose is highly variable and there are those in their 80s whose hearing is very good but we all face the loss of hearing in one form or another, to one degree or another." This is termed "presbycusis" which, as Miller explains, "is the garbage-bag 'cans' too-toss or the multiple ways in which the auditory system degenerates with age."

### WHAT CAUSES SUCH LOSS?

There are genetic mechanisms and individual variations but in Miller's words: "Noise in the workplace, in the home, in the recreational environment, now accounts for more hearing losses than all other causes combined." But medications can also cause hearing impairment and it's well to ask your doctor whether any medicine he prescribes for you can cause hearing problems as a side effect.

### WHY IS AMERICAN HEARING GETTING WORSE?

Dr. Allen explains: "In the cities there are high noise levels, from subways and buses and sirens, and there are those who must take a lot of medication." The very high noise levels are compounded by our noisy household devices.

### CAN WE CONSERVE OUR HEARING?

Dr. Allen urges that "a lot of conservation measures can slow the process and in some cases even reverse it." It is best to select the quietest household appliances available and ear protectors are wise precautions when you operate a power lawnmower or other noisy machine or power tool.

continued

### If you can't hear *continued*

Dr. Miller warns in particular of discotheques and rock concerts and urges us to "avoid snowmobiles which are probably the number one cause of recreational noise exposure."

**ARE EAR PROTECTORS AVAILABLE?** Our two experts suggest that ear muffs are a bit bulky for home use for any length of time except when using very noisy devices such as a chain saw or power lawnmower. Ear plugs are inexpensive, however there are no facilities for fitting them. Plugs are usually available in a large pharmacy, or a sporting goods store. For best results as ear plugs



Reducing our involvement with loud noises helps conserve hearing, says Dr. Elizabeth Allen

you can buy a set of individually fitted protective ear muffs from the laboratories that make ear molds for hearing aids.

**WHAT ABOUT DISCO-THEQUES AND ROCK CONCERTS?** Dr. Miller is blunt: "Don't go to a disco or rock concert—but if you do, wear hearing protectors." He finds these the significant cause of the increased hearing loss in adolescents, some of whom at 18 or 19 have had such significant hearing losses they have become unemployable in certain jobs.

**WHAT CAUSES TINNITUS OR RINGING IN THE EARS?** The causes range from earwax to medications, or even hearing damage from noise. Should you be taking medication and suddenly hear ringing, humming or buzzing, call your doctor without delay. A new device—a tinnitus masker—is being tested experimentally to drown out the sound.

**WHAT IS RECRUITMENT?** Older people in particular may find the distance needed to hear a sound and the level at which the sound becomes painful narrowing. It's like the TV volume control—the point at which a normal ear just hears it and that at which it becomes painful is considerable, but for the person with recruitment this distance is very small. This condition creates problems with hearing aids because sounds then become overwhelming very quickly.

**WHO IS HELPED BY HEARING AIDS?** Since these are essentially amplification devices, those whose hearing needs only to have sounds made louder will benefit most. But those whose hearing is distorted may find the amplification only makes the distortion louder.

**WHAT ARE NEW HEARING DEVICES LIKE?** These devices can amplify a broad range of frequencies or tones or just the ones that are lost (typically the high-frequency ones in aging). Other devices will control recruitment so that when a sound gets louder it will automatically be cut out at a certain level—and there are those with directional microphones that eliminate background noises. Still others build up just those frequencies where speech intelligibility is critical and there are even those that carry the sound from one side to the other when one nerve is useless.

**WHAT DOES A HEARING AID SOUND LIKE?** You can't expect a hearing aid to be like your natural organ. It may seem mechanical or tinny—but the audiologist's counseling will help you get its maximum benefit.

**WHAT HELP IS THERE TODAY FOR HEARING LOSS?** One should seek total rehabilitation where all medical and audiological information is correlated, any necessary medical and surgical help utilized, and medications checked. A hearing aid may be prescribed and the person trained in its use. Speech reading may be tried and this utilizes both lips and facial and bodily cues. Family counseling (the mate is taught, for example, where to stand and speak so speech

reading is easier for the patient) is involved, different kinds of door chimes are tried, and every conceivable help or aid is brought to bear.

**HOW CAN WE GET QUALIFIED HELP?** A family doctor or the nearest medical school or hospital can recommend an otologist. Universities or hospitals are likely to have speech and hearing clinics. The American Speech and Hearing Association (10501 Rockville Pike, Bethesda, Md. 20014) sets standards and certifies professionals. The practitioner should have a CCC, a certificate of clinical competence from this association, and the association may also be able to tell you of experts in your own area.

**HOW DO WE CARE FOR OUR EARS?** As Dr. Miller points out: "Earwax is there for a purpose. He warns sharply against the use of Q tips, bobby pins, pencils, etc. in the ears because these only push wax and debris farther in and may actually make trouble. Earwax keeps out foreign bodies, insects, and dirt and grime. A small number of people are active wax secreters and should see an otologist periodically. As Dr. Miller warns: "never put anything smaller than your elbow in your ear." If there's any earache or infection see an otologist promptly and don't self-treat because this can lead to permanent hearing loss.

**WHAT DOES TOMORROW PROMISE?** Current experimental work is being done with electrodes implanted in the ear to stimulate the hearing nerve so that even the totally deaf can hear some primitive sounds—but this potentially wonderful device is probably a few decades away from general availability. Another experimental device now being worked on is a hearing aid that would be buried under the scalp and be more effective than today's devices—and there's talk of another kind that will have built-in minicomputers to filter out background noise. But while all this is still in the future, it does show that there is interest in those with hearing impairments and that the future will bring them even more help.

# Morning mail

Monday, June 4, 1979

## Obligation to future

*To The Sentinel:*

The looming energy crisis should awaken us to the fact that the time has come for a change in our attitudes and a reassessment of our values. There seems to be an environmental malaise in this country which is increased by commercial pressures and the search for the good life.

It should also bring to our attention that rapidly advancing technology to pamper the mind and body has actually lessened the quality of life by diminishing, rather than enhancing, our search for peace and freedom from stress.

I think we should all become actively involved in helping our country in this time of need. We all need to support and seek simpler ways of life that are less geared to consumerism and energy consumption.

Every thinking person should strive to improve his or her environment not only for today, but for tomorrow. At no time in the past has the burden for the future been as great as it is today. Conscientious Americans know that

their decisions do not belong to them alone, but impact upon their children, their children's children and generations yet to come.

We must make our environment our common cause and in doing so serve to challenge all that exists right now to become what it can be.

GERALDINE M. GRAF,  
Wauwatosa, Wis.

160

CITY OF CLINTON

CLINTON, IOWA 52732

*Dwain T. Walters, Mayor*

OFFICE OF THE CITY ATTORNEY

April 17, 1979

Rail Carrier Docket Number OHAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Re: Rail Carrier Noise Emission Regulation

Dear Sirs:

Your invitation to comment on the proposed revised regulations for Rail Carrier Noise Emissions is appreciated. Rather than try to specifically address each regulation, I would like to voice the problems experienced by the City of Clinton, Iowa as a result of noise caused by railcarriers. I must note in passing that it appears you have addressed these issues in setting your standards, although one of the problems may be unique to Clinton, Iowa.

Clinton, Iowa is fortunate to be the Mississippi River crossing for the Chicago and Northwestern Transportation Company. Clinton, Iowa is also the site for the Chicago, and Northwestern Transportation Company car shops where major car renovation and repair occurs. During the past eight years, the City's problem with railroad noise has been in four areas:

1. Switching noise
2. Train noise
3. Time whistle
4. Wheel drop and bell

The switching noise problem occurs when this operation is carried out during the evening sleeping hours in a switching yard near a residential area. In the past, the railroad responsibility has responded to complaints by rearranging their switching to more suitable hours. However, at least a couple times during the year, the switch engine operator forgets and causes the problem. I see where your regulations directly address this problem.

The train noise is usually expected because of the existence and use of the tracks just like highway noise is expected. In most instances, the trains travel through nonresidential areas. However, the Chicago, Milwaukee, St. Paul and Pacific Railroad does travel directly through a residential and light commercial

79-01-001

COUNCIL MEMBERS

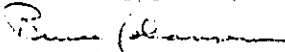
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ROBERT R. GRIFFIN	CLYDE F. JOHNSON	THOMAS P. McDONNELL	WACLOW PIECZYNSKI
		306	JAMES D. TAYLOR

area and the noise created does cause complaints from the residents. Luckily, no switching occurs in that area, so the disturbance is kept to a minimum. I see also where your regulations address this problem.

The time whistle was a problem that is no more. At quitting time, break time and other special times, the Chicago and Northwestern car shops would use a steam whistle to notify employees of the time. Upon notification of the complaint and the obnoxious noise, the local authority reduced the noise through operational changes. I did not observe whether this area was covered in your regulations.

The final problem is the unique one. The Chicago and Northwestern Transportation Company has a wheel manufacture and repair facility across the street from a large residential area. Within their rail facility, they have an overhead crane that moves the wheel from one location to the other. The first noise problem is a bell that rings when the crane moves, undoubtedly an OSHA regulation. However, because of the noise that exists in the area, the bell is very loud so the employees are aware of it. This causes the entire residential area to also hear it. The second noise is the most devastating. The crane drops the wheels in bins or on some other surface at regular intervals. The "clang" that is made is hard to describe but people living 10 to 15 blocks away can look forward to it on a regular basis. The bell has been muffled to some extent where it is no longer as bad as it was, but no change has been made in the noise from the dropping wheel. If your regulations cover that type of noise as well as the others that have been established at the levels set forth, the City of Clinton, Iowa should have no further complaint.

Sincerely yours,

  
Bruce D. Johansen,  
City Attorney

BJ/m



CITY OF



CITY OF COLUMBIA HEIGHTS

590 40th Ave. N. E.

Columbia Heights, MN 55421

(612) 788-9221

"SERVICE IS OUR BUSINESS"

RESOLUTION 79-27

WHEREAS, noise has a detrimental affect on property values; and

WHEREAS, local government would be required to enforce the proposed Environmental Protection Agency's Interstate Rail Carriers Noise Regulations; and

WHEREAS, the City of Columbia Heights feels these proposed receiver standards, if adopted, would be impossible to enforce; and


WHEREAS, the City of Columbia Heights would be pre-empted from enforcing standards which it believes are protective of public health and welfare;

NOW, THEREFORE, BE IT RESOLVED that the City of Columbia Heights, by passage of this Resolution, goes on record as being strongly opposed to establishment of regulations as proposed in the E.P.A. Rail Carrier Docket Number ONAC 79-01. The City of Columbia Heights also concurs with the specific objections raised in the commend document as written by the Chief of the Minnesota State Noise Section.

Passed this 25th day of June, 1979.

Offered by: Hentges  
Seconded by: Norberg  
Roll Call: All Ayes

  
\_\_\_\_\_  
Bruce G. Hawrocki, Mayor.

  
\_\_\_\_\_  
Council Secretary

79-01-143



# National Association of Counties Research, Inc.

Offices • 1735 New York Avenue N.W., Washington, D.C. 20006 • Telephone 202/785-9577

June 1, 1979

Dr. William E. Roper  
Office of Noise Abatement and  
Control (ANR-490)  
U.S. EPA  
Washington, D.C. 20460

Re: Proposed Rules, Docket No. ONAC 79-01

Dear Dr. Roper:

Although we agree with you that "fixed equipment and facilities could be most cost-effectively regulated at the state/local level," we recognize that the U.S. Court of Appeals has shut off that option. However, the court decision could in fact work to the benefit of local government. In communities where rail yards are located, the railroad company is often a major landowner and taxpayer and a major employer. For these reasons the local elected officials might be loathe to act against rail yard noise. Federal regulation can then serve a useful purpose.

We are disappointed in the proposed rules, which we find lax and are doomed to fail in providing even a modicum of relief from rail yard noise. As you admit yourself the federal government will not force the regulations. In the end you will call on local governments to pass ordinances containing your standards and then enforce them. This is wishful thinking.

The proposed property line standard for "hump" yards would have a significant effect on noise, but these yards comprise only a small fraction of the nation's rail yards. The property line standard for most yards would be shamefully inadequate. The flat yard standard is presumably higher because of the use of locomotives for train formation -- locomotives which must meet lax standards for their noise emission.

Assuming the EPA estimations are correct, making the standard more restrictive would require curtailment of nighttime operations. This line of reasoning rules out the use barriers to contain the sound within the yard, or at least, keep it from disturbing residences.

79-01-062

~E&H ANR-490

5 JUN 79 15: 24

The property line standards seem to refer to "developed" property which, we assume, includes residential as well as commercial and industrial land uses. We recommend the standard apply only to residential land use and that the standard be made more stringent -- i.e. no higher than 65 dBA. This would keep the railroads from abating noise in industrial areas so they could concentrate their efforts where residences are located near the yards. Such a standard would encourage railroad companies to work with local governments to use their land use controls to keep new residences away from rail yards.

If the property line standard is made more stringent, more local governments would enforce ordinances using your standards. It is unlikely local governments will make an effort for such minimal relief if your proposed standards are promulgated.

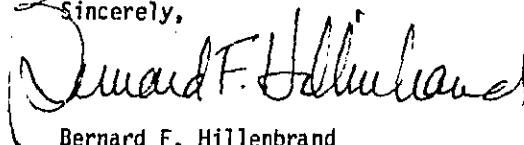
To ensure participation of local governments, we also recommend a stepped-up training and equipment-loan programs. If you expect counties and cities to do the work, we must have the tools and skills.

We feel the property line standard is a constructive and effective tool -- one now used by many local governments to control noise. It will allow the railroad companies to decide how best to meet the standard. It forces them to consider the welfare of their neighbors. If our change is incorporated, whereby only residential property is protected, it brings the noise problem into the land use decision making process and gives the railroads a stake in the political life of the community in which they operate. The difference being that the community would have the backing of federal law in its deliberations.

Where residences now exist, the use of noise barriers, as are being installed along highways, would lower the noise to acceptable levels. This option would allow nighttime operations and also protect public welfare.

We look forward to the expeditious promulgation of these regulations and hope to see more stringent property line standards in the final regulations.

Sincerely,



Bernard F. Hillenbrand  
Executive Director



## METROPOLITAN DADE COUNTY • FLORIDA

909 S.E. First Avenue  
Brickell Plaza, Building - Rm. 402  
Miami, Florida 33131  
Telephone: 579-2760

### ENVIRONMENTAL RESOURCES MANAGEMENT

July 2, 1979

Mr. Henry Thomas  
U. S. Environmental Protection Agency  
401 "M" Street, S.W.  
Washington, D.C. 20460

SUBJECT: Comments on Proposed Noise Regulations

Dear Mr. Thomas:

This office has reviewed the proposed rules governing noise levels from railroad yards throughout the United States. The EPA also has rules which govern noise from the trains themselves as they move from one local jurisdiction to another. In general, we question the enforceability of the proposed rules since average noise level readings are proposed rather than maximum levels. Considerable time and effort will be required of the enforcing agency in order to obtain results on which to base a violation of the standards.

More specifically, we question the exclusion by EPA of rules regulating "Horns, Bells & Whistles". These warning devices are part of the train and therefore move from one jurisdiction to another. It would be very difficult operationally for regulations to vary in different states or counties and EPA is the only regulatory agency which can adopt a national standard on the devices. As you are aware these devices are very noisy and in some cases constitute the primary source of noise creating a nuisance to the surrounding neighborhood. We strongly urge that EPA reconsider excluding these devices from the proposed regulations since their continued operation on a routine basis will make it almost impossible to control the noise nuisance no matter how effective the remaining rules turn out to be. Also, enforcement is made that much more difficult by the exclusion since average noise readings taken in accordance with the proposed regulations would have to be adjusted so that the contribution from the warning devices is not reflected in the final average noise level.

79-01-1692

RECORD ANR-190

11 JUL 79 4:48

We have also consulted with the Office of the County Attorney who has suggested that EPA's most recent draft regulations which exclude from their consideration "horns, bells and whistles" would also be in violation of the mandate of the United States Court of Appeals for the District of Columbia as set forth in the case of Association of American Railroads v. Costle, 562 F.2d 1310 (D.C. App. 1977). In that case, certain exclusions in your previous regulations regarding this matter, including the exclusions for horns, bells and whistles and other warning devices, was considered by the court as to whether or not such exclusions were permissible under the clear and distinct mandate of the Noise Control Act of 1972. In holding that the exclusions were not permitted the Court stated: (562 F.2d at 1315)

...there is absolutely no indication in Section 17(a)(1) that Congress intended to vest discretion in the E.P.A. to decide which of the equipment and facilities would be subject to regulation. Nothing in the statute diminishes or qualifies the generality of these two key words -- equipment and facility. Nothing in the statute states that only certain kinds of equipment or facilities need to be regulated. The plain and natural meaning of the phrase 'the equipment and facilities' is that the power of the E.P.A. is plenary with respect to those objects and places customarily thought to be included in the definition of the phrase. To read this language otherwise would be to distort a relatively clear signal from the national legislature. Indeed, in the context of this case, the E.P.A. chose not to regulate any 'facilities' at all; this action in effect reads this word out of the statute. We are not prepared to label this word as being superfluous to the statutory mandate.

The court also noted that the EPA itself had shown that it was capable of defining railroad "equipment and facilities" in a realistic and reasonable manner and noted that the background document for Railroad Noise Emission Standards identified certain broad categories of railroad equipment and facilities including "horns, whistles, bells and other warning devices..." (id. at 1319). The court hereupon found that the failure of EPA to regulate such equipment was a violation of the statutory mandate to compel the EPA to promulgate new regulations to cure these defects.

The existing proposed regulations attempt to cure one defect while leaving the others in existence. This expressed intent by EPA to not regulate acknowledged railroad equipment such as horns, whistles, bells and other warning devices is as clear a violation of the statutory mandate as is possible as previously noted by the court.

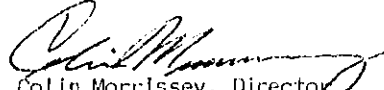
Mr. Henry Thomas

-5-

July 2, 1979

Accordingly, we would respectfully request the EPA obey the mandate of the Court of Appeals and the express statutory mandate of the Noise Control Act of 1972 and promulgate a regulation setting a national standard for noise emissions from horns, whistles, bells and other warning devices.

Very truly yours,

  
Colin Morrissey, Director  
Environmental Resources Management

CM/RR/JJn  
Enclosure

cc: Peter Tell  
Asst. County Attorney



CITY OF DALLAS

George R. Schrader  
City Manager

June 1, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulations Division  
Office of Air, Noise, and Radiation  
United States Environmental Protection Agency  
Washington, D. C. 20460

Dear Mr. Thomas:

Thank you for the opportunity to submit this statement concerning the proposed expanded railroad noise regulation.

We strongly oppose the preemption of state and local authority for the control of noise from railroad yards. In our opinion, state and local governments should have control over any fixed/permanent installations within their jurisdiction so long as their requirements do not impede the flow of interstate commerce.

One of the railroad yards in Dallas is adjacent to a single family residential area. Experience has indicated that citizens are adversely affected when the sound pressure level exceeds 70 dBA, especially at night. This is partially due to the sporadic intrusiveness of the sound.

We therefore urge the Environmental Protection Agency to explore all avenues of recourse to get the preemption clause removed and to adopt more stringent permissible sound pressure levels.

Sincerely,

  
George R. Schrader  
City Manager

jd

OFFICE OF THE CITY MANAGER CITY HALL DALLAS TEXAS 75201 TELEPHONE 214/870-3301

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780-10-67

W.H. McNichols Jr.  
MAYOR



City and County of Denver  
CITY AND COUNTY BUILDING · DENVER, COLORADO · 80202

AREA CODE 303 575-2721

April 20, 1979

Mr. Charles E. Elkins  
Deputy Assistant Administrator  
for Noise Control Programs  
U. S. Environmental Protection Agency  
Office of Air, Noise, and Radiation  
Washington, D. C. 20460

Dear Mr. Elkins:

Thank you for your recent letter concerning the proposed, revised and expanded railroad noise regulations.

Denver's noise control ordinance does not cover railroad noise at the present time. Our noise control people, in the Environmental Health Service of the Department of Health and Hospitals, could assist your agency in the enforcement of your proposed regulations when finalized and adopted. Furthermore, an ordinance amendment or regulations promulgated under authority of the Denver noise control ordinance may be considered by our people, to provide standards for railroad noise exempted, or not covered by the proposed regulations of your agency. For example, your regulations do not cover the noise created by horns, bells and whistles utilized as safety devices on railroad equipment. Your regulations also exempt railroad maintenance and repair equipment which contribute to the community noise problem.

79-01-004

My office presently receives very few complaints relative to railroad noise, however, we are interested in a comprehensive noise control program. We will continue to closely follow the development of your railroad noise control regulations.

Sincerely yours,

W. H. McNichols, Jr.  
MAYOR

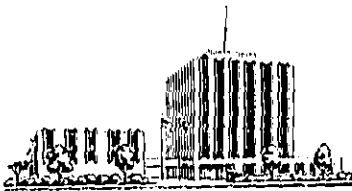
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THE CITY OF DES PLAINES

1420 MINER STREET ■■■ DES PLAINES, ILLINOIS 60016 ■■■ 297-1200

April 17, 1979

Mr. Henry E. Thomas, Director  
Standards & Regulations Division  
U. S. E.P.A. (ANR-490)  
Washington, D.C. 20460

Dear Mr. Thomas:

Your letter dated April 13, 1979 with attachments arrived today concerning the EPA proposed Revised & Expanded Railroad Noise Regulations that by 1982 will extend Federal Noise Control to most equipment and facilities of interstate rail carriers.

These proposed Revised & Expanded Railroad Noise Regulations are a disgrace to the initial intent of the Noise Control Act of 1972 in which "The Congress finds:

Section 2 (a)

- (1.) That inadequately controlled noise present a growing danger to the health and welfare of the nation's population, particularly in urban areas;
- (2.) That major sources of noise include transportation vehicles and equipment, machinery, appliances, and other products in commerce; and
- (3.) That, while primary responsibility for control of noise rests with the State and local governments, Federal action is essential to deal with major noise sources in commerce control of which require national uniformity of treatment.

(b) The Congress declares that it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health and welfare.---

It appears that the U.S. Court of Appeals (D.C. Circuit) has been unduly prejudiced by the Association of American Railroads (AAR) of their poor financial condition (which is the result of the poor management of the member railroads) to rule in favor of the (AAR) and against the "Health and Welfare of the Nation's population, particularly in urban areas," as provided for in the Noise Act of 1972.

It is incomprehensible and unbelievable that the U.S. Court of Appeals (D.C. Circuit) would have let the AAR convince the court that "Railroad facilities equipment, operational procedures, observed noise problems, and other relevant matters" must be dealt with on a nationwide plan at an "Average lowest common denominator standards."

316  
-8860 ANR-490  
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19-01-011

Page 2

There is absolutely no reasonableness in the decision of the U. S. Court of Appeals (D.C. Circuit) to those of us local communities that have unusual railroad generated noise problems.

On page 3, of your letter you speak of "Federal enforcement of EPA's final regulations", but there are no funds for federal enforcement. The U.S. EPA must rely upon the state and local authorities to enforce such unreasonable railroad noise standards.

Does the U. S. Court of Appeals (D.C.Circuit) expect the state and local authorities to enforce railroad noise standards that are not in the interest of a particular railroad noise standard problem to a particular local community? If this is so, it is naivety at its grossest!

Des Plaines Illinois adopted a noise control ordinance in March 1972 and, because of an unconcerned railroad that parked four commuter trains and engines overnight within the city limits of Des Plaines, citations were issued against the Chicago & Northwestern Railroad for excessive noise beginning about 4:30 a.m. on nights with temperatures above forty degrees Fahrenheit or all night long when temperatures fell below that.

During our time in court the receiving noise levels on the residential area boundary was reduced from a maximum of 75 dB(A) to 55 dB(A) due to a combination of activities on the part of the Chicago & Northwestern Railway Company such as adding a seventy-five dollar muffler on the discharge of an air starter on each auxiliary diesel engine and changing start-up procedures so that only two engines were operating at one time.

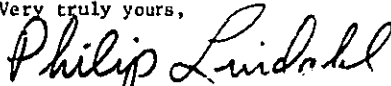
As a result of the appeal to the Illinois Supreme Court by the Chicago & Northwestern Railway Company the Des Plaines Noise Ordinance was ruled invalid--for noise control should be the role of the state--not a home rule community.

However, because Des Plaines had a noise ordinance we were able to get the objectionable noise level reduced by twenty decibels or to one-fourth of the noise level before noise levels were observed. This is quite an accomplishment!

Now, without a valid noise ordinance the U.S. EPA wants the City of Des Plaines to enforce your proposed railroad noise ordinance that is so weak the railroads cannot be touched.

Is that what you are asking us to do? It is absurd!

Very truly yours,



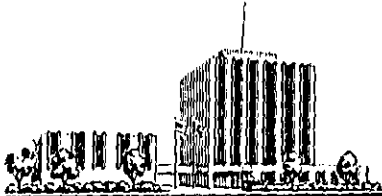
Philip Lindahl, P. E.  
Environmental Control

PL:bp

CC: Douglas Costle, Adm. U.S. EPA  
Congressman Abner Mikva  
Senator Charles Percy  
Senator Adlai Stevenson III  
John McGuire, Regional Adm. U.S. EPA Region V

PS: ON APRIL 17 1979 YOU SENT ME A SECOND MAILING OF THE SAME MATERIAL





THE CITY OF DES PLAINES

1420 MINER STREET DES PLAINES, ILLINOIS 60016 297-1200

May 30, 1979

Mr. Henry Thomas, Director  
Standards & Regulations Division  
U. S. EPA (AnR - 490)  
Washington, D. C. 20460

Re: Rail Carrier Docket  
ONCA 79-01

Dear Mr. Thomas:

After conferring with Thaddeus T. Kason, Commissioner of Environmental Controls for the City of Chicago and Philip Mole', Director of Environmental Controls for Cook County about the short time of comments on Rail Carrier Docket ONAC 79-1 of only forty-five days, and the fact that public hearings were not held in Chicago, the rail capitol of the U.S.A., I too am sending you my official request that you extend the period of comment and come to Chicago for a public hearing on railroad noise from those at the grass roots level.

It is absolutely disgraceful for your office to promulgate such a ridiculous noise standard for railroads!

We realize the U. S. Court of Appeals (D.C.Circuit) gave you the guide lines for such a nation wide noise standard, but in a land of justice, there must be a way to convince the U. S. Court of Appeals (D.C.Circuit) that their instructions to you are wrong, are in error, or are not reasonable for those of us who have to live with railroad noise.

The Des Plaines Noise Ordinance was responsible for us to get the Chicago & North-western Railroad to reduce the noise levels, received in residential zoned areas, from 75 dB(A) to 55 db(A) (twenty decibels to a level of one-fourth the original noise level).

Your new, proposed, revised and expanded railroad noise regulations will only increase railroad noise levels by setting the noise levels so high the railroads will not be able to make that much noise, so there will be no need to enforce such high noise levels.

Please extend your deadline for comments and come to Chicago to get first hand comments on railroad noise standards.

Very truly yours,

*Philip Lindahl*  
Philip Lindahl, P. E.  
Environmental Control

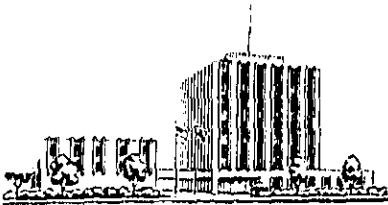
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CC: Douglas Costle, US EPA Administrator  
- Senator Charles Percy  
Senator Adlai Stevenson III  
Congressman Abner Mikva

RECEIVED ANR-490

31 JUN 79 11: 11

79-01-083



THE CITY OF DES PLAINES

1420 MINER STREET ■■■ DES PLAINES, ILLINOIS 60016 ■■■ 297-1200

May 30, 1979

Mr. Henry Thomas, Director
Standards & Regulations Division
U. S. EPA (AnR - 490)
Washington, D. C. 20460
Re: Rail Carrier Docket
ONCA 79-01

Dear Mr. Thomas:

After conferring with Thaddeus T. Kason, Commissioner of Environmental Controls for the City of Chicago and Philip Mole', Director of Environmental Controls for Cook County about the short time of comments on Rail Carrier Docket ONAC 79-1 of only forty-five days, and the fact that public hearings were not held in Chicago, the rail capitol of the U.S.A., I too am sending you my official request that you extend the period of comment and come to Chicago for a public hearing on railroad noise from those at the grass roots level.

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Please extend your deadline for comments and come to Chicago to get first hand comments on railroad noise standards.

Very truly yours,

Philip Lindahl
Philip Lindahl, P. E.
Environmental Control

ML:bp

CC: Douglas Costle, US EPA Administrator
Senator Charles Percy
Senator Adlai Stevenson II
Congressman Abner Mikva

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MAY 31 1979

79-10-84



GOVERNMENT OF THE DISTRICT OF COLUMBIA  
DEPARTMENT OF ENVIRONMENTAL SERVICES  
WASHINGTON, D. C. 20004

JUL 2 1979

Henry E. Thomas, Director  
Standards and Regulations Division (ANR-490)  
United States Environmental Protection Agency  
Office of Air, Noise and Radiation  
Washington, D. C. 20460

Dear Mr. Thomas:

The U. S. Environmental Protection Agency's proposed revised and expanded railroad noise regulations, that by 1982 will extend Federal noise controls to most equipment and facilities of interstate rail carriers, has been reviewed.

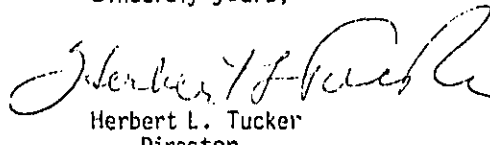
The District of Columbia's Noise Control Act (D. C. Law 2-53) of 1977, Section 5(5) states:

"Vehicles propelled only upon rails and tracks shall be exempt at all times".

The EPA's railroad noise regulations will not, therefore, preempt existing state ordinances.

Many thanks for your interest.

Sincerely yours,

  
Herbert L. Tucker  
Director

79-01-1231

REC'D APR-1-90

9 JUL 79 15: 17

City of  Dover

May 24, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Sirs:

The City of Dover herewith presents a recommendation of non-concurrence with the draft railyard equipment and facility regulations as proposed by the U.S. Environmental Protection Agency. The reasons for our opposition are listed as follows:

1. It is our opinion that there has been a complete lack of citizen input into these regulations which were ostensibly written for the health and welfare of people, therefore, these people should be consulted regarding the impacts to their comfort, peace and safety as it regards their environment.

2. As presently written, the proposed regulations provides for local enforcement, however, the City of Dover has neither the resources nor the expertise to provide enforcement and we feel that the appropriate regulatory arm of the federal government should take responsibility for the enforcement under the view of the EPA. Railroad officials are totally insulated from the citizens and their elected representatives, therefore it is of the utmost importance in having the Federal Government provide these railroad officials with the necessary guidance and advise. An indication of the insulation of railroad officials and the arrogance that they display is contained in the attachment displaying newspaper clippings from our local paper.

79-01-10-64

--SER: ANR-490

31 MAY 79 12: 03

P. O. Box 475 - Dover, Delaware 19901

321

3. The regulations have been written with an extremely broad brush having national views in mind which we feel borders on the ridiculous. In the northeast corridor the problems of railroad noise cannot be compared with a similar situation in the State of Wyoming. These regulations do address local situations in Section 11.0, however, they go on to read that the local regulations cannot be more stringent or "come in conflict" with the federal regulations.

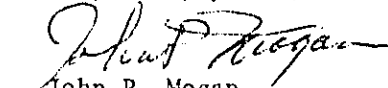
4. The proposed regulations are not protective of the public health and welfare and are inconsistent with our national policy regarding noise pollution. It is our opinion that levels in excess of 55 dB is not in the best interests of residential neighborhood environment. We have recorded in the City of Dover levels in excess of 80 dB for extended periods of time.

5. The regulations are totally pre-emptive which eliminates the State of Delaware and the City of Dover from doing what is necessary and being demanded by its citizens. The regulations are not clear nor do they address a waiver procedure for the local authorities and we feel that such a waiver procedure is absolutely necessary.

6. It is our opinion that the regulations in their present form will escalate noise pollution and place further burdens on the citizens who live in the proximity of railroad yards.

In conclusion we request that the regulations not be promulgated until a full blown report be made by the citizens not only in the State of Delaware but elsewhere and that serious recognition be given to the urban areas as a separate situation. Please be advised that the City of Dover concurs completely with the recommendations made by the State of Delaware and Eugene Ruane, a resident of New Burton Road.

Very truly yours,

  
John P. Mogan  
City Manager

JPM/dp

cc: The Honorable William V. Roth, Jr.  
The Honorable Joseph R. Biden, Jr.  
The Honorable Thomas B. Evans  
The Honorable Charles A. Legates, Jr.  
Secretary Pierre Olney  
Councilman Robert Bewick

79-01-046

*Morning News 5/1/79*

## **Bumps in the night rile New Burton Road**

**By JANE BROOKS**  
Dover Bureau

DOVER — It has been a year since Conrail announced it was moving its switching operations to Harrington - promising Dover citizens relief from nocturnal noises of bumping and grinding rail cars.

But according to a group of New Burton Road area residents, the railroad is celebrating the first anniversary of the promise by "shaking us out of our beds again."

"It's business as usual" with railroad cars being shunted and trains being "made up" between 11 p.m. and 2 a.m. along the tracks across the road from the Mayfair, Crossgates, Wedgewood and Sherwood subdivisions, Eugene B. Ruane, spokesman for a group of residents and a long-time Conrail foe, told a meeting of the city of Dover utility committee last night.

Conrail announced last April that it was bowing to public pressure and moving its main switch-

ing yards from Dover to Harrington. The railroad promised that only cars "destined for General Foods, Scott Paper and other Dover customers" would be switched along New Burton Road, no hazardous material would be stored opposite the residential area and no switching operations would be suspended between 11 p.m. and 7 a.m.

The railroad has broken its promise on all three counts, claimed the residents, who said the night-time noise increased from bad to worse during April.

The utility committee was sympathetic to the residents' woes and will take their case back to city council and the Delaware Congressional delegation.

The committee had its first look at Environmental Protection Agency rules governing noise, which according to Ruane "appear to have been written by the railroad" and give the city "no relief at all" from the noise nuisance.



MORNING NEWS 5/2/78

# Conrail drops trick to put group to bed

By JANE BROOKS  
Dover Bureau

DOVER - Business is booming in Dover — and that is why boxcars have been going bump in the night again along New Burton Road, a Conrail spokesman said yesterday.

But, the "New Burton Road Sleepless Nights Society should get some relief after Friday," said Alvin J. Arnett, vice president in charge of government affairs for the railroad.

That is when Conrail will conclude a three-month "experiment" of operating three "tricks" a day to meet Dover area business demands and revert to two shifts, according to Arnett.

This should eliminate major switching operations between the hours of 8 p.m. and 8 a.m., he said.

It is just one year since the railroad announced that it was bowing to public pressure and moving its switching operations south to Harrington, promising Dover residents relief from nocturnal banging and clanging.

But, a group of New Burton Road residents told the city coun-

cil utility committee Monday night, the railroad is "celebrating the anniversary" of that promise by "shaking us out of our beds again."

"We try never to forget an anniversary," responded Arnett yesterday.

The railroad has been working around the clock in the last three months, he said, to meet the increased demands of Dover customers — including General Foods, Scott Paper, Reichhold Chemicals and others.

Arnett said Conrail officials had been interviewing "all our customers" in the Dover area "to see if we can get by with two tricks a day." He said the railroad was as anxious as residents to eliminate the night shift in the interests of economy.

If the railroad could find a way to bypass Dover completely, it would move all its switching operations to Harrington where it has been "welcomed with open arms," Arnett said.

The utility committee agreed to pass on residents' complaints to city council and the Delaware Congressional delegation.

STATE NEWS 5/15/79

# Residents say Conrail is still noisy

By FRANK MULSHNOCK  
Staff Writer

DOVER—Conrail is still doing a "booming" business on its tracks along New Burton Road, residents say.

City council agreed Monday night to ask the railroad company to honor its original promise of June, 1978, that switching activities be moved from Dover.

The city also will seek federal money under the Quiet Cities Act to fund noise measuring equipment the city can use to surface the city's noise control ordinance.

Not only has Conrail not kept its promise to move switching operations to Haddon, the company also has broken its promise to stop what a spokesman said were "temporary" switching operations in early May, residents said.

Spokesman Gary Fulton told the *State News* in early May that some temporary switching the company was doing because of an increase in local business would be stopped by May 5.

Fulton could not be reached for comment this morning.

"They kept their promise for about three or four days," Elaine Segel of Crossgates, said.

Segel said she was awakened twice last week once at 1:25 a.m. and the other time at 3:20 a.m.

"Saturday morning at 3:14 they said goodbye to us with seven sharp blows of the whistle, just for the hell of it, to let

us know they were there," Crossgates resident Eugene B. Ruane said.

"They surely were not trying to let cars or other trains know they were coming at that time of the morning," he said.

Councilman Robert D. "Dick" Bewick said he was awakened by the train whistles early one recent morning as well.

"And I live in Woodbrook, more than a half mile away," he said.

"Now if it woke me up, I can imagine what it did to the residents out there," he said.



# Conrail veep will avoid Dover noise

By FRANK MULSHNOCK  
Staff Writer

ROCKVILLE, Md.—Alvin J. Arnett says he has no intention of spending the night in Eugene B. Ruane's house.

Ruane said Arnett, a Conrail assistant vice-president, has had a "standing invitation" to spend the night in Dover and hear for himself the railroad noise residents along New Burton Road have been griping about for two years.

Ruane has been an unofficial leader of those complaining residents.

"I feel like we're being nibbled to death by ducks. I don't think they will be satisfied until we start using rubber tires and marshmallow couplers," Arnett said.

"I don't have to spend the night in Dover, the EPA already gave us a clean bill of health in November, 1977," Arnett said by phone from his Rockville, Md. office.

Arnett was referring to a study of noise levels done by a Cambridge, Mass., firm under contract to the U.S. Environmental Protection Agency in 1977 which he said concluded Conrail's noise was well within federal standards.

Ruane said those federal standards, even the new, stricter ones which will go into effect in 1982, allow noise levels that are still, "not tolerable."

"The rail companies wrote those regulations," Ruane contended.

"That's not true. We're going to be battling those regulations ourselves because we'll be losing some 300 jobs, as a result of them," Arnett countered.

Arnett said revenue loss from more stringent noise standards would force layoffs.

"Actually Dover residents should be proud, they have had more to do with writing those new standards than any other city in the country," Arnett said.

Arnett said activity at Dover has been reduced, "about 65 or 75 percent," since the company moved its switching yard from Dover to Harrington last year.

Arnett said more than four million Americans are affected by railroad noise so Dover residents should not feel singled-out.

"We do not board these people intentionally," he said.

"The way they talk you might think we're designing tortures for them."

# CITY OF FRIDLEY

6431 UNIVERSITY AVENUE N.E., FRIDLEY, MINNESOTA 55432  
TELEPHONE (612)571-3450

June 25, 1979

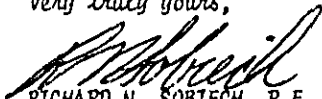
Rail Carrier Docket Number ONAC 79-01  
Office of noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D. C. 20460

Gentlemen:

The City of Fridley has recently reviewed the proposed EPA noise emission regulations for interstate rail carriers, as published in the Federal Registry on Tuesday, April 17, 1979. As a result of the review, the City feels that the proposed regulations would not benefit the residents of the City of Fridley. In addition to the review, the City Council, at their regular meeting of June 18, 1979, adopted the attached Resolution No. 89-1979, which indicates that the proposed regulations do not benefit the City residents and concurs with specific objections raised in the comment document as written by the Chief of Minnesota State Noise Section.

We would urge you to review those comments and revise the proposed regulations to ensure State and local noise control.

Very truly yours,

  
RICHARD N. SOBIECH, P.E.  
Public Works Director

RNS:ik  
Attach.

79-01-119  
611-10-64

BOARD ANR-490

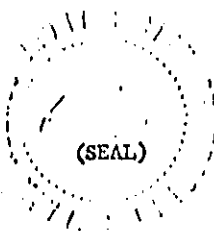
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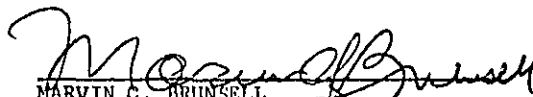
STATE OF MINNESOTA        )  
COUNTY OF ANOKA         )    ss  
CITY OF FRIDLEY         )

I, the undersigned, being the duly qualified and acting City Clerk of the City of Fridley, Minnesota, do hereby certify that I have carefully compared the attached and foregoing extract of the minutes of a       Council       meeting of said Council held       June 18, 1979      , with the original thereof on file in my office, and the same is a full, true, and complete transcript therefrom insofar as the same relates to:

Resolution No. 89-1979: A Resolution concurring with Comments of MPCA in regard to proposed noise emission standards for transportation equipment; Interstate rail carriers.

WITNESS My hand as City Clerk of the City of Fridley and the seal of the City this       25th       day of       June 1979      .



  
MARVIN C. BRUNSELL  
City Clerk of the City of Fridley

RESOLUTION NO. 89-1979

A RESOLUTION CONCURREING WITH COMMENTS OF MPCA IN REGARD TO PROPOSED NOISE EMISSION STANDARDS FOR TRANSPORTATION EQUIPMENT; INTERSTATE RAIL CARRIERS

WHEREAS, the City of Fridley has reviewed the proposed noise emission standards for transportation equipment; interstate rail carriers, and

WHEREAS, the City of Fridley feels the proposed rules and regulations will not benefit the residents of Fridley, and

WHEREAS, the City of Fridley has reviewed comments made by MPCA relative to the proposed rules and regulations.

NOW THEREFORE, BE IT RESOLVED, that the Council of the City of Fridley concurs with statements made by the MPCA relative to the proposed Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers, and urges the EPA to seriously review these comments and incorporate appropriate amendments which would ensure State and local control of noise emissions.

ADOPTED BY THE CITY COUNCIL OF THE CITY OF FRIDLEY THIS 18th  
DAY OF June, 1979.

---

Mayor - William J. Nee

ATTEST:

  
City Clerk - Marvin E. Brunzell



COMMONWEALTH OF VIRGINIA  
COUNTY OF HENRICO

ROBERT J. DAHLSTEDT  
Director of Planning  
(804) 747-4602

June 28, 1979

Rail Carrier Docket (ONAC 7901)  
Office of Noise Abatement and Control (AW-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Dear Sirs:

In reviewing the revised and expanded railroad noise regulations proposed by the Environmental Protection Agency (EPA), it is my understanding that these revised regulations would preempt local or state authority in controlling railroad yard noise.

The County of Henrico, Virginia would like to go on record as being opposed to the provision preempting local or state initiatives to promulgate a set of standards consistent with community concerns. In considering the original regulations and the revised regulations, it would seem more suitable for the EPA regulations to provide a basic minimum level of noise control, wherein state or local governments could enact more stringent controls as community concerns so required. This is especially appropriate since the Department of Transportation's Federal Railroad Administration (FRA) doubts whether it has the resources or authority for adequate national enforcement. Thus monitoring and enforcement will be left primarily to state and local authorities.

79-01-142

We strongly urge that the section of the revised regulations which would preempt local and state governments from issuing their own set of regulations be removed from the regulations. Instead we would recommend that a revised set of regulations contain provisions for state and local authorities to set standards for noise emission standards for railroad yards above those set forth by EPA.

We appreciate this opportunity to review and comment upon these proposed revised regulations.

Sincerely,

*Robert J. Dahlstedt*  
Robert J. Dahlstedt

331

PARHAM AND HUNGARY SPRING ROADS / P. O. BOX 27032 / RICHMOND, VIRGINIA 23273  
-FRD APR-490  
3 JUL 79 10:13





OFFICE OF THE MAYOR

JAKE M. GODBOLD  
MAYOR

May 25, 1979

JACKSONVILLE, FLORIDA  
32202

Mr. Henry E. Thomas,  
Director  
Standards and Regulations Division (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Thomas:

In response to your letter on the proposed railroad noise regulation, I would like to state at the outset that I am quite concerned with Federal preemption of local prerogatives on this subject. I believe that Federal controls should be limited to establishing incremental standards for manufactured products which are noise sources. Cities have individual and unique noise problems and should be allowed to resolve them at the local level with ordinances and enforcement compatible with the desires of the local citizenry.

Jacksonville, as a port of entry for the southeast, has more than a normal share of railroad noises that are annoying to the population. The two most prevalent type complaints are associated with nighttime railroad yard operations and nighttime prolonged train whistles at grade crossings. The selection of a nationwide "lowest common denominator" level will do little to alleviate these complaints unless the level is low enough to protect against speech and sleep interference at the receiving property lines. Our Noise Control Engineer recommends that if a Federal level must be established, that it be no greater than  $L_{dn}$ , 55 dBA when measured at the receiving residential property line. This level would then be consistent with EPA identified criteria requisite to protect public health and welfare with an adequate margin of safety. The level would also be consistent with that in a proposed local ordinance.

79-01-037

/Continued.....

--SERD: ANR-490

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Mr. Henry E. Thomas  
U. S. EPA  
Page 2

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I must also observe that there is a growing opposition toward "over-regulation" at the Federal level. There is also a reluctance to accept the long term cost benefits of environmental controls when viewed from the start up and short term costs involved. The protection of our citizens must be weighed against the economic gain inherent in increased industrial activity associated with rail transportation. As a final comment, since the enforcement of noise controls will ultimately be conducted at the local level, either the standards should be established at the local level or financial assistance should be provided to local officials to enforce the preempting Federal standards.

Very truly yours,



Jake M. Godbold  
Mayor

JMG/WWH/ns

cc: Patricia C. Cowdery, M.D., Dir.  
DHWBES  
cc: A. H. Hinman, Noise Engineer  
cc: Richard Bass, Noise Section Administrator  
Fla. DER



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

17 APR 1979

OFFICE OF  
AIR, NOISE, AND RADIATION

Mr. Jake M. Godbold, Mayor  
City Hall  
Jacksonville, Florida 32202

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APR 23 1979

Dear Mayor Godbold:

MAYOR'S OFFICE  
JACKSONVILLE, FLORIDA

The U.S. Environmental Protection Agency (EPA) has proposed revised and expanded railroad noise regulations that by 1982 will extend Federal noise controls to most equipment and facilities of interstate rail carriers. The purpose of this letter is to inform you of how these rules came about and what their implications are for State and local communities concerned about railroad noise.

The new regulations were ordered by the U.S. Court of Appeals (D.C. Circuit) in August 1977 as a result of a suit brought by the Association of American Railroads (AAR) on behalf of the industry. The AAR successfully argued before the Court that EPA's original regulations (December 1975) covering just locomotives and rail cars were not as comprehensive as Congress had called for in Section 17 of the 1972 Noise Control Act. According to the AAR, the Act required EPA to issue noise emission standards for all railroad equipment and facilities. Further, they contended it was the intent of Congress to establish a Federal regulatory program that completely preempted the authority of State and local governments. These two matters are closely linked because the Act ties the extent of preemption to the coverage of the Federal regulations. Thus, by assuring complete Federal coverage in EPA's regulations, the AAR would obtain for its members full preemptive protection from what the industry viewed as proliferating State/local noise regulations. Of apparent concern were costs and litigative burdens potentially incurred in complying with numerous differing, and perhaps conflicting, local ordinances.

EPA believed it did have the discretion under the Act to restrict the scope to the degree exhibited in the original regulations. In our view, the Act and its legislative history indicated that Congress intended that preemption of State and local authority be limited and, further, that Federal control should center on those aspects of the industry truly in need of the uniform treatment of a national standard. Consequently, the Agency confined its original regulations to locomotives and rail cars -- the only elements of interstate rail carriers that move from jurisdiction to jurisdiction and for which variations in local noise requirements might prove burdensome or an impediment to

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APR 23 1979

MAYOR'S OFFICE OF  
INTERGOVERNMENTAL  
AFFAIRS

commerce. We concluded that, in most instances, fixed equipment and facilities could be most cost-effectively regulated at the State/local level where, if problems were serious enough to justify passage of ordinances, requirements could be tailored to real and practical noise abatement needs. Thus, in general, EPA believed that railroad noise could best be approached by a combination of Federal and local actions.

Though EPA believed its approach was in accordance with the Act, the Court disagreed and ruled in favor of the railroad industry. We have accepted the Court's decision and complied with it in good faith. Essentially the expanded rules supplement our original rules by adding rail yards and specific requirements for three important individual sources: retarders, refrigerator cars, and car coupling operations. The original rules setting noise levels for locomotives and rail cars were not challenged by the AAR in court and, consequently, remain in effect.

Our expanded regulations were developed after an extensive examination of railroad facilities, equipment, operational procedures, observed noise problems, and other relevant matters. Although, we believe these rules are consistent with the Court's directive and the Act, we remain concerned about the degree to which State/local authority will be preempted. Due to certain provisions of Section 17, once final Federal regulations become effective, State/local freedom to independently solve railroad noise problems will be essentially eliminated. This arises primarily because, after the effective date and with limited exceptions, the Act forbids State/local governments adopting or enforcing standards for equipment or facilities covered in the Federal regulations that are different than the Federal standards. Consequently, and again with these limited exceptions (to be mentioned later), State/local governments will be constrained under the present Act to control railroad noise sources only to the degree and levels allowed under the final EPA regulations.

Such preemption might not pose too many difficulties, if the Federal rules could be formulated in a manner that adequately addressed each and every local situation. However, because there are many thousands of railroad facilities across the Nation and Federal noise limits must apply uniformly to all, it was not possible to accomplish this. EPA's regulations were developed with the average rail facility (not the atypical) in mind and they are, of necessity, "lowest common denominator" standards. For several alternative Federal noise limits considered, the Agency estimated total national costs using selected individual facilities deemed representative or "typical" of various facility categories. The reasonableness of the limits were judged on the basis of these total national costs. This has meant that, in some cases, abatement techniques that appeared reasonable when applied to one or a few facilities had to be ruled out because they resulted in excessive costs when applied nationally.

Compliance with EPA's proposed regulations is expected to provide an environment free from railroad noise that jeopardizes the health and welfare for only about 830,000 people. The remainder of the 4 million people currently exposed to rail yard noise should have some improvement in their exposure, although they are not removed from adverse impact. Overall, considering the number of people involved and their respective noise exposures, this regulation will result in a 28.5 percent improvement in the rail yard situation. EPA stopped far short of the degree of protection clearly needed because, based on available information, more stringent limits applied nationally would entail substantially greater costs.

Hence, while we believe some noise abatement will be achieved, the proposed Federal regulations will fall short of providing total relief. Thus, many communities will continue to be affected by serious railroad noise and, due to the preemptive nature of the present Act, they will have quite limited recourse.

Federal enforcement of EPA's final regulations may be limited. Although, the Department of Transportation's Federal Railroad Administration (FRA) is required by the Act to issue rules to assure compliance with the final EPA standards, the FRA has indicated that it doubts whether it has the authority or the resources for adequate national enforcement. Thus, enforcement of railroad noise regulations in State/local jurisdictions may depend on these governments adopting and actively enforcing standards (for rail equipment and facilities covered in the Federal regulations) which are identical to the standards of the final EPA regulations (as the Noise Control Act authorizes).

State/local governments remain free to regulate (even after the effective date of the Federal regulations, as proposed: 1982) any railroad noise source not covered by the Federal regulations. Also, the Act does allow State/local governments the option to petition EPA for a waiver of preemption, if a differing local rule is necessitated by "special local conditions" and is "not in conflict" with the final Federal regulations.

We encourage all State/local governments concerned with railroad noise to review these proposed revised regulations carefully and submit their views to EPA. We have scheduled a 45-day public comment period for this purpose. Normally, we provide 90 days, but the deadline we are under for issuing final regulations mandates the shorter period in this case. Information on how to comment is enclosed, as are copies of the proposed regulation and all relevant background documentation.

Sincerely,



Henry E. Thomas  
Director  
Standards and Regulations Division  
(ANR-490)

Enclosures



Health Department

Section 50100

City of Kansas City, Missouri  
Heart of America

10th Floor, City Hall  
Kansas City, Missouri 64106

May 17, 1979

Mr. Charles E. Elkins  
Deputy Assistant Administrator  
for Noise Control Programs  
U. S. Environmental Protection Agency  
Washington, D C. 20460

Dear Mr. Elkins:

We appreciate the extensive information enclosed with your communication of April 13, and the opportunity to review and comment on the proposed revisions of Rail Carrier Noise Emission Regulations.

We understand the reasoning supporting the position of the American Railroad Association establishing a single standard for the nation through preemption by EPA of state and local railroad noise regulations. This however, requires that our own noise control regulations with respect to railroads either reflect precisely the federal standard or eliminate railroad noise from our local code.

This causes concern in that:


1. We question that EPA will be prepared, or even intends to be prepared, to enforce the regulations locally and respond to complaints allegedly the result of violation of EPA regulations.
2. The regulations promulgated for national application appear unduly liberal for specific local situations and may, in fact, invite use of these high noise level standards as a basis for setting noise level standards for other industrial sites and operations in the community.

Noise is at best a very complex problem and interstate aspects certainly tend to complicate administration of control programs.

Page 2  
Mr. Charles E. Elkins

While our comments are somewhat critical, we do not have corresponding recommendations for alleviating our concerns.

Sincerely,



Richard M. Biery, M.D., M.S.P.H.  
Director of Health

RMB:ri

cc: Richard L. Berkley  
Robert A. Kipp, City Manager



# LINCOLN-LANCASTER COUNTY HEALTH DEPARTMENT

2200 St. Marys Avenue

Phone (402) 474-1541

Lincoln, Nebraska 68502

E. D. LYMAN, M. D., M.P.H.  
DIRECTOR

May 31, 1979

Rail Carrier Docket Number ONAC79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D. C. 20460

Dear Sir:

The Lincoln-Lancaster County Health Department submits the following comments relative to the proposed Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers, published April 17, 1979, in the "Federal Register."

The comments address the following five (5) issues:

- (1) Relationship between maximum hourly  $L_{eq}$  standards and the  $L_{dn}$  standards. There is some question, as raised by the NANCO (National Association of Noise Control Officers), about setting a daytime hourly  $L_{eq}$  maximum which is 14 db above the  $L_{dn}$  standard. Although the use of the 14 db is defensible based on the mathematical relationship between maximum hourly  $L_{eq}$  and  $L_{dn}$ , real word measurements obtained in Region X indicate that the worst one-hour level was within 5 db of the 24-hour level. It would appear that consideration should be given to more reasonable levels for the maximum hourly  $L_{eq}$  standards. If  $L_{dn}$ 's of 70 db(a) for all facilities and equipment and 65 db(a) for hump yard facilities and equipment are considered appropriate, then the  $L_{eq}$ 's daytime should be 75 and 70, respectively, and those for nighttime should be 65 and 60, respectively.

It should also be noted here that the  $L_{dn}$  standards which have been proposed, 70 and 65, are questionable from the standpoint of their adequacy to protect the public health and welfare. EPA's national noise strategy has set a long term goal of  $L_{dn} = 55$  db(a), consequently the proposed standards are inconsistent with this goal.

- (2) Car coupling noise standards. It is recommended that the car speed criteria of 4 mph be dropped to facilitate enforcement. It is further recommended that the standard be reduced from 95 db(a) to 90 db(a) at 30 meters. An energy averaging procedure would be used to determine compliance. This procedure would require a minimum of 10 readings all within 10 db(a) of the maximum reading.

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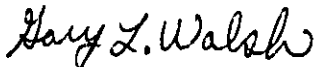


May 31, 1979

- (3) Refrigerator car noise standard. It is recommended that consideration be given to use of electric service for compressors as a means of reducing noise in lieu of diesel-generated service. No mention is made of electric service in the proposed regulation.
- (4) Degradation of existing quiet environments. In some areas of the country it is possible that present levels of noise around railyard facilities are lower than those proposed as property line limits. It would seem reasonable to try to protect those areas with existing quiet conditions and not allow them to degrade to the levels proposed in the regulations. The proposed regulations do not address the matter of degradation, and it is recommended that this be given some attention.
- (5) State and local enforcement of the regulation and measurement criteria. As noted in the proposed regulation, enforcement by state or local authorities is essential to provide adequate enforcement. It is going to be rather difficult for agencies at either of these levels of government to enforce a regulation that uses extremely complex measurement criteria. To make it possible for state and local agencies to enforce the property line limits based on  $L_{dn}$  and  $L_{eq}$ , it is recommended that a simple statistical procedure using a regular Type I or Type II sound level meter and a method of calculating  $L_{eq}$  be established. The requirement for computer modeling to determine noise levels associated with significant sources such as aircraft and motor vehicle traffic is going to complicate enforcement of the regulation. Methodology of a simpler nature should be considered to account for these other sources of significant noise, if the regulation is to be workable.

The Lincoln-Lancaster County Health Department appreciates the opportunity to comment on the proposed regulation and sincerely hopes that the recommendations suggested are given adequate consideration.

Sincerely,



Gary L. Walsh, Ph.D.

Supervisor

Air, Noise, Occupational and Radiological Health Section  
Division of Environmental Health

GLW:gf

cc: Vincent Smith, EPA Region VII

NORMAN MURDOCH  
Planning Director  
THEODORE B. HOWARD  
Acting Chief Deputy  
ROBERT W. CHAVE  
Deputy Director  
FREDERICK W. JACKSON  
Administrative Deputy

COUNTY OF LOS ANGELES  
DEPARTMENT OF REGIONAL PLANNING

320 West Temple Street  
Los Angeles, California 90012  
Telephone: 974-8401

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BETTY MALCOMB  
Secretary to the Commission

April 27, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulation Division  
United States Environmental Protection Agency  
Washington, D. C. 20460

Dear Mr. Thomas:

Subject: RAILROAD NOISE REGULATIONS

The Environmental Protection Agency is to be congratulated for proposing railroad noise emission standards. Noise impact on the community is of great concern to local residents and government. Your proposals will assist us in implementing the policies and action programs contained in the adopted Noise Element of the Los Angeles County General Plan. Thanks for the opportunity to review your recommendations.

Very truly yours,

DEPARTMENT OF REGIONAL PLANNING



Norman Murdoch, Planning Director

NM:JH:th

3-3182 AMR-492

15 MAY 79 14: 24

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CITY OF MAUMEE



MAUMEE, OHIO

Charles H. Beard  
Municipal Clerk  
Director of Finance

410 Grand Street  
Phone 693-8751

May 23, 1979

Office of Noise Abatement  
and Control (ANR-490)  
U. S. Environmental Protection  
Agency  
Washington, D. C. 20460

Re: Rail Carrier Docket  
Number CNAC 79-01

Dear Sirs:

Enclosed is a copy of Resolution No. 80 - 1979 which asks  
the U. S. Environmental Protection Agency to establish a noise level  
limit of 55 decibels for rail yards.

Said resolution was adopted by the Council of the City of Maumee,  
Ohio, on May 21, 1979.

The Council believes the noise level limits proposed by the  
Agency are too high. It further believes cities should have more  
freedom to solve local problems.

Sincerely yours,

*Charles H. Beard*  
Charles H. Beard

CHB/lc

79-01-633

BEARD ANR-490

31 MAY 79 11: 45

URGING THE UNITED STATES ENVIRONMENTAL PROTECTION  
AGENCY TO SET MORE STRINGENT STANDARDS FOR REGULATION  
OF RAILROAD YARD NOISE AND DECLARING AN EMERGENCY.

WHEREAS, the United States Court of Appeals for the District  
of Columbia Circuit in Assoc. of American Railroads v. Costle; 562 F. 2d  
1310 (1977) has directed the United States Environmental Protection Agency  
by court order to propose and promulgate noise emission regulation for  
the facilities and equipment of the nation's interstate rail carriers; and

WHEREAS, pursuant to that court order, the United States Environ-  
mental Protection Agency has promulgated and proposed rules which appear  
in Federal Register, Vol. 44, No. 75, April 17, 1979, pp. 22959 - 22972;  
and has invited all interested persons to submit comments on the same; and

WHEREAS, due to certain provisions of Section 17 of the 1972  
Noise Control Act, once final Federal regulations become effective, State  
and local freedom to solve railroad noise problems will be essentially  
eliminated because of Federal pre-emption of the subject area; and

WHEREAS, the Environmental Protection Agency in its publication  
"Information of Levels of Environmental Noise Requisite to Protect Public  
Health and Welfare with an Adequate Margin of Safety," 500/9 - 74 - 004,  
U.S. EPA, Washington, D.C., 1974, has established 55 decibels as the  
maximum level of noise protective of public health and welfare with an  
adequate margin of safety; and

WHEREAS, the proposed regulations for rail yard noise set an  
average 24 hour noise level limit of 70 decibels at developed property  
near railroad yards and set a maximum one-hour noise level of 84 decibels  
during the daytime and 74 decibels at night; and

WHEREAS, the proposed regulations set noise levels far above the  
value which the Environmental Protection Agency has identified as safe,  
and should, if implemented, prove to be injurious to the health, safety,  
and welfare of the citizens of the City of Maumen and some 3.2 million  
Americans elsewhere across the United States;

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Maumee, Ohio, that:

SECTION 1. It is hereby urged that the Environmental Protection Agency amend the above mentioned rail yard noise regulations to set the average 24 hour noise level limit at 55 decibels, the level identified as protective of the health, safety, and welfare of our nation's citizenry and, further, to take such steps as would grant or permit greater latitude on the part of local government with reference to regulation of railroad noise.

SECTION 2. Municipal Clerk be, and he hereby is, directed to forward copies of this Resolution to: Rail Carrier Docket Number OHAC 79 - 01, Office of Noise Abatement and Control (ANR - 490), U.S. Environmental Protection Agency, Washington, D.C. 20460, as well as to Senators Hetzenbaum and Glenn and Representative Ashley.

SECTION 3. It is hereby found and determined that all formal actions of this Council concerning and relating to the passage of this Resolution were adopted in an open meeting of this Council, and that all deliberations of this Council and any of its committees that resulted in such formal action, were in meeting open to the public, in compliance with all legal requirements, including Section 121.22 of the Revised Code of Ohio.

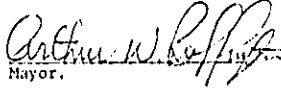
SECTION 4. This Resolution is hereby declared to be an emergency measure and shall take effect and be in force immediately from and after its passage. The reason for the emergency lies in the fact that this Resolution is necessary for immediate preservation of public peace, health, and safety in that the recommendation herein contained must be filed no later than June 1, 1979.

Vote on emergency clause: .

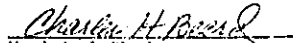
Yeas 7 Nays 0

Passed as an emergency measure:

May 21 , 1979.

  
Mayor.

ATTEST:

  
Municipal Clerk.



metropolitan washington  
**COUNCIL OF GOVERNMENTS**

1225 Connecticut Avenue, N.W., Washington, D. C. 20036 223-0800

May 30, 1979

Rail Carrier Docket Number ONAC 79-01  
 Office of Noise Abatement and Control  
 ANR-490  
 U.S. Environmental Protection Agency  
 Washington, DC 20460

Gentlemen:

Re: Comments on the U.S. EPA's  
 Proposed Railyard Noise Regulation  
 Docket No. ONAC 79-01

In 1974 the Metropolitan Washington Council of Governments initiated a program to coordinate noise control efforts in the metropolitan area. Since the beginning of the program, a Noise Technical Committee, composed of senior-level noise staff representatives from the area's state and local governments, has met monthly to consider issues related to noise control. The Committee convened to review the above cited proposed railyard noise regulation. In their review, the Committee also considered reactions from other noise control officials concerned about the proposed regulation. It should be noted that in our area there is a far greater concern and number of noise complaints associated with aircraft noise than with railyard noise. Summarized below are the comments on the proposed railyard noise regulation:

79 - 01 - 033

1. ISSUE: Property line standards versus source standards.

There is concern about the broad based applicability of a national property line standard as used in this proposed railyard noise regulation. At a minimum, there is a need for provisions which would provide a mechanism for more stringent protection in areas where human health and welfare are adversely affected by the proposed property line standard.

2. ISSUE: Through train noise emissions.

With respect to through train noise emissions, consideration should be given to placing priority requirements on noise reduction for existing railroads, particularly, in areas where noise sensitive uses are adversely impacted. Exploration of approaches for sound reduction similar to those employed in the metropolitan Washington subway system should be explored.

ANR-490

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Rail Carrier Docket Number ONAC 79-01  
May 30, 1979

3. ISSUE: Best available technology definition.

In defining "best available technology" attention should be given to administrative control.

4. ISSUE: Car coupling noise standards.

With respect to car coupling noise standards, it has been recommended that car speed criteria would complicate enforcement without serving any practical purpose.

5. ISSUE: Retarder noise standards.

The members of the review group who have reason for concern support the retarder noise standards.

6. ISSUE: Refrigerator car noise standard.

With respect to refrigerator car noise, additional exploration of the feasibility of electric service for compressors seems warranted.

7. ISSUE: Acoustic environment degradation.

Some of the members of the review group are concerned that where low noise emissions currently exist, the regulations need to contain provisions which would limit future degradation.

8. ISSUE: Land use planning.

Railyards should provide to local governments all relevant information about current and future noise impact zones to assist planning offices in the development of compatible land use plans.

9. ISSUE: State and local enforcement of the regulation.

The enforcement provisions in the proposed regulation are complex and expensive in terms of time required and equipment needed. Many jurisdictions will be unable to assist in enforcement due to these constraints.

We appreciate the opportunity to comment on the proposed regulation and hope that consideration of the concerns expressed will be reflected in the final regulation.

Sincerely,

*Donna M. Cord Dickman*

Donna McCord Dickman, Ph.D.

Program Manager

Areawide Environmental Noise Program

Health & Environmental Protection

cc: Mr. Jesse G. Borthwick  
Mr. John Winder



June 28, 1979

244A Westward Dr.  
Miami Springs, FL 33166  
(305) 885-6210

Rail Carrier Docket (ONAC 79-01)  
Office of Noise Abatement and Control (AW-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

As chairman of a municipal advisory committee to the City of Miami Springs, Florida -- the task of which is to study, among other things, the effects of railroad noise on our community -- I am compelled to add the following comments to those sent earlier to you on behalf of the City. Please include these comments in the formal record and respond to them in writing at your earliest convenience.

First, I have great difficulty with the methodology used in preparing these standards. Namely I question the validity of basing such a standard on "'average' rail yard conditions." Basing standards on "average conditions" assumes that causes, effects, auxiliary circumstances, and even justice can be averaged. Can a group of women be considered "on the average" pregnant? Can a group of 20 murder suspects be considered "on the average" guilty? Or innocent? And is the murder victim considered dead because of some statistical average? No.

The form of the standard suffers from a similar flaw. The noise level that wakes the baby from deep sleep is not the 24 hour or one hour "average" railroad noise. Rather, it's each individual noise event with its own intensity and corresponding set of effects. The point is this: each rail yard is different in a different setting with different neighbors -- all requiring different treatment if any treatment at all is appropriate. And each noise event is as different as each murder suspect. Some are innocent and some are guilty. Some will mollify the result of the noise level's "average" while the excessive, "guilty" noise events will go unnoticed and unregulated.

Now, as to the proposed regulation itself:

(A) The new standard does not and will not protect the health and welfare of the general public -- in some cases hitting the individual residential homeowner, who lives near a rail facility, so hard that his entire life's investment in property, community life, family and career are seriously jeopardized as a direct result of this regulation. By EPA's own calculation the protection afforded by the rule will only help 830,000 out of an estimated 4,000,000 people now affected by railroad noise. I personally feel

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that 4 million is a conservative number; but even if it were true, that means that nearly 3,170,000 people or almost 1/3 the population of the state of Florida is being denied assurance of relief as a result of this regulation and its preemptive nature.

(B) This regulation not only fails to protect the individual's health and welfare --two clear duties of EPA-- but it prevents the possibility of any other agency taking on the responsibility to do so. The public is now to be held captive and to be tortured physically and economically by the very agency which the people created to protect their interests, the EPA!

(C) I am compelled to ask why EPA doesn't appeal the U.S. Court of Appeals ruling to the highest authority. After all, it is a constitutional guarantee " . . . to promote the general welfare," which is being reneged here, not just the obvious duty of an administrative agency. Also, the very intent of Congress is being perverted by adopting regulations that are anything short of complete assurance of protected health and public welfare.

EPA in all its other activities has sought to give the public the benefit of the doubt, especially when it comes to standards. This conspicuous breach of that policy is an abhorrant setting of a precedent which shows that EPA is now, for the first time, willing to count bodies as an ultimate measure of a standard's effectiveness. This precedent cannot be allowed to stand.

(D) Even if these proposed standards were sufficient (which they are not), the provisions for enforcement are apparently deficient, depending on the U.S.D.O.T. at a time when they openly claim they haven't the resources to do the job. In addition there is no requirement in either these regulations or PL 92-574 to ensure that penalties will be levied as a result of violations of the rule. Without such penalties and a guarantee that vigorous enforcement will take place at the time the regulations take effect, there is no real regulation. A paper tiger, we don't need.

(E) Although cost of compliance is to be "considered" a factor by PL 92-574, it is not specified as being a controlling factor in setting noise standards. I feel these proposed regulations have created a dangerous policy where none was specifically required by the Act: i.e. that the protection of the economic health of a few, nearly bankrupt, poorly managed private railroads should be considered at minimum an equally important goal of the regulation, compared to the goal of public health and welfare; and that in the end analysis, the demise of such a private firm is considered more serious than the ruination of a community full of families whose lives and fortunes are being assaulted by the noise from that firm's operations. If the administrator is not required to consider the cost of compliance to the extent that

the public health and welfare remains largely unprotected, then he ought not do so! The priority here is clear: protect the victims from the assailants, not the other way around.

(F) These regulations do not address the real problem of low frequency vibrations, an oversight which must be corrected. The damages from low frequency noise are formidable and documentable. The job of regulation is not complete if this is overlooked.

(G) As proposed, an Appeal for Special Local Determination requires that proposed local rules will not conflict with Federal Regulations. If the local needs require the setting of a stronger standard, then that standard would obviously be different and thus in conflict with the Federal standards, and the local appeal would fail to qualify for approval. Hence, this appeal procedure is meaningless. Locals really have no options.

Finally, I request that each of these issues be addressed separately and completely in the docket and by letter to me. I refer to the below listed separate issues as discussed in the above commentary:

1. Methodology: a) Average Rail Yard Conditions  
b) Average Noise Levels
2. The Regulation
  - (A) Failure to Protect Public Health and Welfare
  - (B) Preemption of Any Other Relief by Local Controls (Invasion of States Rights)
  - (C) Allowing Circuit Court Ruling to Stand
    - 1) Gambling With Human Life
    - 2) Failure to Comply with
      - a) Congressional Intent
      - b) Constitutional Guarantee
      - c) EPA past policy
  - (D) Enforcement: No Enforcement = No Regulation
  - (E) Cost of Compliance Given Greater Than Required Weight In Setting Standard
  - (F) Low Frequency Noise
  - (G) Special Local Determination

I appreciate your attention in this matter and I hope that the resulting final draft of the regulation will satisfy the needs and solve the problems pointed out in these comments.

Sincerely,



Joseph E. Podgor Jr  
Chairman, Ludlam Corridor Ad Hoc  
Committee of the City of Miami Springs



City of  
**MIAMI SPRINGS**  
Florida

201 WESTWARD DRIVE  
MIAMI SPRINGS, FL. 33166

TELEPHONE  
(305) 886-4581

29 June 1979

Rail Carrier Docket (ONAC 79-01)  
Office of Noise Abatement and  
Control (AW-490)  
U. S. Environmental Protection  
Agency  
Washington, DC 20460

RE: Proposed Expanded Noise  
Emission Regulation for  
the Interstate Rail  
Carriers

Gentlemen:

We wish to submit the following comment in reference to the  
above rail carrier noise emission regulations.

Our community is concerned with a growing railroad yard noise  
problem that is occurring on our western residential boundary  
as a result of a new T.O.F.C. facility constructed by the  
F.E.C. Railroad last year. We had hoped that these new regu-  
lations would provide us relief from what we consider to be  
excessive intrusion into the lives of our residents by a  
noise generating industry. This intrusion is starting to  
affect the health and welfare of the residents close by, not  
to mention the gradual decline to be expected in the property  
values of the homes nearby.

~SAHO AFK-490

3 JUL 79 '01 21

We are shocked to find after waiting almost two (2) years to  
get this regulation for our use it will probably do little  
to help our problem and further will "tie our hands" as far  
as doing anything at all due to the preemption provision.

On deep examination we find that instead of protecting people  
from noise, this regulation tends to protect the railroads  
from meaningful regulation by the people on a local basis.

79-01-145

It seems strange that in a period of time where industry, in general, is crying for deregulation and control on government interference in business that the railroad industry has sued the environmental industry in order to regulate itself (railroad industry) more than the original regulations called for.

We cannot understand this unless it was in the best interests of the railroads to do so.

The following are our comments on specific areas and sections of the proposed regulations.

1. States Rights - We can agree somewhat that equipment that moves in interstate commerce would be hampered if there were a different regulation for each municipality and state it passes through. However, railroad yards do not move in interstate commerce and it seems to be that federal regulation is excessive intrusion into what should be a state or local matter. Our particular railroad noise problem is not so much a single impact problem, but one of frequency, duration and excessive night time operation of not only trains but trucks and unloading equipment. We also would like to point out that most of the engines used are in switching use and also the F.E.C. Railroad's operation is contained in the State of Florida and it is doubtful that most of them ever cross state lines.
2. Health and Welfare - It appears that economic impact on the railroad industry is more important than the health and welfare of the people effected. In a booklet prepared by the EPA entitled "Noise: A Health Problem" the EPA describes the effects of noise on the health and welfare of the people. We feel that the text of this publication should be added to the background document especially since it appears that the proposed regulations will only help less than 30% of the people presently effected by railroad noise.
3. Low Frequency Vibrations - Proposed regulations fail to consider the low frequency of engines accelerating under load which occurs when outbound trains leave a yard. These vibrations are able to cause sympathetic vibration in nearby homes.
4. Slack Pullout and Compression - Proposed regulations fail to consider this as a separate category yet a poor engineer can create excessive noise when proper training and supervision by railroad could reduce this noise without cost.

5. HORNS - The proposed regulations fail to address what many consider the most serious noise abuse by the railroads. That is the so called "standard" four blast signal sounded by engines at on-grade crossings. This is done even if other forms of warning are available at the crossing.

We feel strongly that in calculating the noise for the property line standards that horns be included, especially when the engine that the horn is on is engaged in yard activity and the noise of that engine can be used in determining the Leq or Ldn.

The fact that the horn is supposed to be sounded in warning does not make the noise any less severe to the people effected, especially in its routine use when there is no apparent need for warning.

6. Preemption - This regulation will preempt state and local regulation when it goes into effect in 1982, however, it would appear that it does not preempt state and local regulation until that time. Nor does it preempt state and local regulations with the same wording as the proposed federal regulations to be effectively inacted prior to 1982.
7. Enforcement - It would appear that the only way for this regulation to be enforced would be for state and local governments to enact similar regulations and enforce them. The Federal Railway Administration appears neither to have the time, money and personnel to do the job. How will the EPA assist local agencies if they choose to enforce regulations?

#### Summary

Our particular railroad noise problem concerns a new T.O.F.C. facility that was built last year immediately adjacent to our residential borders. We note with some dismay that they were forced to relocate their existing T.O.F.C. facility because of a planned extension of the south runway of the Miami International Airport. Dade's Aviation Director, Richard Judy is quoted in a newspaper article which states: "A \$35 million, 3,000 foot extension of Miami's southern, east-west runway, a project Judy calls the cornerstone of his noise-abatement program."

We are concerned that one program to cut down on noise has created a noise problem for another area. We are amazed to find that the environmental impact statement for this runway

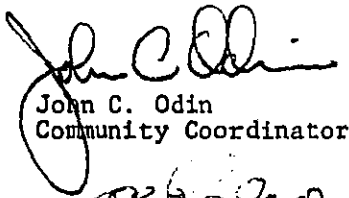
extension fails to consider where and what the effects of the relocation of the T.O.F.C. Yard would have on other areas.

In conclusion, the proposed regulations fall far short of protecting the people from noise intrusion, health and welfare considerations take a back seat to economic concerns, that economic concerns are based on the lowest common denominator, bankrupt railroads, and fails to allow local governments to solve their problems based on what might be unique situations of incompatible land use.

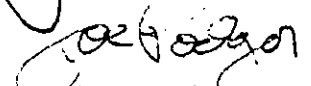
Sincerely,



John A. Cavalier, Jr.  
Mayor



John C. Odin  
Community Coordinator



Joseph E. Podgor, Jr.  
Ad Hoc Committee Chairman

cc: President of United States  
Hon. Claude Pepper  
Hon. Richard Stone  
Hon. Lawton Chiles



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
 WASHINGTON, D. C. 20460  
 31 MAY 1979

SUBJECT: Meeting on 5/26/79 Between Residence and Officials; Town of Miami Springs, Florida, and the U.S. Environmental Protection Agency on Specific Local Railroad Noise Problems and the Proposed Rulemaking: Noise Emission Standards for Transportation Equipment: Interstate Rail Carriers

FROM: Robert C. Rose, Program Manager, Railroads

*Robert C. Rose*

TO: Docket No. ONAC 79-01

The following is the content of the subject meeting held at the City Hall, Miami Springs, Florida.

1. Mr. Henry Thomas, EPA briefed the attendees on the Noise Act and Section 17 in particular. He discussed the current locomotive and rail car standards, the AAR court suit, and its implications. He also referenced that States and local authorities may issue rules and enforce them prior to a Federal final rule and its effective date, the nature of railroad financial conditions, and the limited utility of the State and local waiver provisions of the law as it presently stands.
2. He indicated the need to change the law, but currently EPA cannot do so and explained the current political and industrial concerns and pressures.
3. He also indicated the likelihood of extending the comment period until July 2, 1979 on the proposed rule.
4. The specific local problem outlined by the city officials dealt primarily with whistle blowing at a rail yard operation adjacent to the town. Mr. Thomas indicated that EPA does not plan to issue standards on railroad bells, horns, and whistles because of Federal liability and other safety reasons. Therefore State and locals can regulate. The AAR has not indicated whether they will press for EPA to regulate and EPA will only do so through a court order. The EPA position is that the railroads and local governments should come to acceptable agreements on this issue.
5. A State official indicated that Conrail and some towns in Ohio have already had some bell and whistle legal actions.
6. A city official stated that they would like to have a city rule on bells, horns and whistles and EPA and the State felt that they could if they so chose.
7. EPA personnel and others were given a site visit. The conditions were as follows:

49-01-051

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- a. Three railroad crossings are 150 feet apart in total and the trains sound 4 blasts at each crossing.
  - b. Night time operations are bad 12:00 a.m to 6:00 a.m. particularly
  - c. Coupling and truck vehicle noise are particularly bad also.
  - d. A lot of train/flat car operation. Trains all come in and stop at the yard. No thru trains.
8. The EPA Regional Official stated that the recently submitted airport (extension) Environmental Impact Statement will be looked at more careful as to overall area noise.
9. The meeting proceeded to discuss the attached questions and answers and the general response is so indicated by EPA personnel. In addition other supporting documentation was provided as is submitted for the record.

The meeting began at 9:00 a.m. EDT and ended at 1:00 p.m EDT. The following is a list of attendees at the meeting:

Ludlam Corridor Ad Hoc Committee Meeting with EPA Noise Officials  
May 26, 1979

<u>Name</u>	<u>Address</u>	<u>Organization</u>
Joe Podger	244A Westward Miami Springs, FL	Ad Hoc Committee Chairman
Henry E. Thomas	Washington, D.C.	U.S. EPA
William E. Roper	Washington, D.C.	U.S. EPA
Robert C. Rose	Washington, D.C.	U.S. EPA
Saul S. Leroy	N. Miami Beach, FL	Committee & Grade Crossing in N.E. Dade County, Inc
Cyl Leroy	N. Miami Beach, FL	Committee & Grade Crossing in N.E. Dade County, Inc.
Dick Bass	Tallahassee, FL	Florida Dept. of Env. Regulation
R. E. Rouch	900 Huntington Lodge Drive, Miami Springs	Ad Hoc Committee
Kent Williams	345 Courtland St. Atlanta, GA 30308	U.S. EPA Regional Office

<u>Name</u>	<u>Address</u>	<u>Organization</u>
Thomas L. Webb	1241 Oriole Ave. Miami Springs, FL 33166	Councilman
James R. Borgmann	448 Lark Ave Miami Springs, FL	Code Enforcement Director, City of Miami Springs
Robert S. Dubaugh	1195 Thrush Ave Miami Spring, FL	Concerned resident
J. P. Miller, Jr.	85 South Drive Miami Springs, FL	Ad Hoc Committee
Barbara Lesley-Miller	85 South Drive Miami Springs, FL	Citizen
Rafael Rodon	909 Brickell Plaza	Dade County Env. Resources Management
John A. Cavalier, Jr.	Miami Springs, FL	Mayor
Jack Odin	Miami Springs, FL	Ad Hoc Committee

QUESTIONS AND ANSWERS 5/26/79

- Q #1: Trailer on flat car facilities are not mentioned. Will the noise of truck traffic, unloading cranes, truck horns, other T.O.F.C. equipment be taken into consideration when calculating 24 hour noise level?
- A: Yes, no thru trains. The one (1) hour level is the same as the 24 hour  $L_{dn}$
- Q #2: Has "slack pull-out and compression" noise been taken into consideration? The chain reaction of noise when a stopped train starts forward or backs up seems as loud as "coupling noise". What provision has been made to control this noise?
- A: Provided for in general yard noise standard.
- Q #3: What provision has been made for unannounced sound testing? What prevents railroad from "padding" operations during the test to get a good score; then going back to typical noisy operations afterwards?
- A: No advance notice needed. Citizen suit provisions are in the Act. You may sue EPA, FRA (DOT) or the railroad.
- Q #4: Population: In the background document, some indication was given to using the amount of people effected as part of the formula; could you explain more clearly? Examples showed large population number which seems impossible since it is the residential areas immediately adjacent to yards which are effected by noise of operations.
- A. No. We did not look at a determination of cost/benefit relative to population affected.
- Q #5: Sympathetic Vibrations: In our situation, homes close to the operation report items in their home vibrate excessively (windows, doors, rafters, etc.) when engines accelerate under load, moving slowing in and out of the yard. Is there any protection in this act for this?
- A: None - But 10 decibel penalty for night time operation. EPA must use "A" weighted scale which is ear level noise rather than "C" level weighted scale which is low frequency.
- Q #6: Idling Engines: Although the intensity of noise is not high; the low level vibrations become very annoying. In what way can the Federal Government put pressure on railroads to try and relocate these engines where possible?
- A: Only  $L_{dn}$  exposure

Q #7: Reply deadline. If our official reply is postmarked before 4:30 p.m. - June 1st - Does this count? - or must it be officially received in Washington?

A: July 2, 1979 received in Washington.

Q #8: Horns - in our case, there are 3 crossings that are basically a part of this yard and yard operations create the traffic which crosses these crossings. Will the horn noise be considered in the average noise survey? If not - WHY?

A: May be too difficult to measure. Tape recorder can be used. There are practical concerns. Regional assistance not available. Need training. EPA will prepare how to do it book on violations.

Q #9: Horns: It seems that the EPA does not plan to regulate horns at this time. Does this prevent state and local bodies from doing so? In the original act, the EPA defined horns as part of railroad equipment; yet is failing to regulate their use. The recent court decision seems to mandate the regulation of railroad equipment.

A: EPA will not regulate at this time, therefore state and local governments may make rules and enforce as necessary.

Q #9: What is to prevent another court battle brought by AAR when local bodies enact laws and the EPA is attacked because they failed to regulate this item of railroad equipment?

A: The AAR can take EPA to court again and force further regulation however, most probably will not get favorable decision as Federal liability is involved here on a safety issue.

MAYOR  
JOHN A. CAVALIER, JR.



City Hall: (305) 885-4581  
Home: (305) 887-6775

18 May 1979

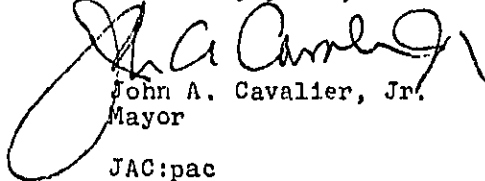
Mr. Henry Thomas  
205 Park Road  
Alexandria, Virginia 22301

Dear Mr. Thomas:

Attached please find a list of questions for you to review prior to your May 26th visit to Miami Springs.

Please feel free to contact me if you need any assistance with your travel plans to Miami Springs.

Sincerely yours,



John A. Cavalier, Jr.  
Mayor

JAC:pac  
Attch.

SPECIAL DELIVERY

Question #1

Trailer on flat car facilities are not mentioned. Will the noise of truck traffic, unloading cranes, truck horns, other T.O.F.C. equipment be taken into consideration when calculating 24 hour noise level?

Question #2

Has "slack pull-out and compression" noise been taken into consideration? The chain reaction of noise when a stopped train starts forward or backs up seems as loud as "coupling noise". What provision has been made to control this noise?

Question #3

What provision has been made for unannounced sound testing? What prevents railroad from "padding" operations during the test to get a good score; then going back to typical noisy operations afterwards?

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Population: In the background document, some indication was given to using the amount of people effected as part of the formula; could you explain more clearly? Examples showed large population number which seems impossible since it is the residential areas immediately adjacent to yards which are effected by noise of operations.

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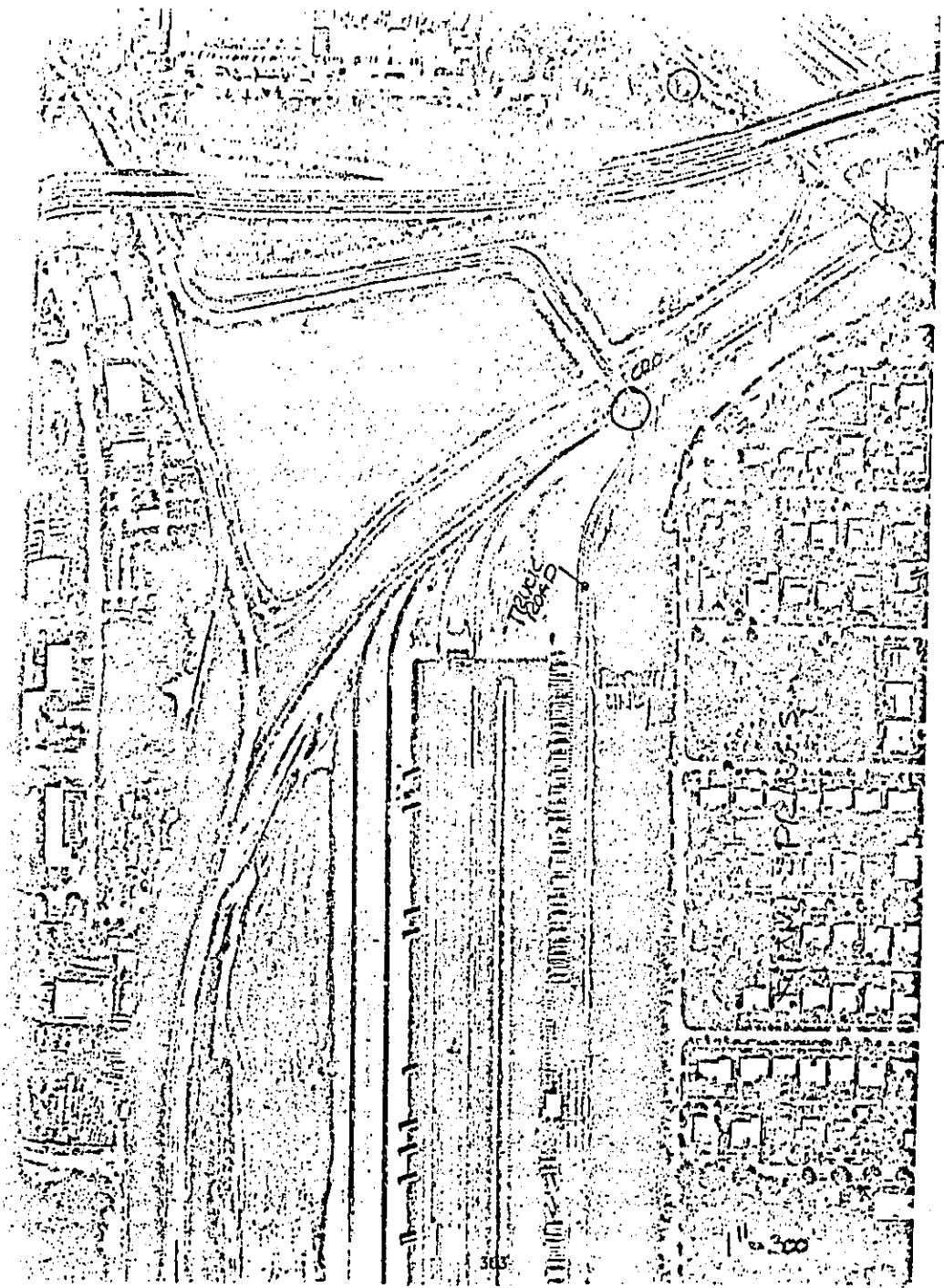
Question #9

Horns: It seems that the E.P.A. does not plan to regulate horns at this time. Does this prevent state and local bodies from doing so? In the original act, the E.P.A. defined horns as part of railroad equipment; yet is failing to regulate their use. The recent court decision seems to mandate the regulation of railroad equipment.

Question #9 (cont'd)

What is to prevent another court battle brought by A.A.R. when local bodies enact laws and the E.P.A. is attacked because they failed to regulate this item of railroad equipment?

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# F. E. C. Train Traffic Log

**Railroad Train** - A STEAM, ELECTRIC OR  
OTHER MOTOR , WITH OR WITHOUT CARS COUPLED  
THERETO, OPERATED ON RAILS, EXCEPT A STREETCAR.

STATE OF FLORIDA STATUTES  
1977  
CH. 316 (38)

THIS IS AN INFORMAL LOG OF TRAIN AND ENGINE TRAFFIC  
KEPT BY JOHN C. ODIN, 1295 THRUSH AVE. MIAMI SPRINGS  
FLORIDA 33166.

IT CONCERNS ITSELF MAINLY WITH TRAFFIC DURING THE  
EVENING AND EARLY MORNING HOURS AS TRAINS AND ENGINES  
ENTER AND LEAVE THE " HIALEAH YARDS", TRAVERSING THREE  
CROSSINGS; OKEECHOBEE ROAD, ROYAL PONCIANA BLVD AND  
A NEW CROSSING BUILT ON F.E.C. PROPERTY FOR TRUCK  
ACCESS TO THE NEW TOFC UNLOADING FACILITY.

IT SHOULD BE POINTED OUT THAT THESE THREE CROSSINGS  
ALL LIE WITHIN A TOTAL DISTANCE OF LESS THAN 1000 FT.  
CURRENT F.E.C. POLICY CALLS FOR THE BLOWING OF HORNS  
4 FOUR TIMES AT EACH ON GRADE CROSSING. THIS IS  
CURRENTLY REQUIRING A TOTAL OF 12 HORN BLASTS ALL  
SOUNDED WITHIN A DISTANCE OF 1000 FT.

THIS LOG IS KEPT IN REVERSE ORDER, THE MOST RECENT  
DATES ARE SHOWN FIRST.



JOHN C. ODIN

Traffic Volume in Urban Areas

Statistics on the frequency of train movements along urban rights-of-way may not exist. However, these statistics can be estimated on the basis of a study of train movements through highway grade crossings in urban areas [45]. If it is assumed that the traffic observed at grade crossings is a representative sample of traffic along the rail network as a whole, then the distribution of traffic at grade crossings can be used to determine the statistics in which we are interested. The distribution observed in Reference is given in Table 8-3.

The mean of this distribution is approximately 8 trains per day.

As a check on this figure, the average traffic on a random segment of railroad line can be estimated from a knowledge of national train traffic totals. Tables 8-4 and 8-5 show the numbers of miles of right-of-way, train-miles per year, and road locomotive-miles per year, as derived from ICC statistics for 1971 (the latest year for which detailed data is available). From these statistics, the average number of trains per day over a segment of right-of-way and the number of locomotives per train can be computed. These are displayed in the third column of Table 8-4 and 8-5, respectively, for freight and passenger traffic. If it is assumed that right-of-way in cities is used for both freight and passengers, then it can be seen from the third column that the total average train traffic (freight plus passenger) is 8.4 trains per day. This total agrees with the previous estimate. Assuming that freight trains are distributed randomly in time, it is estimated that at the average location four freight and one passenger trains pass during the day (7 a.m. to 10 p.m.) and two freight and one passenger trains pass at night.

Average locomotives per train and cars per train are similarly developed in Table 8-5. The last characteristic, train speed, is obtained by inspection of railroad employee timetables for the Northeastern United States. These timetables show 33 mph as the average maximum allowed speed for freight trains and 36 mph for passenger.

TABLE 8-3  
DISTRIBUTION OF URBAN GRADE CROSSINGS  
BY VOLUME OF TRAIN TRAFFIC

Trains per Day	Percent of Grade Crossings
0 to 2	40
3 to 5	18
6 to 10	20
11 to 20	13
21 to 40	6
over 40	3

EXTRACTED FROM:  
"BACKGROUND DOCUMENT  
FOR  
RAILROAD NOISE EMISSION  
STANDARDS"

DECEMBER 1975

U.S.  
ENVIRONMENTAL PROTECTION  
AGENCY

TABLE 8-4  
COMPUTATION OF NATIONAL AVERAGE DIRECT-POWERED TRAIN TRAFFIC

Train Type	Miles of Right-of-Way (a)	Train-miles per Year (b)	Average Trains Per Day Per Segment of Right-of-Way (b ÷ a ÷ 365)
Freight	210 × 10 <sup>3</sup>	425 × 10 <sup>6</sup>	5.5
Passenger	40 × 10 <sup>3</sup>	42 × 10 <sup>6</sup>	2.9

<sup>1</sup> Source: ICC, 1971.

# TRAIN / CROSSING LOG

DURING THE MONTH OF DECEMBER THIS DAY, 27 DEC, COULD BE CONSIDERED TYPICAL AS TO THE GENERAL TIMES AND AMOUNT OF TRAFFIC AND SWITCHING OPERATIONS DURING THE MORNING AND EVENING HOURS.

WED. DECEMBER 27

12:30 AM		Home from work at 5:50 PM	
1:15 "		6:03 PM	Engine only , Loud horn
1:30 "		(5:05 - 6:05 = 33 TRUCKS)	
2:00 "		6:25 PM	5 min.
3:15 "		6:57 "	5 min
3:25 "		7:02 "	
3:40 "		7:05 "	
sleep ?		7:12 "	
8:15 AM		7:48 "	TOFC --
8:45 AM		8:10 "	" --
To work at 9:00		8:14 "	" --
		8:24 "	" --
		8:26 "	" --
		8:30 "	" --
		8:34 "	" --
		8:38 "	" --
		8:46 "	" --

ONE CONT. OPERATION WITH CAR BANGING, WHEEL SCHREECHING AND CONSTANT ENGINE AND HORN NOISE DURING THE ENTIRE TIME SPAN

This train mover forward to let the backed up trucks pass cleared the crossing at 8:49 then backed up into the yard and cleared the crossing at 8:55 During this time the backed up trucks were blowing their horns to complain

**NOTE: SYMBOLS USED**

12:00 ← This indicates a train entering or leaving the yard ( 12 Horn blasts )

1:00 AM TOFC --  
1:12 " TOFC --

← This indicates a switching operation at the TOFC in which train crosses one or more crossings and then backs up to pick up more cars. Keep in mind that each time the engine reaches a crossing it sounds 4 warning blasts of the horn. Also many times it sounds horns on backing up

8:58 PM TOFC --  
9:00 " " --  
9:20 " " --  
CONSTANT ENGINE IDLING UNTIL NEXT TRAIN ( 9:30-10:30 = 19 TRUCKS )  
10:30 PM " " --  
CONSTANT IDLING NOISE  
10:43 PM " " --  
10:51 " " --  
CONSTANT IDLING NOISE  
11:30 PM TOFC --  
11:35 " " --  
11:40 " " --  
11:45 " " --

**6 1/2 HOURS = 25 TRAINS**  
**ESTIMATE OF TRUCK TRAFFIC 80-90**

TRAIN / CROSSING LOG

SUNDAY, DECEMBER 24

12:01 AM	TOFC --	12:15 PM	
12:10 "	" --	2:05	Yard horns, switching
12:20 "	" --		lasted 20 min.
12:25 "	" --	4:30 PM	
12:40 "	" --	8:55 "	
4:30 AM		9:30	Yard horns, switching
7:30 "			banging of cars
8:15 "			
9:15 - 10:05	Yard horns, switching		
	banging of cars.		no more trains until after
10:05 AM			midnight
10:47 "			
11:15 "	TOFC -- 10 min		

MONDAY, DECEMBER 25 CHRISTMAS

1:00 AM  
6:30 "  
8:15 "  
10:05 "  
No more trains until after  
Midnight.

TUESDAY, DECEMBER 26 CHRISTMAS NIGHT

12:45 AM	HOME FROM OFFICE AT 10:20 PM
1:20 "	
2:15 "	10:23 PM
3:15 "	10:26 "
3:25 "	10:52 "
3:40 "	
sleep?	CONT. ENGINE IDLING FROM
8:15 AM	11:26 to 11:30
8:45 "	(11:05 - 11:35 = 21 TRUCKS )
to work	

*J. Edwards*

# TRAIN / CROSSING LOG

## SUNDAY, DECEMBER 17

12:31 AM  
 12:40 AM TOFC -->  
 12:52 "  
     1:00 AM TOFC  
     1:12 " 4 Yard horns  
 1:24  
 2:05 AM  
 sleep??

4:30 PM TOFC -->  
 4:40 " TOFC -->  
 4:45 " TOFC --> Bad engineer a lot  
           of clanging and banging of  
           cars  
 4:50 PM TOFC  
 5:00 - 5:30 Engine sat idling  
           just in front of the new  
           crossing for 30 Min.

THE ABOVE TOFC OPERATION LASTED  
 WITH CONT. NOISE FOR ONE HOUR

6:30 PM TOFC -->  
 6:35 " TOFC -->  
 7:30 "  
 8:40 "  
 9:15 "  
 9:55 "  
 10:30 "

## MONDAY, DECEMBER 18

12:00 AM - 6:00 AM 11 TRAINS  
 6:00 AM - 9:30 AM 3 TRAINS

## TUESDAY, DECEMBER 19

3:30 AM - 5:25 AM 5 TRAINS

## SATURDAY, DECEMBER 23

12:00 - 2:00 AM 2 TRAINS  
 2:00 AM  
 2:15 AM  
 sleep?  
 6:30 AM  
 sleep?  
 8:30 AM  
 8:40 " TOFC -->  
 8:45 "  
 8:50 " TOFC -->  
     9:45 TOFC  
     10:45 TOFC  
 11:25 AM  
 11:59 "

12:40 PM  
 12:57 "  
 OUT OF HOUSE TILL 3:15  
 3:35 PM TOFC -->  
 3:39 " " -->  
 3:45 " " -->  
 4:00 " " -->  
 4:10 " " -->  
 4:20 " " -->  
 5:30 TOFC  
 6:10 PM  
 7:00 "  
 8:00 "  
 11:10 "  
 11:30 "

} ONE CONT.  
 SWITCHING  
 OPERATION  
 CONSTANT NOISE

TOTAL TRAINS LOGGED 24

*John Doe*

TRAIN / CROSSING LOG

MONDAY, DECEMBER 11

MIDNIGHT TO 7:00 AM

12:00 - 7:00 AM 10 TRAINS  
7:00 - 9:30 AM 6 TRAINS

9½ HRS 16 TRAINS

TUESDAY, DECEMBER 12

12:00 - 5:30 AM SLEPT AT OFFICE  
5:30 - 7:30 AM 4 TRAINS  
sleep???  
8:45 - 10:15 6 TRAINS

WED, DECEMBER 13

12:00 - 6:45 AM 9 TRAINS  
SLEEP?  
9:15 - 10:30 3 TRAINS  
6:00 - 8:30 PM 9 TRAINS  
LEFT HOUSE UNTIL 10:30  
10:30 - 12:00 3 TRAINS

FRIDAY DECEMBER 15

4:30 PM	8:12 PM
4:37 "	9:22 "
5:00 " TOFC -->	9:30 TOFC
5:10 "	9:50 " Single engine
5:30 "	10:00 " Very loud train from North
5:55 " TOFC -->	15 min. long
6:03 "	10:15 " TOFC -- Pulled out right
6:06 "	after the train above passed
6:38 "	stopped for 15 min.
7:25 "	TRUCKS, TRUCKS, TRUCKS
7:30 " TOFC -->	10:30 Engine idling 10 min.
7:36 " TOFC -->	10:45 PM TOFC -->
7:55 "	10:46 "
	11:20 " TOFC -->
	11:50

NOTE Cont. engine idling for 1HR  
from 11:00PM to 12 MIDNIGHT

FROM 4:30 PM TO MIDNIGHT (7½) THERE HAVE BEEN 21 TRAINS

SATURDAY, DECEMBER 16

Engine idling since midnight

12:25 AM	7:15 AM - 12 Noon	7 TRAINS
12:35 " TOFC -->	noon - 6:00 PM	7 TRAINS
12:45 " LOUD HORN	6:00 PM - 12 MID.	9 TRAINS
12:50 Engine noise		
12:55 PM VERY LOUD 14min train		
1:10 " TOFC -->		
1:15 " TOFC -->		
1:20 " TOFC -->		
1:27		
1:30 TOFC		

*John C. Allen*

TRAIN / CROSSING LOG

SATURDAY , DECEMBER 9

12:20 AM  
12:30 "  
2:20 "  
3:15 "  
4:50 "  
sleep ??  
6:50  
7:45  
8:00  
8:15  
9:10  
(9:15 to 11:30 NOT AT HOME)  
11:46

19 HOURS LOGGED  
TOTAL 25 TRAINS

TRAIN/CROSSING LOG - continued

12:35 TOFC ENGINE NOISE  
 12:40 " " "  
 12:45  
 12:50 # 669 VERY LOUD HORN  
 1:05 TOFC  
 ( 1:15 - 3:30 OUT OF HOUSE)  
 5:10  
 6:05 5 min train  
 6:30  
 7:15 5 min train  
 7:20 TRAIN MAKE UP, INTENSE  
 ENGINE THROBING  
 8:00  
 sleep  
 10:30  
 11:15  
 11:30  
 11:45  
 11:59

SUNDAY, DECEMBER 10

2:15 AM  
 3:15 AM A switching operation  
 passed crossing, backed  
 up, then blew 4 very loud  
 yard signals  
 3:40 AM part of the above  
 3:50 " Train from North  
 very loud horn, very  
 long, slow train  
 4:15 AM Same Engine #620 from  
 the 3:15 operation,  
 sounded horn as loud as  
 possible at the crossing  
 then sounded 4 yard toots  
 at  $\frac{1}{2}$  the intensity of the  
 crossing signals.  
 5:30 AM  
 6:20 "  
 6:30 "  
 6:40 AM  
 7:00 "  
 7:20 "  
 7:40 "  
 7:50 "  
 8:30 "  
 9:30 AM  
 11:25 "  
 11:40 " Single engine

---

12 Hrs 17 TRAINS

*J. C. D.*



TRAIN / CROSSING LOG

THURSDAY 30 NOVEMBER (PARTIAL)

MIDNIGHT TO 10:35 AM

12:00-6:00 AM 6 trains  
6:00-7:00 " 1 train  
7:30 AM  
8:00-9:45 sleep?????  
9:45 "  
10:00 "  
10:15 "  
10:35 "

7:30 PM TO MIDNIGHT

7:45 PM  
8:20 "  
9:00 "  
9:35 "  
10:00 "  
10:40 "  
11:50 "  
12:00 "

4 1/2 HRS 9 TRAINS

LOUD ENGINE, SWITCHING FROM 12:00 to  
12:30. DRIVEN OUT OF THE HOUSE, SLEPT  
AT OFFICE.

FRIDAY 1 DECEMBER

NO LOG KEPT, SLEPT AT  
OFFICE.

SATURDAY AND SUNDAY DECEMBER 2,3

THE TOFC FACILITY OPENED

WED, DECEMBER 6

MIDNIGHT TO 8:45 AM

12:00 - 7:00 AM 10 trains  
7:00 - 8:00 " 4 "  
8:00 - 8:45 " 5 "

9 HR..TOTAL 19 Trains

THURSDAY 7 DEC.

MIDNIGHT TO 5:00 AM

Total 12 Trains

FRIDAY, DECEMBER 8

MIDNIGHT TO 7:00AM

No log, slept at office  
8:28 AM  
8:35 "  
8:52 TOFC  
8:55  
10:00 - 10:15 TOFC

5:00 PM to MIDNIGHT

5:05 TOFC 5min  
5:10  
(5:40 - 6:00 20 Trucks )  
5:45 #410 Loud Horn and  
engine

7:10  
8:00  
8:20 10 min train  
8:40 to 10:40 7 Trains

*John C. Olin*

TRAIN / CROSSING LOG

THURSDAY 30 NOVEMBER (PARTIAL)

MIDNIGHT TO 10:35 AM

12:00-6:00 AM 6 trains  
6:00-7:00 " 1 train  
7:30 AM  
8:00-9:45 sleep?????  
9:45 "  
10:00 "  
10:15 "  
10:35 "

7:30 PM TO MIDNIGHT

7:45 PM  
8:20 "  
9:00 "  
9:35 "  
10:00 "  
10:40 "  
11:50 "  
12:00 "

4 1/2 HRS 9 TRAINS

LOUD ENGINE, SWITCHING FROM 12:00 to  
12:30. DRIVEN OUT OF THE HOUSE, SLEPT  
AT OFFICE.

FRIDAY 1 DECEMBER

NO LOG KEPT, SLEPT AT  
OFFICE.

*John C. Olin*

TRAIN / CROSSING LOG

TUESDAY 28 NOVEMBER (PARTIAL)

12:45 AM  
1:00 "  
2:15 " appox  
4:30 "  
5:00-7:00 sleep  
7:30 "  
8:15 "  
9:25 "  
9:31-10:25 Engine #401 pulling a long train proceeded North for five minutes then stoped. Train sat dead for nearly one hour. Train was split at some point to allow traffic to proceed. The train backed up then regained its composure and headed North again.  
10:28 " work

WED. 30 NOVEMBER (PARTIAL)

MIDNIGHT TO 9:00 AM  
12:00-6:00 AM 6 trains  
6:00 -7:00 " 5 trains  
7:30 -8:00 " 3 trains  
8:00 -9:00 " 4 trains

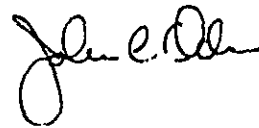
9 HRS 18 TRAINS  
9:00-11:00 AM 0 work

NOTE!!!! IN THE 19 HOURS THAT TRAIN TRAFFIC WAS LOGGED THERE HAVE BEEN:

33 TRAINS

1:45 - 3:45 LOGGED  
2:00 PM switching across 3 crossings, backed up #401 LOUD LOUD  
2:10 "  
3:00 "  
3:20 "  
3:27 " flat car switching

5:40 TO MIDNIGHT  
5:40 PM  
6:10 "  
6:15 "  
6:35 "  
6:54 sharp horn blasts yard signals  
7:15 "  
8:45 "  
9:10 " switching past crossings  
9:25 "  
9:55 "  
10:30 sleep ?????



TRAIN / CROSSING LOG

SATURDAY 25 NOVEMBER

MIDNIGHT TO NOON

1:15  
1:25  
2:30  
sleep ?????  
7:00  
7:15  
7:30  
8:00  
8:15  
8:45  
sleep?????  
9:45  
11:00  
11:30

TOTAL 12 TRAINS 12 HRS

NOON TO MIDNIGHT

1:30  
3:25  
3:50  
3:50?  
4:20  
5:15 # 516 SUPER LOUD passed  
crossing backed up and  
came again at ;  
5:16  
5:20  
6:15  
6:40  
6:45 10 min train make up  
7:15  
7:20 10 min train make up  
7:40  
8:15  
9:15  
9:20 switch eng noise 10 min  
9:45  
9:55 single engine - North  
10:25  
11:20

TOTAL 18 TRAINS 12 HRS

TOTAL FOR THE DAY 30 TRAINS

SUNDAY 26 NOVEMBER

MIDNIGHT TO NOON

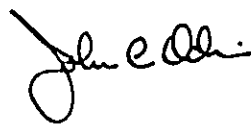
2:10  
2:45  
4:55  
6:15  
6:45  
sleep????  
7:45  
sleep til 10:30 ???  
11:10 #509 very LOUD

NOON TO MIDNIGHT

1:10  
5:30 # 666 SUPER LOUD  
7:15  
9:10  
9:35

MONDAY 27 NOVEMBER ( PARTIAL)

12:45 AM  
2:20 "  
3:30 " LOUD LOUD  
3:40 " LOUD  
4:40 "  
7:15 "  
8:15 "



TRAIN / CROSSING LOG

FRIDAY 24 NOVEMBER DAY AFTER THANKSGIVING

AM MORNING

1:30 AM  
2:05 "  
2:30 "  
2:40 "  
3:30 "  
5:00 "  
5:05 "  
5:10 " 6 trains in one hour  
5:20 "  
5:50 "  
6:00 "  
7:30 - 8:30 total 6 trains  
sleep  
8:30-10:44 3 trains (wife kept track)  
10:44  
10:47  
10:55  
11:14 Cont switching noise until 11:30  
11:43  
11:50

TOTAL 12 HOURS 26 TRAINS

PM AFTERNOON

12:45 PM  
12:56 "  
1:53 " #406 VERY LOUD 8 toots in yard before 12 regular  
signals  
2:00 "  
2:40 " single engine  
2:45 " single engine , North  
3:35 "  
4:00 " 2 trains heard at the same time  
4:25 "  
4:35  
5:45  
6:00  
7:20 Very slow . excessive vibration  
7:22 Switch engine noise  
8:30  
9:20  
9:50  
10:10  
11:40  
11:55

TOTAL FOR THE DAY 47 TRAINS

*John C. Allen*

# TRAIN / CROSSING LOG

THURSDAY 23 NOVEMBER "THANKSGIVING"

AM MORNING

1:00 AM  
6:00 "  
6:30 "  
9:00 "  
9:45 "

PM AFTERNOON

12:00  
12:05  
12:10 #674 loud engine  
\* 1:15 676 single eng.loud  
1:45  
1:50 single engine  
2:30  
3:00 single engine  
general switch engine noise  
heard all afternoon  
4:45 #620 LOUD. sounded 4  
cute blasts to someone  
on canal bank plus regular  
signals.

5:30  
6:20 PM  
6:35 "

PM EVENING

7:00 PM  
7:10 " Slow train, 5 min. of vibrations before train  
got to the first crossing. Headed North  
8:55 "  
9:00 "  
9:15 "  
9:30 - 10:00 Cont. engine noise for train "make up".  
10:15"  
sleep ????????????

TOTAL FOR THE DAY 23 TRAINS

\* Engine # 676 blasted his horn 16 times entering  
the yard over the 3 crossings.

*J. C. O.*

TRAIN / CROSSING LOG

WED, 22 NOVEMBER (PARTIAL)

MIDNIGHT TO 9:30 AM

3:30 LOUD AS USUAL  
7:05  
7:53  
8:07  
9:15  
9:30  
work

12:40 PM

12:50 "

12:55 YARD SIGNALS 4

1:30 "

5:00 TO MIDNIGHT

5:10 PM

6:25 "

6:30 "

6:35 SWITCHING NOISE

9:00 "

9:20 "

9:40 "

11:15 "

11:30 "

11:45 " making up train  
crossed 3 crossings  
then backed up

TOTAL 9 TRAINS 7 HRS

*John E. D. ...*

TRAIN / CROSSING LOG

SUNDAY 19 NOVEMBER

MIDNIGHT TO NOON

12:00 -8:30 ?  
sleep-at last  
8:30-10:00 3 trains  
11:40 #661 switching flat  
12:00 cars, LOUD LOUD crossed  
all three crossings

NOON TO MIDNIGHT

12:10 PM  
1:35 "  
2:15 "  
4:17 LOUD LOUD  
6:00 switching across 3  
crossings and backed up  
6:15 PM  
6:17 "  
7:17 "  
9:10 "  
9:15 "  
9:40 "  
11:15 "

TOTAL RECORDED FOR THE DAY 17 TRAINS

MONDAY 20 NOVEMBER (PARTIAL)

MIDNIGHT TO 9:30 AM

3:15 AM LOUD LOUD  
4:15 "  
5:15 "  
6:20 "  
7:40 "  
8:15 " switching  
8:25 "  
9:00 "  
9:30 "

TOTAL 9 TRAINS 9 1/2 Hrs

1:45 PM #661 excessively loud  
drawn out signals

5:45 To MIDNIGHT

5:45 PM  
5:47 "  
5:55 : single engine  
6:12 "  
7:10 "  
8:00 "  
9:10 "  
9:30 "  
9:53 "  
11:05 "

TOTAL 10 TRAINS 7 plus HRS

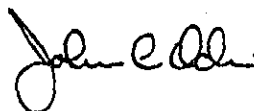
TUESDAY 21 NOVEMBER (PARTIAL)

MIDNIGHT TO 8:30 AM

2:20 AM LOUD short train  
2:55 " LOUD heard three crossings  
away  
3:05 "  
5:10 "  
5:35 :  
6:10 "  
6:20 "  
6:40 "  
7:20 "  
7:21 Loud yard horns  
8:07 ' LOUD #665 with three  
cars

FROM 10:00 TO MIDNIGHT

10:05 PM  
10:25  
10:33 cont yard noise  
10:50  
sleep ???





TRAIN / CROSSING LOG

WED. 15 NOVEMBER (PARTIAL) Start log at 6:00 PM

6:24 PM  
7:12 "  
8:30 "  
8:47 "  
10:10 " Switching past crossings  
10:26 "  
10:49 "  
11:38 " TOTAL 6 HRS 8 TRAINS

THURSDAY 16 NOVEMBER (PARTIAL)

12:15 AM	5:00-6:00 PM 3 trains
3:10 "	6:00-10:00 " 7 "
4:20 "	10:00-11:00 " 7 trains
4:40 " LOUD HORN	note that 2 trains are
6:27 "	the same train in a
6:31 "	switching operation
7:50 "	passed crossing twice
8:21 " #414 excess. loud	then backed up.
heard 4 crossings	11:00-12:00 2 trains
away	
TO WORK	
<u>TOTAL 8 TRAINS 8 1/2 HRS</u>	<u>TOTAL 15 TRAINS 7 HRS</u>

FRIDAY 17 NOVEMBER

MIDNIGHT TO 10:00 AM

1:20 AM  
1:40 "  
1:45 "  
4:00 "  
sleep??????  
6:15 "  
6:30 "  
6:45 "  
7:05 "  
7:45 "  
8:00 "  
8:05 "  
8:35 " switching past cross.  
9:50 "  
TO WORK

TOTAL 13 TRAINS 10 HRS

SATURDAY 18 NOVEMBER (PARTIAL)

MIDNIGHT TO 7:00 AM

3:15 AM  
3:17 "  
6:30 " very LOUD  
did not keep day log

5:15 PM TO MIDNIGHT

5:20 PM  
5:25 "  
6:55 "  
7:15 "  
8:25 "  
9:00 "  
9:45 "  
10:00 "  
10:30 "  
10:55 "  
11:59 "

TOTAL 11 TRAINS 7 HRS

7:00 PM TO MIDNIGHT

7:10 PM'  
7:40 †  
8:45 - 9:00 SWITCH ENGINE NOISE  
9:07 switching crossed 3  
crossings then backed up  
10:00  
10:32 switching crossed 3  
crossings then backed up

*John C. O'Brien*

TRAIN / CROSSING LOG

BY: JOHN C. OLIN  
1295 THRUSH AVE  
MIAMI SPRINGS , FLA 33166

MONDAY NIGHT NOVEMBER 6  
and  
TUESDAY MORNING NOVEMBER 7 1978

6:50 P.M.  
7:10 "  
7:40 "  
8:20 "  
9:05 " LOUD LOUD LOUD  
10:00 "  
11:00 "  
11:20 " cont. switching  
12:00 " until midnight 40 min. total

EARLY MORNING

12:25 A.M.  
12:47 " single engine, North, very loud heard all the way at every crossing to Hialeah race track.  
1:05 A.M.  
til three sets of 4 blasts for yard signals  
1:10  
1:15  
1:20 till 1:40 one long train tood 20 minutes of banging and crashing to enter the yard.  
1:45 engine #510 extra loud  
1:55  
til LOUD LOUD ENGINE EXCELERATION HEARD AS FAR AS RED ROAD TWO CROSSINGS AFTER LEAVING MIAMI SPRINGS  
2:10  
2:20 A.M.

NOTE FROM 6:50 P.M. to 2:20 A.M. THERE HAS BEEN A TOTAL OF 18 TRAINS

4:40 A.M.  
sleep ???????  
7:35 A.M.  
7:42 "  
7:55 " #510 EXTREMELY LOUD  
8:05 "  
8:25 " YARD SIGNALING  
8:40 "  
8:50 "  
8:56 " Yard signals  
9:10 " "  
9:12 "

TO WORK

*John C. Olin*

# TRAIN / CROSSING LOG

## MONDAY 30 OCTOBER

2:00 A.M.  
2:01 "  
2:30 "  
2:40 "  
2:55 "  
3:05 " took 17 min. for train  
to pass  
sleep??????  
5:00 "  
7:30 "  
7:40 "  
8:15 "  
8:45 "  
to work

## TUESDAY 31 OCTOBER

9:30 to 11:30 P.M. 8 trains, almost cont. traffic  
for 45 min starting at 9:30

## WEDNESDAY 1 NOV

6:30 A.M. Morning	2:29 P.M. Afternoon
6:35 "	2:45 "
6:55 "	3:15 "
sleep????	3:25 " #409 blew horn
8:15 "	8 times at one
8:30 " cont. switching 15 min.	crossing , loud
8:45 "	3:40
8:53 "	3:45 single engine, North
9:00 "	work
9:10	5:50 P.M.
went to work	6:45 "
	7:45 "
	8:20 "
	8:50 "
	9:30 "
	10:00 "
	10:07 "
	10:25 "
	11:07 "

## THURSDAY 2 NOVEMBER

12:07 A.M.  
12:55 " single engine north  
1:05 "  
1:55 "  
3:00 "  
4:10 "  
5:20 "  
5:40 "  
6:00 "  
6:30 "  
6:50 "  
sleep????  
8:45  
9:00 - 9:15 4 trains  
cont. switching and engine noise  
from 9:15 lasting for 30 min. 382

*John Eddi*

# TRAIN / CROSSING LOG

## OCTOBER 26 THURSDAY

2:30 A.M.	MORNING	7:10 P.M.	EVENING
3:00 "		7:25 "	
sleep ?????		9:10 "	
5:30 "		10:05 "	
6:00 "		11:00 "	
8:30 "			
8:55 "			
9:00 "			
9:05 "			
9:10 "			

## OCTOBER 27 FRIDAY

2:30 A.M.	MORNING	5:15 P.M.	EVENING
2:40 "		6:30 "	
3:00 "		6:50 "	
4:00 "		7:00 "	
4:10 "		7:05 "	
4:30 "		8:30 "	
4:50 "		9:05 "	
5:30 "		10:30 "	
sleep ?????		11:00 "	
8:45 "		11:10 "	
9:00 "		11:15 "	
9:05 "		12:00 "	TOTAL 12 TRAINS 7 HRS

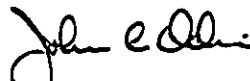
## OCTOBER 28 SATURDAY

1:30 A.M.	MORNING	12:50 P.M.	AFTERNOON AND
2:00 "		1:25 "	EVENING
sleep ?????		3:30 "	
5:30 "		5:25 "	Excessively loud
7:45 "			engine, heard all the way
8:15 "			from Red Road
9:15 "		6:45 "	
9:50 "		8:30 "	
9:55 "		9:10 "	
10:55 "		10:55 "	
11:55 "		11:00 "	
12:06 "		11:30 "	

24 HOUR TOTAL EST . 21 TRAINS plus

## OCTOBER 29 SUNDAY

MORNING	2:10 P.M.
3:00 LOUD LOUD	2:25 " engine 504 very loud
4:30 A.M.	3:20 "
4:45 "	4:00 "
sleep ?????	4:50 "
7:10 "	5:30 "
8:15 "	6:50 "
10:30 " Switching 15 min.	8:00 " switching 15 min.
AFTERNOON	10:00 exc.cloud engine.
12:45 P.M. single engine,north	11:30 "
1:07 P.M. single engine,south	11:45 "
excessively loud heard at Red	
Road.	



TRAIN / CROSSING LOG

AUGUST 28 LATE EVENING  
AUGUST 29 TUESDAY

(Partial)

11:15 P.M.  
11:40 "  
12:00 MIDNIGHT  
12:15 A.M.  
1:15 "  
1:40 "  
1:45 "  
2:30 "  
2:40 "  
sleep ??????  
5:00 A.M.  
5:15 "  
6:00 "  
6:30 "

TOTAL 13 TRAINS

LABOR DAY SATURDAY AND SUNDAY

LATE EVENING EARLY MORNING

10:55 P.M.  
11:00 "  
12:30 A.M.  
12:35 "  
1:30 "  
2:15 " Excessively loud driver and engine  
3:00 "  
5:00 "

OCTOBER 11 WEDNESDAY

PARTIAL EARLY MORNING

4:45 A.M.  
4:55 "  
5:05 "  
5:25 "  
5:35 "  
5:45 "

TOTAL 6 TRAINS IN ONE HOUR

OCTOBER 22 SUNDAY

Almost cont. traffic from 8:00AM to 1:00PM  
Afternoon during football game ZERO  
Start again around 8:00 PM. Seven (7) trains from  
8:30 til midnight.

OCTOBER 25 WEDNESDAY

EVENING

7:00 P.M.  
7:10 "  
7:15 "  
8:45 "  
9:30 "  
9:50 "  
10:00 "  
11:15 "

TOTAL 8 TRAINS IN 4 1/2 HOURS

*John C. O.*

# TRAIN / CROSSING LOG

## JULY 26 WED. ( Partial )

12:50 AM  
1:15 " Northbound; EXCESSIVELY LOUD ENGINE  
DRIVER DRAGGED OUT HORN BLASTS AS LONG  
AS HE COULD.  
1:45 "  
3:00 "  
3:55 "  
5:15 "  
5:20 " EVENING  
5:45 " 9:15 PM  
6:15 " 9:45 PM Continuous switching  
6:45 " noise for 30 min.  
7:15 " 10:30 "  
7:20 " 11:00 "  
7:40 "  
8:30 "

## JULY 29 SATURDAY

Yard activity consisted of train make up by yard engines. Engine # 510 was positioned outside my home from 9:00 - 10:00 AM revving its engine moving back and forth while making up a extremely long train.

Engine # 661 HAD AN EXTREMELY LOUD HORN

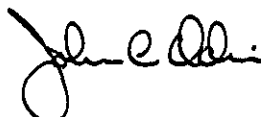
Engine #610 Had an extremely loud horn. The horn was blown excessively while blocking Okeechobee Road and Royal Poinciana . This engine was making up a train on the Hialeah side of the Miami River Canal.

## AUGUST 15 TUESDAY ( Partial )

4:45 to 6:00 P.M. 8 Trains  
6:05 P.M.  
6:10 P.M.  
9:15 "  
9:35 "  
9:40 "  
SLEEP ???????

## AUGUST 16 WED. ( Partial )

2:00 A.M.  
2:30 "  
2:45 "  
6:00 "  
6:25 "  
6:45 "  
7:00 "  
7:45 "



TRAIN / CROSSING LOG

JULY 20 THURSDAY ( Partial)

1:10 AM	5:10 AM	
1:55 "	5:20 "	
2:45 "	5:50 "	
3:15 "	6:00 "	
4:00 "	6:20 "	
5:00 "	6:40 "	(6 3/4 HRS) <u>TOTAL 12 TRAINS</u>

JULY 22 SATURDAY (Partial)

1:40AM	5:30 AM	
1:45 "	6:30 "	6 1/2 HRS 7 TRAINS
4:00 "	5:45 "	
5:15 "	8:30 AM	
	8:15 "	
	9:00 "	
	10:30 "	
	10:45 "	( 10 3/4 HRS) <u>TOTAL 12 TRAINS</u>

JULY 24 MONDAY ( Partial)

12:20 AM	
12:35 "	
1:15 "	
1:20 "	
Sleep ???? Heard at least 6 more trains but was too sleepy to note time.	
EVENING	Noticed extremely loud horn on engine
9:05 PM	# 508
9:45 "	
10:15 "	
11:15 "	

JULY 25 TUESDAY ( Partial)

12:03 AM	Evening
12:15 "	9:10 PM
2:00 "	9:45 "
5:00 "	10:15 "
6:00 "	11:10 "
6:45 "	11:50 "
7:15 "	
No trains from 7:15 - 9:00 AM	

TRAIN / CROSSING LOG

JULY 5 WED.

12:05 AM 8:24 AM  
\* sleep? 8:47 "  
7:00 AM  
7:15 " ( 9 HRS) TOTAL 5 TRAINS?  
6:24 PM 11:52  
7:40 "  
9:45 "  
10:45 (6 HRS) TOTAL 5 TRAINS

JULY 6 THURSDAY (Partial)

1:30 AM 7:20 AM  
2:20 " 8:00 "  
5:55 " 8:30 "  
7:00 " 8:45 " (8 HRS) TOTAL 8 TRAINS

JULY 12 WED. (Partial)

12:15 AM 6:20 AM  
1:15 ~~excessively~~ <sup>long</sup> ~~diast~~ 7:45 "  
1:30 " 8:00 "  
sleep? 9:15 "  
5:45 10:30 (10 HRS) 9 TRAINS

JULY 13 THURSDAY (Partial)

1:10 AM 5:30 AM  
1:20 " 5:55 "  
2:20 " 6:30 "  
4:55 " 7:05 "  
5:10 " 7:15 " (7 HRS) TOTAL 10 TRAINS

JULY 14 FRIDAY ( Partial )

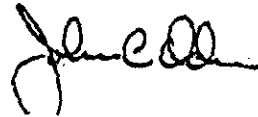
12:02 AM 7:45 AM  
3:00 " 7:55 " cont. back and forth  
5:55 " 8:15 " switching  
7:15 " 8:20 " (8½ HRS) TOTAL 8 TRAINS

JULY 18 TUESDAY ( Partial)

1:30 AM 6:05 AM  
2:30 " 7:30 "  
5:15 " 7:45 "  
5:30 " 8:30 "  
5:55 " ( 8½ HRS.) TOTAL 9 TRAINS

JULY 19 WED (Partial)

1:30 AM 5:20 AM  
2:00 " 5:30 "  
2:30 " 5:45 "  
2:45 " 6:00 " ( 6 HRS) TOTAL 8 TRAINS





TRAIN / CROSSING LOG

JUNE 26 MONDAY ( Partial )

1:30 AM 4:15 AM  
3:00 " 4:30 "  
4:00 " 5:00 " (3½ HRS) TOTAL 6 TRAINS

JULY 1 SATURDAY

1:10 AM  
1:20 " 10:05 AM  
1:35 " 10:15 "  
\* sleep 10:45 "  
7:00 - 9:00 AM 7 TRAINS (12 HRS) TOTAL 13 TRAINS

12:10 PM 6:35 PM  
2:30 " 7:20 "  
4:00 " 7:55 "  
4:30 " 8:25 "  
5:00 " 9:05 "  
6:00 " 10:30 "  
7:00 " 10:50 "  
24 HOUR PERIOD 28 TRAINS

JULY 2 SUNDAY


1:30 AM 9:00 PM  
2:30 " 9:20 "  
4:00 " \* 9:45 " \* Engine #507 excessively  
8:10 " 9:50 " loud horn, excessive speed  
12:10 PM 10:30 " heard train crossing West 8th  
7:10 " 11:00 PM ave while anothe train was  
\*8:05 " crossing into Miami Springs  
TOTAL 13 TRAINS

JULY 3 MONDAY

1:05 AM \*\*\* out for da.  
4:15 " 1:50 PM  
\* 7:15 " 2:30 "  
\* 7:55 " \*\*\* out  
\* these two trains 9:30  
close together so 10:15  
whistles from both 11:35  
were heard at the  
same time.  
8:04 AM  
\* 8:55 again  
engine 507 with loud  
whistle or driver

JULY 4 TUESDAY

12:40 AM \*Parade 5:15 PM  
1:05 " 11:20 AM 5:30 "  
1:20 " 11:50 " 7:11 "  
2:10 " 12:10 PM 8:04 "  
3:20 " 1:10 " 9:15 "  
sleep? 1:15 " 9:50 "  
8:40 " 1:50 "  
9:15 " \* out till 5:00



# TRAIN / CROSSING LOG

## MAY 17 WED (Partial)

8:00 PM - 11:00 3 Trains

## MAY 18 THURSDAY (Partial)

3:00 AM - 6:00 AM (3 Hours) TOTAL 17 TRAINS

8:00 PM - 11:00 PM 3 TRAINS

## MAY 19 FRIDAY (Partial)

1:00 AM - 3:30 AM (2½ Hours) TOTAL 15 TRAINS

## JUNE 5 MONDAY (Partial)

3:30 AM 4:25 AM  
3:35 " 4:45 "  
3:55 " 5:15 " (1 3/4 HRS) TOTAL 6 TRAINS

## JUNE 10 SATURDAY

1:30 AM 2:15 AM  
2:00 " sleep ?  
2:30 " 4:30 AM  
6:00 (5½ HRS) TOTAL 6 TRAINS

### DAYLIGHT

8:30 AM 10:45 AM  
3:50 " 11:00 "  
9:00 " 11:20 "  
9:30 " 11:40 "  
10:05 " 1:45 PM  
10:35 " 1:55 PM (5½ HRS) TOTAL 12 TRAINS  
\*\*\* Log ended 2:00 PM

## JUNE 20 TUESDAY ( Partial)

12:00 AM 2:30 AM  
12:30 " 3:00 "  
1:00 " 3:15 "  
2:00 " sleep ?  
2:15 " 6:30 AM (6½ HRS) TOTAL 9 TRAINS

## JUNE 22 THURSDAY ( Partial)

7:00 PM 11:00 PM  
7:05 " 11:45 "  
8:30 " (4 3/4 HRS) TOTAL 5 TRAINS

## JUNE 23 FRIDAY ( Partial)

3:30 AM 5:15 AM  
3:55 " 6:30 AM  
4:45 " 7:15 " (3 3/4 HRS) TOTAL 6 TRAINS

*J. E. O.*

# Hialeah-Miami Springs News

COMMUNITY NEWSPAPERS

Thursday, February 1, 1979

## Dade Delegation To Hear FEC Noise Complaint

BY R. MARCUCCI  
CN Staff Writer

Members of a Miami Springs citizen committee will meet with at least one member of the Northwest Dade legislative delegation, Friday, at Hialeah city hall, to discuss the noise and visual problem created by the new

Florida East Coast Railroad trailer-on flatcar unloading facility.

The special meeting, which will be chaired by State Rep. Joe Lang Kershaw, is aimed at providing a public forum for complaints which could be handled in the upcoming legislative session.

Expected to be on hand

for the special meeting, which get underway at 7:30 pm, are Jack Odin, John Cavalier Jr., Joe Podgor, and at least one city official.

"We'll be making a presentation and placing a copy of all the documents we've been collecting. We'll be seeking a clarification of state laws relating to the

sounding of train horns at grade crossings and see if there is something we can do regarding the regulation of train traffic," said Odin.

Residents of the western areas of Miami Springs say noise levels from the FEC property have been increasing steadily over the past year. Particularly offensive is the

practice by train engineers of sounding their horns four times at each grade crossing. Trains must negotiate three crossings to enter or leave the FEC yard.

According to Odin, one of the biggest headaches for the residents is the FEC's practice of carrying out loading operations and train switching at night.

"Our contention is that their operational policy seems to be generating much more traffic than we used to see and at all hour of the day and night. You tend to see a lot of short trains with just one or two cars or just one engine. We feel they could do it better, make the trains a little longer, and install an acceptable buffer," he said.

# HOME NEWS

VOLUME 35, NUMBER 4B

HIALEAH, FLORIDA  
15¢ A COPY

FEBRUARY 1, 1979

## Sleepy Springs Residents Upset by Whistles

By Steve Gulko  
Assistant Editor

The lights at Miami Springs Senior High School's auditorium were turned off. A voice told the 150 people in attendance to think that the darkness was night and they were asleep.

All of a sudden, the taped sounds of a train breaks the silence. During the next few minutes, horns, whistles and the clanging of trains are heard. The lights are turned on.

This scenario was the beginning of a meeting by Miami Springs people to discuss their problem — the Florida East Coast Railway Co. (FEC) at work during the night and early morning hours while the citizens were trying to sleep in their homes nearby.

Each night, Miami Springs residents who live near the railroad crossings and the FEC yard hear the trains blow their whistles four times before each of the three crossings which are within 1,000 feet of each other.

The restless citizens also hear the clanging of the trains, and various sounds from the yard which is located west of Ludlum Road and the Ludlum Canal between 25th St. in Miami

to the Okeechobee road boundary to the north.

"I have to keep the air conditioner on 24 hours a day because of the noise," said Edie Chambers of 1245 Ludlum Road. "It feels like the whole house shakes when the train goes by."

The Ludlum Corridor Ad Hoc Committee was formed by the city council to research the problem and try to arrive at some agreement between the residents and the FEC. No compromises have been reached since the committee was formed a year ago.

The committee has written a report for the city council which lists various recommendations on how to limit the noise. Among the recommendations were requests that a meeting be held with officials of the Environmental Protection Agency (EPA) and that the

city attorney be directed to investigate ways of obtaining relief from the noise of the FEC yards.

John Odin, one of the members of the committee and one of the sponsors of last week's presentations said that there is no written law that requires the trains to blow their whistles.

"It's up in the air whether there is a law regarding whistles," according to T.E. Johnston, the general superintendent of the FEC Hialeah terminal.

Another recommendation from the committee is for the FEC to limit or, if necessary, stop work during the wee hours of the night.

"There's no way we can set certain times not to work. This is a 24-hour operation," Johnston countered.

But many of the citizens

(Continued on Page 6)

## Trains

(Continued from page 4)

don't buy Johnston's reasoning. John Cavalier, Jr., of 1181 Red Bird Ave. says he hears the whistles nightly. "My windows vibrate from the trains," says Fred Shay, of 1265 Thrush Ave., only 350 feet from the tracks.

"We will not move from this location and will continue to run the railroad," Johnston affirmed. "We will continue to blow the whistles until either management or the government tell us not to."

Cavalier, Shay, Odin and committee chairman Joe Podger urged the people at the meeting to send letters to local, state and national officials to air their views on the problem.

# Springs Residents Get the Whoos in the Night

By MARY VOBORIL  
Herald Staff Writer

Thanks to the whoo-whoos, Jack Odln can't remember the last time he had a good night's sleep — "unless it was in Cleveland."

Thanks to the whoo-whoos, James McWhorter has to count sheep before he can fall asleep. There's nothing novel about that — except McWhorter has to count them "four or five times a night."

Odln, McWhorter and hundreds of other Miami Springs residents are not insomniacs by nature. But they say the "whoo-whoos," courtesy of the Florida East Coast Railway, has made sleeplessness a habit.

The whoo-whoos are the blasts of train

whistles. Since May, the jolting blasts have disrupted the quiet late-night air in the small Miami suburb in the interests of running a railroad.

THE HARSHLY-LIT rail yard, where semis are unloaded from flatcars, is situated across the Ludlam Canal on Miami Springs' western border. The tracks have been there almost as long as Miami Springs has been there, and Miami Springs was incorporated in 1928. But the noise is new, suddenly starting when the FEC's "trailer-on-flatcar" freight operation began last year.

In a space of 1,000 feet, the trains chug across three roads. Each time they approach one of the roads, the engineers sound their shrill warning whistles four

times. That's 12 blasts. Residents have logged as many as 47 trains a day. That's 564 blasts.

The residents say they wouldn't mind so much if the railroad did its business during the day. But the railroad doesn't sleep, and the noise continues unabated "even between the hours of 12 midnight and 0 a.m.," residents say.

SEVERAL MEETINGS with FEC officials have left the residents frustrated and still sleepless, they say. The FEC says all manner of laws dictate that they have to sound the whistles before they cross a road. Odln, a member of a citizens' committee, says the committee has searched for such laws and can't find any.

"My nerves are shot," says McWhorter, a flight engineer who lives "the space of a football field away" from the railyard. Because of his job, he can't take sleeping pills. His wife Jeanne, a homemaker, can. She's on tranquilizers "only since this happened."

"You can't watch TV. You can't talk on the phone when there's a train," Jeanne McWhorter says.

"They rattle the windows. They've cracked my terrazzo floor so bad I've had to put carpeting over it," her husband says.

"I have no trouble counting 20 trains between midnight and 6 o'clock," says Odln. The University of Miami monkeys who are being exposed to constant noise "get more rest than I do," he says.

THE PEOPLE have had enough. They have embraced the time-honored route toward redress of grievance: at a meeting Thursday night at Miami Springs High School, about 125 of them agreed to write their congressman, Claude Pepper, and Florida's senators.

They are going to appear at Metro Commission meetings en masse.

They are going to meet with the Environmental Protection Agency and try to get proposed anti-noise pollution standards enforced.

They want the whoo-whoos stopped — at night, anyway.



December, 1978

I. DESCRIPTION AND BACKGROUND OF AREA

Miami Springs is a predominately residential community, triangular in shape, bounded by 36th Street and the Miami International Airport on the South, the Miami River canal and the City of Hialeah on the North, and unincorporated Dade County on the West.

The western boundary is a man made body of water running North and South. This canal is known to residents as the "Ludlam Canal", and shown on official plats as the "F.E.C. Borrow Ditch".

The land east of the Ludlam Canal is located in the City of Miami Springs. The land use bordering this canal is 98% residential. Older homes are located in the southern portion with newer homes located in the northwest. The streets in this northwest area are named after birds and this area has become known as "the Bird Section". The value of homes in this area would vary anywhere from \$60,000 to \$100,000.

It should be pointed out that Miami Springs is not a new community. It was founded by Glen H. Curtiss in the early 1920's and in 1926 the first mayor and city commission took office. The property in Miami Springs has almost completely built upon and there are very few vacant lots left. The average age of the newer homes in the "Bird Section" is 15 years, while some of the oldest homes date back 20 years or more.

The land located west of the Ludlam Canal is located in unincorporated Dade County and is zoned "Heavy Industrial". This land is owned by the Florida East Coast Railway Company (F.E.C.).

The canal proper is owned by the F.E.C. Over the years the trees and vegetation have grown up along this canal and it has become one of Miami Springs' scenic and natural areas. Tall Australian Pines line its banks and the vegetation on the F.E.C. side has traditionally existed in a wild state providing homes for many wild animals and birds.

The railroad activity on this property for a good many years was located in the extreme southwestern portion, well away from the residential area. This activity was well screened, both in sight and sound, by distance and vegetation. One main track enters this property from the North across a railroad bridge over the Miami River Canal. (See attached strip map in Appendix, Exhibit 2).

## II. CURRENT PROPOSED USAGE OF THE F.E.C. PROPERTY

In the later part of 1977 the F.E.C. began extensive clearing of the trees and vegetation in the most northern portion of their property known on the County Plat books as the "HIALEAH YARDS" (yellow portion on attached map).

This land clearing coincided with an announcement by Dade County that it wanted this parcel of land for the shops and yards of the new proposed Rapid Transit System.

Most of the citizens in the Bird Section understood that this was the reason for the land clearing. However, it was learned at a public meeting that the F.E.C. planned to use this land for a "TRAILER ON FLAT CAR" (TOFC) unloading facility. The F.E.C. stated that they

were forced to relocate their existing facility to the site in question because of the extension of the south runway of the Miami International Airport.

Ironically, Dade County Aviation Director, Richard Judy, considers the \$35 million, 3,000 foot extension of Miami International Airport's southern, east-west runway the cornerstone of his noise abatement program (Miami Herald, October 29, 1978 - See Appendix - Exhibit 3).

Grading and basic construction started early in 1978 with a construction schedule that calls for a December 1978 completion date. Two new tracks for T.O.F.C. use have been planned with future provision for two more tracks to be used as unloading sidings. However, it is believed at this time all four tracks have been installed.

A new bridge has been built crossing the north, F.E.C. Canal and a new crossing (#3 - see map) has been established at the end of this bridge where a proposed access road crosses the main track. This road is being used for truck access to the unloading facility. Automatic signals with drop gates have been installed at this crossing.

As of December 2, this T.O.F.C. facility became operational. According to discussions with F.E.C. officials, the proposed operation of the T.O.F.C. facility will entail the movement of trains throughout the evening and early morning hours, unloading trailers, in order to be ready for pick-up by truckers during the working day. However, in the two weeks that the T.O.F.C. has been operating, it has been reported that truck traffic is not limited to just daylight but continues on a 24-hour basis.



### III. CURRENT NOISE PROBLEM

Since May of 1978, residents in the northwest portion of Miami Springs have noticed a drastic increase in the train and yard engine traffic going both directions across the crossings at Okeechobee Road and Royal Poinciana (#1, #2 - attached map). What once seemed to be a mild inconvenience has become an almost intolerable situation, especially during the early morning hours between midnight and 6:00 AM when it has been reported that the intensity of traffic is as high as 4-6 train trips per hour during this time period.

On Thanksgiving Day, there were 23 trains logged in 24 hours, 47 the next day and 30 trains on Saturday following. F.E.C. officials have reported that their optimistic predictions would project an even higher increase in the amount of train traffic that currently exists.

F.E.C. policy requires that an engine sound four (4) horn blasts at each of the crossings that it passes over. As an engine enters the yard area from the north, it crosses Okeechobee Road (#1), Royal Poinciana (#2) and the new private road crossing (#3). The distance that these three crossings take up is less than 1,000 feet. AN ENGINE PASSING THESE CROSSINGS BLOWS A TOTAL OF 12 HORN BLASTS IN LESS THAN 1,000 FEET.

When this situation of increased traffic, engine and excessive horn noise is addressed to the F.E.C. they say they are required by Federal and State law to sound engine horns four (4) times at each crossing on grade. The horns are to be sounded in a sequence of two lone - one short - one long as an engine approaches a crossing, they say.

It has been noticed that there seems to be no standard level of intensity to the horns and they seem to vary from engine to engine and their loudness seems to depend on the engineer driving the train. Many horns seem excessively loud compared to the average.

Residents have also complained recently about engine noise in the yard operations and also what seems to be an increase in the use of engine horns for yard signals.

Many times in the still air of the early morning, the engine horns can be heard clearly from the crossing at 74th Street (#5) and West 8th Avenue (#4) in Hialeah. It must be pointed out that when a citizen complains about this horn noise he is generally complaining about the level of noise that is heard inside of his home. Also, that for the most part, his home is air conditioned and the windows are shut up when this noise is heard.

The T.O.F.C. has been operational since the first week in December and the following train traffic and noise patterns seem to be emerging.

Heavy train traffic starts around 4:30 PM and continues until 1:00 or 2:00 in the morning. This train traffic also includes shifting of cars to different tracks during the trailer loading and unloading process. This switching process has taken as much as one (1) hour and has filled the night air with the sounds of engines accelerating under load pulling forward, stopping, and backing up with loud banging of cars as train moves from a stop; plus the sound of horns as the engine approaches the crossings it passes over during the switching process. During the switching and train make-up process, the noise is constant, and, as soon as the train clears the T.O.F.C.

access road crossing, the noise from backed up trucks starts. In a recent evening, there were 21 trains logged in the seven (7) hour period from 5:00 PM until midnight.

The T.O.F.C. train-switching and truck traffic continues after midnight and its intensity seems to depend on the day. Train traffic starts heavy on Monday mornings, tapering off towards the weekend. A recent Monday morning logged 12 trains from midnight to 6:00 AM, with each of these trains sounding its warning horn 12 times. Much of this traffic seems to be single engine or engine with a few cars shuttling back and forth.

Railroad spokesmen have indicated that this T.O.F.C. yard was to be a "drive thru" yard with trains arriving from the north heading straight in, dropping off cars and the engine proceeding south around the "balloon" track. But, apparently this is not the case as considerable noise is generated by the back-and-forth movement of engines on the north side of the T.O.F.C. yard.

In addition to the trains, is the new sound of heavy truck traffic and the trailer unloading equipment. The trucks stop at the dispatchers building, accelerate through gears, stop at the new crossing, then accelerate through gears again towards the yard exit. This truck traffic seems heaviest at night and continues all night long.

Based on observations of residents in the area, it would appear that the F.E.C. seems to be moving towards an operation that concentrates most of its train and T.O.F.C. activity during the night time hours. Spokesmen from the F.E.C. state that it is an increase in business that accounts for the amount of traffic. However, residents

find it hard to believe that a 500 to 800% increase in the amount of train traffic over this same time last year is reasonable unless there has been some change in the operation of the F.E.C. yards which could account for the increase.

Sleep for many of our residents is now almost impossible due to the noise from railroad traffic and train horns. This has become to many a health and welfare problem. The City has thus far presumed that there should be some way for residents to be able to sleep unmolested and the railroad to be able to operate as well. But our meetings with the railroad representatives have failed to produce any solution.

#### IV. HORN REGULATIONS: FEDERAL REQUIREMENTS

The City of Miami Springs has contacted the Federal Railroad Administration concerning Federal Regulations relating to the blowing of horns at crossings. Mr. Wright, Deputy Associate Administrator for Safety, replied in a letter (see Appendix, Exhibit 4) that the Federal Government does not regulate nor does it propose to regulate the blowing of horns at crossings.

Mr. Wright stated "Rules concerning the applicability, method and time duration of the actual sounding of the locomotive whistle or horn are issued, administered, and enforced by either the State Public Utilities Commissions or by the operating railroad companies themselves".

Mr. Wright enclosed a booklet containing the EPA Railroad Noise Emission Standards, FRA Compliance Regulations, and the Noise Control Act of 1972.

In a section of this book, "Summary of Comments Received," 40 CFR part 201 relating to warning horns and signals (see Appendix, Exhibit 5) the statement is made: "The EPA does recognize that a noise problem exists as to the use and extent of railroad warning devices, and that regulatory action may be appropriate for controlling same. However, the Agency believes that such regulation can best be considered and implemented by State and local authorities who are better able to evaluate the particular local circumstances with respect to the nature and extent of the noise problem and the requisite safety considerations involved."

It goes on to state: "Warning gates too, as suggested would appear to be an effective safety alternative to acoustic warning signals"; and: "Since acoustic warning devices do serve the interests of safety and, in the Agency's opinion, can best be regulated at the local and State level for the reasons indicated, EPA does not propose to regulate railroad acoustic warning devices at this time (emphasis added)."

The "Background Document for Railroad Noise Emissions Standards" December 1975, prepared by the U. S. Environmental Protection Agency, Appendix B in which is indicated on Page B-22 that there were, at this time of preparation, 15 states where requirements to use horns are excepted, but not necessarily prohibited, in incorporated areas. Florida is one of these states.

On Page B-26 of the above document the last paragraph states:

"In view of the questionable value of train horns for warning highway drivers, particularly at locations having active crossing signals, it may be appropriate to encourage the abolition of routine use of horns at crossings so equipped, particularly but not necessarily only those with gates. The circumstances which deter-

mine hazard levels as well as noise intrusion vary widely and are peculiar to local circumstances. It is therefore concluded that regulation of railroad warning be best left to the option of local authorities at this time, recommending thereto that consideration be given to restrictions upon the routine sounding of train horns at protected crossings."

V. HORN REGULATIONS: STATE REQUIREMENTS

The F.E.C. Railroad states that they are required by State law to blow engine horns four (4) times at on grade crossings and this requirement has been included in the railroad's Operations Manual. Repeated requests by the City to obtain a copy of the F.E.C.'s Operations Manual have been refused.

Included in Appendix E are copies of the State Statutes and Regulations which seem to apply to On Grade Crossings.

The main Statute appears in Chapter 351, "DUTIES OF RAILROADS IN OPERATING TRAINS."

351.03 TO POST SIGN BOARD, RING BELL, AND EXERCISE REASONABLE CARE AT HIGHWAY AND STREET CROSSINGS. Every railroad company shall exercise reasonable care for the safety of motorists whenever its track crosses a highway ... shall cause the bell on the engine to be rung before crossing any of the streets of a city or town ...

There is no mention of horns, only bells indicated. It would appear that the railroad assumes that "reasonable care" should include the sounding of horns. It is not clear however, that this is mandated or implied by the State.

It should be pointed out that FS 317.9928 (1969 Florida Statutes) which required a locomotive to blow a whistle "before said

locomotive reaches the crossing." This Statute was repealed in 1971 as a result of recodification of Chapter 317.

Another Statute dealing with "reasonable warning" can be found in Chapter 338 of the Florida Statutes:

338.21 ELIMINATION OF RAILWAY-HIGHWAY CROSSING HAZARDS

§ (2) "Every railroad company maintaining a railway-highway crossing shall ... install, maintain and operate at such crossings an automatic flashing light signal and ringing bell, the design of which shall be approved by the department, (Department of Transportation) so that it will give to the users of such road reasonable warning of the approach of trains or cars on the tracks of said railroad company (underlining added) ...."

At this time we have found no State Statute or Rules and Regulations of either the Department of Transportation or the Public Service Commission which requires the Railroad to blow their horns four (4) times at each crossing and there is doubt to whether there is any regulation at all that mentions horns.

VI. INTERACTION

The City of Miami Springs, on the recommendation of an Ad Hoc Committee established to monitor the development of the F.E.C. property, has met in a series of Roundtable Discussions. These meetings included representatives of the F.E.C. Railway Co., State and County agencies, members of the Miami Springs City Council, and representatives of the Ludlam Corridor Ad Hoc Committee.

The main goals of these Roundtable meetings included:

1. To insure water quality through proper site drainage of the F.E.C.'s T.O.F.C.
2. To provide a visual screen and noise buffer between the residential areas of Miami Springs

and the F.E.C.'s industrially zoned property.

3. To lessen the negative impact of yard security lighting in the residential areas of Miami Springs.
4. To protect Miami Springs residents from excessive noise generated by the industrial railroad uses of the F.E.C.'s property.

There have been three meetings of the Roundtable Commission to date. The problem of site drainage affecting the water quality of the area has been resolved, much to the credit of the F.E.C.

For a visual buffer, the F.E.C. has planted a number of three-foot-tall seedlings of the Sea Grape tree. The majority of these are planted at the foot of a slope three to four feet below the level surface of the T.O.F.C. pavement. Professional estimates project at least eight to ten years growth will be required before these plants become tall enough to provide any effective screening of the railroad yard.

The installation of the facility security lighting has finally been completed after some difficulty over County permits. The City has, by resolution, requested of the County a public hearing to show that this lighting has a negative effect on the residential area of Miami Springs. Meanwhile, the lighting is operated under a temporary operating permit from Dade County. Although this security lighting has been shaded fairly well, the scene which it illuminates is repugnant. The former view along the lushly wooded Ludlam Canal Corridor once served as an amenity which made residential locations near it both desirable and valuable. Now, these same homesites overlook an inescapable vista of commercial-industrial activity -- which is most clearly visible at night under the unnatural yellow sodium lights. Concern over property values are common among the residents in the affected areas.



Addressing the noise question, spokesmen for the railroad have stated that they will continue to sound the horns at crossings as long as the courts consider that the railroad is negligent in accident cases if they fail to do so. Also, they indicate that they will not consider rescheduling train activities to different hours which would be more compatible with the sleeping habits of City residents.

The City's position does not ignore safety, nor intends to diminish the need for responsible train operations. However, some feel that a warning which might be required at railroad crossings by busy traffic conditions of daylight hours could be considered excessive during the hours of darkness when the ambient noise level is less and the lighted signals at crossings and on locomotives are most clearly visible.

It should be pointed out that all the crossings mentioned in the preceding sections have automatic signals with drop gates. In addition, the crossings at Okeechobee Road and Royal Poinciana Blvd. have a Cantilever Span of a type indicated in Railroad-Highway Grade Crossing Warning Systems Recommended Practices Bulletin No. 7, published by the Association of American Railroads. This cantilever provides for additional flashing red lights directly above the roadway. Also, the drop gate crossarms have red lights on them. With such warning equipment already in place, the suggestion has been made by the City that such automatic signals are, by themselves, sufficient to provide "reasonable warning," especially between the hours of 11:00 PM and 7:00 AM.

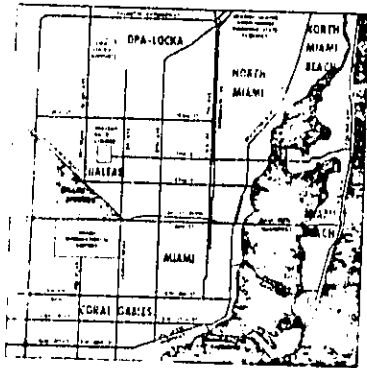
No resolution of these differences between the City and the Railroad concerning the noise problem has yet been achieved. As the

City understands the law, any effort on her part to legally regulate the noise from a railroad's facility has been thwarted by a preemption of such action by the United States Environmental Protection Agency (EPA). The Ad Hoc Committee, in their November report, has proposed to the City that a conference be held between Federal, State and County noise officials and City representatives to clarify, once and for all, the options available for the solution to this noise problem.

#### VII. FEDERAL NOISE REGULATION UPDATE

As of this writing, the latest news has it that revisions to the Interstate Rail Carrier Noise Standard (see Environmental News, Tuesday, October 10, 1978, in Appendix, Exhibit 8) are pending. In essence, the U. S. Court of Appeals has directed the EPA to broaden the above regulation to cover all railroad equipment and facilities, railroad yards in particular. The agency was given one (1) year to comply with the court order. However, the Court granted a six-month extension, and new regulations are scheduled to be proposed in November 1978 with final actions taken in February of 1979.

It would appear from the "Draft Background Document" that there will be some form of property line standard for yard noise based on a comprehensive noise survey. These matters would be discussed at the proposed EPA-City conference.



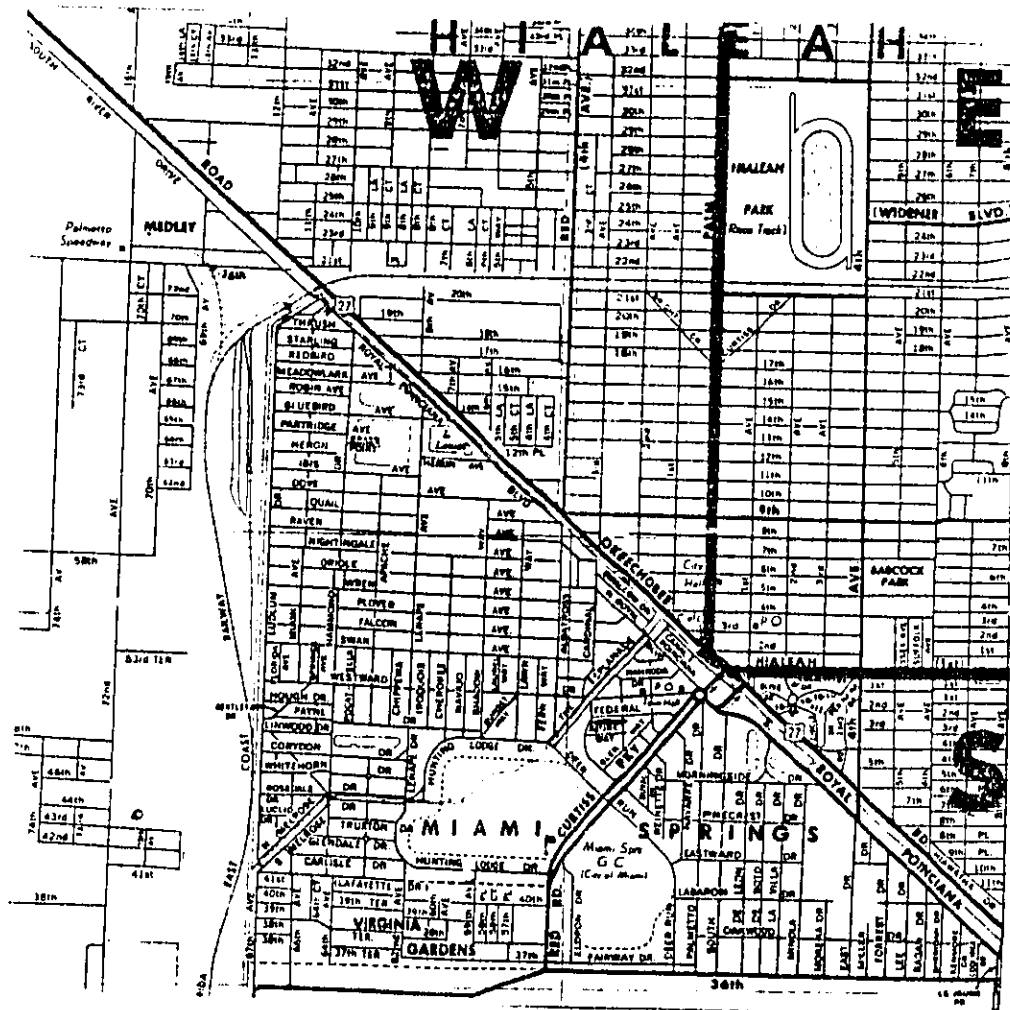
CITY OF MIAMI SPRINGS MAP

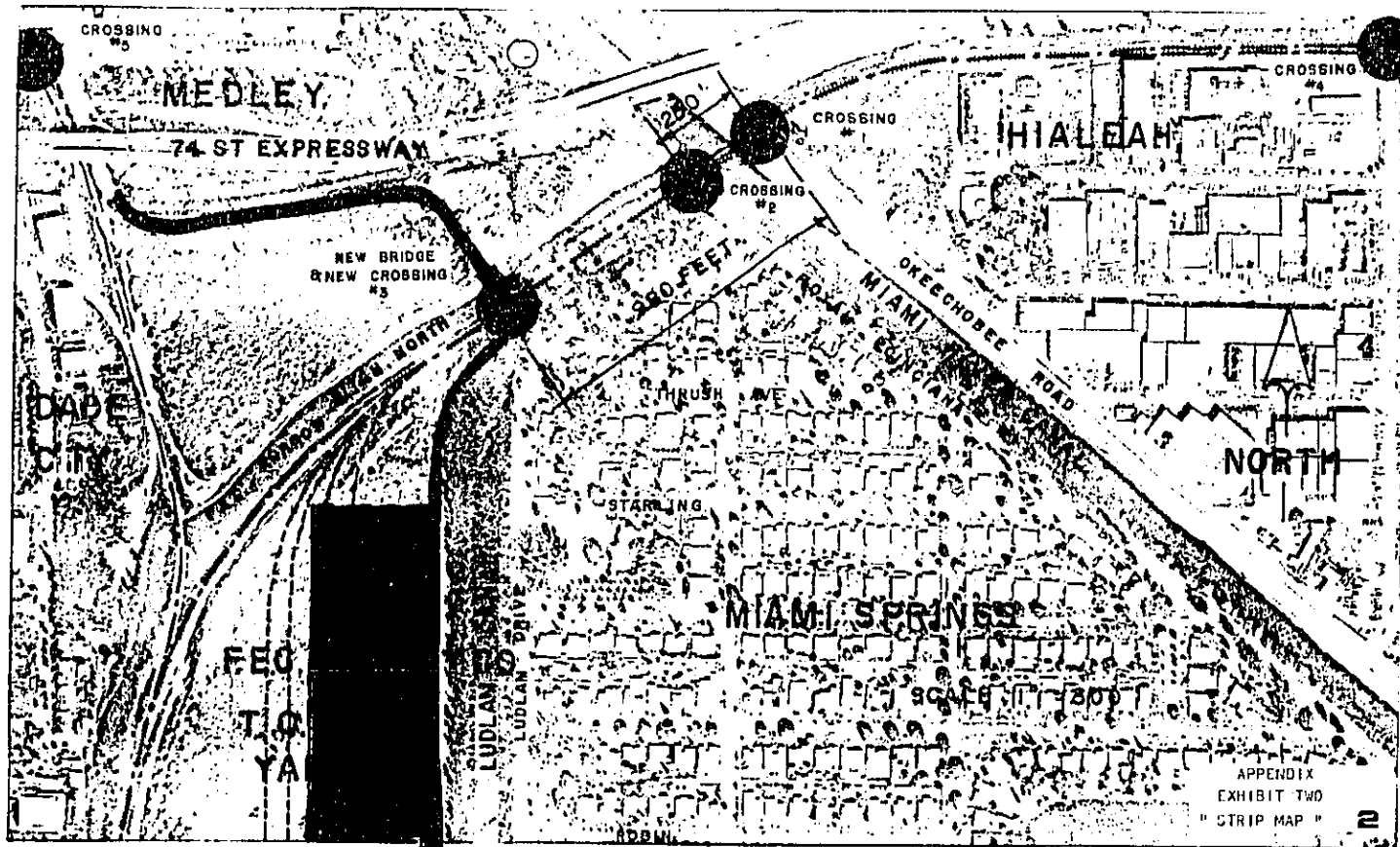
KEY:

F.E.C. NEW YARD FACILITY



AT GRADE CROSSINGS





# \$70-Million Bond Issue to Be Sold For Airport's Expansion Program

By JAMES CRATE  
Herald Business Writer

Several key elements of Miami International Airport's ambitious Program 70's upgrading plan, put on hold by the mid-decade recession and inflation-conscious federal authorities, may be only short months away from liftoff.

Dade County Aviation Director Richard Judy, promising a future airport that will be cleaner, quieter, safer and more accessible, says he will float a \$70-million bond issue before the end of the year to put the lagging \$238-million construction and land-acquisition program back on course.

Federal and state matching funds and airport revenues are slated to pay for the balance of the project, an overhaul that has been in the planning and "partial progress" stages for more than six years.

"EVEN IF WE have a problem getting our share of federal funds, I think construction should be under way on all phases of the program by the end of the '70s," Judy said. "It's going to be an airport we can live with, identify

with, and we're very pleased with what we've come up with."

What Judy says he and his planners have come up with is a plan maximizing use of MIA's limited space against the often-conflicting demands placed on it.

He says airport planners must accommodate increasing numbers of domestic and international flights; soaring passenger volume and cargo tonnage; larger, more complex aircraft; airlines' demands for quicker turnaround times; a boom in general aviation; better access roads; and travelers' demands for more modern, convenient terminals.

Against these demands are arrayed stringent federal and community noise-abatement regulations, limited expansion opportunities and tight money.

"PEOPLE SEEM to expect more of the aviation industry than any other sector of the economy, and that's not necessarily wrong," Judy says. "We welcome their high expectations ... we think we do our job extremely well. But at the same time, I think the public has to know

that we need certain things to do the job that's expected of us."

Some of the projects Judy says he needs are already falling into place, however.

- A \$45-million international "satellite" terminal, although still in the final stages of construction, recently went into operation.

- A \$12.5-million elevated people-mover system, designed to transport international passengers between the satellite terminal and a new customs facility, is scheduled to go into operation in early 1979.

- A new multi-function passenger and freight customs facility, designed to speed up the customs clearance process, is under construction with an unspecified start date.

- A \$10.5-million runway and taxiway strengthening program is largely complete.

### STILL PENDING however, are:

- A \$35-million, 3,000-foot extension of MIA's southern, East-West runway, a project Judy calls the cornerstone of his noise-abatement program.

- A \$33.5-million terminal expansion program, to include more aircraft parking spaces, the provision of additional baggage, lobby and ticket-counter space, and a redesigned vehicle control and parking system.

- A \$50-to-\$60-million redesign of existing road entries to MIA, to include an elevated bypass roadway over Lejeune Road linking 195 (36th Street expressway) to the airport terminal.

- A \$10-million tunnel under MIA's diagonal runway, linking an expanded cargo complex on the field's Southwest corner to the main terminal and customs complex.

- An approximately \$3-million upgrading for runway and approach-control systems at Tamiami Airport, part of a program to keep smaller general aircraft out of MIA's busy air lanes.

- And somewhere down the road, literally, and figuratively, a plan to build a 50-square-mile jetport, "Florida's Kennedy International," in Northwest Dade.

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THIS IS A PARTIAL EXTRACT OF AN ARTICLE WHICH APPEARED IN THE MIAMI HERALD ON 29 OCT. 1978.

THIS ARTICLE MENTIONED THAT THE PLANNED EXTENSION OF THE SOUTH RUNWAY AS BEING THE "CORNERSTONE" OF THE NOISE ABATEMENT PROGRAM AT THE AIRPORT.

IT IS THIS PROPOSED EXTENSION THAT FORCED THE RAILROAD TO RELOCATE THEIR T.O.F.C. FACILITY



ASSOCIATE ADMINISTRATOR

DEPARTMENT OF TRANSPORTATION  
FEDERAL RAILROAD ADMINISTRATION

WASHINGTON, D.C. 20590

JUL 13 1978

78 JUL 17 P 5: 21

CITY OF MIAMI SPRINGS

Honorable J. C. Fields  
Mayor  
City of Miami Springs  
Miami Springs, Florida

Dear Mayor Fields:

This is in reply to your letter of June 13, 1978, concerning noise from locomotive horns.

The Federal Railroad Administration (FRA) has the responsibility for promulgation and enforcement of Federal regulations which concern the safety of the public, and railroad employees and passengers who ride on trains. The Federal regulations concerning the locomotive whistle or horn, contained in 49 CFR 230.234, require only that each locomotive shall be provided with a suitable whistle, or its equivalent, so arranged that it may be conveniently operated by the engineer or motorman from his position in the cab. Rules concerning the applicability, method and time duration of the actual sounding of the locomotive whistle or horn are issued, administered, and enforced by either the State Public Utilities Commissions or by the operating railroad companies themselves.

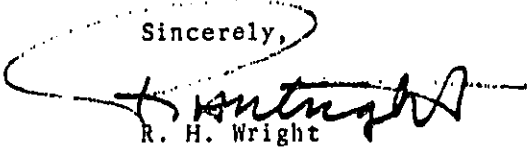
The Federal government's noise control program was established in 1972 with the passage of the Noise Control Act, P.L. 92-574, 86 Stat. 1234. That Act recognized that the primary responsibility for control of noise rests with State and local governments, but that in certain instances, Federal action would be necessary to control noise sources in commerce, the control of which requires national uniformity in order to avoid imposing undue burdens on interstate commerce. Section 17 of the Act specifically identified railroad generated noise as one of those areas requiring Federal action. The Environmental Protection Agency (EPA) is designated as the Federal agency responsible for the issuance of noise emission standards. The Federal Railroad Administration, on other hand, has been designated as the agency which will insure railroad industry compliance with the EPA noise standards. I have enclosed a publication containing the EPA Railroad Noise Emission Standards, FRA Compliance Regulations, and the Noise Control Act of 1972.

I understand your concern over the extent and use of railroad warning devices operating near a residential area. In determining those sources of railroad noise that were in need of national regulation, the EPA concluded that comprehensive and truly effective Federal regulation in this area would be overly diverse and cumbersome. Rather, State and local authorities are better able to evaluate the particular local circumstances with respect to the nature and extent of the noise problem and the requisite safety consideration involved.

I suggest that you contact the Regional Administrator, Region IV, Environmental Protection Agency (EPA), 345 Courtland Street, N.E., Atlanta, Georgia 30308, for further information and assistance in addressing your particular local noise problem. In addition, I shall forward a copy of your correspondence to the EPA Deputy Assistant Administrator for Noise Abatement and Control here in Washington.

I trust that this reply adequately explains the FRA's role in railroad noise control.

Sincerely,



R. H. Wright  
Deputy Associate Administrator  
for Safety

Enclosure

cc: EPA Deputy Assistant Administrator

Title 40 Protection of Environment  
CHAPTER I—ENVIRONMENTAL

relating to ; WARNING HORNS AND  
SIGNALS

PROTECTION AGENCY

Part 201 Railroad Noise Emission Standards

a. Horns, bells, whistles, and other warning devices.

A number of commenters, ranging from private citizens to both State and Federal administrative agencies, expressed both concern over and agreement with the EPA's decision not to regulate rail carrier acoustic warning devices.

This broad response serves as an indication of the conspicuous nature of the complaints about railroad warning devices, and that to many citizens they are one of the most noticeable and disagreeable examples of railroad noise.

Three State environmental agencies indicated that complaints from citizens about railroad warning device noise were not only large in number but comprised the major source of all complaints about railroad noise, and therefore contended that such warning devices should be regulated.

The Agency in analyzing the problem of acoustic warning device noise recognized a unique characteristic of such noise as opposed to other railroad noises. That is, it is a form of noise that is purposefully created and intended to be heard for safety reasons, instead of being an unwanted by-product of some other activity. As such, the EPA found that these warning devices and their use are regulated at both Federal and State levels; information as to the number and nature of such regulations are included in the Background Document. In addition, studies considered by the EPA, also included in the Background Document, show that such warning devices do not appear to be unrelated to highway and pedestrian safety, especially in emergency situations. The reduction or elimination of such warning devices through the authority of the Noise Control Act does not therefore appear to be a reasonable consideration, as suggested by three commenters.

The EPA does recognize that a noise problem exists as to the use and extent of railroad warning devices, and that regulatory action may be appropriate for controlling same. However, the Agency believes that such regulation can best be considered and implemented by State and local authorities who are better able to evaluate the particular local circumstances with respect to the nature and extent of the noise problem and the requisite safety considerations involved. Any comprehensive Federal regulation in this area could be overly diverse and cumbersome. The EPA encourages in this regard the interaction between local and State governments and the railroads directly concerned in solving the particular local noise problems associated with the use of such warning devices. Such interaction has taken place, examples of which are included in the Background Document, and has apparently produced both safe and cost effective solutions to these local noise problems. However, if local authorities, after having first sought solutions with the railroads involved, have still not been able to resolve their problems, they are encouraged to then direct their concerns to the EPA for possible further Federal action.

Two other State environmental agencies indicated that locomotive horns, bells, or whistles around railroad yards are unnecessarily overused by the railroads, and that such use should be limited by Federal regulation.

The EPA has determined that the use of such warning devices in and around railroad yards is not entirely out of place due to the often heavy intermingling of workers and mobile equipment with locomotives and rail cars. Such use may of course be beyond the extent necessary to ensure safety, not only in railroad yards but wherever else railroad horns, bells, and whistles are used. The term "over-used," however, is relative to the particular circumstances surrounding such use. Whether, for example, a railroad yard or rail-highway intersection is situated in a residential as opposed to an industrialized area. These situations are instances where the EPA's recommendation for railroad and community interaction is at this time the most appropriate means of achieving effective warning device noise abatement.

Another commenter stated that railroad acoustic warning signals are ineffective due to the often loud ambient noise levels that exist in motor vehicle interiors due to radios and other noise sources.

Acoustical analysis available to the Agency indicates that the effectiveness of acoustic warning signals as used on police and emergency vehicles as well as urban buses and trucks is not only a function of amplitude or loudness but also of tonal characteristics. That is, recognition is achieved by a particular fixed or variable frequency of a reasonable loudness that impinges itself upon whatever ambient noise may exist. This view is in accord with the study referenced above which indicates that railroad warning signals do appear to affect safety, especially in emergency situations.

One commenter indicated that roadway drop gates equipped with flasher units provide visual warning that is adequate without acoustic signals.

EPA encourages alternate solutions to the routine use of acoustic warning devices at rail and road crossings. For example, the elimination of public grade level railroad crossings would do away with the source of the problem, the intersection of rail tracks and public thoroughfares. However, such a program on a national basis of elevating or depressing either the railroad line or the public thoroughfare at each crossing, solely for the purpose of the abatement of acoustic warning signal noise, is not considered appropriate. However, it should be seriously considered in future public thoroughfare or railroad line construction programs for both safety and environmental noise reasons.

Warning gates, too, as suggested, would appear to be an effective safety alternative to acoustic warning signals. Specifying their use on a national basis, however, would be prohibitively expensive considering that costs range from \$45,000 to \$100,000 per unit, and with the extensive use of grade level crossings in the United States, for example Illinois having approximately 15,000 crossings without drop gates, the cost would be \$675 million or more in that State alone.

Since acoustic warning devices do serve the interest of safety and, in the Agency's opinion, can best be regulated at the local and State level for the reasons indicated, EPA does not propose to regulate railroad acoustic warning devices at this time.

NOTE!! UNDERLINING HAS BEEN ADDED FOR EMPHASIS



THE FOLLOWING INFORMATION HAS BEEN EXTRACTED FROM:

**BACKGROUND DOCUMENT  
FOR  
RAILROAD NOISE EMISSIONS  
STANDARDS**

**DECEMBER 1975**

**U.S. Environmental Protection Agency  
Office of Noise Abatement and Control  
Washington, D.C. 20460**

This document has been approved for general availability. It does not constitute a standard, specification or regulation.

**Appendix B**

**REVIEW OF THE USE OF AUDIBLE TRAIN-MOUNTED WARNING DEVICES AT  
PROTECTED RAILROAD HIGHWAY CROSSINGS**

**PLEASE NOTE**

THE FOLLOWING IS NOT MEANT TO REPRESENT THE COMPLETE TEXT OF "APPENDIX B" WHICH CONTAINS BACKGROUND INFORMATION SUPPORTING BOTH SIDES OF THE ARGUMENT ON THE USE OF WARNING DEVICES.

WE ONLY WISH TO SHOW THAT THERE ARE AND HAVE BEEN AT LEAST 15 STATES THAT PROVIDE EXCEPTION TO THE SOUNDING OF ROUTINE WARNING DEVICES IN INCORPORATED AREAS AND THAT THE FEDERAL GOVERNMENT DOES APPEAR TO REGULATE THE SOUNDING OF ACCOUSTICAL WARNING DEVICES AS MOST PEOPLE ARE LEAD TO BELIEVE.

WE WOULD URGE ALL THOSE INTERESTED TO READ THE COMPLETE TEXT OF APPENDIX B

→ Train-born signals to warn motorists and pedestrians of the approach of trains are required by most States. Federal safety regulations are confined to the inspection of such devices on locomotives, to the end that - if present - they shall be suitably located and in good working order (Safety Appliance Act, 45 USCA; 49 Code of Fed. Regulation 121, 234, 236, 428, 429). The Federal government has shunned greater regulatory responsibility in this field in the past. There is a very significant Federal research and promotional effort underway to improve grade crossing safety, however.

The State laws requiring train-born signals do not quantify their loudness. It is common for the State laws to quantify the requirement to apply all public crossings except in municipalities, leaving the use of horns or bells in towns and cities to local discretion.

A survey of the 48 contiguous States yields the following summary of information regarding their regulations:

.. Requirements for sound signals at public crossings imposed by:

Statute	38
Public Utility Commission	1 (Calif.)
Common Law	3
Penal Code	1 (N. Y.)
None or no information	<u>5</u>
	48

- .. Requirement at private crossing: - if view is obstructed .... 1
- .. Signals to consist of:
  - Whistle or bell 24
  - Whistle and bell 7
  - Whistle 6
  - Bell only 2 (Fla. & R.I.) (a)

(a) Florida restriction to bells applies in incorporated areas and is accompanied by a speed restriction of 12 mph.

- .. Distance at which signal is to be sounded:

Beginning at a minimum of distance (35 States varying from 660 feet in Michigan to 1500 feet in South Carolina, with an average of 1,265, the most common being 1,320 feet (80 rods).

Beginning at a maximum distance (3 States):  
 Montana 1,320, Ohio 1,650, and Virginia 1,800 feet.

To continue until train:

Reaches crossing 35

Is entirely over crossing 3

- .. Exception of some form provided for incorporated areas in at least 15 States:

California, Iowa, Indiana, Kentucky, Michigan, Minnesota, Missouri, New Jersey, New York, Nevada, Utah, Virginia, Washington, Wisconsin, and Florida.

- .. Exception provided at crossing with:

Gates and/or watchmen - Delaware

Flashing lights and bells - Illinois 414

EXHIBIT 6

Railroad operating rules reflect the ordinances in effect in the areas through which they pass, generally encouraging the use of warning signals at the discretion of the operator to avoid accidents, but admonishing against unnecessary soundings. Specific supplementary advice is contained in Standard Rule 14, which is adopted by many carriers, requiring the sounding of signals in all situations where two or more trains are at or approaching a crossing simultaneously, due to the extra hazard consequent to the limited view and preoccupation of approaching motorists and pedestrians when they see or hear just one of the trains.

Two good examples of State requirements for the sounding of warning signals at crossings are those of California and West Virginia, attached hereto as Appendix A1, A2, and B, respectively.

Over and above statutory and regulatory requirements for the use of warning signals on trains, the judiciary and juries have tended to assume that there is a burden upon the operators of railroads to employ such devices. Numerous judgments have been made against railroads in court cases wherein the sufficiency of warnings were questioned, particularly by juries and seemingly to a relatively greater degree in California. As a result, railroads are reluctant to dispense with any ordinary action which might be construed to be a contributing factor in crossing accidents. More will be said on this topic

B.4 Prohibition against the use of audible devices

It is already quite common for the routine sounding of horns or whistles to be prohibited, except in emergencies. It is also common for these prohibitions not to be enforced. A careful search for cases where such prohibitions appeared to, or were claimed to contribute to an accident has not yielded evidence of a single such situation.

Among the localities which restrict the use of horns are those listed in Table 5.

## EXHIBIT 6

Table 5. Some Localities with Restrictions

	<u>Notes</u>
The State of Florida	(2)
The State of Illinois	(1)
The State of Massachusetts	
Chicago, Illinois	(1) (2) (3)
Houston, Texas	(1) (2)
Minneapolis, Minnesota	
Buffalo, New York	(1) (2)
Philadelphia, Pennsylvania	
Knoxville, Tennessee	(1) (2)
Durham, North Carolina	(2)
Mason City, Iowa	(3)
Warren Pennsylvania	
Elkhart, Indiana	
Toledo, Ohio	
Columbus, Ohio	
Akron, Ohio	
Lynchburg, Virginia	(1) (2)
San Bernadino, California	(1)
South Holland, Illinois	
Elmhurst, Illinois	
Lockport, N.Y.	
Rochester, N.Y.	

(1) Contacted local authorities in course of this study.

(2) Specific Information contained in Enclosure F.

(3) Not enforced.

The 15 states where requirements to use horns are  
 excepted, but not necessarily prohibited, in incorporated  
 areas are:

Table 6.

California*	New Jersey
Florida	New York*
Iowa*	Nevada*
Kansas	Utah
Kentucky*	Virginia*
Michigan*	Washington
Minnesota	Wisconsin

(\*also have local-option provision)

In 4 additional states there is a local option provision,  
 allowing cities and towns to relieve requirements:

Table 7.

Illinois	North Carolina
Indiana	West Virginia

Two states permit silent running at crossings with  
 certain protection systems:

- .. Delaware: warning requirements do not apply when  
 crossing is protected by watchman or gates.
- .. Illinois: requirements do not apply when crossing  
 is protected by automatic signals (with or without  
 gates).

EXHIBIT C

One of the most comprehensive Noise Control Regulations thus far drafted in the United States is that of the State of Illinois. , As it stands, its property line limitations would affect the use of audible crossing warning devices except that its Rule 208, Exceptions, states: "Rules 202 through 207 inclusive shall not apply to sound emitted from emergency warning devices and unregulated safety relief valves."

Thus, it can be seen that there is considerable precedent for placing constraints upon the use of audible warnings, with no apparent adverse effects. However, they are not uniformly enforced, and where enforced, the carrier generally receives written instructions from the constraining authority, and is nevertheless impowered to sound warnings "in emergencies"... "in the event of impending accident"... etc.

B.5 Judicial Background

Tort litigation constitutes the bulk of the legal or judicial history of grade crossing safety responsibility. Abstracts of 2500 cases throughout the United States during the period 1946 to 1966 have been surveyed (3), checking into 300 possibly related to the question at hand.

In addition, 5 cases were cited by a cooperating railroad as illustrative of the railroad liability question. One of these was found to be inapplicable to the question at hand, three were decided in favor of the railroad. In the other, a jury found for the plaintiff, although a



EXHIBIT 6

whistle had in fact been sounded. Of these, 21 appeared to be somewhat related and the case records were reviewed. Nothing was unearthed which would appear to deter Federal or local constraints on audible traincarried devices at protected crossings.

Several themes are woven through the opinions rendered in the many cases on record. These are certainly not uniformly respected, but they are sufficiently common as to be noticeable:

.. Safety provisions, including warnings, should be compensurate with the specifics of local conditions.

.. The railroad is expected to give "adequate and timely" warning of the approach of a train. The railroad's case is often intended to show that their warning could have been heard by an attentive motorist.

.. To be cause for placing liability, an omission on the part of the carrier generally must be shown to have contributed to the event in question.

.. Motorists are generally expected to be cautious at crossings, to the extent even of stopping or look "and listen".

.. Contributory negligence on the part of a motorist is generally taken into account.

The fact remains, however, that courts, especially juries, have extracted severe payments from railroads,

## EXHIBIT 6

seeming usually to give plaintiffs the benefit of all doubt. For this reason, railroad companies are understandably at pains to make any changes which could conceivably be construed as a reduction in safety precaution (or increase in hazard). Also, the employees charged with operating trains are usually subject to prosecution under criminal law if negligence and/or violation of a statute might be involved, and are thus inclined to err in the direction of sounding their warning devices, not to mention their sincere personal desire to avoid injury to even the negligent public, as well as themselves. (Collision between trains and large trucks, especially those carrying hazardous materials, are very dangerous to the occupants of the train.) A possible fine for violation of a noise ordinance is not nearly as imposing a threat as the liability, criminal action and conscience which accompany the threat of collision.

### B.6 Summary

One of the railroad noise sources which has been commented upon in the course of interstate rail carrier regulatory development by this Agency's Office of Noise Abatement and Control, is that of railroad train horns which are sounded routinely at grade crossings. It has

EXHIBIT 6

been suggested that such sounding be prohibited in cases where automatic, active protection is in operation at the crossing itself, particularly where this protection includes gates.

However, it remains that the routine sounding of horns might be contributing to the prevention of some accidents. Certainly, a small segment of the population is exposed to serious noise intrusion thereby and a reduction in their welfare, particularly at night. But it is the Agency's position at this time, that it would be imprudent to single out and restrict night time use of horns, since the crossing hazard with regard to driver behavior is, if anything, worse at night.

In view of the questionable value of train horns for warning highway drivers, particularly at locations having active crossing signals, it may be appropriate to encourage the abolition of routine use of horns at crossings so equipped, particularly but not necessarily only those with gates. The circumstances which determine hazard levels as well as noise intrusion vary widely and are peculiar to local circumstances. It is therefore concluded that regulation of railroad warning be best left to the option of local authorities at this time, recommending thereto that consideration be given to restrictions upon the routine sounding of train horns at protected crossings.

78 SEP 27 P 3: 10

CITY OF MIAMI SPRINGS



**FLORIDA HOUSE OF REPRESENTATIVES**

DONALDI. TUCKER, Speaker/JOHN L. RYALS, Speaker Pro Tempore  
COMMITTEE ON CRIMINAL JUSTICE

Ralph H. Haben, Jr.  
Clerk

Barry Richard  
Vice Clerk

September 19, 1978

The Honorable A. M. Fontana  
Representative, 107th District  
1003 East 1st Avenue  
Hialeah, Florida 33010

Dear Mr. Fontana:

In response to your telephone request of September 18, the following information is attached:

1. [EXHIBIT #1] - A copy of page 1514 (1969 Florida Statutes) reflecting the law at that time relating to locomotive whistles.

This section was repealed in 1971 as a result of recodification of Chapter 317 by the Committee on Transportation.

2. [EXHIBIT #2] - A copy of page 1815 (1977 Florida Statutes), Section 351.03, requiring railroad companies to post signboards and cause the bell on the engine to be rung before crossing any streets of a city or town and regulating their speed. This section obviously does not apply to unincorporated areas.
3. [EXHIBIT #3] - A copy of page 1726 (1977 Florida Statutes), Section 338.21(4), which authorizes the Department of Transportation to regulate speed limits of railroad traffic anywhere in the state (emphasis supplied).

There is apparently no authority in this section by which the Department of Transportation could require the sounding of a whistle or bell.

EXHIBIT 7

Hon. A. M. Fontana

September 19, 1975

We were unable to find out any reason for the repeal of 317.9928 (1969 Florida Statutes). I am still attempting to rundown Dan Turnbull and others in an effort to ascertain why it occurred.

Sincerely yours,

  
Karl R. Adams  
Staff Director

KKA/ord  
Attachments (3)

EDITOR'S NOTE

THE EXHIBITS THAT MR KARL R. ADAMS SENT TO MR FONTANA WERE FULL PAGE COPIES FROM THE FLORIDA STATUTES MENTIONED.

I HAVE EXTRACTED THE EXHIBIT ITEMS FOR CLEARER READING.

EXHIBIT 7

317.9928 Locomotive whistles.—Every railroad locomotive crossing or attempting to cross over any public highway in this state, which is within the purview of §317.454, shall be equipped with a suitable whistle in good working order, and said whistle shall be blown in

1514

such manner before said locomotive reaches the crossing, that any motor vehicle driver who has complied with §317.454 will timely be warned thereby of the approach of any such locomotive or train or cars.

History.—§1 ch. 63-178.  
Note.—Section renumbered from 317.5107 in conformance with original system of numbering.

1969-FLORIDA STATUTES

EXHIBIT # 1

351.03 To post signboard, ring bell, and exercise reasonable care at highway and street crossings.—Every railroad company shall exercise reasonable care for the safety of motorists whenever its track crosses a highway and shall put up large signboards at or near said crossing with the following inscription in large letters on both sides of the boards: LOOK OUT FOR THE CARS! In all incorporated cities and towns the said companies shall cause the bell on the engine to be rung before crossing any of the streets of a city or town, and their trains shall not go faster through any of the traveled streets of a city or town than at the rate of 12 miles per hour. This requirement for posting signs shall not apply to railroad crossings having signs as required by s. 316.171. All motorists approaching a railroad crossing shall exercise reasonable care for their own safety and that of their passengers and for the safety of railroad train crews operating trains across such crossings.

History.—s. 34, ch. 1987, 1974, HS 2264, GS 2461; ch. 7940, 1919, ROS 4829; CGL 8592, s. 1, ch. 75-338, s. 52, ch. 76-81.  
cf.—s. 331.90 Automatic signals

1977 FLORIDA STATUTES

EXHIBIT # 2

338.21 Elimination of railway-highway crossing hazards.—

(1) The Department of Transportation, in cooperation with the several railroad companies operating in the state, shall determine and adopt a program for the expenditure of moneys now available, and of the moneys to become available, for the construction cost of projects for the elimination of hazards of railway-highway crossings.

(2) Every railroad company maintaining a railway-highway crossing shall, upon reasonable demand and notice from the department, install, maintain, and operate at such crossing an automatic flashing light signal and ringing bell, the design of which shall be approved by the department, so that it will give to the users of such road reasonable warning of the approach of trains or cars on the tracks of said railroad company, the cost of such signals and the expense of installation to be paid from the moneys described in subsection (1).

(3) The department shall have regulatory authority over all public railroad crossings in the state, including the authority to issue a permit for the opening and closing of such crossings.

(4) The department is authorized to regulate the speed limits of railroad traffic on a municipal, county, regional, or statewide basis.

(5) Prior to the adoption of any rule or regulation opening or closing such crossings or of any rule or regulation fixing such speed limits, due notice shall be given and a public hearing shall be held by the secretary of the department or his duly authorized hearing officer, pursuant to the provisions of chapter

120, the Administrative Procedure Act.

(6) Review of such rules and regulations shall be by writ of certiorari as provided in chapter 120, the Administrative Procedure Act. Jurisdiction to enforce rules and regulations so adopted shall be as provided in s. 316.640, and any penalty for violation of a rule and regulation so adopted shall be imposed

upon the railroad company. Nothing herein shall prevent a city, county, or other public authority from passing an ordinance relating to the blocking of a crossing as provided in chapter 351.

History.—s. 131, ch. 2963, 1955; s. 1, ch. 63-44, s. 23, 35, ch. 69-106, s. 1, ch. 72-163, s. 49, ch. 76-31.

1977 FLORIDA STATUTES  
EXHIBIT # 3

United States  
Environmental Protection  
Agency

Office of  
Public Awareness (A-107)  
Washington DC 20460



# Environmental News

Sibbison (202) 755-0344

FOR RELEASE

TUESDAY, OCTOBER 10, 1978

REVISION TO INTERSTATE  
RAIL CARRIER NOISE  
STANDARD

The U.S. Environmental Protection Agency (EPA)

said today it will expand its regulations to control railroad noise early in 1979.

EPA has had a regulation in effect to limit noise from locomotives and railroad cars since 1976. However, the U.S. Court of Appeals for the District of Columbia Circuit in 1977 directed the Agency to broaden this regulation to cover all railroad equipment and facilities, railroad yards in particular.

The Court acted in response to a suit filed by the Association of American Railroads, asking that this be done.

"The Agency tried to limit the scope of its intervention in railroad industry matters," said Douglas M. Costle, EPA Administrator.

"However, now the Court has ordered EPA to control the noise from virtually all railroad equipment and facilities. We are in the paradoxical situation of being required to extend our regulatory authority over the railroad industry at the insistence of the industry itself."

To comply with the court order, EPA will add to its regulations, which now cover only locomotives and rail cars, additional requirements for the noise produced by railroad equipment and facilities. These regulations will require the industry to apply the "best technology available, taking into account the cost of compliance" as mandated by the Noise Control Act of 1972.

EXHIBIT 8

Currently, the responsibility to regulate noise from railroad yards, equipment and other facilities not explicitly regulated by EPA rests with State and local governments. Once EPA's new regulations become final, these governments will be constrained by the Noise Control Act to write regulations identical to the EPA regulations if they wish to take enforcement actions against railroad noise.

EPA has met with State and local officials to explain Federal pre-emption of local authority to adopt or enforce controls which are not identical to the Federal regulation and to discuss the consequences of this for State and local regulation of railroad noise.

In the 1977 decision, the Court allowed EPA only one year--until August 23, 1978--to issue final comprehensive regulations to control noise from railroad facilities and equipment. In August 1978, the Court granted a six-month extension requested by EPA and the Association of American Railroads.

This means the new regulations are scheduled to be proposed in November and made final in February 1979.

EPA is completing studies at this time which will form part of the basis for writing the regulations. Concurrently with the proposed regulation, the Agency will release the supporting data to the public.

Persons desiring to receive these data are requested to write: Railroad Noise, Environmental Protection Agency (ANR-490), Washington, D.C. 20460.

###



79R- 1111 JUL 1979 14

# RESOLUTION of the CITY OF MINNEAPOLIS

Referred to \_\_\_\_\_ Comm.

Date \_\_\_\_\_

By \_\_\_\_\_ Alderman Kaplan

Opposing the establishment of proposed regulations in the Environmental Protection Agency Rail Carrier Pocket Number ONAC 79-01 and concurrence in the objections raised by the Chief of the Minnesota State Noise Section.

WHEREAS, noise has a detrimental affect on property values; and

WHEREAS, local government would be required to enforce the proposed Environmental Protection Agency's Interstate Rail Carriers Noise Regulations; and

WHEREAS, the City of Minneapolis feels these proposed receiver standards, if adopted, would be impossible to enforce; and

WHEREAS, the City of Minneapolis would be pre-empted from enforcing standards which it believes are protective of public health and welfare;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF MINNEAPOLIS:

That the City of Minneapolis, by passage of this Resolution, goes on record as being strongly opposed to establishment of regulations as proposed in the Environmental Protection Agency Rail Carrier Pocket Number ONAC 79-01. The City of Minneapolis also concurs with the specific objections raised in the comment document as written by the Chief of the Minnesota State Noise Section.

RECORD OF COUNCIL VOTE													
Aldermen	Aye	Nay	N.V.	Abs.	Ovrd.	Sust.	Aldermen	Aye	Nay	N.V.	Abs.	Ovrd.	Sust.
Dziedziec	X						Green	X					
Corrao				X			Howard	X					
Dougherty	X						Ruckenstein	X					
Hilvillie	X						Schulstad	X					
Slater	X						Hoyt	X					
Trostel	X						Pres. DeHais	X					
Kaplan	X												

X INDICATES VOTE N.V. - Not Voting Abs. - Absent Ovrd. - Vote to Override Sust. - Vote to Sustain

PASSED JUN 29 1979 19

APPROVED  
NOT APPROVED  
VETOED

ATTEST \_\_\_\_\_ 428

*James M. DeHais*  
President of Council

Mayor

ERND APR-490  
 9 JUL 79 9:51



June 4, 1979

Henry E. Thomas, Director  
Standards and Regulations Division (ANR-490)  
Office of Noise Abatement and Control  
U. S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Thomas:

Your letter of April 13, 1979 requested that the Department of Environmental Protection, Montgomery County, Maryland comment on the Notice of Proposed Rule Making for "Noise Emission Standards for Transportation Equipment Interstate Rail Carriers" published in the Federal Register April 17, 1979. The package forwarded with your letter of April 13, 1979 was quite complete with (1) numerous briefing sheets, (2) the equivalent of an Environmental Impact Statement and (3) the necessary legal package which enabled me to make analysis of the issues involved.

The primary limitation in the proposed rule making is the pre-emption of local authority to establish sound pressure level constraints in excess of those limitations established by the Federal government. Although it is appreciated that there are real economic needs for the establishment of uniform railroad noise standards as indicated by the U.S. Court of Appeals (D. C. Circuit) in Case No. 76-1353 decided August 23, 1977, there are real citizen needs for the maintenance of a reasonably quiet environment, particularly in residential areas.

Present and future regulations should take into consideration the maintenance of such reasonable standards in rapidly developing suburban and urban areas. These proposed regulations fail to make provision for future noise reduction improvements in new rail facilities and expanded operations or to make allowance for the maintenance of such reasonable noise levels in residential areas.

Enclosed are specific comments on sections of the Draft proposed changed to 40 Code of Regulations 201, "Railroad Noise Emission Standards" in accordance with your request.

6 JUN 79 14:35 It is quite clear that the United States Court of Appeals for the District of Columbia Circuit, Case No. 76-1353, decision of August 23, 1977, clearly preempts from local control for noise the equipment and facilities of the railroads. However, there should be a strengthening of relationships

6110 Executive Boulevard, Rockville, Maryland 20852

Department of Environmental Protection, Division of Pollution Control

H. E. Thomas  
June 4, 1979


among the States and local governments, the Environmental Protection Agency, the Department of Transportation and interested members of the United States Congress directed at common goals. These goals should: (1) foster the research and development of new equipment and facilities within the railroad community to reduce noise levels and require the reduction of such equipment and facility noises, (2) provide for development of new railroad equipment and facilities in such a manner that the addition of such new equipment and facilities will minimize the acoustical impact on the community and permit local zoning boards maximum flexibility in dealing with future land use planning, and (3) accelerate the rate of making improvements to rolling stock such as improved mufflers on Diesel-electric engines, the installation of noise baffles on tracks in high-density residential areas, and the more extensive use of welding and grinding of track sections in high-density residential areas to reduce the noise created by through trains.

Some effort should be expended to coordinate State, local, and the Environmental Protection Agency's efforts through State and regional organizations towards control of noise created by equipment which is not now controlled by the Federal government. Admittedly, this area of concern has largely been constricted by the proposed regulations, there is still some areas where effective action could be taken by local governments in concert.

The area of greatest need on the part of local government will be in developing laws compatible with Federal laws and regulations and making determinations concerning the level of compliance of railroad equipment and facilities with the Federal regulations. Limited resources have been allocated to do this monitoring work in the past. It appears that both State and local activities will continue to be constrained by limited budgets, trained personnel and equipment. It is doubtful that State or local effort will be expended to accomplish this noise monitoring work.

I thank you for your consideration in forwarding the draft changes to the "Railroad Noise Emission Standards" and requesting my comments.

Sincerely,

  
Eric Mendelsohn, Chief  
Technical Operations Section

ESM:REL:sm

Enclosure: Montgomery County, Maryland Comments Concerning Proposed Changes to 40 Code of Federal Regulations 201, "Railroad Noise Emission Standards"

cc: AD-11-3-2 Noise Control, Federal Regulations, Proposed

Montgomery County, Maryland Comments Concerning  
Proposed Changes to 40 Code of Federal Regulations 201,  
"Railroad Noise Emission Standards"

June 4, 1979

Subpart A-General Provisions

Sec. 201.1 Definitions

1. Definition (oo) states that "Residential Dwelling Measurement Surface" means a connected set of surfaces that are parallel to and are spaced 2± 0.5 meters, outside the walls of a residential dwelling" it is considered that the householder should have the privilege of enjoying the use of his real estate to the limits of his property line and this definition prejudices that right. The Montgomery County Code, 1972, Chapter 31B, as amended recognizes this right and establishes the relative measurement surface at the property line instead of at some reference plane with respect to the residential dwelling. It is considered that other local jurisdictions would take the same position. For these reasons it is recommended that Definition (oo) be changed to read:

(oo) "Residential Dwelling Measurement Surface" means a connected set of surfaces that are parallel to the real estate property line and are located at that property line provided that there is a residential dwelling on the premises".

Subpart B-Interstate Rail Carrier Operations.

Sec. 201.10 Applicability

Section (b) reads as follows:

"(b) Provisions are made for noise radiated across the railroad facility boundary to receiving property. These provisions apply to the total noise from all equipment/facility operations within the railroad facility, except that part of the total noise resulting from the operation of through trains that move continuously through the facility. The provisions apply to all receiving property except undeveloped property. When undeveloped property is developed for human use, the initial standards shall become effective three years after the change in land use and the final standards effective 6 years after the change."

In a county, such as Montgomery County, where the rate of development rapidly follows rezoning and subdivision actions, a period of time of three years for the initial standards to become effective and a period of six years for the final standards to become effective after a change in land use would subject Montgomery County citizens with unnecessarily higher noise levels. Because the railroad company will be well aware of proposed zoning changes and has the opportunity to participate in public hearings concerning such zoning and land use changes, it is only reasonable

that the railroad company commence action for reducing noise levels adjacent to the properties of such rezoned land as soon as the decision has been reached by the Zoning Board. Therefore, it is recommended that the last sentence of Section (b) be changed to read as follows:

"When undeveloped property is rezoned for residential use by the duly constituted authority for taking action to rezone such land, then the initial standards shall become effective three years after such rezoning action and the final standards shall be effective six years after the legal action to rezone such land for residential use."

Sec. 201.14 Standard for Mechanical Refrigerator Cars Under Stationary Conditions

This section establishes an a weighted sound level of 78 dB at 7 meters from the centerline of the refrigerator car track at any throttle condition. In order for the Montgomery County residential property line standard of 55 dBA to be compatible with this requirement, the railroad has either the option of purchasing the land up to approximately 100 meters on either side of the track or constructing a solid earthen barrier of sufficient height to preclude noise levels from reaching the limit of 55 dBA permitted by Montgomery County law. For the railroad to construct a refrigerator-car siding without providing for the proper attenuation of diesel refrigerator noise would be an invasion of the privacy of existing nearby residents. Since Montgomery County is an expanding residential and commercial community adjacent to Washington, D.C., all prospects indicate a real potential for the growth of additional refrigerator car sidings in the future. The railroad companies should provide suitable facilities or procure land to assure the impacted citizen the right, which is accorded to all other County citizens, of enjoying noise levels which do not exceed 55 dBA during the night. It is therefore recommended that the following sentence be added to paragraph 201.14 as follows:

"The construction of a railroad siding for the accommodation of refrigerator cars shall be accomplished in such a manner that the existing property-line sound pressure level limitations for the adjacent properties established by legally constituted authority will not be exceeded."

4. Although there is no immediate prospect for the establishment of a hump yard or other Yard Facility in Montgomery County at present, the establishment of such a facility in Montgomery County would greatly restrict the amount of land which could be zoned residential for two reasons: (1) the current limitation of 55 dB(a) (property line measurement) for residential property in Montgomery County and (2) The HUD restriction on approving loans for property where the  $L_{dn}(24)$  exceeds 65 dBA. Any action by a railroad company to install such a facility would restrict the Zoning Board and the Maryland-National Capital Park and Planning Commission in flexibility in planning for residential development. This action should be considered an infringement on the local power to conduct

land planning and take rezoning actions. Some flexibility should be written into the regulations to require acoustical engineering solutions to the reduction of noise when installing humps and other yard facilities.

5. The establishment of acoustical standards for retarders (active type) and car coupling noise appears to neglect the possibility of reducing such noises as the result of innovative development. There appears no compulsory requirement that coupling be conducted at velocities less than 4 miles per hour if new type couplings are developed. In the same manner, there should be a program for the development of lower noise retarders which would further reduce the noise of humping and other yard operations. This aspect of the new regulations should be evaluated prior to implementation of the draft regulations.

#### Section 201.17 Standards for Receiving Properties

6. Section (b) establishes the Night L in dB at 74 dB for all facilities and equipment and 69 dB for Hump Yard Facilities and Equipment, only. These very high night-time allowable sound pressure levels will have a significant impact on the amount of rest residents in the nearby residential areas could receive. These high levels of noise disturbance, with no alternative to appeal to the courts, leaves local communities with no other alternatives other than to broaden the area of commercial and industrial zoned land adjacent to railroad facilities or to impose local laws and regulations requiring increased costs for the construction of the residential shells of buildings with high sound transmission loss ratings. This action forces local government to increase the costs of construction of such residential units and forces the home-buying public to pay for these extra costs. This aspect was not considered in any of the economic analyses included in the "regulation" package.

REL:c1h



National  
League  
of  
Cities

1620 Eye Street, N.W.  
Washington, D. C.  
20006  
(202) 293-7310  
Cable: NLCITIES

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Tom Mouty, Mayor, Columbus, Ohio  
Executive Director  
Audi Heas

July 2, 1979

Mr. Charles Elkins, Deputy Assistant Administrator  
Office of Noise Abatement and Control (AW-471)  
U.S. Environmental Protection Agency  
Washington, DC 20460

Ref: Rail Carrier Docket (ONAC 79-01)

Dear Mr. Elkins:

The National League of Cities (NLC) finds the Environmental Protection Agency's (EPA) proposed noise emission standards for railroad facilities and equipment wholly inadequate from both technical and policy perspectives. We object to the concept of absolute inflexible federal regulation of fixed facilities within a local jurisdiction and find such federal policy without precedent. Within the legislative parameters to control railyard noise, EPA has opted for a very unreasonable course of action, unreasonable for cities and unreasonable for the rail industry.

Specifically, the regulation fails to conform with the following articulated federal policies:

- The President's Urban Policy
- EPA's National Strategy for Noise Control
- Protection of public health and welfare (Section 2(a), Noise Control Act of 1972, as amended)

Additionally the regulation as proposed fails to address the following important local concerns:

- Reasonable balance between community and industry concerns
- Recognition of special local conditions necessitating special control measures.
- The unique, localized nature of noise pollution

President Carter, in announcing the Administration's commitment to urban America called upon each department and agency to recognize local initiative

PAST PRESIDENTS: Tom Bradley, Mayor, Los Angeles, California • Henry W. Maier, Mayor, Milwaukee, Wisconsin • DIRECTORS: J. Michael Amyx, Executive Director, Kentucky Municipal League • Patricia J. Beck, Council President, Albuquerque, New Mexico • Randall F. Bowen, Mayor, Lafayette, Louisiana • Richard Brown, Executive Director, Texas Municipal League • Kenneth D. Bueche, Executive Director, Colorado Municipal League • William E. Byrd, Council Member, Duluth, Minnesota • Nicholas R. Carbone, Deputy Mayor, Hartford, Connecticut • Richard B. Carver, Mayor, Peoria, Illinois • Henry D. Clarendon, Council Member, San Antonio, Texas • Arrington Dixon, Council Chairman, Washington, D.C. • Patrick A. Dunn, Executive Director, Massachusetts Municipal Association • Margaret T. Hines, Mayor, Phoenix, Arizona • Ernie Henderson, Council President, Detroit, Michigan • Charles P. Hens, Mayor, Kettering, Ohio • Raymond Jackson, Mayor, Annapolis, Georgia • Carl T. Langford, Mayor, Orlando, Florida • Patricia Lattling, Mayor, Oklahoma City, Oklahoma • John McCona, Mayor, Houston, Texas • John M. Patsalides, Director, Michigan Municipal League • Cathy Reynolds, Council Member, Denver, Colorado • Joseph P. Riley, Jr., Mayor, Charleston, South Carolina • Richard M. Scott, Mayor, Lancaster, Pennsylvania • Kenneth S. Shinn, Executive Director, Massachusetts League of Cities and Towns • Kent B. Slaughter, Executive Director, Association of Washington Cities • Victor F. Stimpfen, Council Member, Kansas City, Missouri • Dorothy Van Horn, Council Member, Jefferson, Iowa • David J. Vane, Mayor, Birmingham, Alabama • Joel Waska, Council Member, Los Angeles, California • Hans Wilmar, Mayor, Hayward, California • Ted Wilson, Mayor, Salt Lake City, Utah

and leadership in all federal programs and regulations which impact local government. EPA's proposed railyard regulation does not reflect this directive, since it eliminates all local initiatives to reduce railyard facility noise. It provides for a single-number uniform national standard which fails to recognize the complexity of combating individual fixed facility noise levels. (NLC, however, does recommend that all source standards be retained for "rolling stock," i.e. refrigerator cars, locomotives, etc.)

The proposed railyard regulation establishes a standard which conflicts with articulated EPA noise control policy in two ways:

- (1) It fails to "reduce environmental noise exposure to Ldn 65 dB by vigorous regulatory and planning actions" (Toward a National Strategy for Noise Control, Environmental Protection Agency, April 1977)
- (2) It fails to "strive for an eventual reduction of noise levels to an Ldn of 55dB" (Ibid)

Furthermore, the enforcement measures set forth are unworkable; they rely on measurements of 1 hour or more. This approach is impossible from a local cost and a local enforcement standpoint.

NLC views this regulation as excluding local participation even more than federal airport noise policies. At the very least, local governments can be consulted in preparing an airport noise abatement plan, but not so in the federal regulation regarding railyard facilities. Since EPA strongly advocates such cooperative airport noise abatement planning, NLC finds such a dramatic reversal of previously articulated policy alarming.

We urge EPA to eliminate the use of property-line standards as the basis for regulating railroad noise emissions. EPA is ignoring other possibilities. In the case of Association of American Railroads et. al. vs. Costle the Court stated, "if the federal level issues all of its regulations concerning 'equipment and facilities' at one time, the localities can plan their own activities in the area of noise regulation with increased certainty and confidence that their efforts will not go for naught." Clearly this statement embraces the idea that cities can play a role, within federal parameters, in controlling railyard noise. The property-line standard is contrary to the Court's acceptance of local initiatives within federal preemptive guidelines. This concept together with the lack of a definition of "noise emission standards" in Section 17(a) leaves EPA considerable regulatory latitude, more than it has opted to exercise.

Within the context of Section 17 of the Noise Control Act of 1972, NLC believes that the intent of Congress was to provide a uniform set of regulations which do not burden the railroad industry. NLC supports regulatory action which would accommodate the rail industry concerns but which will also provide a high degree of local planning and initiative.



## NLC PROPOSAL

In lieu of the proposed property line standards, NLC supports a package of uniform local options to control railyard noise which could be activated by any community seeking relief from rail noise; if the local government sees no necessity for railyard noise reduction, then none would be required. The benefit of such an approach, as opposed to EPA's proposal, is that it does not mandate the rail industry to reduce noise at every rail facility in the country whether or not such reduction is necessary to protect public health. Under our proposal, a community, experiencing railyard noise problems, would have several federally prescribed options which it could consider in developing and implementing an abatement plan. Abatement requirements would become mandatory upon a local railyard operator only if a city, with approval of EPA, decided that they were necessary. In effect, the city and the railroad would consult with one another and develop an abatement plan based on prescribed federal options such as modified curfews, barriers, speed limits, operations, etc. Only action by municipal government would result in abatement requirements being placed upon the local railyard operator. An option package would allow the rail industry to target its noise abatement resources on "problem" yards rather than scattering investments at every yard in the country. In return for such targeting, lower noise levels than those proposed by the regulation could and should be achieved in heavily noise impacted urban areas. NLC anticipates that a regulatory approach of this nature would cost the rail industry considerably less money and allow it to invest its noise abatement resources where they would provide the most noise relief to citizens. Such a city-industry plan of action is currently being implemented by the city of Dover, Delaware and Con Rail in solving an acute railyard noise problem in that city. NLC supports such a balance of concerns in controlling yard noise and urges EPA to issue a standard which sets forth equitable local options for control within certain uniform parameters.

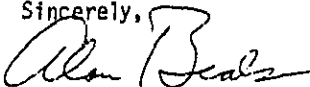
We feel that such an approach is both reasonable to cities and the rail industry and will save significant time and money. NLC believes that such city-industry cooperation must be encouraged by regulations, not eliminated. This approach is not unlike that currently available to cities seeking relief from noise generated by an airport, a fixed facility also. Furthermore such an "optional" regulatory proposal conforms with current moves to deregulate the rail industry.

While we recognize the legal restraints which have been imposed on EPA to issue regulations expeditiously under the federal noise law, NLC feels that because of the controversy about these regulations an extension of the promulgation deadline would allow adequate time to develop a meaningful and balanced noise abatement strategy. Extensive public hearings should be conducted which would lead to a more reasonable regulation rather than one which removes noise control from the hands of local government.

We recognize that the existing law preempts state and local governments from establishing noise emission levels in conflict with federal limits. But we do not believe that Section 17 precludes EPA from establishing several uniform options which local governments can choose among subject to EPA approval. EPA's approval of a local government's abatement plan would be contingent on protecting public health and welfare and on "taking into account the cost of compliance" by railroads.

The National League of Cities appreciates this opportunity to comment on the proposed regulation and would be happy to meet with representatives of the rail industry and EPA to develop a fair solution to the rail noise problem within the existing parameters of The Noise Control Act of 1972.

Sincerely,



Alan Beals  
Executive Director

Enclosure

cc: Senator John C. Culver  
Senator William V. Roth  
Representative James Florio  
Jack Watson  
Stuart Eizenstat

# Newark

Kenneth A. Gibson  
Mayor

Police Department

22 Franklin Street  
Newark, New Jersey 07102

OUR FILE: L.A. 79-24  
REL 4

Hubert Williams  
Director

May 11, 1979

Rail Carrier Docket ONAC 79-01  
Office of Noise Abatement  
and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D. C. 20460

Gentlemen:

Thank you for informing me of the proposed regulations governing railroad noise and the possible implications for this Department. Actually, though, I fail to perceive any major impact on the operation of this Department, since the enforcement of the proposed regulations will be essentially left to the citizenry and the Administrator of the Environmental Protection Agency.

There is much to be said, however, regarding the government's role in this endeavor to reduce noise pollution, which is an increasing menace to the health and welfare of our society. Several factors favor the use of a federal rather than a local attack. In addition to the conflicting standards and the problems they cause mentioned by the Association of American Railroads, state and local governments are loath to enforce anti-noise ordinances or pursue offenders.

Firstly, the offenders usually contribute substantially to the community's economy. Secondly, vigorous enforcement requires large expenditures of much needed funds. Moreover, national standards can provide an incentive for technological change, and it is in the best position to conduct research on the medical and environmental effects of noise and enforce the established standards.

SEARCHED ANR-490

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Rail Carrier Docket ONAC 79-01  
May 11, 1979

Since much of the enforcement will come by virtue of citizen suits or complaints, it is strongly suggested that the regulations be highly publicized to enlist the aid and support of the citizenry. Without their support, any talk of reducing noise only adds to the decibel level.

Very truly yours,

  
Robert Williams  
Police Director

HW/dmr

CITY OF  
OAK RIDGE



615 / 483-5671 • POST OFFICE BOX 1 • OAK RIDGE, TENNESSEE 37830

July 2, 1979


Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

Gentlemen:

The City of Oak Ridge submits the attached comments in support of an amendment which would allow the exemption of cities from EPA's proposed noise regulation for railroad yards.

We feel that local regulations, where they are reasonable and below the regulations proposed at the national level, should be given consideration. EPA's studies have indicated that noise levels above 55 decibels may be both physiologically and psychologically harmful. We feel that EPA's proposed 70-decibel limit for rail yards, preempting any local control, is both unreasonable and a preemption of the federal governmental system.

Sincerely yours,

  
M. Lyle Lacy, III  
City Manager

Attachment

79-01-156

REC ANR-490

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City of Oak Ridge, Tennessee

COMMENTS

on the

Environmental Protection Agency's  
Proposed Noise Regulation for Railroad Yards

The current Oak Ridge Zoning Ordinance, originally passed June 17, 1959, pursuant to State of Tennessee law and as subsequently amended, establishes maximum sound levels in decibels at the following levels:

Neighborhood Business Districts	55 at common lot line
Industrial Districts	65 at common lot line
All Residential Districts	50 at common lot line
Neighborhood Business Districts	55 at common lot line
General Business Districts and Secondary Streets	60 at common lot line or street lot line
Major Streets	75 at street lot line

According to EPA's booklet, "Model Noise Control Ordinance," November 1975, Figure 1, some 17 cities out of 117 surveyed (about 14%) are known to have noise standards for residential districts equal or quieter than Oak Ridge in the daytime. About 45 cities (38%) require equal or greater quiet at night. About 112 cities (per Figure 1) or 95% have adopted noise standards below the 70-decibel 24-hour average standard proposed by EPA next to rail yards.

Oak Ridge includes a small rail yard adjacent on one side to lands already developed and under development for residences. Distances from the rail yard to the nearest homes are 75 to 90 meters, up hill. Distances to the "receiving property" boundary are 18 to 20 meters. To date, operation

of the yard has caused relatively few complaints. Under the Oak Ridge ordinance this yard, zoned Industrial, could emit 65 db at the nearest property line of abutting industrial lots, but only 50 db measured at the residential lot boundary.

We object to the proposed rules because they remove any recourse for the affected citizens through their local government. It is technically possible for the awakened or disturbed residents of any community to call Washington or Bethesda or Fairfax County, Virginia, at the relevant hour to inform a federal official that an EPA noise standard violation is occurring. We feel this approach is unsatisfactory for most parties concerned.

We feel that local standards should be available as one way for citizens to obtain relief from local environmental impacts, allowing appropriate regulation of noise for health, safety and the general welfare. Local conditions should be taken into account.

Local regulations proliferate when environmental degradation takes place. EPA should consider the difficulty to local governments of enforcing reasonable standards throughout the community in the face of major, obvious, objectionable activities operating under a federal exemption. On this basis, we support the amendment of Senator William Ross to the Noise Control Act of 1972.

July 1979

ENVIRONMENTAL IMPROVEMENT AGENCY



County of San Bernardino

ENVIRONMENTAL HEALTH SERVICES DEPARTMENT  
1111 East Mill Street, Building 1 • San Bernardino, CA 92415 • (714) 383-1617

Richard L. Roberts, R.S., M.P.H.  
Director  
Environmental Health Services

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Montclair	Upland

May 30, 1979

Henry E. Thomas, Director  
Standards and Regulations Division  
US Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Thomas:

The enclosed letters which were obtained at the recent meeting have been duplicated and are being returned to you. Pursuant to our conversation, a copy of a news article taken from the NACo County News is included.

Also enclosed is a draft resolution for your review. If you have any suggestions for improvement or corrections regarding this resolution, please forward them as soon as possible.

*Dik*

RICHARD L. ROBERTS, R.S., MPH  
Director

RLR:dr  
enc.

79-01-073

LAVEL GOODWIN  
County Administrative Officer  
ROBERT D. HIGNEY, Administrator  
Environmental Improvement Agency

JAMES M. LAY  
CALIFORNIA

91027 APR-190

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PHOTO COPY

JOHN DUNN  
County Director  
San Bernardino

DENNIS HARRIS  
County Director  
San Bernardino

JOHN DUNN  
County Director  
San Bernardino





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
AIR AND WASTE MANAGEMENT

Mr. Ronald L. Smith  
Planning Director  
City of San Bernardino  
300 North "D" Street  
San Bernardino, CA 92418

Dear Mr. Smith:

This is in response to your letter of February 9, 1979, to the Administrator of the United States Environmental Protection Agency. You have requested that the Administrator provide authorization to establish noise control measures on a newly contemplated facility being undertaken by the Southern Pacific Transportation Company, such authorization being requested under Section 17(c)(2) of the Noise Control Act of 1972.

We have earlier published a notice of proposed rulemaking establishing the procedures which the Agency would follow in reviewing petitions under Section 17(c)(2) of the Act. We have not, however, issued final rules on those procedures. As you may be aware, the Association of American Railroads sued the EPA to force the issuance of much more comprehensive Federal regulations for rail carrier equipment and facilities than we had earlier established. Their litigation was successful and in August 1977, the U.S. Court of Appeals for the District of Columbia Circuit ordered the Agency to issue such rules. I enclose a copy here of the Court's decision.

Because there appears to be a relationship between the Court Order and our earlier proposed rules for dealing with actions under Section 17(c)(2), we do not feel that we are in a position to act under Section 17(c)(2) until these more extensive EPA rules governing interstate rail carrier equipment and facilities are finalized.

We will stay in close contact with you on this matter and will provide you with copies of all of the documents associated with our impending issuance of a Notice of Proposed Rulemaking, pursuant to the Court Order.

Sincerely yours,

Charles L. Elkins  
Deputy Assistant Administrator  
for Noise Control Programs

Enclosure

**DO NOT WRITE ON THIS COVER AS IT IS INTENDED FOR RE-USE  
RETURN IT WITH THE FILE COPIES TO ORIGINATING OFFICE**



CITY OF SAN BERNARDINO 300 NORTH "D" STREET, SAN BERNARDINO, CALIFORNIA 92418

W. R. "BOB" HOLCOMB  
Mayor

Members of the Common Council

Robert A. Costaneda ..... First Ward  
Edward S. Wheeler, Jr. .... Second Ward  
William Katons ..... Third Ward  
Richard F. Gervig ..... Fourth Ward  
Lionel E. Hudson ..... Fifth Ward  
John D. Hobbs ..... Sixth Ward  
Russell E. Lackner ..... Seventh Ward

February 9, 1979

Administrator  
Environmental Protection Agency  
Washington, D.C. 20460

Re: Railroad Noise

Dear Sir:

Pursuant to Section 17(c) (2) of the Noise Control Act of 1972, 42 U.S. Code 4916; the City of San Bernardino California requests that authorization be provided to establish noise control measures on a newly contemplated facility being undertaken by the So. Pacific Transportation Company in an R-1 Single Family Residential zoning district, north and south of Mill Street in the western portion of the City of San Bernardino.

The issue confronting the City of San Bernardino is a very complex and confusing one. For the Citizens involved and for those who reside near where the So. Pacific Transportation Company is constructing their siding, the issue is environmentally important. The residents are involved because of concern for their health, safety, vis-a-vis exposure to uncomfortably high noise levels and air pollutants.

The exact problem experienced has to do with rail line extensions and the construction of sidings along the main So. Pacific Line extending from the yards at Bloomington, California towards Palmdale, California. In order to help the trains overcome the grade problems, So. Pacific stations idling engines along sidings, from which they pull onto the main track to meet and boost the trains over steep terrain.

In so determining the placement of and constructing the sidings, the So. Pacific Transportation Company has not considered the General Plan of the City of San Bernardino; local zoning; land use



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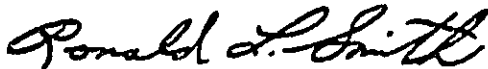
or environmental factors. No concern or evaluation has been undertaken towards residents living near the idling train sites; no studies have been conducted to determine the degree of noise exposure that the residents are subjected to; no efforts towards minimizing the problem are being contemplated; and all of this because the So. Pacific Transportation Company contends that there is no environmental nor legal obligation for them to do so.

The City of San Bernardino's desire is not to require the railroad to achieve noise levels less than that specified by Environmental Protection Agency. However, the City contends that should a fixed railroad operation (i.e; siding) be constructed or extended in an area that is zoned and utilized for residential purposes, that the operation should study and address the need for environmental review and mitigation measures to reduce the impacts of noise and air pollution.

The City of San Bernardino respectfully requests that the Environmental Protection Agency grant to the City the ability to require an environmental impact statement report prepared in compliance with the national Environmental Protection Act addressing the impacts the activities have upon the residents of the subject area and, further, that the So. Pacific Transportation Company be required necessary buffers to reduce the impacts upon the residents to an acceptable level.

Your early response in this matter is greatly appreciated.

Very truly yours,



Ronald L. Smith  
Planning Director

# EPA Issues Rail Yard Noise Standards

Federal government proposals for regulating noise around railroad yards would preempt local regulations and could well shift responsibility for enforcement onto local governments.

In addition, these noise control regulations, recently proposed by the Environmental Protection Agency, would solve the problem for only a portion of the millions of persons who live around railroad yards.

The Noise Control Act of 1972 authorizes EPA to promulgate standards for a variety of noise generating situations. In the case of railroad yards, the Federal Railroad Administration is charged with enforcement. However, sources have indicated that the agency lacks the resources for adequately enforcing the proposed noise standards, and monitoring could become the responsibility of local governments.

Originally EPA had intended to allow local governments to regulate noise around railroad yards, but was ordered by the U.S. Court of Appeals to extend the noise regulations to fixed facilities. (The Association of American Railroads brought suit to require a federal standard which

would preempt local control.)

In addition to existing regulations which limit the noise from locomotives and rail cars, the proposed EPA regulations would apply to rail yards where rail cars are formed into trains, usually causing high noise levels. Because the rail yards are often found in urban areas, the noise affects a large number of people.

Currently more than four million persons are exposed to rail yard noise which exceeds 55 decibels, the level EPA has identified as the maximum allowable to protect public health. The proposed standard of 70 decibels would provide relief for about 830,000 persons who are now exposed to noise levels over the standard. However, another three million persons would have to live with noise exceeding the health standard of 55 decibels.

## PROPOSED STANDARDS

EPA proposes to limit the noise from rail yards in two ways: source standards for the noisiest equipment and procedures; and property line standards which set a maximum sound level at the nearest developed property.

The property line standard sets a limit on the average total level of noise reaching a developed property over 24 hours. Because the standard applies to all rail yards in the nation, EPA chose to use a "lowest common denominator" approach. EPA relied heavily on economic impact analysis in arriving at the standard. A stricter standard would, in EPA's estimation, require rail yards to cease night-time operations. To meet the standard, the railroad companies may use any combination of options to ensure the standard is not exceeded.

The source standards would require mufflers for the engines which power refrigerator cars, shields for the retainers which slow coasting cars during train formation in "hump" rail yards, and adherence to a four m.p.h. speed limit during coupling operations. The source standards are needed in addition to property line standards, because the identified sources emit very loud noise of short duration so the average level may not indicate a noise problem.

Both the property line and source standards would go into effect in 1982. A more restrictive standard would be required in 1985 for "hump" yards where the rail cars are as-

sembled by gravity rather than by locomotives as in flat yards. Hump yards comprise three percent of all rail yards.

## EXCEPTIONS

The law allows waivers of federal preemption but EPA has not promulgated regulations on this part of the law so the rules and procedures are not defined. However, the law demands that any waivers not conflict with federal standards. Another possibility is for local government to petition EPA for a new standard as allowed by the Quiet Communities Act of 1978.

Working under the court-imposed deadline, EPA has limited the public review period to 45 days, ending June 1. The proposed regulations were published in the *Federal Register* April 17. For further information contact William Roper at EPA, 703/557-7747.

NACo will be preparing its response in the next few weeks and needs specific suggestions on how the regulations might be improved. Send your comments to Alan Magan at NACo, 1735 New York Ave., N.W., Washington, D.C. 20006.

Country News 5/14/79

# INTER-OFFICE MEMO

DATE May 30, 1979

FROM RICHARD L. ROBERTS, R.S. *DR* MPH, Director PHONE 2743  
Department of Environmental Health Services



TO KENNETH TOPPING, Director, Planning Department cc: Board of Supervisors (Info only)  
CLARK ALSOP, County Counsel's Office CAO  
Robert B. Rigney

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SUBJECT PROPOSED EPA RAILROAD NOISE REGULATIONS

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On May 23, I attended an informal meeting called by representatives of the U.S. EPA and California principals to discuss proposed revised railroad noise regulations. Representatives of EPA, California Office of Noise Control, California Department of Transportation, California Public Utilities Commission and California Attorney General's office attended. Henry Thomas, Director of Standards and Regulations Division for EPA led the discussion that brought them to the point of proposing revised noise regulations for adoption.

In summary, the regulations were ordered by the U.S. Court of Appeals in August, 1977, as a result of a suit brought by the Association of American Railroads on behalf of the industry; that the regulations pre-empt all state and local standards except noise emitted by steam locomotives, horns, bells and whistles. The deadline for adoption of the regulations is July, 1979, however EPA feels that additional time may be granted by the courts in order to have full public review and comment. The regulations are proposed to take effect in 1982 and would negate any local standards or agreements at the time of adoption by EPA.

Contrary to the court edict, it has been the philosophy of EPA that with the adoption of the Noise Control Act the congressional intent was to limit state and local pre-emption, thus allow local government to exercise some control over railroad yards, equipment and operation. This philosophy was overridden by the U.S. courts.

EPA does not feel that any substantial public relief will come from the adoption of these revised proposed regulations. They also feel that a means must be made available to establish a forum for public review and comment in order to establish the need for statutory amendments to allow state and local rule. The proposed revised standards take into consideration the "common denominator" based upon national findings. This means that quiet railroad operations might legally become noisier.

Attached is a backgrounder on these proposed revised regulations. The Federal Register and the EPA full background document are quite voluminous and may be checked out through Tia Michener, Ext. 3853.

Also attached is a proposed draft resolution that might be adopted by the San Bernardino County Board of Supervisors and a news article from County News (5/14/79) summarizing the proposed regulations and requesting specific suggestions on what NACo might recommend.

I suggest that appropriate staff familiarize themselves by reviewing the proposed revised regulations after which the EIA Noise Control Committee should meet and establish what further course, if any, the county should take regarding the matter.

The meeting has been scheduled to be held on Wednesday, June 13 at 10:00 a.m. in DEHS Conference Room #2.

RLR:dr  
Attachments

DRAFT: 5/24/79

A RESOLUTION ADOPTED BY THE SAN BERNARDINO COUNTY, CALIFORNIA, BOARD OF SUPERVISORS PROTESTING THE ADOPTION OF E.P.A. REVISED NOISE REGULATIONS PRE-EMPTING THE AUTHORITY OF LOCAL GOVERNMENT TO INDEPENDENTLY SOLVE COMMUNITY NOISE PROBLEMS ASSOCIATED WITH RAILROAD OPERATIONS AND CALLING FOR PUBLIC DEBATE ON THE ISSUES.

.... WHEREAS, the E.P.A. has been given U.S. Court of Appeals order to adopt revised noise regulations governing all railroad equipment and facilities; and,

.... WHEREAS, in accordance with the provisions of the U.S. Noise Control Act (PL 92-574), Section 17, these regulations completely pre-empt the authority of local government; and,

.... WHEREAS, the standards will not only legalize existing levels of railroad operation noise but will also in the case of railyards, allow significant increases in noise emissions at yards which are currently "quiet"; and,

.... WHEREAS, although it is recognized that certain uniformity of standards must prevail in matters of inter-state commerce, to totally pre-empt local authority in its traditional responsibility to protect public health and welfare is not in the best interest of the local citizenry; and,

.... WHEREAS, with the passage of the Noise Control Act, congress intended that pre-emption of local authority be limited and that federal control should center on those aspects of the industry truly in need of uniform treatment of a national standard; and,

.... THEREFORE BE IT RESOLVED, that the San Bernardino County, California, Board of Supervisors encourages the Executive and Legislative branches of the U.S. Government to reconsider the immediate adoption of the proposed revised noise regulations and to delay said adoption until such time that sufficient public congressional hearings are held to clearly identify the impact upon local government as it affects their responsibilities to their constituents; and,

.... BE IT FURTHER RESOLVED, that short of conducting public hearings on the matter that arrangements be made in conjunction with the Federal Office of Mediation and Conciliation Service to provide for debate and compromise between the railroad industry and state and local government on the matter of pre-emption.

June 7, 1979

Board of Trustees,  
Queen Anne Community Council  
c/O 466 Smith Street  
Seattle, Washington 98109

Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D. C. 20460

RE: Rail Carrier Docket No. CNAC 79-01

To Whom It May Concern:

We are informed that your office has promulgated proposed legislation designed to establish uniform standards for control of noise from rail facilities and equipment such as humpyards, refrigerator cars and rail car coupling operations. While we understand that these proposed regulations may offer some protection for human sensibilities and health in many areas not now so protected, we are concerned that the regulations may not be stringent enough in all situations and localities.

The Queen Anne Community and our residential neighbors across the Interbay Corridor in Magnolia have long been subjected to rail noise emanating from Burlington Northern main line operations in the Interbay right of way, switching and yarding in the Balmer yard (a "hump" classification yard) and coupling and switching operations associated with the Port of Seattle's Terminal 90-91 and Pier 86 Grain Terminal facilities. We express our concern here that regulations designed to uniformly govern rail noise nationwide in a variety of environments will not adequately address the problems of residential communities in close proximity to rail facilities such as exist in the Queen Anne/Magnolia/Interbay area.

We urge you consider devising more stringent standards and realistic monitoring and enforcement criteria to protect communities such as Queen Anne and Magnolia whom we feel are already overburdened with rail noise intrusions; or permit local governments to establish and enforce rail noise performance standards that are sensitive to community aspirations for an environment suitable for residential living.

Yours truly,

  
Sheryn Haya, Chairperson  
Queen Anne Community Council

cc: Seattle King County Health Department  
Port of Seattle  
Senator Warren G. Magnuson  
Senator Henry M. Jackson  
Congressman Joel Pritchard  
Councilman George Benson  
Magnolia Community Club  
Queen Anne News

RECD ANR-490

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79-01-120



Seattle-King County / **DEPARTMENT OF PUBLIC HEALTH**  
 Public Safety Building Seattle, Washington 98104 (206) 825-2161

May 24, 1979

LAWRENCE BERGNER, M.D., M.P.H.  
 Director of Public Health

Rail Carrier Docket Number ONAC 79-01  
 Office of Noise Treatment and Control (ANR-490)  
 U.S. Environmental Protection Agency  
 Washington, D.C.

The Seattle-King County Health Department does not concur with the proposed railroad equipment facility regulations currently being considered by the Environmental Protection Agency (EPA).

The regulations as proposed are not protective of public health and welfare as defined by the E.P.A. In the Seattle-King County area, the regulations would allow a serious degradation of the acoustic environment. Levels well below those proposed have been measured at the Interbay rail yard in Seattle and if the regulation is implemented, there would be no incentive for the railroads to lower the noise levels in this area. This is especially significant at this rail yard since residential areas abut the yard on both the east and west sides.

The preemptive nature of Federal standards would make the efforts of our local Noise Abatement Program ineffective. The complexity of the measurement methodology would require the services of an acoustics engineer and also very expensive equipment. This would put any type of noise enforcement out of reach of many communities in Washington State. It would also seriously hamper the efforts of our noise control effort since we are being asked to reduce the budget of the Health Department. These regulations would add to our costs while, as previously noted, allowing the acoustical environment to degrade.

The Seattle-King County Department of Public Health completely concurs with the NACCO preliminary critique of the proposed regulations and with the comments of E.P.A. Region X Administrator, Donald P. Dubois. Copies of these two references are enclosed.

Sincerely,

Curt Horner  
 Noise Program Coordinator

CH:b  
 Enc.

**DISTRICT SERVICE CENTERS:**

**CENTRAL**  
 1000 Public Safety Building  
 Seattle 98104  
 825-2571

**NORTH**  
 1600 N. E. 150th  
 Seattle 98155  
 363-4765

**EAST**  
 15607 N. E. Bellevue  
 Redmond Road  
 Bellevue 98008  
 885-4778

**SOUTHEAST**  
 3001 N. E. 4th St.  
 Renton 98055  
 228-2620

**SOUTHWEST**  
 10821 8th Ave. S.  
 Seattle 98148  
 244-6400

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
Region 10

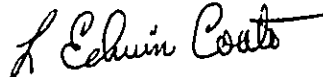
DATE: FEB 16 1979

SUBJECT: Recommendation of Non-concurrence with Draft Railyard Equipment  
and Facility Regulations Under Red Border Review

FROM: Donald P. Dubois  
Regional Administrator

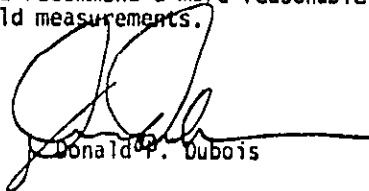
TO: J. Edward Roush, Director  
Office of Regional and Intergovernmental Operations

THRU: L. Edwin Coate  
Deputy Regional Administrator



We are non-concurring with the proposed railroad equipments' facility regulations currently under red border review. We recognize there may be overriding considerations at the National level; our non-concurrence is therefore based on our concerns about negative impacts on the Region 10 noise program. Our objections to the package are summarized below.

1. The proposed regulations (both 24 and one-hour) are not protective of public health and welfare and are inconsistent with our national noise strategy.
2. Because they are totally preemptive, the proposed standards would prohibit one of our states (Oregon) from enforcing its own standards which are protective of public health and welfare. Enforcement actions taken by Oregon using their more stringent standards have not resulted in placing an unreasonable economic burden on the railroads in order to achieve compliance. We understand Illinois has also been enforcing more stringent standards.
3. The regulations will allow degradation in the noise climate around some existing railyards.
4. The draft regulation proposes a one-hour standard which is inconsistent with measurements made in Region 10 and by Regions 4, 6, and 8. These measurements were taken to provide data to support the regulation development. From our data, our worst one-hour level was within 5 dB of the 24 hour levels. The regulation proposes a one-hour daytime level 14 dB higher than the 24 hour level. We cannot see the justification for such a high one-hour level and recommend a more reasonable level be established based on real world measurements.



Donald P. Dubois

A PRELIMINARY CRITIQUE  
OF THE  
U.S. ENVIRONMENTAL PROTECTION AGENCY'S  
PROPOSED RAILYARD NOISE REGULATION

**SUMMARY:** The following is a preliminary critique of the U.S. Environmental Protection Agency's proposed noise emission regulations for facilities and equipment of the nation's interstate rail carriers as published in the Federal Register on Tuesday, April 17, 1979. These comments have been drafted by a special NANCO review committee made up of John Hector, Bob Hellweg, Jerry Jensen, Jack Swing and Jesse Borthwick. They do not necessarily reflect the views of any State or local agency nor do they represent a formal position by NANCO. They have been prepared in an effort to stimulate and encourage review of the regulation by all interested persons.

ISSUE: Property line standards versus source standards.

**COMMENT:** The committee feels that EPA should not establish property-line type noise emission standards for railyards or any other sources of environmental noise. Any property-line standards promulgated by EPA would have to be based on worst case or "least common denominator" situations since there are no variance provisions in the Noise Control Act. We don't feel that a standard based on the worst case would be in the best interest of the public health and welfare. Such standards would only serve to legalize existing levels of noise and in the case of railyards actually allow significant increases in noise emissions at yards which are currently "quiet."

Recognizing the restrictions that would be placed on establishing national property-line railroad noise emission standards and the uniqueness of local acoustic environments, the committee would recommend the adoption of receiving property criteria to aid in determining when source controls should be imposed. The following scenario is suggested:

- (1) EPA should establish receiving property noise impact criteria which when violated would constitute an impact on the public health and welfare and therefore be considered excessive. Such criteria should be established without consideration for cost of compliance or technology requirements. We would recommend  $L_{DN}$  55 dBA be adopted as the criterion for longterm steady state noise exposure (based on information published by EPA) and that maximum hourly Leq's of 60 dBA (day) and 50 dBA (night) also be established to allow shortterm monitoring. These hourly levels are recommended based on the need to protect against communication interference and sleep interference, and are supported by (i) the data presented in EPA's Appendix V which shows the greatest difference between maximum measured hourly Leq values and  $L_{DN}$  values being 4.5 dBA, indicating that the daytime hourly Leq should be set no higher than 5 dBA above the  $L_{DN}$  value; and (ii) the need for a 10 dB nighttime penalty. A third set of criteria needs to be established as a measure of intrusive noise, perhaps a maximum  $L_{MAX}-L_{50}$  difference or some similar measure.
- (2) Once the above criteria are established Federal, State and local enforcement officials can determine where noise impacts exist. When the noise emissions from a given railyard are found to be in violation of the criteria at a receiving noise sensitive site, the next step is to determine whether the noise is necessary. We would define unnecessary noise as any noise which is excessive (violates the criteria) and which has not been controlled using best available technology (BAT) as identified by EPA source standards which includes

administrative controls.

- (3) A railyard which is found to be generating excessive and unnecessary noise would be required to bring its noise within the criteria or comply with all EPA source standards through the application of BAT and administrative controls.

This scenario would result in noise abatement only at noise sensitive sites as opposed to requiring abatement on all sources industrywide, thereby reducing drastically the economic impact on industry. We feel it would also encourage the use of administrative controls including cooperation with local planning officials to prevent encroachment and encourage compatible redevelopment.

ISSUE: Through train noise emissions

COMMENT: We feel that through train noise has not been adequately addressed. Existing source standards fail to protect the public health and welfare. We strongly urge that standards for rolling stock be reexamined.

ISSUE: Best Available Technology definition

COMMENT: Best Available Technology should include administrative control. Control considered workable and reasonable should be published by EPA for use by the railroads and enforcing agencies.

ISSUE: Car coupling noise standards

COMMENT: We recommend the car speed criteria be dropped since it will only serve to complicate enforcement. As currently written the regulation would require the monitoring of car speed to document it moving less than 4 mph in order to fully support a violation.

We also recommend that the standard be reduced from 95 dBA to 90 dBA at 30 meters. A minimum of 10 readings all within 10 dBA of the maximum reading should be required. It appears that the 90 dBA standard could be reached through speed controls, especially when the energy averaging of 10 readings is considered.

ISSUE: Retarder noise standards

COMMENT: We support EPA's application of 12 ft. barriers with absorptive lining as BAT. We support the 90 dBA standard but suggest that the measurement criteria be amended to require a minimum of 10 readings, all within 10 dBA of the maximum reading, be used in arriving at the energy average.

ISSUE: Refrigerator car noise standard

COMMENT: The background documentation presents insufficient data to support a review of the standard. However, it does not appear that the use of electric service for compressors as opposed to diesel-generated service was given adequate, if any, consideration. This control approach is currently being used in Orange County, California.

ISSUE: Acoustic environment degradation

COMMENT: The regulation should be amended to include provisions limiting degradation of the acoustic environment surrounding railyards that currently have low level noise emissions.

ISSUE: Land use planning

COMMENT: All railyards should be required to provide noise contours to local planning departments showing current and future noise impact zones, in order to encourage compatible land use planning.

ISSUE: State and local enforcement of the regulation

COMMENT: The measurement criteria are extremely complex and will result in little, if any, enforcement by State and local noise control agencies. We know of no agency that is willing to participate in the enforcement of the regulation as proposed. Even if acceptable standards and measurement procedures are promulgated by EPA, State and local governments will be required to adopt identical regulations before they could become involved in enforcement. This process could prove to be a lengthy if not impossible task in many jurisdictions. Furthermore, we feel that without financial and technical support (training enforcement officials, providing legal advice, equipment, technical consultation, etc.), no State or local noise control agency will be able to successfully enforce against a major rail company.

ISSUE: Measurement criteria

COMMENT: The measurement criteria as proposed are too complex to be considered workable. Modeling out all non-railyard noise sources and through trains as proposed using sophisticated techniques such as the TSC Highway Noise Prediction Method is asking too much. There are currently no integrating sound level instrumentation systems that meet all ANSI Type I specifications due to the lack of specifications for digital read-out. Those that meet the Type I accuracy specifications are overly expensive and are therefore rarely found in the equipment inventories of State and local noise control programs. Although we recommended earlier against the use of  $L_{DN}$  or  $L_{eq}$  for enforcement, if  $L_{DN}$  and  $L_{eq}$  metrics are adopted, a simple statistical measurement procedure using Type II sound level meters and a method of calculating  $L_{eq}$  should be established.

ISSUE: EPA Region X Recommendation of non-concurrence

COMMENT: The committee completely concurs with EPA Region X Administrator DuBois' comments as outlined in attached letter.



# CITY OF TUCSON

The Sunshine City

CITY HALL  
TUCSON, ARIZONA 85726  
P. O. BOX 27210

DEPARTMENT OF PLANNING  
791-4505  
791-4571  
791-4541

May 16, 1979

Mr. Henry E. Thomas, Director  
Standards and Regulations Division  
U. S. Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Thomas:

I received your letter of April 17, 1979, addressed to the Zoning Administrator, relative to revised and expanded railroad noise regulations. I've read it several times and still have some difficulty understanding what it says. My lack of understanding probably relates to my relatively low level of education and experience. I had one of my staff apply the Fog Index\* to the letter so I could satisfy my own curiosity as to the potential reasons for my own lack of understanding, hoping it would help me decide whether or not to go back to college. It has a Fog Index of 32.8. According to the May, 1976, issue of the American Statistician (p. 50, Vol. 30, No. 2) a Fog Index of less than 9 should be understood by a child, 9-13 by an average reader, and 14-17 requires university experience. Needless to say, I was relieved to find that my inability to totally understand the letter is not necessarily based upon a lack of education.

What I've been able to interpret from your letter is that EPA was forced to develop noise standards for all railroad equipment and facilities, including retarders, refrigerator cars, car coupling operations, and rail guards, in addition to locomotives and rail cars. We, at the local level, will therefore be preempted from regulating these noise levels.

We in Tucson have a major rail line running diagonally through the city, with audible noise affecting approximately half of the residents. More importantly, we are attempting to "revitalize" our downtown area according to the Carter Administration's guidelines and are aggressively pursuing housing programs. Unfortunately, the railroad runs immediately adjacent to the downtown area and creates substantial noise problems which puts a damper on the marketability of housing. I have attached an excerpt from a recently-adopted plan which touches on the railroad noise problem.

From our standpoint, therefore, the highest possible noise standards and enforcement would be desirable. Are funding sources available through

\*Robert Gunning, The Technique of Clear Writing, 1952

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Mr. Henry E. Thomas  
Page 2  
May 16, 1979

EPA and/or the railroad industry for noise mitigation measures, such as earthen berms as proposed in this plan, or is this another local burden as with most federal programs?

Sincerely,

*Wayne Moody*  
Wayne Moody  
Planning Director

WM:m

Enclosure

## Southern Pacific Railroad Reserve

### Objectives

Key objectives of the Southern Pacific Railroad Reserve are:

- Stabilize and bring about the environmental improvement of Armory Park's east side.
- Find a feasible land use program which is compatible with surrounding uses and forms a smooth transition between Armory Park and the industrial zone to the east.
- Bring about private investment to increase the City's property tax.

### Design Concept and Program

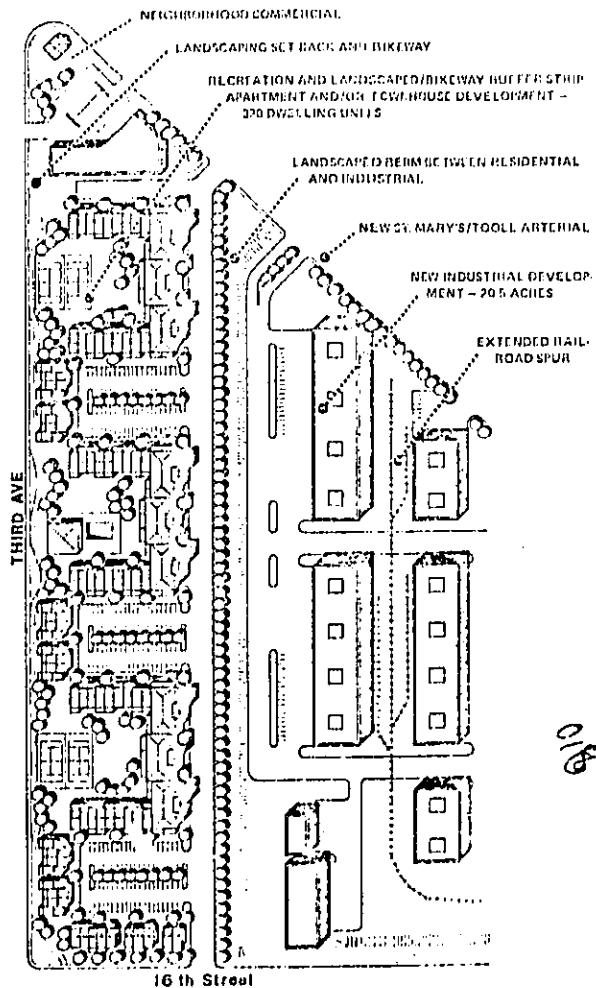
The western edge of the site is shown as residential uses which step back from Third Avenue from two to four-story residential structures. The inclusion of a parkway, amenities, landscaping, and the lower-density buildings along Third Avenue is in keeping with the predominately single-family two-story structures along the west side of Third Avenue.

A landscaped berm is shown between the industrial and residential portions of the plan to form a visual and sound barrier to protect the dwellings. Vehicular and railroad service would be accomplished by the extension and realignment of existing railroad spurs and the construction of the new St. Mary's/Toole/Euclid Boulevard on the eastern boundary of the site.

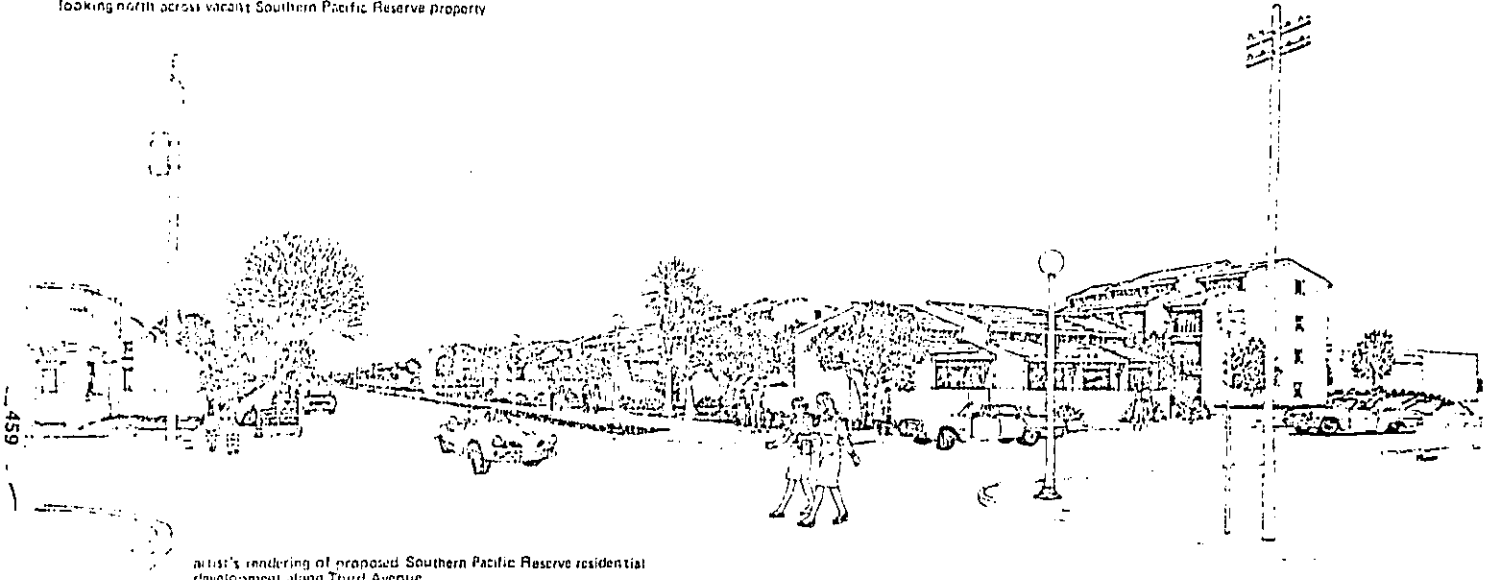
The program for the project's 38 acre site consists of industrial and residential uses as follows:

- Residential (16.0 acres) - 320 dwelling units
- Neighborhood Retail (1.5 acres) - 18,000 square feet
- Industrial (20.5 acres) - 160,000 square feet

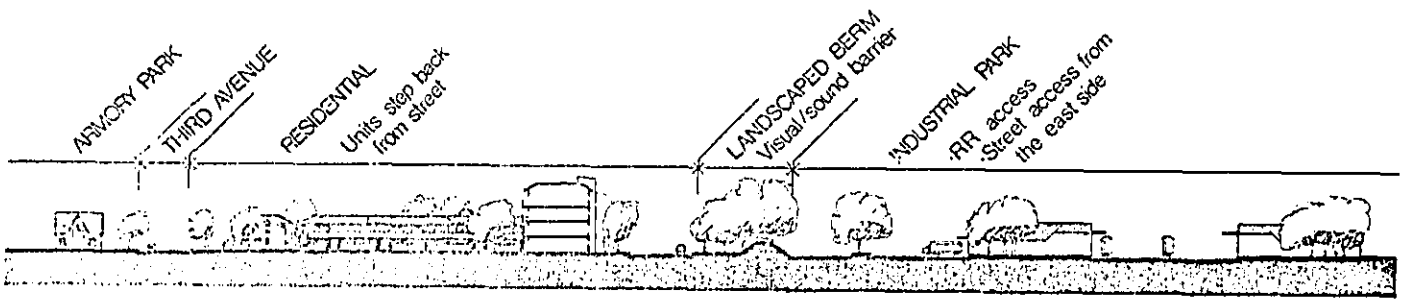
The market for the housing is assumed to be a medium-density market with an orientation toward the downtown-oriented employees and the university and its student population.



Looking north across vacant Southern Pacific Reserve property



Artist's rendering of proposed Southern Pacific Reserve residential development along Third Avenue



SECTION THROUGH SP RESERVE-Looking North



TRANSCRIPTS OF AAR/EPA MEETING  
ON DATA AND INFORMATION EXCHANGE HELD  
MAY 15, 1979

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5/15/79  
Page 1  
Tape 1

S I apologize for the late start and the somewhat cramped conditions. The meeting will be recorded. As you all know we're in the comment period of proposed rule making on the Interstate Rail Carrier Regulation and, partly due to that, we are required to keep public records on all meetings that we hold with parties interested in the rulemaking. So, for that reason, we will be recording this meeting. Recording of the meeting will be placed in the docket, and anyone wishing to review it or make a copy of it will have an opportunity to do that. For the record, today's date is May 16, 1979; the subject of this meeting is the proposed Interstate Rail Carrier Regulation, and specifically to discuss some of the data related to railroad operations. As a preliminary action to this meeting, there was a letter sent from EPA under my signature to Mr. Charles Taylor that also included an agenda for the meeting that does spell out in more specific detail the types of data that will be discussed in the meeting. A copy of this letter and the agenda will also be part of the material related to this meeting that will be put in the docket, as well as this attendance sheet, and I would like everyone who is here, if they haven't signed it already, to do so before you leave the meeting. I think at this point it would be appropriate to go around the table and have everyone introduce themselves, so that we do have that for the record also. My name is Bill Roper, from the Office of Noise Abatement and Control, EPA. We'll go around this way.

- S Elliott Ratner from Science Applications, Incorporated;
- S Sam Lane from Science Applications, Incorporated;
- S Ken Eldred from Bolt, Beranek and Newman;

5/15/79  
Page 2  
Tape 1

- S Eric Stusnick, Wyle Laboratories;
- S Peter Conlon with the research department of the AAR,
- S Joe Schmidt, Gellman Research Associates;
- S Rick Westlund ONAC/EPA;
- S Jessie Borthwick, National Association of Noise Control Officials;
- S Bob Hellweg, State of Illinois, Environmental Protection Agency;
- S Fred Newman, Science Applications, Incorporated;
- S Henry Thomas, EPA;
- S Chuck Taylor, Association of American Railroads;
- S Conan Furber, Association of American Railroads;
- S Raelyn Janssen, EPA;
- S Dick Marabelli, Science Applications;
- S Kurt Askin, EPA;
- S Robert Stunt, Technology and Economics.

S Okay. Thank you and now that we all know who everyone else is and who they represent, I'd like to dwell just a little bit on the framework or nature of this meeting. This is not an adversary type of meeting, where we're where it's intended to get into debates on the basis of the data; this is intended to be a more neutral, scientific data discussion type of meeting. If we do get in; if the trend does go to more of an adversary type of role, I will cut off discussion on that area. So, I recommend that we all keep in mind as we continue in the meeting.

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Page 3  
Tape 1

S Bill, I'd like to add a few comments please. . . .

S Yes.

S This meeting is a result of a session, several meetings, that Dr. Harris of the AAR and I held together with Dr. Gellman. The purpose of this meeting, as Dr. Harris of the AAR and I held together with Dr. Gellman. The purpose of this meeting, as Dr. Harris and I envisioned it, was to address data--facts. That is, that EPA has proposed a regulation which is based on certain data, data assumptions, techniques for collecting that data, and for arraying that information. To the extent that it would be beneficial to the Association of American Railroads and other parties, such as state and local governments, to be more familiar with that data and the basis on which that data was acquired, (the basis on which it's presented and arrayed), we're happy to expound on that. We recognize that there are data gaps present. We recognize that there are some areas where, perhaps, insufficient data may be there; or even inaccurate data may be there. Dr. Harris and I both agree that, to the extent that those points can be identified, those places can be identified, or the data gaps or incorrect data can be identified, [such identification] would be extremely helpful to all parties concerned, but particularly to the government. To the extent that anyone can identify a data gap, that would be particularly helpful; however, it should be very clearly understood that, if one wants to assert that the data is incorrect, we would presume, that this kind of a meeting, that the person making that assumption has a factual basis for making that allegation or statement and is prepared to present to EPA the data which they believe to be more correct or accurate. What we do not want to have happen is [to have] an exchange of allegations; nor are we prepared to address the regulatory philosophies in any way, shape or form, associated with this rule making. That is already presented in the public record, and it stands at this point. We are, likewise, not prepared to discuss at all the relative regulatory levels that have been proposed by the EPA Administrators. That

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is appropriate to occur in a different form, where subjectivity can be brought to bear on that point. People can agree to disagree on philosophies. What we would like to have, and again the principle purpose of this meeting as Dr. Harris and I agreed, was to address data or facts. And, to that extent, as Dr. Roper said, hopefully, that should not be adversarial. If you dispute the facts one presumes, there [that] you have other facts to present. And that should be very clear. If you identify a gap, we can all identify that, that's fine. We would like to hope, at that point, that the party so identifying it is prepared to offer something to fill that gap. If you don't have information to fill that gap, of course, that's likewise valuable for the record, and I would hope that you would identify that at that point. So if there are any questions on that, why, this is a good time to raise them, I think. Okay. We are prepared at EPA, based on our earlier meetings with Dr. Harris, to have a series of such meetings. The first one was to deal with the points which we have today. We are likewise, fully prepared to discuss technology issues, [such as] the question of costing out technology applications, and the question of economic philosophy in the sense that one may derive from certain costs certain economic results. On that basis, we would be prepared absent any number [or] to address economic philosophy or matters in which economic data could be raised. We've agreed to do that with the AAR if they desire to participate in that. So we are open, from EPA's point of view, to subsequent meetings beyond this one if the AAR desires to hold such meetings. Thank you Bill.

S As a lead off for the meeting, I'd like to discuss briefly an overview of the process that EPA went through in developing the data base and the assessments that went into the proposed rulemaking. And we will make available to attendees at the meeting a copy of that kind of line diagram that shows the process that we went through. There are two a number of

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elements in this analysis. One was the identification and classification of the rail yards across the country, and, as many of you know, we used, to a great degree, the SAI study that was done a year or so ago that did identify all the railroad yards. We've also attempted to identify to the degree we could, the type of land that's adjacent to those railroad yards; and later on we'll talk more specifically about that. That activity that I've just described is what we call the classifications activity. There was also a measurement methodology activity that looked at ways of measuring the property-line or receiver property noise levels. There were a number of concerns that we had there both from an accuracy standpoint and from a simplicity standpoint in order to come up with something that would be as usable as possible in a regulatory framework. We also looked at measurement methodologies for individual sources. As you know, part of the regulation does set standards on specific sources, as opposed to identifying more or less ambient noise levels on a longer time period. This part of the study we characterized as the measurement methodology element. We also did some modeling work which essentially integrated the outputs of the two units I just mentioned; the railroad noise model activity that looked at both configuration and geometry of railroad yards, and at noise propagation from within the yard out to the property line and beyond. From there we looked at three other study activities. One was noise control; looking at the sources, the types of technology available, site layouts of rail facilities, the activities of activity levels in various railroad yards and, in one case, we also looked at the possibility of using buffer zones or land acquisition as a control technology. We also looked at the health and welfare impact of railroad noise. From an ENI standpoint, which was a model effort essentially laying on the population statistics around the rail yards in the country and projecting population impacts given in model noise levels as they projected out into the communities. There was also the cost and economic impact unit which looked at capital investment costs, operating and maintenance costs,, disruptions of operation and unemployment in the kind of classical economic and costing sense. These six study units were combined to develop the regulatory options from which the EPA management made the proposal decision. And this is kind of lined out, in a little more simplistic manner

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perhaps than I've just said it, and we'll make a copy of that available to everyone. With that kind of overview of the process that EPA went through, I'd like to move to the second point on the agenda, which is an outline of the rail yard noise and health and welfare models used to identify the input data requirements. And for procedural purposes I would suggest that in these --in most of these--areas that we present, the EPA study--studies--some of the data that we've found and are using or did use, and then provide others here at the meeting the opportunity to present data or ask question or what have you. In fact, we may be exchanging questions as well as data, as we get further in, to clarify the facts of the matter. So with that I would like to ask Sam Lane to describe the data input requirements for the health and welfare model. Sam.

S Excuse me, Mr. Ware you were with what organization?

S I'm Mr. Ratner.

S Oh! I'm sorry.

S And I'm with SAI, this is Sam Lane, and Sam's with SAI.

S All right.

S The agenda items here outline of the rail yard noise model, and then the other following items about description of various items of data are obviously very interrelated. I'll try to give a brief overview discussion of the noise model without addressing and detailing particular items of data that are required for the model, and then get into some discussion of of the input data required as we go along on these other items. The object was to try to determine the impact of rail yard noise on a national basis. We did this in terms of the equivalent noise impact rating scale developed previously by the EPA, and we also used population exposed, which is simply the number of people exposed to various levels of noise. The ENI and the population exposed rating scales are in turn based on the day/night average noise level or  $L_{dn}$  rating scale. I won't belabor explanations

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of those; I assume that most people know what they are. It's an average; the  $L_{dn}$  is an average noise level with a penalty factor for the attitude noise levels that take place at night averaged over a 24 hour period. We developed a noise generation and propagation model first. The with that model, which is really an integral part of the overall noise model, we go on to calculate the noise propagation away from the rail yard boundary, and with information on the population density around the rail yards we calculate the ENI value on a national scale. I don't know quite what else to say to summarize the model, without getting into the data requirements, but essentially we needed to know the type and number of predominant sources at rail yards, by type of or function of rail yard we needed to know the number of people residing around rail yards, we needed to know the activity patterns for the various sources in rail yards. Once we had the basis or a basis for that type of information, the basic group of data in each of those data need areas, and we could calculate the noise level at the boundary of the yard (the  $L_{dn}$  at the boundary of a rail yard), and propagate that rise out into the neighborhood, and see how much noise or how many people were in the noise area of the yard (out to a cut-off value of 55 decibels on the  $L_{dn}$  scale), then we could multiply total number of yards (feet, type, etc.), and come up with an estimate of the impact on a national scale. Then from that point on there were economic models built (which will be discussed later), economic impact, economic analysis, analysis of the technology available to reduce noise levels, etc. But that's not--those last two items are not--part of my discussion. So, let me repeat the information or input data required. We need to know the number of rail yards; the type of rail yards by function; the noise sources in rail yards; types of sources; whether they're moving or stationary sources; we need to know the average noise level for each type of source; we needed to know the characteristics of the noise for each source or the frequency distribution of the spectrum fro the source. We needed to match the noise sources to the type of yard (or the function of the yard); we needed the usage rate and the number of sources for each source (that's what I call activity parameters); and we needed to match those and distribute them according to the number of yards by type and activity. We needed to know



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typical configurations of rail yards, yard dimensions by yard type and activity rate; and we needed to know the population density around rail yards. I'll go ahead with some discussions of these various data needs, and, if some other summary statement or information is required or desired on the models, I could discuss that also. Pictures or charts showing the scheme of the models are in the background document in Section 6. Maybe, to make sure that I don't forget something important in a summary statement, I need to have a quick look at that. Well, essentially this chart, which is in the background document--I don't remember which figure, here--shows in schematic form what I've just said in words; so maybe there is not any need to discuss that.

S That's on page 641.

S Figure 6-3. Two things that I did not mention previously were the source locations in rail yards and information needed to develop a propagation model, that is the absorption of the noise as it propagates out from the rail yards and any shielding due to structures that would take place. We considered both of these, and we can discuss that data more specifically if you desire.

S Are there any question on that part of the model, the input information?

S Dr. Roper, I think maybe I'd--perhaps what I could do here is describe to you (kind of) the nature and format of some of the questions that we have, and maybe that'll help guide this presentation a little bit. We have some specific questions about the data and circumstances under which the data were collected which relate to the three major point sources that are described in the regulation as well as some general questions. Now, for example, we have information or, rather, questions, which relate to cost information related to various abatement technology, and noise measurements in connection with that abatement technology. And they relate to, as I indicated earlier, the three major sources that are addressed--well four actually, and those are the coupling, the retarder noise, and the noise

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abatement technology that's used for switch engines. Now, if you like, if it would be helpful, I can very briefly summarize the nature of those questions now for you; or we can wait until after this presentation by SAI.

S I think it would probably be fruitful to delve right into the area where the major concerns are, so--

S Well, it's my understanding too that this meeting is not just for our benefit, but for others too, so I don't want to preempt the interests of other parties here around the table.

S Does anyone object to moving on to discuss these particular issues?

S Chuck, could you just repeat the question so that I can make sure that I understand it completely. You're concerned about the technology, the cost...

S Yes. In some instances, we have some questions about the data itself and we have some questions about the source of the data. For example, we have some question about the cost data, for example, and some data about the specifications--the technical specifications--for the abatement technology that was referenced in the regulation and the background document.

S And the items, the particular sources that you're questioning or . . . are the . . . have been concerned about.

S Yes. The areas are the mechanical refrigerator units, the retarders, the abatement devices for retarders, the car coupling locomotive switchers. And then we have some general questions. . . (whispering, not audible). . . Well, in the general questions include some which relate to the models. So, with that would you--what's your pleasure--would you like us to get into some of these questions now, or would you like to continue?

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S I think it might be best to get into those questions, and I didn't see any objection from anyone else in the room, so why don't we move into those questions and see what kind of factual information you have, and what factual information we have.

S Okay. . .

S I'd just like to interrupt for a second. . . yet surely. . . regarding your input information on the model, we've had a written request for examples of some of the data, the inputs for the noise model and health and welfare.

S I don't have the letter in front of me, is that the one that asks seven different. . .

S Yes. . .

S Items, yes we have that and we will respond.

S Peter, I don't know if we've covered all of those in this list that we discussed this morning or not, have we? Are there any additional items that you've requested in that letter that aren't included in here? So we'll be covering all of those in here as well. . .

S They're essentially. . .

S Okay, okay, fine. . . .

S I guess at some point, as we get into the meeting, those questions that were covered in your written request that we do satisfactorily address here--I would like to get some indication from you to that effect, so that we'll be in a position to follow through on that appropriately. . .

S Could I add two cents? I think still it would be of relative importance to go through some of these background areas where we have obtained some data because it essentially establishes the point of depar-

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ture for many of the costs for many of the need for abatement procedures or techniques to applied so we do need to have at least a refernce point of how many yards there are, what kinds of yards, some of the activities and functions that go on and so forth, so I think. . . we. . . need that. . .

S Okay, well let's do it this way, let's look at the first question and if that, as soon as we run across a question that. . .

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that would require that kind of background, then we can identify where on the agenda, and start through and go through it systematically in response to that particular concern. Okay?

S All right.

S One point perhaps. Is this basically the way that the meeting is going to be conducted? As far as you have detailed questions, is there a larger concept? I guess, the way the meeting was initially envisioned, was that there would be a general conceptual framework presented, within which specific questions would be asked. It seems now that we're changing direction and that we're just going to deal with specific question; and if everybody feels that's the best way, then I guess that's what probably needs to be resolved, that just specific detailed questions are all that's of interest in this forum.

S Yeah, that's why I say, I don't want to preempt anyone. . . yeah. . . On that point, and if it's the consensus of the people in this room that they would prefer that this general conceptual framework be discussed further, why I'm perfectly satisfied that.

S It seems to me the question would be the most efficient way. Let's do that then. Let's. . . the framework will come out, the general conceptual framework. Then so be it.

S Okay, with regard to the mechanical refrigerator noise issue, one specific question we have is: can you provide us with any comparative data of truck reefer and rail reefer noise, and along that line, we're specifically interested in comparative data on the effectiveness of abatement techniques, the sources of the cost data that were cited. To be a little more specific, we also are interested in specifications of the noise abatement technology that was used, that is to say, the noise attenuation devices that were employed, when those measurements were taken for truck reefers, and a description . . .

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S For truck reefer or? . . .

S Well, . . .

S For rail car refrigeration units?

S Both if you can provide them. If you have data which relates-- which quantifies the effectiveness of attenuation devices for mechanical refrigerator cars, we'd like to have that data. If you can provide it for us.

S Have you collected any data in the refrigeration car area?

S I don't know. I'm not aware of any. Peter, have we?

S Have we made measurements of refrigerator car sound levels? Is that what you're asking?

S Because this rulemaking, of course, deals with rail equipment, and I believe most of the data that we have is related to rail equipment, and I don't think we . . . you know, there are other rulemaking activities going on within the noise office and the truck mounted refrigeration unit is one of those that we have collected some data on. It's under a separate program, I can't speak directly on what we have and don't have in that program, but I think we can speak directly on what we have and don't have in that program, but I think we can speak to the kinds of data that we have on rail cars. . .

S Okay . . . maybe. . .

S Eric did you wanna. . .

S I think we need to explain this a little better. . . yeah. . .  
yeah. .

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S Well, if Bill I think describes the data they have on railroad cars, it would be very helpful. See, the problem is that--my understanding is that--a large part of the noise control that's recommended in the document for refrigerator rail cars is the same as or similar to noise control methods that were recommended in an earlier document for truck mounted refrigeration units, and I guess the general concern is: what data is available to show that the tech--that basically the two devices are similar in their noise producing mechanisms and that the attenuation techniques employed in truck mounted units that are referred to in the background document will indeed work as well for railroad mounted units? There is a reference in section 4 that we have been trying to get. Excuse me, section 5.....

S Is this the BBN report?

S This is 3264 Noise of Control Technology for Truck Mounted Refrigerator units.

S Right. You referred us yesterday--the day before--to some group over in main EPA. We talked to them. They don't have it, and we're still left with no source of that document.

S Are you aware?

S I put it in there. . .

S It should be there. . .

S We sent somebody over there and it's not, so. . .

S They said they don't have it; they referred us back to your office.

S When did it go over, Rick?

S Oh, we put that in there about a week ago. I personally took it over there.

S Now, the girl whose name you gave us is no longer there.

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Lillian Pitts. . .

S She's not there.

S Did you find our file, our whole file?

S I didn't go, one of our secretaries went. Actually, one of our secretaries called on the phone and asked for Lillian Pitts; she's no longer there and they got whoever's doing her job now.

S She was just there last week.

S And she said that they do not have that document, and referred us back to your office.

S Well, I guess the question is: can we get a hold of that document?

S Yes. We. . . there should be no problem. We should definitely get a hold of it; from our standpoint it was over there, period. Rick, would you make sure that we iron this difficulty out. Sounds like. . .

S Because that is the document that talks about the noise control technology that you were recommending in this document to be applied to railroad cars; at least that's my understanding from this document. . . yeah, I think it's. . .

S Well, why don't we spend some time right now, then discussing or outlining the data that we do have on reefer car technology?

S Yeah, and if you could--the sources of it.

S Right, the sources and if it's appropriate to do so now, we would appreciate comments which describe the test procedures that were used in the collection of data. Such things as, you know, the operating conditions, engine speeds, that sort of thing; you may not want to get into that kind



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of detail here, but that's some of the kinds of information that we are interested in.

S Well, I think the first issue, I guess, that's associated with that is the number of reefer cars themselves. I think that's. . . the basis of that information is an ICC document 1975 which permits one to obtain identification of 24,000 reefer cars. Now that particular document is referenced in the background document that I've been able to locate. That is, a 1977 or 1978 reference for the number of cars that are out there. I would like to know how many truck mounted TOFC type refrigeration units are moved by the railroads. Is there any--is that information available?

S I think we can get a number for you there, yeah. We can certainly come up with an estimate.

S All right, and I also would like to know, how different, if any, their refrigeration diesel engines are from those which are typically truck mounted, which is of some concern to you.

S Would you repeat that question?

S I said I would like to know if they're different than those that are typically truck mounted refrigeration units, diesel engines?

S You mean the TOFC are different than the normal on the road?

S Yes, they are.

S I'm not aware that there is any difference, but I . . . I believe there is. . . No, but for the record I'd like to know. Richard, could you at least indicate from your understanding of the technology?

S Noise abatement technology is based on three references, those being the former background document appendix O, the diesel powered heavy duty refrigeration unit noise study by Tom Retka (and that's a DOT document dated 1976, January), and the BBN study which was done for EPA on noise

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control technology on truck mounted refrigeration units.

S What was the second document please? The DOT one?

S That's DOT-75-5.

S And the title is?

S Diesel Powered Heavy Duty Refrigeration Unit Noise.

S It's reference 6 on page 414.

S Thank you

S Is there anyone else that has any data or information on refrigeration unit noise control techniques? We certainly at EPA will endeavor to get that document to you as soon as possible, the one you've had difficulty getting from Waterside Mall. That troubles me that that occurred, because we hand carried it over there. Okay, this is the BBN thing you're talking about.

S Am I correct in hearing that you have taken noise data measurements for mechanical refrigerator equipment, railroad mechanical refrigerator equipment--

S Direct measurements during the past year, you mean, as part of the studies?

S I'd have to check that.

S Have you or your contractors taken such. . . In any of our field measurements did we actually measure the refrigeration units as far as part of our yard studies?

S I think we may have measured a few.

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S Personally, I don't recall.

S I don't think it's part of the data base. I personally don't recall seeing, you know, a separate analysis on refrigeration cars. Now, in the first eight yards that we measured, we took continuous strip chart recordings at a number of locations over some fairly long periods of time. I know we provided copies of all those to you. I think that if some of those locations there may have been highlighted on those strip charts perhaps reefer cars, or whatever during the subsequent studies we did last August, where some of our regional people participated, there may have been some refrigeration car noise specifically measured at a few sites there, but I think all of the data that we actually used in developing the options and how one might set a limit on reefer cars did not include that data, because we had not had a chance to separate it out so. . .

S Again what we're particularly interested in is any data that you might have available which quantifies or characterizes the effectiveness of noise abatement techniques for rail mechanical refrigerator units--you know--includes a technical description of the experimental or test procedure that was used to take the noise measurements on which the attenuation conclusions were based.

S I think the references that were given in the background document pretty much address that point that you're raising.

S Bill, one thing I would like to add is: I think there will be some data coming in from California, the State of California, on reefers, and I'm not familiar with the data, but I do know that Orange County--one point that was made by the state is the--they have data on the refrigeration units, where they used the on-site electric power, for shut down of diesel units; was any of that type of data gathered?

S I don't believe, in our studies, we did anything with the--using local electric power and turning off the diesels. That's an interesting approach. By coming in from California, you're anticipating that as part

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of the document response, or just a separate report?

S We've been told that they will be responding and we know that they have data, and hopefully, we'll have it through our associations well. I haven't seen the data; I do know that they have a considerable amount of data there on refrigeration units.

S I don't think it's gonna arrive--it doesn't sound like it will arrive in time to do any of us any good. We hope to get Mr. Swing here for the meeting. . . . I know.

S Maybe it would be more specific, though, in helping them understand our approach. Did we actually have empirical data on the abatement techniques used to quiet refrigeration units, or did we base it upon analogy of our understanding of the noise source mechanisms and on the empirical data developed for the truck mounted refrigeration units, and therefore, was this sort of a modeling approach as opposed to having direct empirical backup?

S We base it--we base it upon the--primarily on the two studies (the BBN study and the EPA) which actually went into the noise abatement fixes and gave cost data and level reductions associated with several degrees of the technology. So they, they listed a set of fixes and. . .

S The study was done for a truck mounted unit?

S That's right. . . so . . . do you have a reference to any additional study that was done to show whether the techniques would also be applicable to the other type of noise?

S Well, we don't have any data on--direct data on--the quieting of a refrigerator car, if that's the question.

S But you said your TSC study gave you the basis for understanding

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the noise source generation mechanism of the refrigerator of the rail car version, we what you're doing is basically modeling by analogy the technology abatement technologies that could have been used to apply it to the refrigeration car functions. . . even though we didn't have direct empirical evidence that that was in fact.

S No. I know of no studies on rail cars to answer your question, but there was an analogy. Since the diesel engines are approximately of the same horse power, the levels are approximately the same; They're the same basic driving units. they're just mounted in different. . .

S Could you summarize briefly the actual technologies that are involved? We're talking about putting on a muffler.

S Yet, yep.

S Fan treatment or what? And give some insight as to the kind of difficulties are or what the logic would be that you count apply to either unit. . .

S Ah, the treatments that we were talking about were an exhaust muffler and possibly, partial enclosure of the engines. This might include absorptive material; there is perhaps a difference from type of refrigerator car to another; there are several configurations. You don't have a specific design, but in the BBN study they studied three types of refrigeration units, the same basic treatment being used on each type. That is: muffler, plus absorptive material, and further reduction--slowing down of the fan or improvement of the fan cooling system, a diesel. Whose are these. . . These are the standard treatments. . . engineers. I think, you know. Maybe the way to reconcile any complications here would be to say that if there were any empirical measurements that were available--if you people had some--that would be very helpful. I think that's how I feel, as you feel probably

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Dick, that you're pretty confident that the analogies that we used are representative and typical of what can be done and the cost associated with these techniques are representative costs within the general bounds of uncertainty that this whole study was done under, that we feel fairly confident that the numbers are good. But, since hard data is not available, any hard data that could be presented would be helpful. This is fair to say. I know of no data, we certainly haven't taken any. In source identification in a mechanical refrigerators my only concern is that although the major components are similar to a diesel engine refrigeration unit, or generator refrigeration unit, there are differences in the diesel engine. And it's not at all clear that whereas in the --I think the--truck mounted one the exhaust noise may have been a predominate source, it's not at all clear to me that that would be automatically follow on the railroad mounted one. But I don't know, I'm not saying it's wrong, I'm not saying it's right, I'm just wondering is there any data to show that

S The TSC study does not that, you know, show what the similarities that guard between the noise source generations comparing the BBN study and the TSC study? Isn't that. . .

S Well there is no study directly of a quieted unit. . .

S But the baseline of the unit. . .

S Refrigerate a . . . the railway. . . rail refrigerator. . .

S Versus the truck refrigerator unit in terms of the noise source generation, the differences in diesel engines.

S Yes, certainly the diesel engine the noise source generation is the same as the diesel engine, I mean you have, you have the same components, you

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S One's two stroke the other's a four stroke. . .

S Yes. . .

S And as a result there may be differences in where it's exhaust dominated, or radiation. . . body of the engine. . . and without data to show that they're the same, he's got the mufflers and the portion closures for both engines.

S On that point, do you have any data manufacturer model numbers, or so forth on the muffler that was anticipated to be used? Is it a conceptual muffler, or is it one that actually?

S I would have to get back to the--the BBN/EPA document to give you more specifics on the muffler.

S Could you provide us with the reference of specifications for that muffler?

S I think the report he's referring to is. . . well, yeah. . .

S I was gonna say is: that's contained in the BBN reports which. . . yeah. . . yeah, Okay, sorry.

S Incidentally, as we go along here, I'm going to--I'm writing down the things that we're going to provide you, so I understand it, you would like to know how many truck mounted refrigeration units are handled in TOFC service in the rail industry in, say, a recent year. Yes. . . Okay, fine. And also, whether or not we can determine if there are any differences between regular highway truck refrigeration units and those that are used in the TOFC service in the rail industry. Now, Peter, had we provided them with the noise data on rail refrigeration units that we collected? Okay, well we can do that also.

S That data has been collected since April 17th.

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S Right, Oh, it has. . . recent. . . yes it would be part of . . .  
Okay, our. . . levels . . . not source identification, total level is no . .  
.how many did you say? . . . What?. . . data. . . I don't know . . very few.  
. .I haven't received any. . . How do the numbers of the . . . compare to the  
numbers given on page 4.51? Okay. . . As Jim would stress. . .

S There was a question as to how the noise level you have measured  
from these reefer cars compared with the values on page, what was it, 4-7. .  
. 5. . . 4-5 which I presume is the baseline levels that we had gotten from  
the literature.

S We haven't finished the analysis of that yet, have we?

S Well, now. . .

S It depends on the operating. . . usually two engine speeds and in  
both engine speeds they are. . .

S We would need quite a bit of additional information, too. Can I  
outline that information now? Would this be a point which we could request  
or outline data needs in this regard?

S As the reefer. . .

S Yes, as it refers to reefer cars, yes.

S Outline the data needs,. . . Yes. . .

S We would need to know how many cars there are in rail yards. How  
would they be distributed by type of rail yard? Where would they be located  
in the rail yard? How many would be grouped together? What would be their  
off-on cycle during the day? Or, in other words, any activity data, activity  
parameters that of the boundary of a rail yard.



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S It may be perhaps constructive. You're identifying areas where we need data, but as you may anticipate, there's had to be some assumptions made on how reefer cars operate. You might run through the assumptions that we used in our analysis and, as far as a reefer car use cycle, how many and this kind of thing.

S Yeah, that would be, that would be helpful.

S Is it possible to do that?

S Ah, yes, if that, you know, is an item that anyone is interested in. . . .

S Well, let's just outline it right now, since we're on the reefer cars. In a kind of a nutshell, what the basic assumptions were on reefer operation.

S Okay, I have to look in the document here and see. Let's see. The type of assumptions we had to make, how many refrigeration cars there would be running in a yard or a type of yard.

S Let's ask for it just. . . Does everyone understand the kind of assumptions that we've used with regard to reefer cars or is it worth-while to spend a little time going through those? I guess it is in the background document. I don't want to go over things that you've probably already looked at.

S Well, no, it might be worth a few words. I. . . especially about what kind of lease. . . That wasn't clear at least from the background document. . . well. . .

S We assume they were an old. . .

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S Let's see. . . the. . .

S Reported in table. . . 14--have to go in here and check--but my point is that there is a concern about the noise levels made by refrigerator cars and about the technology available to quiet refrigerator cars. Now that discussion may be directed toward the regulatory action on specific source as a refrigerator car and if so, perhaps my asking for data wasn't relevant at this point, but if you go on further than the regulatory acts versus specific source to the health and welfare impact model itself, then one needs to know how many refrigerator cars there are sitting in any particular type of yard and where they are located in the yard and, if they are running all day long. So that was the motivation for my question and so to make sure we're not miscommunicating or I didn't bring up something that wasn't relevant at this point. Let me say again, the data I just asked for is not directly relevant to the noise limit proposed for refrigerator cars. It has to do with the health and welfare background.

S We have--since we didn't have any information on how many refrigeration cars would be sitting in any yards, we had an indication from Wyle publication for Southern Pacific Railroads and perhaps some indication

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from the ICC report that there were about 26,000 refrigerator cars in the United States. Also, in the previous discussion with the AAR, it looked like only, maybe only 12,000 of those would actually be in use, and maybe on a particular day, only a few thousand of them would be moving around in trains and the rest would be sitting. We have no more specific data than what I just said. So we have several types of rail yards: hump yards, flat yards, freedom or traffic rates for each of those types of classification areas. Well, before we move one, those numbers, so far as the number of reefer cars and so forth, does that track pretty much with your understanding of what's in the fleet right now--what's in the active fleet and so forth?

S I'm not prepared to give you a response to that off the top of my head. I don't know whether, you know, we've had a chance to take a look at those numbers on the basis of. . . I . . . but I've got some other figures which were recently . . . and some computer information to compare that to. I haven't compared it yet, so I don't know. . . I think it's fair to say that our estimates are basically derived from the industry's input to us. So I'm sure as your numbers change, ours are too because you are our source. . . Okay, go ahead. . . when you give these numbers, it also could be helpful to indicate if they are increasing in the future or if there are fewer and fewer refrigeration cars being manufactured. Possibly, we could develop some information about that, end of the year counts, for the past few years and see, I don't know. . . anything. . . I have no information on the future at this point. . . I think Dr. Roper is asking a very relevant point in terms of what's happening currently with fuel shortages. Will there be, you know, in the future--is the AAR projecting a very increased use of rail traffic, and therefore, a much greater number of refrigerator cars being used as opposed to the?

S I see your point, but as I say, at least at my understanding, that information either isn't available, at least in my sphere of work, and I don't know but we can provide information about, you know, how many there were up til sometime around the present. Your comment I take it, is that with specific reference to a mechanical refrigeration car and what's likely

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to happen to the volume of that type of traffic in the near future. This tends to be relevant in terms of projecting the noise picture out into the future whereas EPA is inclined to do to get a feeling for, you know, what would happen with or without regulations in terms of the scenario due to changes in fleet volume and various kinds of things that are being considered for regulation. . . especially being given inputs indicating there are very few refrigeration cars--new ones--being built nowadays, so I'm a little confused. . . yeah, yeah, we'd have to check with the other departments and make that part of. . . had you finished, Sam? . . . Well, it depends on, you know, how detailed anyone wants to get. Let me just make one short summary statements so that people are aware of that part of the noise level. We distributed refrigeration cars throughout classification yards, but your only concern being four major functions. . . We can look in our data and the document to find out how many, but, say in a larger type of flat yard, for example, in a high traffic rate flat yard, we assume that there would be maybe 5 rows of and 5 cars each of 25 or 30 refrigeration cars sitting grouped together. So that's the kind of activity parameter we derive from other data, and so that's the motivation for my question. There was no data that indicated--where--what part of the yard refrigeration cars would be parked in, if they would all be grouped together or not, but. . . Typically we grouped several together and calculated the noise from several cars together propagating now as to the surrounding area. We wanted specific details now. The other thing is then the number of cars times the number of yards should total some number, 24,000 or less. I think that as we went along and developed a modified model, maybe it came out to 10,000 or 12,000. I don't remember. We can look up that data and tell you what it is but we're just trying to get the idea across that we grouped cars together in yards, and the total number of cars times the total number of yards should come out to some estimate of the number of refrigeration cars we thought would be sitting in rail yards, which would be less than 24,000 as there are apparently. That's my point.

S Do I understand that your assumptions with regard to how many and where these units would be located within a particular yard and the movement patterns for those cars--are they based at all on observations that you made?

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S No.

S As you went around looking at various classification yards?

S No, there was no task of that nature that I know of.

S I see.

S Did you attempt to to it on a line by line basis, a railroad by railroad basis, or just distributed it equally?

S Now, we distributed it by yard, function, and type.

S Is a description of that assumption that you've just outlined for us contained anywhere in the--it. . .

S I believe so.

S Okay. . . in the background documents?

S Yes, if it isn't it's a typo or an error or. . . but it was written up and ah. . .

S I think it's in there.

S In my virgin copy--I didn't find it just now--but. . .

S When he mentioned distribution by yard, function, and type, to a degree, the different types of yards, like your hump yards, as you know, are usually larger . . . yards and this is more allocative--so there is some. . . built into the yard type and function, and I think--

S You looked at activity level, too, didn't you?

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S By yard so there is some discrimination but it's , ah, you might say a uniform discrimination. We've treated all like high activity hump yards the same, as opposed to low activity flat yards, so. . . yeah.

S Did you give any account to seasonal variations? Do you think?

S No.

S That's an interesting point because much of that traffic, of course, is highly seasonal, and, so you know, you may have peaking of that kind of equipment in service during certain times of the year. Would it also be locational, regional?

S I would expect so. Very, yeah.

S There were data on that kind.

S Well, you'd have trouble handling that, wouldn't you?

S Yes.

S I mean weighing them all has been conceptualized. Has been in terms of an annualized  $L_{dn}$  value which would back into some mythical, typical yards which are sort of typical over the whole of the year, so daily variations would never be dominated by this kind of model as far as it's-- it's quite--gross because it's relating back to the EPA descriptor  $L_{dn}$  was  $L_{dn}$  in terms of impact. Seasonal and location factors wouldn't fit in the model of. . .

S It would be a big refinement. Sam, one question: you described, you know, giving the numbers of cars and their location; the other input variable that concerns me is the level you describe to each car. Now cars can operate generally in two engine speeds at which they have a different level. Now in obtaining this average level you're quoting here in table 4-1, which I think is also repeated in Chapter 6, has there been an attempt to

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average appropriately over the different operating loads of the cars so that you're getting some sort of time averaged energy that's representative?

S Well, yes, I think that there is and in order to answer you more directly we have to go back to our development and derivation notes. Since we had to treat a great deal of data in doing this, it's difficult for me to have all of that at my fingertips. What I recall is that, we took the measurements that were available at the time, whether they were in, and--you know--we of course examined the documents wherein the data resided to try to see if it was running--you know--what kind of operation cycle was taking place. As I recall we decided to average all of that data, take an energy average level, and say that, recognize that it might be running at a low or a high RPM mode, but, that in our model when you average everything out that--the model is an averaging out--the when we take care of that difference in modes of operation by assuming that their going be randomly distributed or something, and thus it would be averaged out in terms of the whole nation. But if that is an item of information that anyone wishes us to look up and be more explicit about, we can, but. . . Does anybody want to go into that further?

S Yeah, well I think this would be relevant. We're gonna have to go to single event measures where you're looking peaks and statistical variations, but that hasn't been the dominant thrust of the health and welfare analysis that's been done by the EPA, except under special kinds of regulations where single event analysis or dominant kinds of things and that perhaps could be looked at here if people felt that were necessary and relevant, but the philosophy has not been to look at the statistical variations and the peaks. This is the ENI kind of measure you know . .

S As I recall, and the specific question that you asked, as to how we actually made the calculation.

S Right you. . .

S We have already provided you with the copies of the specific calcu-

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lations and the details of where that data came from, of course, is in the references in that Chapter. Now, are there any other questions on reefer units? You may want to move on as the thought ticks away. Okay, why don't we move on to couplings then?

S On the reefers, can you tell us the life of a reefer unit? That would be helpful. Approximately the useful life, life expectancy.

S The life expectancy of the car or the mechanical refrigeration unit specifically?

S The unit specifically. You want a replacement.

S Yes, replacement of the refrigeration unit.

S Okay.

S Well there's, whether it's replacement life or major repair cycle, there's a concern there we have with effective date, in that changes could be made on the refrigeration unit without forcing it out of service due to the noise fix by itself. That's the time period we're concerned with.

S Something in the area of a mean time between major overhaul or something along that line.

S Intermediate and major overhaul.

S So that a noise fix could be incorporated without forcing it out of service due to noise only, like a piggyback or something else.

S And going along with if a replacement has to occur, what shock load how would it be occurring, and where? How would it be scheduled?

S I don't understand your question.



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S If a replacement interval on a refrigeration unit comes due, how would it be scheduled so that you have minimal impact on your utilization of the car? How is it worked then into the schedule? We're curious, in which shop would that be done? Would a subcontractor do it, coming to the yard, or would it be done in your maintenance shops? . . .

S Well. . .

S I'm--I'm--I think your gonna find that there's very side variation in, you know, response to your question. For example, much of that equipment is privately owned, and you know, it's done by either the car owner or contractor to the car owner.

S Okay, let's move on then to the coupling noise question.

S I just have one question in connection with the car coupling noise, and that's whether or not you have any data which describes the distribution of coupling speed in both hump yards and flat yards?

S To my knowledge, we don't have actual data which would describe, for example, what percent of couplings in both hump yards and flat yards occur in excess of 4 miles an hour, 5 miles and hour, or so? That kind of a distribution.

S I. . There was no speed. . .

S We don't have any specific information to my knowledge of that type. Of course, the basis for the proposed rules was on industry practice. And establishing the noise relationship to speed. And the question you've asked really doesn't bear on that relationship between noise and speed. You're just looking at speed distribution.

S Chuck, do you have data?

S I'm not aware of any data. Peter are you?

S Yes, we have copies of several studies that have been done over the past years, summaries of which I sent to you in a letter form some time

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back or I guess it went out under Hollis's signature, in response to your letter about rules, you know, rules for car coupling. Remember that letter.

S I don't recall it. . .

S Well, you sent a letter.

S Right I sent a letter to all railroad companies, including the AAR asking for copies of rules or recommendations about car coupling speeds, and our response included information summarizing. . . several reports, which we have on file, concerning measurements of car coupling speeds in yards around the country. Since then I've found out more data are available on what they call a safe car handling day which--something like that--which was an annual event which I think has since been discontinued, where every railroad in the country had either an AAR inspector or some kind of a safe car handling guy out for a day and they measured all the car coupling speeds in the yard, or they tried to do the best they could. So that data is also available.

S I don't know how much confidence I'd have in that data.

S Well you have to understand, that, you know, that safe car handling day these guys were out there doing the best they could and it was significantly higher than the normal distribution data which was measured by people such as Pullman Company.

S This does not imply that we have done away with safe car handling.

S Higher, you mean they couple with higher speeds.

S No, no, they coupled at 4 miles an hour at a higher, at a very. . . at a higher percentage of the time.

S Even when they were doing their best?

S Even when they were doing their best, well, I'm not going to

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without the data in front of me tell you what the data are, but I can provide that information, indeed I was planning to, as part of our comments. But if you want to see it before hand, I don't see why I can't find that for you. . . Yeah, I think we would like to see that. As you know, we did write all the railroad companies and ask what their practice was as far a coupling speed, and we essentially adopted what the railroads had told us was their practice. On the other hand, some of the history and litigation for lading damages said the same thing, that 4 miles an hour is the way the railroad operates. We're essentially adopting the noise requirements based on how the railroad operates. Everything we had in writing so far companies directly have said it's 4 miles an hour. If it's 5 miles an hour, fine.

S Well again, like I said, the numbers that I do recall--I think in the letter that I wrote to you--was "that in general about 50 percent of the time the car couplings occur between 4 and 6 miles and hour; about 25 percent of the time it's greater than 6 miles an hour; and 25 percent of the time it's less than 4 miles an hour."

S So it's by no means all the time 4 miles an hour, and I think we can show that's. . .

S Yeah, we'd be most interested in receiving that. I guess also the--well you've seen the data that we've collected on the noise relationship--we essentially took the maximum noise level at the 4 mile an hour speed. That's an area that we're continuing to be very interested in because of the impulsive and annoying character of the coupling noise, and there appears to be little that can be done except operation of the kinds of controls and slowing down these cars. It's difficult to envision technology except perhaps the European bumper type system which have never been adopted in the U.S. to quiet the car coupling. But we would appreciate receiving that data.

S Yeah, I have a question on: when you established the limit of 95 as an L<sub>eq</sub> average of . . . coupling, was your data base coupling operations that occurred in the immediate vicinity of the microphone, in other words, the distance specified in the regulation data described in Appendix O? Yes,

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it was a controlled experiment at Savannah Army Depot, where we had a number of different types of cars that generally represented the majority types of cars in the system--loaded and unloaded, usually we had, I think there was 3 cars that were coupling into and it was, I think, hopper cars loaded an empty box car, loaded, an empty several other kinds--and it was under those conditions that we established tht relationship between noise and impact speed.

S Is there a low level cut-off on coupling speeds; a point at which you really run into trouble. If you dropped the load 2 miles per hour, coupling, you know, is there a point that you can specify as a lower cut-off?

S I'm not sure it's actually specifiabile, but there is a point at which the cars don't ouple and you have to physically push them together.

S Maybe Joe might know what that speed is.

S I don't know exactly what the speed is.

S Does it vary from car to car, depending on, maybe when that. . .

S Sometimes you know, if the cars are coupling together on a straight track, then regardless of the speed, they won't couple, or if the coupler or the shank is off to the side they won't couple either, but actually speed would be the . . . 25 percent of the cars are coupling at less than 4 miles per hour but there really isn't any data which shows how the percentage of poor couplings increases when you lower the speed there. Yeah. . .

S It might be three, but they don't couple at 2 and a half or 3.5. . There's probably not really any good data on that at this point.

S None that I'm aware of.

S It's not really a problem unless you get what is referred to as a stall in which you, you know, the car stalls down the track in which case

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you, you're taking up a lot of room in that particular classification.

S There seems to be that problem rather than failure to--

S But if the car rolls down and doesn't make couple it's really not much of a problem, because when the trim engine comes in from the other end, he's gonna bunch them all up anyhow and --

S So the primary concern is seeing that they travel down the yard and are in close proximity to each other and don't waste space.

S Right.

S If there's no further questions on coupling, I'd like to move on to the. . .

S If you'll excuse me, would it not be appropriate to ask a question about car coupling rates or activity parameters at this point?

S Would that. . . Agenda?

s Speak.

S Okay, I'd like to ask a question. . . Now this again is getting a little bit away from the individual impact source standard, but since we're talking about coupling, to expand it a little more to how we looked at the total yard situation from a modeling standpoint and so forth. Sam ask your question.

S Well, would there be any data that would indicate the average number of cars coupled at a time? Like, you know, if you're humping 2 or 3 at a time or kicking 2 or 3 at a time, would there be any data that would indicate for different types of yards, hump or flat classification yards, or industrial yards, and by activity, whether it's a high traffic rate yard, maybe that's not. . .?

S Parameter, the average number of cars coupled at a time? The motivation for this is: how many of car impacts a day take place in a

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take place in a type of rail yard, and how are they distributed throughout the day and the night?

S I, Sam, I'm not. . . aware of any existing data, or even, you know, there may be some reports around which contain data which could be used to develop some estimate of that. For a typical hump yard for example, if there is such a thing, one could take the daily car count over the crest, for example, and get some estimate of what typical cut sizes are, that is to say are the single cuts, and what percentage of multiple cuts do you have. And come up with some estimate of, you know, the number of impacts in the bowl, for example, that you're likely to get in a typical day's operation.

S And the other part of the question is this: are there any data that indicate where in the classification yard, either a hump or a flat one the car impacts are likely to take place or would it be distributed throughout the whole yard area or?

S Well, in a hump yards, most of your--just about all of your--impacts are gonna take place in the bowl, in the classification yard itself.

S The bowl, I think is, you're thinking of it maybe 4,000 feet long and 200 feet wide. . . Yeah, and where typically within that? As it fills up it moves right on down. In other words, as each classification track within the bowl gets filled up with cars, each impact is gonna occur closer and closer to crest of the hump. So there is no--I don't know what you could do there except come up with some kind of assumption of a uniform distribution over the entire bowl track.

S This car coupling, as I understand it the company's policy, most companies 4 miles an hour? That's the stated company policy; that's the target figure, that's correct. It actually at the field it is being coupled at lower speeds than I guess that is operational impact that. . . in here more to classify. . . cars itself. On the other hand, if--

S Excuse me would you say that again?

S I'm making some assumption. . . if actually at the field the

the retarder area.

S We have basically the same kinds of questions here, they have to do with the comparative data used to qualify the effectiveness of noise attenuation devices in connection with retarders and specifically, which would quantify the effectiveness of barriers, lubrication systems . . . and retarder shoes. Both singlely and in combination. A description of the test procedures, that is to say where and how were the measurements taken? For example, were they taken perpendicular, all taken perpendicular to the barrier, at what locations around the barrier specifically were the noise measurements taken? And, as I say, cost data and a description of the technical description of the kind of barriers for example that were used, what kind of configuration, what kind of construction materials as well as the cost data. So that very briefly is the kind of information we'd like to have in connection with the retarder data that you used in your study.

S Well, as far as a basic procedure, Richard, I guess I can talk to that, that's described I think in the background document maybe not, to . . . details just indicated.

S Let's address the description of the technology that was used and the testing and the data base first and then we'll move in a, where our costing information came from. . .

S Okay, fine.

S And perhaps we could elaborate a little more on what was in the background. . .

S Well, the first problem, I guess is do you have no difficulty with the number of retarders that's a basic number I used, that is, it turns out there are 124 hump yards.

S I think that's--.

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S Pardon?

S That's just a little low, there have been some few built since then.

S Okay.

S These data come from basically the FRA, DOT, SRI documentation.....

S Yeah, which is the . . .

S Right.

S So it would be nice to have the. . .

S You're saying there is how many more. . .

S What's your number of hump yards, I think mine's 127, I'm reasonably sure that's what it is. . .

S I guess we would like to have the additional number of hump yards and names of the yards and the data that you have associated with them as a point of departure. . .

S Such as number of cars handled, that kind of general description.

S Yes, right.

S What I can provide you very easily is information that the suppliers have supplied me, and can easily supply anyone else regarding the type of equipment and the number of tracks, physical information about each hump yard, each. . .

S Okay. . .

S And it's reasonably up to date, I say reasonably it may not include the latest couple of 3 or 4 yards, but you can switch. A signal company,



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for instance, provided me with a report which, a sales brochure telling everybody how well they've done in comparison to everybody else, that makes retarder yards and it does tell what the yards are like.

S Okay, well, I think EPA would like to have that information updated as you can in as short a time period as you can. . .

S In connection with that again, I hate to bring up the same feature, but any abandonments foreseen in the future regarding these yards or additions or expansions.

S I think my knowledge doesn't include information like that, but I know that SRI made some estimates in their report concerning. . .

S But that's 3 years old, do you have any more current than that?

S I don't know that the AAR does.

S It's awfully difficult to anticipate things like mergers and consolidations and rerouting of traffic, you know, we get surprised when we read the newspaper about, you know, which, the latest two railroads that are, that have a merger plan under study, so. . .

S Our problem is our cost estimates and also the health and welfare estimates look at the future oh, 10, 20, or 20 years. . .

S I understand your problem. .

S And, we wanted to synchronize the report. . .

S Does the information contain who the yard owner is?

S You want an operator??

S It does tell you that, and that's interesting because it includes

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companies like Penn Central, Lehigh Valley, and the railroads are no longer in existence, as such.

S Yes, they just. . .

S So the report actually is kind of dated. . .

S But this is the one that you the most recent one that you have.

S Yes.

S And that you say has physical characteristics and is that also yard dimensions?

S No.

S It does have track.

S It tells how many tracks there are and. . .

S Does it have other employment and other parameters besides just hardware, like employments of. . .

S No.

S This is a report made by member manufacturers to sell more hardware, so it doesn't include other kinds of information.

S Yeah, with regard to the question that's on the table, let's address the technology and some of the data specific to retarders. . .

S I just wanted to get basic reference points correct to that noise abatement calculatons at least that we have gotten are agreed upon, Dick

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will talk about. . . information that we have on abatement procedures for the cars. . . areas and . . . shoes as a technique and lubrication and the like. . .

S The most definitive study we have on barriers is the TSC Burlington Northern study which I imagine you are familiar with. In that measurements are taken at perpendicular at angles to the perpendicular and at elevations and at 3 different distances. The barriers are tested with and without absorptive materials. These were commercial barriers provided by IAC and I think for the details of construction, I think the reference itself, the report, which was at the time the background document was put together, not released, I think now has been released and there's an awful lot of detail;

S Can we. . .

S Pardon, can we get a copy of that from you, can you perhaps give us some information of how to obtain a copy of it.

S Now who, that was prepared by who?

S The TSC.

S It was prepared y TSC. . .

S Okay and it's. . .

S Burlington Northern is the, I believe the official contractor.

S Burlington Northern has agreed to release it to public use is that what. . .

S TSC is I believe now releasing that yes.

S It's a. . .

S Do you know that for a fact, that it has been released?

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It's an ongoing study. . .

S The last I heard it was due for release in about 3 weeks this was about a week and a half ago. . .

S Okay, that's exactly what I heard, yes.

S Okay.

S It's in the process of being. . .

S Do you know. . .

S So it is not yet available and in fact we have been trying to get some data out of it and have gotten some resistance on the ground that it's not worth the effort to go look it up because it will be released in a week and a half or so.

S Rick, what's that document referenced in ours? . . .

S Pardon, it's your reference 2 in section 5.

S Yes.

S Okay, let's work out some kind of arrangement with TSC so we can make that available as soon as possible. . .

S Where is that reference? . . . is the, is table 5-2 on page 5-5 taken from that refernece? The one that shows the insertion loss of the function . . . ?

S Yes it is.

S Figure. . 5-2. . yes. . .yes . . .okay, the data from Venice yard then is not included in 5-2 or 5-1.

S No, the data, there are no figures on the, the Terminal Railroad Association. . .

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S Right. . . data, no we don't have any figures to go with that. . . we have some information on the Terminal Railroad, the State of Illinois does, and we'll send that to AAR and EPA, including costs, plans on the barriers, they're inclined barriers, I think approximately 12 feet high with absorptive material inside.

S The Madison Yard, I think it's . . . Venice Yard, Terminal Railroad Association.

S You may have that, some of that data . . .

S Do you know if that data base includes angular measurements around the retarder as opposed to just at 90 degrees?

S I think that primarily in terms of 90° I'll have to investigate to see if we have the data. I believe there are some data different distances that are angular because the makeup of the yard there's several sets of retarders with barriers and making measurements in one site you're gonna get data from other sites and so the will be some angular variation.

S Yeah, if you could provide that that would be very much appreciated.

S While we're on this specific topic, could I ask in the model study, when you calculate the reductions in ANI by assuming various insertion losses when you employed certain of the noise control techniques, what figure did you use for the retarder the loss of your barriers would that be, did you use the 90° value or did you do some spacial average around the yard? Around the barrier? . . .

S The figure used was 20. . . would be very close to the range for the barriers that we stated in the background document was 16 to 20 db the range generally that we found was up to 25 dB. . .

S Does that not represent though just at the at a position 90° out from the center of the barrier? Now not all points on the boundary line are 90° out from the center of the barrier, in particular, the group retarders generally point out in toward the community or in toward the community or in toward the boundary line so that normally the closest point on the boundary

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of the yard would not be making a 90° angle with the barrier.

S That would include an angle from 60 to 90° roughly. . . The other thing, too, is that the retarder they're not always adjacent as the tracks fan out or whatever the proper railroad term is, you know the group retarders are not always directly adjacent to one another in a row, they may be staggered and concerned with an average as you get further out, the average of things that are happening change.

S Bill, I understand you're gonna try and get in touch with TSC and see if we can't get some of this. .

S Yes, we'll work it out. . .

S Data released in . . . advance of their official release of their report.

S Yeah, we'll work out some type of arrangement now, whether we can get the full report or not, I don't know at a minimum, I will get you the portion that we used, I think we got some kind of an agreement from them to use what we did use in the background document and I'll just make sure we get the whole section that deals with this and I'll ask Rick to be back in touch with you tomorrow on the status of that.

S Okay.

S On the source of base line data, on page 4.5 you 410 measurements, with energy average of 111, what are the source of those 410 are those previous studies the BBN studies and the Wyle studies.

S I believe so.

S NBS.

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S How does the insertion loss vary, say if you just took perpendicular lines.

S Yes.

S Went 200 feet or a thousand feet out of the side as opposed to 100 or 200 how is the insertion loss.

S We have . . .

S Vary. .

S We have data that I'll be able to give to you that measurements up to about 1/4 of a mile, those barriers were installed because of a large number of complaints from the residential community that was located approximately 1/4 of a mile from the retarders and so we have a large number of data at the residential property in addition to data close made with the cooperation of the railroad.

S I mean before and after type. . .

S Some of it, yet not as good as we'd like to have it. . .

S Does the . . .

S That large tend to get. . .

S A reduction . . . I don't know what we're getting at the . . . I said 25 dB, I'm talking at 100'. . .

S See, that brings up another point, some of there are draft documents available of pieces of that TSC study, its been progressing for years, some of them reference distant measurements made at distances 500 feet from the barrier rather than 100 feet. That data doesn't seem to be available,

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one of the report we have mentions the data was collected there, but there aren't any numbers. . .

S No, I haven't seen any 500 foot data. I've seen the 100 foot data. It's that sort of thing that we're hoping is in this final report.

S It may well be.

S It's very particular that it's not there, because one of the reports actually assigns it a microphone location and there's a place in the summary table for that microphone except there aren't any numbers there. . . yes. . it's a possibility.

S You measured at the North Town Yard.

S We did not.

S You , who measured at North Town?

S Burlington Northern.

S Were they at distances greater than 100 feet?

S They didn't measure retarder noise for us.

S The information that we gave you the same information . . . yes. . . property-line or nearer to the property lines. . . to get a 24 hour. . . the other question I might have on this new data, not in terms of insertion loss but in terms of the actual values you're getting from cars squealing behind these barriers, what are the levels indeed below.

S That's why we're taking them right now to see how they compare with proposed standards.

S Are they below the standard, there are too few data points to generalize so I wanna get a large number of data before I answer that.



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S That's the other thing that's a little bothersome, a lot of the data that exists in other studies shows. . .20 dB insertion loss, but when you look at the actual level that they're getting with most barriers, not with the highest ones, the 12 foot ones, but with most barriers, 8 foot barriers, for instance, they're above the standard and one wonders, you know, what the discrepancy is you see.

S Is that just single values or  $L_{eq}$  of all the values?

S Well it's sometimes hard to find out, cause if it's, and I'm thinking in terms of a few BVM, and, of course, I believe their average is over a great number of, I don't know how many, over several certainly more than 1 or 2 squeal events, that's the problem, it is a statistical sort of thing, you've gotta sit there and average a lot of them in order to be able to compare before and after and they use them to get insertion loss but then if you look at the raw numbers, there are in many cases, I can't quantify exactly how many, there just not below 90 even with the barrier.

S There's always, I may be misunderstanding what you're saying but if that's the problem of apples and oranges how do you know that the squeals made after the barrier was installed . . . the average the same as what was made before it was installed.

S Oh, but you don't you have to assume that, that's always. . .

S You've gotta assume it's a stationary process, but actually the really important number I think is when the barrier is in place, are our cars generally meeting this proposed standard? And I have yet to see a very much data, I know of one instance where they do, it's a very high barrier, it goes beyond the ends of the retarder considerably and it's a very high barrier, and it's got a lip on it. I think it was in one of your reports. . . BVM and they just make it, in fact I'm not sure I think they might be even past the . . . it's that type of effort that gets you down to this level and I just wonder what data is available to, you know, it's just one measurement or one set of measurements what does it take, is it available. . .

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S You're also, in your energy average they include all data points including those that were 40, 50 dB below the maximum, those values included in--

S None of that data includes any retarders or barriers. . .

S Well, there's a lot of distribution in some of the early reports 30 to 40 dB variation of cars going through retarders. . .

S That's just an energy average of whatever data was available, and as I recall sometimes there were histograms of numbers of occurrences versus levels.

S Okay, included all of the low levels in addition to the high levels.

S We energy averaged the whole bit.

S I might continue that there have been several presentations and . . . presented to the AAR back in 1973 data on retarder noise reduction that is consistent with what's presented in the background document, in the Burlington Northern Study that was by Robert Carroll, it has been a BBN study of the Pascal Yard in which they measure reductions of 20-23 dB and as a gives a detailed. . .

S This is barriers. . . barriers. . . an article in General Rail that is July '74 20 BVM more. I think that 20 dB figure has been appearing over and over again. . .

S Now is the barriers that went in in the State of Illinois does the 20 dB track with your findings. . .

S That's low, our value is higher than 20 dB, I can't give you an exact number now, because I don't we're having some measurements taken yesterday. . .

S High reduction or. . . a higher reduction than 20 dB. . .

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S The barrier height is a critical parameter. . . everything I believe that's what's costed out is an 8 foot barrier. . . read that a long time ago so I'm not sure you can get it with and 8 foot barrier. .

S I haven't personally seen any reports of anyone that's gotten below 90 at 30 meters with an 8 foot barrier. That's just a vague recollection from . . .

S The type of range from either 8 to 12 feet.

S In costing the figures though, it's probably closer to 10 feet.

S Ten feet. Okay.

S A complicating factor is the elevation of the receiver too, because it seems in yards that have been sampled so far yards that. . . receivers are up near the barrier insertion loss. . . a complicating factor models. . the model considers only flat surface.

S And it also assumes an open field I think between the source and the receiver.

S Yes, it doesn't take into account any shielding by parked rail cars.

S Or any other structure.

S That's to the boundary.

S Right.

S After you have passed the boundary I think structure shields are taken into account in an approximate way.

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S Well, I think on the barrier issue there appears to be some information sharing that we can do here a couple of new sources that have been identified that not all of us were aware of new sources, there were some other parts to your question that dealt beyond the barrier.

S Well, the lubrication systems for example, and the . . . shoes, we just wondered, you know, essentially the same set of questions, you know, with regard to any noise data which quantifies the effectiveness of those devices and technical descriptions and any cost data.

S Other than those that are shown in the background document in reference there are 2, I don't think we have any additional information if there are such available, but those were the only ones that we were able to get that appeared to be relevant both in terms of abatement procedure and of costing.

S Publish any dB reduction values for the . . .

S Well, lubrication and . . . shoes basically reduced the numbers and that's in section 5, 5-7 here is the description. The information came from Burlington Northern. It's there, it's the only one that I'm aware of . . . there is another one . . .

S Based on noise emission levels itself . . .

S That could be . . .

S Effect be held . . . in that it reduces the . . . we didn't use that though. I didn't use that in the calculations of noise abatement. Was that used in the costing?

S Lubrication system?

S In terms of . . . was it costed out? We didn't toss that out, right?

S Not lubrication systems, no . . . no . . . shoes okay. . .

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That's an annual replacement . . . high maintenance cost . . . I guess, let's see I think we spelled out the unit cost on the shoes. I believe we got that direct from vendors. Is there any comment or question on that unit cost? . . . Which vendor? . . . Let's see, which vendor did we go to on that? . . . I don't know.

S If we can find that out if we well, it would be interesting, but it's not necessarily critical information . . .

S We can continue on with the. . .

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. . .switch engines and once again there is one other area under charters that we didn't touch on that I'd like to question, that's the releasable . . .when we go to the more stringent level on hump yards, we costed out releasable...on all yards based on the, you know, the amount of assessment you've done on that. Is that reasonable, or is, does our data look good from your standpoint. I think we assumed the releasable...be installed on every track in the classification yards which might be a bit of an overkill. I don't know, I can't, the number of tracks agree with the kind of values you're looking at. . .

S I honestly haven't got an answer. . .it's something we gonna look at, certainly. . .is our unit cost on track with what you've been getting from your sources...it's...refresh my memory on the unit cost. . .it's \$7,500 per releasable. . .to purchase and install it. . .that seems very low from what information that I've got. . .this is . . .\$10,000. . .it still seems low. . .for installation included . . .I have one vendor that supplied me an approximate price of \$27,000 to buy one. . .a new one. . .and that didn't include installation that was just off the shelf price and I mean that's not an exact price. He said it was in the ball park of \$27,000 per unit there's an alternative method and indeed alternative suppliers, this was just one, and I'm trying to get another one, another supplier, but some of the inner retarders that are presently on the market, and presently installed in some of the yards can be converted at a lower cost on the order of perhaps \$15,000 per unit, again that's not an exact figure. It's a little less than the . . .you already have but can be converted.

S . . .we don't have any estimate of how many could be converted?

S . . .No. there's that kind of information at this point isn't available and I'm not sure that it's gonna be...just a particular time...it's just one company's brand.

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S . . .that's what the company would charge, now...you had railroad labor do it, then it would be different. Or, if you had another outside contractor come in and, as a third party type, it would be a different price.

S . . .do the railroads have difficulty in, say, getting an outside contractor to come in and do that kind of work, or are there...?

S Yes...

S Or are there legal problems....?

S Yes...yeah, I'm not sure...

S Another problem too, which is brought up by that, is that you hire an outside company and you come in and start tearing up the yard. They, I'm told, from railroad professional engineers, that you're not gonna get a good itemized price or estimate before hand, because in the railroad yards, under the ground, there's all sorts of stuff. Air lines, water lines, gas lines, electric and telephone type lines, or whatever, and there may not necessarily be the....not getting detailed plans to tell you where these things are so that when they start digging things up. . .Yeah, it's an expensive position to start with. . .so that tends to inflate the cost of having something done by an outside contractor. .

S Just for the record, Peter, the AAR provided EPA, in a 1975 EPA regulation, the unit price of the releasable retarder, and that's in the Background Document, about \$7,500. We inflated it and added some additional cost to raise it to \$10,000, to go to the \$27,000 dollar line from the single vendor. I think more information, perhaps, could be gathered.

I think what is being suggested here, is that we get a couple other data points...it sounds a little out of line..

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I plan to do that. I already investigated that research... I don't know if a copy of the letter that AAR sent to EPA.

It's in the Appendix of the old document.

It's on D5 or D17, or there about.

I think that finished, probably, any other discussion on retarders...

Someone just recommended that we take a break. We will take a five minute break.



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S Source level. . .

S Well, . . .

S From your standpoint, looking at the data you've reviewed. Is there a particular value that you recommend for modeling purposes of idling switch locomotives?

S No. My people are still working on it. You don't have any data, by chance, to show what are the major sources in idling? . . . Don't know . . . exhaust noise . . .

S It says right . . . Background Document that this has been set . . . But there was. . .

S Do you want the answer to your question, or what?

S Yeah.

S Idling . . .160.

S 63

S That's an energy average. That's not a mass. How did you come up with that?

S By taking the energy average of whatever data was available to go into this. And I don't know if there was a histogram of levels or whatever. I'd have to look into our data sources.

S There are . . . setting of data in the Background Document of all types of locomotives.

S Well, there has been apparently, an energy average generated

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and used in the model. I guess this is what I would suggest that we do is go back with the actual calculation that we went through to come up with that value and provide that. . .

S There's some 63 data . . . Those are among the numbers, some of the numbers that you gave me. I glanced through it, it was there and I gave it to . . . But I believe that it had the individual numbers.

S OK. So essentially we've already provided that to you. OK. Right. But the question I'm curious about, again we're talking about reductions, you suggest that in order to get to the regulatory level that it will be necessary to, put mufflers on locomotives. That's one of the figures in your tables here where you give the various price control options to achieve the various study levels.

S That's not necessarily necessary. It's an option in terms of the costing process. That was one of the ways costing was developed. But any manufacturer, any railroad company could use whatever they feel necessary. There are many different combinations that are possibilities . . . understand that. . .

S Oh sure.

S The other thing too, is that locomotives are used for other than just sitting and idling.

But they're usually at low . . . theory . . . population that's published in this report . . . 40%, or something?

S Yeah.

S Almost all the time . . . setting . . . or less.

S Yes. There is some data that. Not a lot. But there is some. And we use that to develop an energy average level for a locomotive switching cars. Now, you know, at this point, once again, we should indicate that we need additional, or this is another point of departure in getting activity parameters and data, for yards, of what's the average switch engine push or kick cycle when it has various throttle settings, etc. So there was some data about that and some deviations or assumptions that we made in doing that. And, in addition to that, applying technology, a noise reduction alternative to the model for costing purposes, I don't think it's quite applied in the way you're thinking about. I think Dick or Elliot might, I don't know maybe they'll have something more specific to say about that, but it's, it's more of an application on an overall average basis for all kinds of yards for engines operating under cycles, our energy average level we have to assume for an energy average for a time at certain throttle settings, and a time at higher throttle settings and a time at a lower setting. That kind of stuff.

I think the point of confusion, perhaps, I don't know if I'm gonna clarify it for you, but in terms of the process the one goes through in trying to assess all elements of this kind of study, one makes a certain amount of assumptions which are based on very good firm . . . data., others are based on analyses and extrapolations from a data point and in terms of developing a whole scenario there was, a series of assumptions or data used to develop the configuration of the yard, assess the major noise sources to decide what would be the quieting techniques generally appropriate to meeting the various . . . study levels and costing . . . on that basis. We get down to specific situations . . . might find by using the suggested treatments that EPA has, you know, put into the Background Document, those things might not work on a case-by-case basis, that they would have to do some shifting. In some cases it would be cheaper for a yard to apply and in other cases it would be more expensive because of . . . situations. The hope is that this sort of national average

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arrogate somewhat is in the right ball park when you would add up every single yard's individual cost. Some being higher than, what would be presented here, others being lower because of the unique situations. This would average out to be a fairly representative average national figure. Now, whether or not that's true only time will ever tell. But in terms of our analysis process, you know, this was the best data that was available to use with a given . . . and everybody can sit here and . . . millions of . . . because enough data isn't available to give everybody pertinent confidence that everything is done with an extremely low margin of error. Quite probably that is not a reserve within 1/10th of 1 percent accuracy. And this is sort of a, quote, question marks, that I think we all have to live with. And, even trying to prove, but I think that this is some of the difficulty when you're trying to process a very complicated analytical kind of a study in six months when there is no . . . And one has to take short cuts and make assumptions based upon data . . . One is better than nothing. How good is one? We've all probably scientists here. I guess we all don't want to live with one but sometimes we have to. Until we get the second one and change it.

S Yeah. I understand your point. I think one of the things we've concerned about, you say, shifting to other alternatives, I think we're a little uncomfortable as to whether or not there are alternatives to shift to.

S OK.

S And based on what their costs might be.

S Yeah. Yeah.

S What their effectiveness might be.

S Yeah. Yeah.

S And I also quarrel with you on one data point being better than the one. I think that in many instances it's proven that you are better off with no data than (laughs) one . . .

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S Yes, that's sort of . . .

S I was going to suggest that . . . maybe you at least admit that you should go get some. That if you have one data that you sometimes convince yourself that it's good enough.

S My point is that when . . . doesn't work you may have to have a higher barrier around your retarders. You may have to move an engine and that could . . . yard, and that might be more costly.

S You know, that's possible. But then, again, if your levels are initially lower than the base lines here projected than, in fact, . . . might be cheaper for you to meet a specific level than is what is promulgated here as based upon these techniques. So, this is where some of the complete. . . lines. . . process. And I think everyone of the numbers that we had published. . . in terms of the real world situations and how this relates to the real world. I guess the concern is that is there is no reduction possible then the only thing to do about, in those areas where I link locomotives are slow moving locomotives are the problem. Where the major contributor to the  $L_{dn}$  is . . .

S . . .turn off.

S Well, that, that

S Operational. . .

S Right.

S That engineers a whole other series of problems. . .

S Well, I think what we are trying to do here is to develop our estimates of what it is going to take us to come in compliance with . . . and what we are really trying to do here is to find out whether or not you know some things that we're not aware of. Help us go through that exercise.

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S I think that the direct answer to your question, what I recall from our other rulemaking and what I've heard here today is that the data that we have, noise reduction for switcher locomotives basically comes out of the GM work as part of the background for the initial rulemaking.

S Yeah. Yeah.

Which did show, that a 3 dB was achievable. Now, the other part of your question was, What about the cost of that technology application? and, let's see.

S You mean the cost, that is again from the old Background Document?

S That's essentially from the GM estimate also.

S That's correct.

S Are those from . . . low frequency mufflers?

S Yes.

S Reduced low frequency.

S How, in the old Background Document . . . General Motors makes estimates on . . . mufflers . . . cost estimates on which we are talking about . . . Background Document . . . I wonder . . .

S I don't think I can. Right now. I can't. I have to look at what your, the old Background Document and see if those . . . actually are different. And how much.

S . . . Numbers?

S I believe that what you say is right. OK?

S I know there's a big range of costs. . .

S And the more expenses, . . . many of the more expensive ones are road type locomotives.

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S Yeah. It's true Bill. All these costs and reports that GM did were for road type locomotives. . . locomotives, per se . . .

S See, that's one of the differences, at least as I understand it, was that a big part of the cost in fixing the road locomotives, retrofitting it, is that you have to replace the underside of the hood, in order to make the space available for that larger muffler. And on a switcher you have . . ., at least on many of the switchers you have the space available above the hood. You can lay something on without replumbing. And, when you take out that cost, the unit costs for retrofitting a muffler drops substantially.

S I don't know how appropriate it is to develop into this too much, but let me just say . . .

S I think it's worthwhile to try and nail down where our data lies.

S Let me refer here . . .

S . . . You came up with the Bill? . . .

S . . . Seven locomotives which a lot of . . . conversations . . . people . . . recent conversations. . . specified. . . They say that the cost of . . . locomotives actually . . . install noise abatement equipment on the locomotives, is not much different than what they said in 1975. In other words, the hardware prices are not much different . . . cost be inflated since 1975. The method of noise abatement is different. Instead of mufflers they are replacing . . . the exhaust . . . redesign . . . comply with . . . standard . . . So, . . . have to . . . old . . . new one to make room for . . . switcher . . . rebuilt. And we feel that the cost of that . . . labor charge here . . . But everything else is still about the same.

S So, they are saying the total costs is about the same too even though they are going in different route to, a trade off.

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S Yes.

S Date of the . . .

S In 1972 . . . , it was 16,300 to the muffler on the locomotive including time out of service . . . labor and parts . . .

S You did say . . .

S This . . . inflated to 1979 prices and labor charges . . .

S When they said the same, they were not talking about 1979 dollars, they were talking about 1973 dollars, is that correct?

S That's correct . . . And that's why I'm concerned about the price difference . . . switch locomotives . . . true are not quite the same as . . . but still the same . . . Procedure has to be gone through . .

S Yeah.

S Silence . . .

S Yeah. Well, I think this has been helpful. At least from my standpoint, to get. This is new information to me and it's, I think it will be helpful in assessing . . .

S In our comments . . . prepared . . . try to explain . . . figures . . . costs . . .

S The GP7, the GP7 represents how a large portion of the switch locomotives, switcher locomotives . . .



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S Well, you see, it's again a matter of distinction or definition of switcher locomotives.

S Yeah. This goes back to our original question, what assumptions . .

S I don't think your GP7 in your categories is called the switch locomotives?

S No.

S So, how many yards do we use then?

S See, I think the slightly . . . technique that has to be corrected, there seems to be this idea that there's this category of locomotives called switcher locomotives and it's for that category it's relatively easy to do noise control and that's the one that's usually used for switching. Well, I'm not sure any of those statements are true. From what Peter's saying, switcher locomotives, per se, although they do have more room to, to put the mufflers in, the cost really isn't that much less because you still have to do a certain reworking of the body.

S The room is there. The parts are expensive.

S The parts are expensive. And if they are cheaper, they aren't used, I mean it isn't that all the switching is done with that type of locomotive. It's up to the individual . . . railroads. These guys tell me when a line locomotive gets older, they use them in the yards for switching operation. So you could find almost any locomotive . . .

S . . . GP7 the original . . . oldest and yet . . . passed . . . Metro area . . . station . . . The companies don't, many companies buy switcher type locomotives any longer. They just delegate their older . . . this function.

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S Is there any, I guess we've kinda battered this around, what actually is used for switcher use and what isn't. Is there any way that we can nail that down a little better.

S Well, we intend to try. It's in the works. Whether or not it works we'll see, but I don't have any information back yet but we've asked the companies to tell us what they are using, if they can. But, I did find in her as I was looking through, there was a list of locomotives that are in use or were in use at this particular time on page 5-25 . . . dated 5/6, "Switcher locomotives in service for a total of 6,000 units," and EFD between 1940 and the present, which was 74 or 75, or something like that, 4,400 units in service. Alco, GE . . . and Morris have a total of 1,700 units in operation. And, so, presumably they . . . other locomotives are fewer . . . service. It seems to be consistent . . . 6,300 . . .

S The fact that the table is labeled "Switcher Locomotive" . . . necessarily mean . . . or does it?

S Well, I don't know what it means. Whether it means SW 1500 type switchers and designated by the manufacturer as a switcher locomotive or designated by the railroad as switcher units . . . It's not clear to me exactly what that means. And we're trying to find that out too . . . what do . . . mean? . . . ICC in our case . . . yard switcher locomotives . . . I don't know.

S Well, that's certainly . . .

S The term, "the switcher" is giving us fits.

S Yeah. I can see where . . .

S Well, we had relied on you to define "switcher" because we just took it right out of your data.

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S (laughter)

S Yes. (more laughter)

S Did you remember that problem?

S Yes, I also remember defining railroad equipment and facilities.

S (laughter)

S Everybody knows what they are but nobody can define it.

S Bill?

S Yes.

S When you did your cost calculations for putting mufflers in switch engines. . .7065 standard, how many switch engines did you estimate it required. . .

S OK. That, in that rule the only locomotives we really ended up requiring, theoretically, to put on mufflers, were newly manufactured ones. That was not a retrofit rule. You were talking about...?

S I'm talking about this 7065 standard.

S That was just for a, locomotives used for switching operations in yards. . .indicated.

S Dedicated.

S Yeah.

S So, how many were...?

S . Six thousand five hundred forty something.

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S ...that none of the other locomotives that normally...in a yard...

S That is correct. Doing switching operations. That's correct.

S Is that all of the delegated switching...?

S That was the assumption that was made...

S And as Peter just mentioned, that seemed to track with the figures and the earlier study too.

S Yeah.

S It was 6,000, but is it what they are, is something else.

S Yeah. Whether it really represents ...used as switchers or locomotives used as switchers is not clear. At least to me it isn't.

S Well...

S Maybe 6,000 switchers ...service...how many thousand locomotives?

S 28,000.

S Well, can you get at it by going the opposite way, knowing the total number of locomotives and the line haul. The power units are fairly, they keep pretty good track of those. Can you back into it by defining those used on line haul? And subtract that from the total number?

S Well, I..

S That's sorta what the ICC did.

S Well, we're doing it too. Yes. And our definition of equipment. .

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S Yeah.

S . . .usage. . .

S Is the assumption being made that the locomotives is not doing the switching. That it is not a problem? There's, there's no noise control needed?

S No. No. It's for this particular operation. Switching operation we define that, that a certain number of locomotives, there's other parts of the yard where there's servicing of locomotives and all that which would include line. . .

S I understood you to just say that in costing, what it would cost to take care of locomotives. Are you only costing in modifications of the switching to be six thousand and. . .?

S That is correct.

S That assumes, does it not, that, that no other locomotives need to be quieted?

S Oh, but isn't that, the rest of that, taken care of by the 75 law? The rule? The limit? The regulation?

S Noooo. Noooo.

S The 75 regulation is. . .

S Only newly manufactured.

Well, even so the level is well above the 50, the 65 period...which at night time would represent a level of 55...and in most cases the storage areas are closer to the edges of the yard.

S Well, the 65 is for hump yards. OK? And if there are locomotives that are operating in there.

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S Not operating, just sitting idling, waiting to go on the main line the next day.

S Right.

S And, they are usually at the edge of the yards because the standard of the yard is occupied by the . . .

S Wait there, we're letting a lot of things drop through the cracks over the past half hour. A lot of allocations of information have been thrown out on the table without any substantiating reference documents. There's some discussion about the noise from the mufflers, not the dominant noise from an idling locomotive. Are there...? Does anyone have any...?

S I didn't say that. I asked if there was any information?

S Yeah. That's our question too. Is there any information that shows the . . . distribution and the identification of the dominant sources of idling locomotives. I wanted. . .

S And the answer was apparently, "There is for one locomotive."

S And, are there data or documents that show where the idling locomotives are sitting? And how many are there? In any particular yard.

S I think we are starting to cross from talking about specific source information, back into the model and systems. . . Right now.

S I would say that issue was just raised...

S That was something I had not realized that...

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S That is, yeah, basically, on the available data that came from the ICC, it was identified that approximately 6300 switch engines exist and are used, dedicated to switching operations in the yards. That is the number that we used for costing purposes. That is the number that we used to specify what the noise levels might be at the property-line. That was used, as well, for techniques. OK? And that's what it says in the document. Alright? If you have any other number that indicates that the fleet is larger we would like to know that. Similarly, as Peter brought up, there appears to be a misnomer in regard to the retrofit of the, and installation of, mufflers or abatement techniques for switch engines. And we will look into that further. But, again, that's the only information we have.

S Now, to clarify the point...if you had...line of locomotives that you use occasionally in the yard for switching purposes, say two days a year, each one of those, they will not contribute substantially to an increased. . .LUM because they are only used two days. . .

S Not used for switching? Just sitting there!

S Oh, sitting there.

S Being serviced. Waiting.

S Oh, but, fine. Sitting, those are included...

S But that's not including costing.

S Because they are not contributing to...

S You're saying they're included...

S They are included in the yard.

S In the OBN calculation but...

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S You don't need to quiet those to the purpose of...levels.

S The earlier regulation...

S Don't need to quiet...?

S Because they are not located in terms of where they are sitting.

S In other words, in your model you have found that those locomotives that are just sitting there, not engaged in the classification function are not going to contribute sufficiently to the, uh, boundry line to need quieting. Is that what you are saying?

S I believe that is a correct statement.

S ...turning...

S Yeah. That's right.

S OK?

S That's true.

S The model did not take into account the need to quiet line haul locomotives within yards. Therefore the previously established regulation, which was only on the new locomotives was essentially used and the assumed levels of other locomotives operations and. . .

S There's a few exceptions to that as I recall and that is that we do account for certain servicing, testing operations of non-switcher locomotives.

S Low tests.

S Low tests.



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S Enclosure around the locomotive for those noisy type of operations, where. . .assessment indicator, that the noise from that operation would be important, as a property line. . .So, there's an abatement, not to the locomotive, but for the area. . .

S To the physical plant.

S Yeah.

S I think that clarifies the question.

S The other point you are trying to make, perhaps, is if all these other locomotives were occasionally used in switching, would you have to quiet every single locomotive. . .? No. You might think, "yes" initially, but when you realize that if you only use it occasionally, you don't contribute to the yearly L<sub>dn</sub>. You don't have to treat those things. So, the 6,000 is an indicator of the ones that you really have to treat, the ones that have been treated and costed. So, I think, you know, we are not in as bad shape as. . .

S But, again, from a costing standpoint, we assumed we'd have to fix all 6,300.

S Yeah.

S All six, they have been fixed and they, and it's really a question here whether you feel the ones that aren't being used for switcher... aren't contributing and whether you aren't going to do anything about it. I realize what you are saying in your model. You don't, because, and, I, well, I don't know. They don't. . .

S allocation?

S I can't document any contribution...or not. Not as high as...

S So I get all the time....

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S Can you refresh my memory? Where have you assumed it to be? The model . . . assumptions about where locomotives are stored. Which group? Which of the four groups? I think you assumed they were retarded.

S No.

S It's around 4:30 right now. We have, at least with us right now, Ken Eldred, who's representing BBN, and who did, his firm is responsible for some of the specific noise measurement studies around the yards. It might be appropriate, if there are some specific questions about noise data collected around yards, that we might touch on those areas now. I don't know how available Ken will be if we decide to meet again this Friday.

S Friday is a very bad day because I'm on vacation.

S (laughter)

S I don't see why that should..

S I'm very liberal on those days.

S (laughter)

S I don't see why that should bother you. (laughter)

S Are there any, are there any questions that relate to the noise, the physical, the actual noise data in the field of real live railroad yards versus some of the modeling and other theoretical things we have done?

S I've got one general question.

S Yeah.

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S In your measurements that were take beyond the property-line, or the railroad line, did you try to segregate through-train whistles, or any non-regulated sources, from your. . .or did you just come through and take measurements in one hour, or 24 hours?

S I think all the data reported here probably includes through-trains

S With a . . .range?

S Yeah, a . . . However, we did segregate some of that on an experimental basis and we did it several ways. . .

S Reported as. . .

S With the exception of some of the regional noise teams, I think the EPA teams did segregate out through-trains.

S And you'll find in some of the 20 yards, at some of the sites, there will be a mention of through-trains having a significant input. That's a fairly small percentage of all the data that has any significant through-trains.... But we did as a separate exercise, make some segregations.

S . . .clarification, according to the proposed standard, a through-train is one which does not stop. So, I assume that all the through-trains that you are referring to, did not stop...changes?

S That would be a very small percentage of trains.

S Well, we have a problem with that definition. Most through-trains would stop for crew changes.

S With a short duration.

S But it does stop. So, your standard says it does not stop.

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S Well, I guess that under the standard, that particular through-train, since it uses the yard facility, in some fashion, is not a through-train. As it is not applying to the standard.

S That's a particular area that they might want to discuss a little more because our intent, and I thought it was reasonable, according to the preempt, anyway, was if a train did not, a through-train did not enter into a classification, or servicing type of activity, in the yard, we were considering it as a through-train. If it is momentarily stopped to pick up an exchange crew, that's a new one on me and one we might want to think about a bit.

S I think we are thinking the same things, but you may want to revise your definition, your terminology a little bit.

S I think we could probably either...our comments, or make some suggestions, or at least relate with the permission or our railroad practice with regard to...through-trains.

S OK. Yeah. I think that would be helpful

S But these would also be quieter through-trains? A through-train that went steaming through at 40 miles an hour at such a high speed.

S Well, that depends. It might be quieter coming in, but it may be noisier going out.

S Because it would be accelerating out.

S It is also...accelerating and...that type of...

S It's a complicated mixture together. It's going by on a main line track. It by-passes the yard.

S Yeah. But won't it...?

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S The exhaust from the locomotive may not be as high as the accelerating locomotive pulling in and out of the yard, but the car noise and all the other noise... So, it's really not a simple...

S Does that type of operation, where you have a crew change, do they continue to operate on the main line, or do they actually pull into the main of the yard?

S It's hard to say.

S Can vary...railroad...

S Yeah. In some cases they will stop right on the main and some cases they will pull off on what is essentially the passing siding and make the crew change.

S I think...study, perhaps in a couple of situations...just look at where the yard limits are in regard to the main line...track. That might be one way in which it would be useful to define a yard...in terms of labor... yard labor doesn't go out on the main line and the main line doesn't go out on the yard.

S Yeah.

S I hope we can assist you in furnishing you some operating practices and appropriate terminology.

S Yeah.

S I hope we can assist you in furnishing you some operating practices and appropriate terminology.

S Yeah.

S What is a through-train, and what isn't.

S Yeah. We would be much receptive to those kinds of suggestions.

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S Really. At any time, between now and whenever. And that doesn't necessarily have to be, you know, at the end of the comment period, but I think we are continually looking at this rule to see ways we can improve it. Along that line, I would like to throw out an item for you to think about, and that's with regard to who to look at the retarder, specific retarder standard. As it is written right now, it specifies that an average noise level at a 100 feet from the center line of the track is a retarder. Now, we understand, that in some yards, there's a, that the spacing between tracks could cause some problems on...physically locating some of the barriers around the retarders where you get down into the...or further on, I've forgotten what the other...of retarders is called....

S ...group and tangential.

S Tangential?

S Tangentant.

S Master group and tangentant.

S OK. If we can get down to the tangentant retarders, I haven't seen on many yards, but I guess there are some. Well, we've seen blueprints of some. It may be difficult to construct double barriers around each retarder, so that you may want to provide the flexibility to build a larger barrier around two or three retarders. (1) What is a good way of developing the language of the standard to provide that flexibility, is one point and (2) since some yards are located out in areas that are undeveloped, it would seem to make appropriate sense to have a specific retarder standard that would also be, would be tied to the land use around the yard in the same way that the receiving property standard is. That is, that is there is nothing around the yard, why require the retarder to be abated. And, how do we tie that to the standard?

S Would that apply to possibly other point sources, as well? Such as the... Or did you have that in mind just in regard to the retarders?

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S I was thinking in regard to the retarder, primarily.

S That's the only thing that's next to the yard.

S Right. Right.

S I'd like to point out that there is a potential problem there, with regard to this...retarder, and that is, with a couple of speed requirements, one of the methods of developing greater control over speed, is for ...retarders.

S ....tangentant..., this is what they use, as well as the...retarder action...use information on systems recently constructed tangentant...retarder...other methods. But what I'm getting at...creating another set of problems...retarder...clearing some as well. I just see it as a very expensive....

S Well, you know another...is the difference in the noise levels from a master retarder or a ...retarder or a ...retarder.

S Well, look at the...and see if you can't identify retarders there because they have the tangentant retarders there...you may be able to determine with tape recorders. That sequential squealing... I suspect that...

S There are two sets of them.

S You mean the...data, or the ...data?

S Both.

S Both. Both simultaneously. But that does have all...master group..

S Trouble is, they are all at different...

S That's right.

S You don't know what was squealing while you was...

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S That's right.

S The question was, was there a measure when the BBN teams took more measurements within the yard than we did? Were there actually measurements taken with each of the three. I guess that's a...retarder. And could they be looked at as average? The point is, Bill, in solving the noise impact problem, one of the ways is to get better control on the speed and in a hump yard, it looks like one of the few ways to do it, is to put in another set of retarders at the tangentant..., which is where each of the classification tracks... OK? That may give you the speed control you need to meet your impact regulation, but it's going to have a whole set of retarders, lots of them, not just one master, or six or seven groups, but something like six or seven tangentant point retarders for each group retarder, plus the additional problem of not enough room down there to put barriers around each one. And a barrier around each set is not going to be as effective because they are so wide.

S Well, it would mean 50 large hump yards, or 50 tracks, or more. But there are that many...retarders than at the other end.

S That's true.

S But you are not suggesting that....surrounding yards.

S No. We're not.

S Just get the releasable time.

S But on the other hand, as you get more control of your car speed, at least some of the earlier data I had seen on the ramp control where you stretch out the length to the retarder, you put in ramp control, where you have a better control over how you are applying that braking action and the number of squeals went down. So, supposedly, you have more linear feet of breaking surface so you can control and reduce the numbers of squeals.



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S I don't think there's enough data right now to show that if you have all three sets a day, sets of retarders, you can, plus have ramp control, I don't know if there are any yards that have ramp control, or have three sets of retarders like that, and ramp control, so I certainly...

S Didn't Barstow's have ramp control on the master?

S On the master. They may have them, I don't know.

S I think they did.

S I suspect, but I'm not entirely sure...

S Even if...Tangentant...retarders do not control, just sat.

S Oh, they are like...

S They are set at a, I know that is the way it is at. . . They are set at 4 miles an hour.

S They are only on one track, too. Not on both. They are just on one side.

S The only thing is, if they do have ramp control, it is not doing much good, because they are squealing. All of us, you've been there too, and they were.

S ...we are going to have to put in a couple more sets of...to measure the speed going in a group and then measure the speed, again, going into ...points.

S You can...

S Extremely complex system to guarantee this 4 miles or less.

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S Yeah. If it requires that extra set of retarders.

S Do any of us have any questions for, with regard to the noise?

S ...original question.

S I got one more. On the low test sites, did you assume that 11 low test sites were quieted to come into compliance of 7065?

S I believe so.

S It was my understanding.

S All low test sites would have to be enclosed?

S All low test sites would have to be enclosed. It was what we were able to determine.

S There is a thought we had. It doesn't exist now, but there is the hope that the railroads would do their own noise testing...at low test sites.

S So that they will ultimately be designed so there is free ground and everything.

S ...go enclosed, the low test sites...community...

S ...direction.

S You're talking now about the enclosure?

S The alternative, of course is to build...low test. I'm sure you would love...

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S Well, in order to take your low sound sites, you don't have to build the enclosure.

S Right. We made the assumption, that to be conservative you'd have to. . .

S Concrete.

S Conservatively, ...estimate that ...actual cost to include every load cell test site. Now, some, I think, of Barstow's were undeveloped land nearby so they wouldn't be so concerned, perhaps.

S No. There were...

S That was the only site that was near a residential area.

S I thought that was down on the western end?

S Yeah. It was in the old Barstow yards and it was only a few hundred feet away from. . .

S There was a whole bunch of little white houses across the street.

S In all the other...was hundreds of feet away.

S Oh, I was thinking of the servicing area.

S The service...

S I stand corrected. I was thinking of the wrong part of Barstow.  
Any other questions on yard data?

S There is a point on a question Eric raised earlier. He was concerned, you know, about the idling locomotives, the  $L_{dn}$ , and where they were, and maybe it wasn't clear yet in the document, and what we forgot to say, but in the analyses of typical rail yards dimensions, the location of

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S but in the analyses of typical rail yards dimensions, the location of locomotives were spotted and counted, and the number of locomotives and their distance to the yard boundary, and weighted averages were included in developing typical dimensions. So you asked, Elliot, or someone, earlier, "Well, did you assume that they were all sitting in the yard?" And I responded that, "Well, it's a little more complicated than that," and that we could supply you with information about that.

S That...point... One of the things on that list of seven items...that we asked for, was all the detailed numbers that went into the average values that they have for those tables and things...where we list...

S We've, Rick, could you bring a set of that over? The dimensional data.

S Are you listing, for instance, for each source group, the average distances from the near side and the far side? What I really wanted to see was the numbers that went into making up that average. What kind of...was involved?

S Yeah. That data is available.

S Those meaningful averages. What is their essential tendency? Or can they...

S Well, the question is whether or not they have the data and can provide it to us? And the answer is "yes."

S ...analyses.

S Well, what I had prepared was, looking at our aerial photography testing where took 120 sites, and we divided, I think that's into 12 different cells of 10 yards each, and this is the actual, the actual data sheets on each one of those 10 yards. It's all divided up by the ...cell.

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S Tell you something we did...

S Those...copies, I hope?

S Yes.

S (laughter)

S Want to get the actual...

S (laughter)

S Most of the photographs that our EPA people ended up using were from the intelligence community. So we located great locations of a few GSA maps and then they went to their sources and actually did the analyses of those photos.

S That's another, that's kinda a minor problem in a way, because if there were questions about the yard configuration we couldn't look at the photos, so...

S Oh, because you weren't actually allowed to see those photos? You requested information from...

S We, in the noise office, didn't know, but our EPA lab, that does this kind of work routinely, does have all the security clearances and arrangements, so they did the analyses. And, I mean, they are available to testify, or whatever, if it ever comes to that. But, we, I, didn't physically see the photographs. But they are the ones that developed the data. I think, as we are nearing 5:00 o'clock, which is the time that I had originally thought we would adjourn, I think we should discuss, if there is no more questions relative to the noise data at the yards, I'd like to kinda discuss whether there's a need for another meeting, and what we might cover at the next meeting, if there is another meeting. And in a letter I've written to you, we do have Friday blocked off, starting at 10:00 o'clock, from EPA's standpoint, and we are certainly going to meet again.

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S Yeah. Well, we had a few additional questions, but they could be, as... points out, we could probably get through most of those between now and 5:00 o'clock. Or they can be handled by a letter. The other major topic is the boundary line issue and I don't think that can be covered.

S No.

S Now is that...

S ...time today

S Is the boundary line issue the same question that was mentioned here in regard to the size of the yards, that kind of thing?

S No.

S No.

S This is a, clarifying misunderstandings that we might have on the receiving property issue.

S OK. Well, that may...

S There appears to be some confusion.

S Well, that may be appropriate then to meet on that subject Friday. I think that is something that's worthy of some further discussion.

S But that doesn't necessarily include discussions of data or a model, or so forth? I think it's more of a philosophical discussion, isn't it?

S Yeah. I would see that as clarifying, mainly.

S Yeah.

S That's right.

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S You understand what we meant by that. And then having the opportunity to ask questions so that you can clarify that.

S Yeah. Yeah. I think that's sort of the agreement that we rule out the most...

S OK. Let's plan on that, and, Rick, did we have the 8th floor conference room reserved for Friday? Do you know?

S .....(could not hear answer)

S I'm sure we can make a conference room available at AAR.

S Let's leave it, let's leave it that it will start at 10:00 and we'll get back to you tomorrow to finalize on the, where it will be.

S Joe, is there any chance that you can get that...

S We have that for Friday.

S .....(could not hear speaker)

S At 10:00 o'clock.

S So, OK. Let's...

S ...for a conference room in this building at 10:00 o'clock.

S That's right.

S OK. Fine. Let's plan on that.

S Well, perhaps in the remaining time we have we'll try and get through as many of these additional questions. I don't...

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S OK.

S I don't suspect that many of them will prompt a lot of discussion, but let's see what happens. In paragraph 201.31, the question is the question is and this....detailed now. Eric had a specific question as source for the specifications on integrating sound level meters? That's described in 201.31.

S You have specifications on the instrumentation for the integrating sound level meters. I know no national standards except the standard.... specifications yet....committees really...

S Yeah.

S Wondering what the source was for those numbers.

S I believe it is essentially that committee. I'll let Ken address that.

S 201 point what?

S Ken, you probably...

S Is that right...The general provisions?

S Yeah. It's 201.31...level, equivalent sound level. I wondered what the source was for those standards.

S Well, that's... That is the requirement standard.

S OK. But

S There is no NC standard referred to.

S OK.



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S Other than...

S OK.

S These are the additional...requirements translated and that's 1.4...

S OK. Is there any data to indicate that there are instrumentations available commercially to meet these standards?

S Yeah. That's right.

S Well, can you supply the data that show that they do indeed meet the standards?

S I think we can do that.

S OK.

S We checked three or four...

S I know what the three or four are.

S We've been working on this standard for 10 years.

S The worst time was 1973.

S There are a lot of subtles in the way these pieces work.

S So, your question is that we provide data that shows what are the systems that meet that requirement?

S And, which ones they are.

S I'm...

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S It, it, you know, I don't...running around to make sure the...exercises  
. . .that they all meet those standards.

S They don't all meet the standards?

S They don't all meet, well, OK. That would be very important.

S I think there are... We are much better off...

S ...purchased

S Be able to measure...

S Let me put it this way. Do you have data to show that there are...  
and which ones they....

S Yeah.

S OK. Thank you.

S Next.

S OK. Another question was..

S Could you tell me...

S (someone laughs)

S Can you provide us with any information or data that relates to com-  
parisons to the noise contour model in Section 6. The results of the field  
measurements program in Section 4 which may have been used to test the  
validity of the model.

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S Or do you understand the question?.

S Yes. But say again, just to...

S Yeah. OK. I'm, I'm, all I'm doing is repeating your question that we discussed with Eric, and it essentially relates to any information or data with regard to comparisons between the noise contour model in Section 6 and the results of the field measurement program in Section 4 as they may have been used to validate the model.

S ...the statement is made and the document in general, that's a very loosely-worded statement, but in general the noise models have...over-predicted the levels of ...when compared with the measurement data...have access to the data...comparison.

S Yes, we have been working on that. We've made comparisons of a lot of data and talked to the EPA the other day about, and we've talked to Bill...

S What comparisons, what data we have available on response to that question, we will provide.

S In the interest of definitions again, since you've been concerned about definitions, we would prefer to call it the noise generation propagation and health and welfare impact model, rather than the noise contour model.

S The only reason I used it was because in reality there are two models.

S It's alright.

S I had possession of computer programs. One was the noise contour, and the other....

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S No. You have models that compute ENI and population exposed.

S I thought I had two computer programs from EPA. One of which does the contours, and the other...

S The model...

S It does promulgate life levels against distances in a few ENIs, but it's really not quite correct to call it that. But that's OK.

S I'll call it whatever you want me to call it.

S ...one before you had the other one...

S Sure.

S What's your next question?

S OK. Next, is any information which describes the procedure used to measure noise near a vertical reflecting surface. Specifically two meters from a house surface.

S The procedure used?

S Yes. I guess, too, and you may want to expand on this one, too. The question is whether, or not...

S OK. The document for a standard is very careful to suggest that we do not make measurements within 10 meters of a vertical reflecting surface with one exception. You can't measure within 10 meters of a side of a house.

S Right.

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S There's no effort to attempt to direct the measurement for the reflections coming from the side of the house... We do not believe in measuring higher than you would have been if the house...

S So, that's a ...part of the standard?

S That is knowing and explicitly part of the standard. Which is something.

S Yeah. Yeah. Sure.

S That answer it?

S Yeah. OK. That's the question, let's get...

S OK.

S And, finally, Eric, you wanted copies of the input and output data for that model.

S Right. We have copies of the programs and we have people looking at them. They tell me it would be very helpful if they could have some copies of, Tip, not necessarily all of them. I'm sure there must be mass. . . which is the typical run where you've got the input and the associated output for the programs...both of those...Now, Bill this might already be on your list, I'm not sure. I think it was on your list today.

S I've forgotten. Was it on the 7th?

S So, I don't know whether it has been taken care of, or not, we are asking for it again.

S We haven't received it yet.

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S Yeah. We have not received it.

S Yeah. I haven't, as far as I know, nothing has gone out of my office.

S OK. ...assist my people understand the workings of...programs.

S OK. We'll try and get that over to you as soon as we can. Now, is that the last question?

S That's all I had...Eric, ....covered everything?

S Yeah.

S I had one little question. Page 625 in your Background Document, you referred to your data analysis on the size of the railroad cars, and the location of the...system. You said that you picked out distances within the yard boundaries, to the nearest cluster of residential buildings and several locations around the railroad yard. Well, I didn't find that data anywhere in the background document. Is that readily available, then?

S Let's see. That comes from the...

S It's in there.

S It's in the data sheets.

S That's the copy of the data sheets?

S Yeah. That's essentially from the photo analysis.

S Yeah. Right.

S Could you find us a copy?

S Yes. We can. In fact I had two copies brought over. Here's yours.  
(laughs) Now, to...

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S One question did occur to me and one of my people, who is looking at the ENI model. You have the, for any given type of yard, you have these noise source broken down into four source groups and your computer...

S Little classification yards. We do.

S Right. OK. Sure. And you use your source model and your propagation model to get the  $L_{dn}$  at the receiving location.

S The property-line. Right.

S Well, at the property-line.

S Oh well, we could get an  $L_{dn}$  at the boundary yard for those..

S Right. Now you do it for each source program.

S Route sources and then propagate it further out to get the ENI.

S OK. And you propagate it further out so...I'm thinking on terms of adding in the people to get the ENI. Propagate it further out and you do it individually for each one of those source groups. Do you then calculate the ENI individually? For each one of those source groups? And then add...?

S Yes.

S Seems to me that you are saying..

S Yes.

S I have some very serious reservations about that... Shouldn't you be adding levels together, first, and then calculating ENI.

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S We did some research and testing and we had some test models of, your time might be over.... It's a technical problem and we don't have time to get into it here, but certainly, if you want to, you know, I mean, we would ask Bill to discuss it with us, or whatever and we will talk about it with you. But we checked it out what the problem was there and we drew the model that way. And our analysis indicated....

S Do you have any information on those tests? I would like to get that from you today...serious.

S Well, by test, I mean...or calculation...

S Well, then it is not perfectly accurate? But in the time...we...was looking at...again. He's looking just theoretically, but then you come up with...due to the fact that you are adding ENIs rather than adding...

S The source groups don't overlaps significantly, so that's one way it works out as an approximately correct answer. It did overlap, but in terms of compatibility...then you have to have...answers... It's very difficult to model properly in terms of ...standards.

S You know, this is a feature of the model that we discussed from the very beginning when we...this and the assumption is related in the Background Document.

S Basically, what they are saying, is that at any given area in the community of those sources, one of those four groups is contributing and the others are all below 55 so they are not adding anything to the ENI.

S ...that much... One may be 10...above the others as far as contributing to an...(space) which means that the total of dB adapt with the same as the higher one.



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S Higher one. Right.

S But you're assuming that they both are contributing to the...

S No. Not, not, not, we do overlap. They will overlap. We don't know how much because we only know an approximate dimension in spacing in the yard and for the... There is an overlap in the contours. OK? There is an overlap. There appears like somebody, because there is an overlap, someone might be, on the surface it appears at first like someone might be double-counted. Or, on the surface it appears at first like, well, you should have the  $L_{dn}$  values first and develop the contours, and then get the ENI in the contours and that, that whole discussion is a, something, of course we were concerned with. We did some analysis to see what the problems were, and as Fred mentioned, the whole time... We'll be very glad to go into that in as much detail as you would want to and explain our rationality and, of course, help you understand the model. We'll be delighted to talk to you about it. I would, of course, want you to arrange through EPA to have any such discussion.

S Well, basically...ask at this time if you have any information showing the justification for doing it the way you have. For although technically, it isn't correct, that, in this case it works out.

S Well, let's see...

S I'm surely, I'm willing to take, you know...

S You can't say that technically it's incorrect. So you can say that it looks questionable.

S I think I can, but you know, you add the sound level to find the total sound level of a point.

S Well, let us look at, you know, how much time and effort it would take, maybe it is already done, some kind of written up analysis, or something.

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S Yeah. Well, whatever you have will be helpful.

S If that's not available, maybe we'll, you know, to meet on that subject.

S You...two point sources...

S One thing I would like to tie off before we close, is the seven items that Peter had asked. Are they, have they been essentially covered in this meeting so that we respond to the items that we agreed to here in the meeting that completes...?

S I can't answer exactly because I don't have a copy of the letter.

S You have the same problem I've got.

S I have a copy of ...letter.

S I have a copy.

S I thought we had stayed away from those questions because they had been asked in a formal letter.

S (several people talking about checking to see)

S Yeah. Yeah. Go ahead.

S ...the data includes computer programming in the health and welfare analysis. Results of any analysis of property-lines...individual source contributions?

S We were going to check on that.

S Yeah. That, we don't have any individual source of analysis.

S ...monumental...for all the yards...

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S Yeah. Yeah. All we had was a strip charts that you've already gotten.

S ...adding up the energy...gone through a half dozen...already.

S The third question is the results of any analysis preparing fast meter response to slow meter response and measuring...

S Yes. That's not available. We did not have that.

S The distribution of levels for each source in Table 4-1 verses the new ...I didn't ask for that.

S Yeah. That's the one we will provided.

S The data used to compute the average distances listed in Table 6-16.

S That's this. I do have a question to ask. What are these called, number of RE, number of SE? I take it this is the distance from...to the boundary.

S Broad engine switch...

S Broad engine switch engines, care facilities, master retarder, again to the boundary?

S That's right.

S What's this distance BR?

S Boundary to residency and BD is boundary to...

S Yeah. OK. Boundary to residency. RE is switch engines.

S I think. I'll have to check.

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S Yes. Could you?

S Yeah. It's right above...

S OK. Peter...your next one.

S The next one is a sample of input and output data from the SAI computer programs...

S OK. We covered that one.

S And details of the population...including the individual yard data by block census. Average population, levels used and all other pertinent data.

S (laughter)

S I don't think we...

S That's called all inclusive.

S Well...

S OK.

S The intent there was, if we could, to examine the way in which the population density changed as a function of distance in the yard. Whether it was uniform as assumed in the model.

S No. That data is not available.

S It is not available.

S Yeah. We sent you the census...

S Yeah. But it's....

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S And that's...

S Well, in a great many cases you must have had several census tracks within the study area.

S No.

S No?

S No. That data were provided in a population, in a rectangular area, were given us.

S I see. OK. I see...

S At the site specific location...

S I suspected that if it was done, it was done within a computer and nobody here could provide you with the individual census tracks.

S Afraid of that?

S I was afraid of that.

S Yeah. Yeah.

S Yeah. It would have been nice to....

S OK.

S As we went through the meeting I wrote down the various things that we were going to look at and provide you further information on, so let me just run through those. First, the comparison data on the truck referee unit. It's the BBN report. We'll get that to you. The one that you had difficulty, we're unable to get from our Waterside friends. We will

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S had difficulty, we're unable to get from our Waterside friends. We will get with TSC on the retarder report and make that available, at least a portion of it. Let's see, the vender information on the...iron shoes, now that data that we have will, will identify who the vendor was that we got our cost information from. Provide data in regard to the sound level meter system that specified in the regulation. We'll provide information on systems that meet that requirement.

S We'll also...data, copies of typical...

S We'll provide a comparison of the model predictions and the field data points and lastly, sample input/output data to the model for typical... And those were, I think there were, let's see, there's three, six items that we..., I don't know, I didn't keep a record, but Elliott did, of the things that you were going to provide to us. I don't know if you want to run through those.

S Yeah. OK. The, an estimate of the number to, to a truck. Yeah.

S TOFC. Refrigeration units for a recent year.

S Alright.

S And whether or not there were any, any differences between highway refrigeration units and those created on TOFC.

S And the air and noise data. Air refrigeration units.

S Yeah. Replacement, I have replacement per unit of diesel...

S Yeah.

S Refrigeration...

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S Right. Anytime between major overhaul and replacement.

S Right.

S Right.

S Also, we were going to get back to you on some clarification on operations with regard to through-trains.

S Right.

S And trains, as opposed to trains that stop just to change.

S Right. Peter was going to provide, if possible, information to EPA regarding the distribution of car coupling velocity. He had some data on that. OK. And noise measurement, any new noise measurements available on car coupling. Do you not have that?

S I don't have that. . .

S Well, OK.

S The last thing I had was, you had raised the question, Bill, about space to install barriers for retarders?

S Right.

S And whether or not we could provide any information there as to potential problems.

S The one I suggested was perhaps structuring it so you could build a larger barrier around the group rather than the individual ones and the other thing I didn't really mention was that if we really level out to the property-line or the receiving .

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S property so you can govern whether you have to abate based on whether it is developed or undeveloped line, and you have to have some mechanism for making that translation. Whether it's a, some type of extrapolation table that says that 100 feet such and such is a level but at 1000 feet it is, and all the distances in between so that you can make a judgment when you measure at the property-line or the receiving property. If it is undeveloped, then there's no requirements. If it's developed, then it is developed.

S . . . receptive to moving the point sources up to the property line?

S That's one option we are thinking of, ourselves. Yes. Now you get in some difficulties, there with what's the proper correction for distance. The straight 6 dB is probably not appropriate for retarders. Particularly if you have to . .

S . . . for example of 90 that's proposed on the retarder and just taken that 90 out to the property-line?

S Naw. I don't think that's acceptable. (laughs)

S Those are the items that I . . . Did you have any more on you list?

S I had two more. One was the, to supply a copy of the . . . switching company report.

S Oh, go ahead.

S Right. mmmum humm.

S For retarder yards and also a copy of the letter from the company that supplied the estimate on the releasable charts.

S Right.

S In the interest of communicating, I think it might be important to say one other



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S thing about our data. We, of course, do need, or have needed quite a bit of data about activity in railroad yards. The reason we had a list of questions, thousand questions long, the reason we are not asking them is it appears, for the most part, the kind of data that we need aren't available. So, we do have further information on these. We are not asking because it appears that those kind of things are not data that are available.

S Well, it's difficult for me to respond to that because I know only part of what you have in mind is to kind of operational statistics, for example, yard activity distribution on a yard by yard basis. Certainly, now, the timing, we are a little tight on the schedule to even try and come up with a schedule to even try and come up with estimates. And it is not the sort of thing that indicated that you, one, we could go out and lay our hands on easily.

S I'm sure it would be the kind of questions that we have for you.

S Yeah.

S When all of this started we made our services available to the EPA and to you folks. So far you've only made about one or two requests. Now, many of these requests could have been made and they'd have been honored to the best of our ability.

S See, we had two meetings with AAR people, previously and we had discussed the information on these at that time and often it appeared that it would be very difficult to get that kind of information.

S I think that what you're saying is kinda a case of that kind of information that you just, you know, is not generally available and probably very few people, if anyone, has ever really tried to figure out.

S . . . refrigerate cars. . .

S Yeah.

S Especially, in 12, made in 10, as I see it, what you are doing is to try

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to typify railroad yards and I'm not sure . . . to come up with the average or reciprocal kind of facility and . . .

S See, some specific piece of information like in a high-volume hump yard you might be passing through the . . . 2300 cars a day? How many times do retarders squeal? You know, that kind of . . .

S Who knows. I don't mean to be antagonistic but the only way to find out is really go out and measure it and just make some assumptions.

S Yeah. Yeah. Yeah.

S You'd need to have an awful lot of data to rely on the measurements because of the given variability of the recurrences.

S mmmum hum.

S And also, over the year you don't know, I don't know what kind of . . . weather has . . . squeal . . . Maybe it has been studied a lot and nobody really has any answers, so . . . , you know.

S Yeah. Well, I think, you know, the activity had underway has attempted to quantify an estimate, or whatever you want to call it of the very complex railroad system. Probably for the first time that it has ever been tried and I think that it goes without saying, we tried to do the best we could with the information we had and I think Sam's questions, they are really probing at the desire of all of us to improve and make better what we've now started and I think we are going to continue to do that and, I had not realized that we had only asked you two things, I thought we had asked you to do many, many things.

S For this part of the study, yes. On the other part, the noise collection and the data part, yes.

S Yeah. It seemed like we were with you daily almost, for a while.

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S Oh, you were. But as far as information input into the model, there was only two meetings. So this kind of information has never been requested.

S Well, I think we are going to continue to have a dialogue with the people as we move ahead and I guess would, unless there's a, did you want to make a particular point?

S I think, just to add, and add what would be a sensible respect to Sam's concerns, and everybody's concerns, now that you have the document before you, as you critically review it, I guess, as many other people, as you see the things that trigger information that you might have to provide updates. . .gaps and accuracies. As you provide them I'm sure EPA will consider them and try to improve the calculations. I think that is part of the . . .process is to read these things and see where you feel are omissions and. . .

S Oh, certainly. Well, it is certainly in our best interest to do that.

S The next meeting, then, will be at 10:00 o'clock on Friday and the principal subject will be explanations, discussions, and clarification of what was in, what the property-line/receiving property approach to the proposed rule is and with that I would like to thank all of you for participating in the meeting today and the meeting stands adjourned, at approximately 5:30.

Thank you.

TRANSCRIPTS OF SECOND AAR/EPA  
MEETING ON DATA AND INFORMATION EXCHANGE  
HELD MAY 18, 1979

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S Good morning. I'm Henry Thomas and we will start this off as though it were a hearing. I'm used to doing that sort of thing. Today is May 18th, 1979 and it is a somewhat overcast day in Washington, D.C. We are gathered to continue the discussion of earlier between the EPA and the Association of American Railroads, to clarify and expand on information presented in the Background Documents associated with the proposed regulation for revising this Interstate Rail Carrier Regulation. I'm Henry Thomas. Also present this morning are:

Elliott Ratner from SAI.  
Fred Newman from SAI  
Rick Westlund, from EPA...  
Chuck Taylor, from Association of American Railroads  
Conon Furber, Association of American Railroads.

OK. As I understand it, Gentlemen (I have listened to most of the tapes from the last session that you had but I've not gotten through all of them yet) all eight, as I recall. But I did follow most of the proceedings, I think, and, up to and including the last one which was that you were to continue today a discussion of the property line aspect.

S That's correct.

S So perhaps we could have someone rephrase, or restate the question, or what is up for discussion this morning.

Actually, before we get started. At the last meeting there was some questions asked of us (EPA) that we agreed to respond to. Whether you would like to take those up first, or afterwards. We have some responses to those questions.

S I don't know. Chuck, what do you think?

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S Well, I'll tell you what. Let me suggest that in the interest of time here, why don't we take the new issue and then, you know, if time is available, we can, time remaining, we can cover our responses, because you may want some written responses to some of those questions. Peter Conlon, for example, has worked up responses to a good many of the questions that were posed to us...(AAR)

S So I would suggest that we get started here. Mainly because some of us are on a schedule with the property line issue. And, the time remaining we could go on to...questions asked at the last session. If that's agreeable with you?

S Certainly. It is.

S Fine with me.

S That's good. The property line in questions is to address how we arrived at that concept.

S I think that it wasn't clear what the specific issue was and that was presumably the first agenda item in this discussion. What is the concern about the property line standard? That wasn't made explicitly clear at the last meeting. What exactly were the concerns?

S OK.

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S Well, I'm not sure it is a concern as much as it is a clarification and interpretation. As, for example, Hunt and I discussed this yesterday. We felt that perhaps the way to get the kind of clarification we are looking for is to cite some hypothetical situations and say how would the proposed standard be interpreted in the following situation rather than talk in big general terms. And, because we do have some questions as to, just exactly how the proposed standard would be interpreted with the respect to the receiving line issue.

S That's a perfect legitimate question, certainly. I'm sure there are many cases that we have not looked at that would be some subject for further, clarification at this point.

S Let me perhaps, take a moment and just kinda highlight the rationale behind what we have done here and some anticipation that might help provide that clarification to those points at issue. We started out with our thinking of endeavoring to address individual sources. We found that there were sufficiently different combinations of individual sources at rail yards, so as to make it questionable whether within the time frame we had to issue the rules, we could collect enough data to fully determine what all of those permutations and combinations could necessarily be. We then looked at a concept of a property line standard. Under the concept of air emissions which the agency has advanced in the last year, publicly, of an umbrella type standard, dealing essentially with stationary or fixed facilities, sources, which has met with reasonably wide-spread acceptance within the industry associated with cleaning up the air pollution; polluting industry. Which is that the umbrella standard, or the bubble concept as it has been referred to, gives the polluting industry more options to pick and choose how it would best meet a standard by not exceeding a given emissions level outside that

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bubble, rather than the federal government, or state government trying to specify with precision, the particular emittance from any given individual source. Any given stack within an industrial complex. So, our first concern here was to give the industry, itself, more options, recognizing that it could make more informed decisions as to how it would mix and match to optimize its meeting the standard in the most efficient way. So the bubble concept seemed to have merit to us and therefore we used that in terms of the overall yard standard. Then the question was, of course, how does one define the preambles of the bubble itself. Well, clearly, one would start at the property line of the industry itself. Then, as we looked at the railroad industry yards, and having looked at some imagery and ... maps, in here, it appeared to us that there were enough yards, and that's not a quantifiable measure, but that there were enough yards were the yards themselves were bounded by properties that did not appear to us to necessitate noise control limits being controlled at the rail industries property line, per se. For example, those yards bounded by a river, or a body of water. Those which have a desert on one side.

S un hun.

S Those which have even an airport, for example, closely contiguous to it. Those where there are highways, or some non habitation area literally contiguous to the railroad property boundary, itself. Having identified enough of those, it did not make sense to us to force the rail industry to have a noise, not to exceed noise level at their property line when there was no one there to benefit from the noise reduction. So, taking that concept then, and it says we only want to incur noise abatement costs on the industry where there will be benefits occurring, in terms of the population, occurring from that, we said let's make the standard, not at the rail property line, but at the receiving property line. And furthermore, let's look at the receiving property in terms of its use. If there ain't no folks there, we



don't give a hoot whether you reduce the noise or not. Because the noise isn't bothering anybody. OK. Now we went through a number of permutations as to how we could best categorize the land itself. And we looked, for example, at the SOLCOM Code, and other mechanisms to see how we could best define them. At one point we had a multiple array of different land use classifications. We worked those classifications back to what you have seen in the proposed rules, which is where there's residential commercial use of the property, and where the property is essentially undeveloped. Now, we are not at all certain that that's the best way to do it. There may be other means of, of classifying the land use, and we're very much open to any recommendations as to how that might be established and what mechanism in terms, in a legal definition point of view, of what you would define as industrial compatible use. What would you define as incompatible use. The point being, what we're striving to do here is to optimize the velocity of "let's protect people from the noise. Let's don't force noise reduction where no one will benefit from it." Now, in the same context, in the terms of the method methodology employed, we placed in there the element of clear dominance. That is, we have no intention, under the standards as proposed, to cause the rail industry to have to reduce the noise from their operations where there are other noise sources as noisy, or noisier than that coming from the railroad. Again, it just doesn't make sense to us. So we want to cause noise to occur from railroad operations only where there are clear benefits to be achieved from that noise reduction, itself. So it must be demonstrated that there is clear dominance. That the railroad is clearly the dominant noise source in that environment. And, of course, for that we have added, as it were, a penalty factor onto the measurement procedure itself of a described number decibels, to assure that it is clearly dominant. That the railroad is clearly the dominant source. Now, by this we would infer that in a given railroad facility, or given railroad yard, the first thing that the railroad would do is to look at its individual facilities and for each facility, first determine whether the property adjacent to that facility falls into the compatible or incompatible definition, which is still very

much still subject to discretion of comment to the agency. The second point, would be then to look at where that property rests, with respect to the railroad operation itself. Because, again, we are only concerned at the receiving property, as to the noise level. And, third, that clear dominance must be established insofar as the railroad noise is concerned. Now, optionally, we would hope that any data, insofar as noise levels are concerned that are presented in response by the railroad, would demonstrate these three factors. If the data is at the property line of the railroad, that is submitted by the railroads to us, and does not take into account those subsequently three elements: receiving property, compatible or incompatible to property in clear dominance, then the data submitted to us has little meaning because it would be questionable as to indeed whether anything is being imposed on the railroad in terms of the proposed regulations, or not.

S mmum hum.

S Whether there is any requirement being imposed on the railroad at all, or not.

S mmum hum.

S Now, we would recognize, as I'm sure you do, equally, that there are going to be some railroad facilities where the railroad property line and the receiving property line are contiguous. That the receiving property, not only being contiguous is also going to be incompatible. And it may be a situation as well where clear dominance is present on the part of the railroad. That would be, from our perspective, a worst case in area. We would then want to look at how many other cases there are where any one of those three elements is different from this worst case in area. Thus mitigating the impact of the rules on that particular facility by some degree. Now, to the extent that one could then, with such data in hand, say there are X

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number of railroad facilities in the country that are in this worst case situation, moving to the opposite extreme of why cases where any one or combination of the three elements of which I have cited are such that the railroad would have to do nothing at all to that facility. Which would remove them from any kind prospective compliance in a foreseeable time frame, which one would look at too. That's our philosophy behind what we have done here. Now I would only go one step further to explain this a bit more by saying it is a clear policy intention of the agency by doing this to force the railroads to have a continuing interaction with the communities in which they are operating to assure that the railroads' interest is involved in land use planning and zoning. That follows the president's verbal policy, the guidelines. It follows the policy established by the administration with respect to airport planning and large scale facility planning in terms of community involvement with the industry's concern to assure compatible land use which is to some degree perhaps, and I think that you might agree to this, is at the heart of the problem.

S mmum hum. mum hum.

S To permit the railroads to disassociate themselves entirely from that process, which they would, and could do, if one were to establish exclusively a property line standard, maximum not to exceed, at the railroad's property line, essentially says to the railroads, "We don't have to pay any attention at all to what happens on the other side of our property line." This is at the heart of the matter. Because virtually no community or state in the nation is going to be prepared, in my view, from a legal, jurisdiction point of view, to accept that. At least that's what several state attorney generals have told me.

S mmum hum. mmum hum.

S And, so the process that we are using in here would, if finalized as proposed, assure the necessity of a continued interaction between the railroad company and the community through which they operate. Both of them would have clearly invested interest in working together on the land use property use.

S mmmum hum.

S That's, the philosophy and the concept of mind.

S I see. Well, that's very helpful. Very helpful, indeed. Very helpful. In fact.

S Very helpful. The problem that we have is that over the last year or so since we've started collecting data and evaluating, we have been operating under the assumption that there would be a property line standard. Consequently, our data has been collected in that regard and we've only had a very short period of time since April 17th to revise our thinking and to begin to evaluate the impact of the receiving property.

S And, one of the problems that this raises, of course, is that you've got a much more definible situation on your hands if you are just concerned with what the measurements are on the property line. But once we become involved in the philosophic approach here as you have described it, why then it becomes amorphous, you know, exactly what the impact will be on the railroad industry. It's not nearly a clear-cut case and it's almost a case by case kind of thing.

S I think that's right, Chuck. And you see, that's really what our objective is.

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S mmum hum. mmum hum.

S In here. Because we could not, and we did start out from the same base you did and that is at the property line. And the more we struggled with how one could establish a property line standard and at the same time assure that you were not imposing a requirement on the railroad that would be burdensome with no perceivable benefits.

S Right. That's right.

S It became evident to us the further we dealt into the matter that the property line standard in and of itself was not appropriate. Now, as I said earlier and I would like to repeat again for emphasis, here, we are not at all sure that the approach that we have taken in the proposed rulemaking in here optimized the philosophy that I gave a few minutes ago. When we had, and I forget how many it was, how many different and categorizations we had worked out at one point.

S There was a hierarchy of land uses, but basically they turned out to be, basically four with the fifth one undeveloped land and we had two, the industrial and the agricultural, associated with the compatible land use and commercial and residential property.

S And industrial?

S Yes sir.

S Residential?

S And commercial associated with incompatible land. Industrial and agricultural ... And we had, I think we mentioned the other categorization codes which numbered somewhere in the order of over a hundred categories of different types of land use...

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S So we recognize that there are other ways to approach this thing.

S mmmum hum.

S We have taken the very simplistic view. The one that we have used right now.

S Right.

S Another point that would perhaps clarify the concept that I think Hank is enlisting is, in terms of the analysis process we tried to be particularly conservative. You asked the question, "Have you assessed the impact?" In the analysis process we took the conservative view, "Let's consider everything a worst case situation."

S mmmum humm.

S Let's consider in fact there is one, let's consider the fact that there is no undeveloped land and there is. And it will help... resources... legal property line measurements that we do have. Let's assume that there is in fact... dominance.

S mmmum hum.

S So that all the noise sources that we... railroad sources... so the impact numbers in terms of... are intentionally intended to be conservative.

S Did you, what, did you make any, or what, I should say what assumptions did you make with regard to the dominance issue? As to what is likely to happen due to EPA action to some of these other noise sources which currently render railroad noise sources dominant. You know, it's the old, it's always the town drunk syndrome.

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S ...assume that EPA regulation and other state and local action will in fact reduce the levels external to ...situation.

S mmum hum. mmum hum.

S It's not dominance.

S mmum hum. mum hum.

S The Health Welfare...had no ambient consideration included in it.

S mmum. hum.

S That implicitly assumes then that EPA regulations, other state and local actions will lead to a situation where ambient, car ambient levels will reduce to the point where they don't, where they don't .... Health and Welfare impacts.

S mmum hum. mmmum hum.

S Where indeed that may be the case.

S May be the case.

S Yeah. Yeah.

S But what we're basically saying and matching up all that with respect to the noise data base, that we have overestimated because we are assuming all noise levels that have been measured or used solely to, to the railroad noise sources, we've overestimated the base line conditions. Where you only have to account for dominant portion, the railroad sources, so that is again is another ... estimate with respect to the whole analysis process. We get into the cost implications...

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S mmum hum. mmum hum.

S But this overestimates the ENIs.

S It does to an extent overestimate the ENIs. Right. Which ... analysis...Section 17 is not the critical factor, it's more ... factor... biggest concern.

S I would agree that it might, could possibly overestimate the railroad noise impact, but conversely it would overestimate the number of people factor.

S That's a fair statement in doing a cross-effectiveness assessment of the...point. I would agree. I think if we were to take.

S Not quite true....not quite true. Cause we're using actual noise levels. OK? The impact on people are due to the two contributions, the ambient level and the railroad levels combined. ENI is...on both contributions...assumptions in...modeling and our costing methodology is that all of it would be to railroad noise, none of it due to ambient. OK? ... but we're overestimating the cost...to be very conservative.

S Yeah. Right. mmum hum.

S See, ENI is calculated on the basis of what people are exposed ... to what source.

S mmum hum. mmum hum.

S The railroads are contributing an ambient...process...developing... including both contributions. We are basically assuming that it's all due to railroads for the purpose of developing a conservative estimate. Of the cost...The only overestimate of Health and Welfare is due to the fact that...



in terms of receiving land use. If there's water there. If there are highways. There would be a strip where there would be no people...We haven't accounted for that strip. So there's that small amount of overestimate on ENI.

S mmum hum. mum hum.

S The smallest is not...But it basically allows the costing to be done in a way which I think is...critical issue that we're not overestimating the costs. If anything we're overestimating the costs. Other than perhaps other input...you know there are discussions, specific noise...costs...concerned issue. In terms of methodology you know, the concept that we have been using have been purposely designed to get an upper...not a lower...cost.

S mmum hum. mum hum.

S On how they could possibly be...

S OK. I think that the, that the rest of the answer to your, to your question here. "What's happeningto", I stand corrected (CHANGE TAPE)

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here, is, "What is happening to the other noise sources?"

S Right. mmum hum. mmum hum.

S Based on the EPA program. What EPA has rejected and what we have testified to the congress on is based on our principal noise activities source emissions standards. For trucks, for example, projected potentially for light vehicle tires not regulations yet. Not even proposed, much less finalized on light vehicles and tires. Motorcycles and buses and aviation. What our projections show is that although the individual noise sources will come down as the new quieter vehicles enter into the fleet and the turnover on that is something on the order one can roughly say, seven years for each product to hit a 50% turnover in terms of total fleet.

S mmum hum.

S Seven years you'll get 50% turnover of the truck fleet. Alright? However,...Oh, so as a function of time and the increasing stringent of the standard you will get over a period of roughly the next ten to twelve years, if my recollection is correct, a gradually decreasing sloop, downward sloop, in terms of the contribution of noise from each of those sources. However, in the past ten to twelve year period, and remember it takes you seven years to turn over 50% of the fleet, in a post ten to twelve year period following promulgation of the rule, following its effective date, that sloop starts upwards again. Bottoms out and starts up based on all the projections of increased units in each of those categories.

S mmum hum.

S So the projected increase vehicular, the numbers of vehicles, trucks, buses, for example we expect the bus fleet to double in the nation over the next ten years in funding and programs directed towards that effort. Automobiles, same kind of sloop occurs in here too. And so, unless the agency revisits through regulations, those sources and rachets them down again individually we will not do what one of our fundamental rationale is, which is to keep it, to keep the environment from getting noisier, much less making it quieter.

S mmum hum. mmum hum.

S Alright? Now, the same applies to aviation. And hence my earlier comments to you before we began with the present aviation bill, because what we have sought there as an administration policy was to force the retirement of the noisier element of the noisier jet fleet. The 20-year old planes, now. And to require more stringent standards on new yet-to-be-constructed aircraft.

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Recognizing that the current fleet of white bodies, for example, are already an order of magnitude proved in terms of noise reduction over the older aircraft and so here we wanted to force out the older, noisier jets at an accelerated pace than they would otherwise economically be phased out. While bringing in yet more quieter design aircraft in future years. So we get two elements there. And what is likely to occur is indeed that we will not get the older jets forced out but that they will continue in operation. We will get new quieter aircraft into the fleet. But a principal argument is, at this point on this whole issue, is that there is inadequate future production capacity now, in terms of aircraft, airplanes, to meet the carriers requirements. So they must keep the old aircraft in while buying yet increased numbers of new aircraft. Composite requirement is this.

S mmum hum.

S So this will not only dramatically delay the absence, the absenting from fleet of the older noisier aircraft but the number of aircraft in the fleet which I believe is around 2300 right now, commercial jet aircraft, and...will increase rather dramatically. And all current orders from this last two years demonstrate that these two projections are still very realistic. Obviously major economic ... can change all of this very quickly. But nonetheless, what we are saying to you is the, in terms of the projections of noise around existing railroad facilities, unless a community, itself, were to make some very dramatic changes in terms of its land use zoning for the usage of the land or establish under its own right, under its own police authorities, noise levels for its own industries, its own properties out there of some rather dramatic proportions nothing that the federal is doing will really substantially change those noise levels downward over the next ten to fifteen year period unless the agencies take further stringent action the noise levels will start an upper creep again. That's, that's what that picture looks to you. Now this explains, also why several

of the states and cities are particularly concerned with this existing ruling, in here. There are not many who fully understand what I have just told you here. That really appreciate this process that has happened. What they are concerned, however, is on the presumption that the action that are being taken will cause their community not to increase it's existing noise level. They are concerned however, that the EPA will in fact permit rail carrier noise levels to increase where it would become dominant, where it is not now, and so they are most concerned that we have no Grandfathering in here in terms of assuring that properties that do not, real properties that do not now, for example, approach the levels that we have proposed in the regulations. We have nothing that will keep them from getting noisier.

S mmum hum. mmum hum.

S This is a principal concern of states and cities. And as you know, or if you follow the law on the matter of Grandfather clauses, in here, there is absolutely nothing that would preclude a state or a city under it's policy powers to require a present noise-producing property. Because of zoning changes that they might effect, to be able to continue at the same noise level. In other words a community has clear authority to require something to be made quieter in the future, even though it may be making noise now and has been making that noise for the last 20 to 50 years or so.

S mmum hum.

S And so we are removing that authority from them with respect to the railroads, as indeed you are aware, and the AAR is aware. And so this becomes a major point of contention here. So what we are saying in effect is, philosophically, if the land is undeveloped and therefore the railcarrier would have, in effect, no standard to meet in that area, this is right and proper because there is no adverse impact on any party from the undeveloped land. On the other hand, your concern is that that land not be developed in an incompatible fashion. Because if it is developed in an incompatible

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fashion the rail carrier would then have a standard which it would have to meet in that area. So your interest, and ours, and ostensibly that jurisdiction's should be common. And that is that that land be developed only in a compatible manner to the existing railroad operation.

S mmum. hum.

S That's...on their part.

S Yeah. But that's our philosophical intent, is we want to force that interaction, which is to the mutual advantage ostensibly of all parties understanding the ...

S Perhaps we need a little clarification on what your thinking is on undeveloped property is. Looking at your list here on 42, uh, you say that it means any land property that has not been developed for human use and isn't in any of the following categories, residential, etc. I don't see much in the way of land use which is not included under your definition. With the exception of agricultural.

S Hank?

S For example, when you include recreational and transportation, when you include transportation, you are including the streets that's enjoining contiguous to the property. So, therefore, that is, would mean that that would have to come under this regulation.

S Could. And remember what we have done is put forward in this case the worst case situation that we can envision and that says that for the railroads, in particular, as you look at those classifications from your perspective, which ones could properly in your view be termed either undeveloped or compatible. You might well say that if it is being developed

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for transportation use purposes, that should be viewed as compatible land. If it's an industrial site going in there, indeed could that not be viewed as compatible land use adjacent to the railroad. Alright? I think that there is a case that can be made that certainly, at least some recreational use can be made of that land that would likewise be compatible. And it might well be that in the final rule-making discussion, and meeting, if we were to move to that point, and we would probably be prepared to do so, meeting with concerned states and cities on this issue as well, that they may well agree that recreational use of the land, indeed would be compatible in their view. And you might well find existing circumstances, such as you have here in Washington, where land is in fact deemed compatible for recreational purposes such as the areas immediately adjacent to National Airport.

S mmum hum.

S Where the lads play socker and it has been placed, the land has been placed into a situation out there where it is not exactly the most exquisite area for picnicking, I would think, if one were going for solitude, but nonetheless, for a fairly roudy sport, where a lot of noise is generated by the sport itself, there should not be, in many people's view an incompatible problem. Now, then, does one look at the issue associated with a hospital, in here. How does one define a residential compatible use, compatible mind you, now, if the residents were a motel or a hotel designed and built to accommodate noise. If I were to use there a direct analog, the O'Hare Hilton, which has to be in one of the most noise impacted sites in the nation, and yet if you have stayed there, as have I, you have almost pristine solitude except for a few who have ... a little too much in the quarters. So, indeed that could be structured in. The question then would be for us, the practical side, as it would be for the railroad, as it would be for the communities concerned. How does one write in that kind of language.

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S Apparently I'm a little confused here. You're saying that if it's classified as an undeveloped property, then it doesn't have to meet the standard.

S There is no standard for it, yes.

S OK

S But then when you start to talking about compatible, compatible use vs. incompatible, are you considering compatible uses as not being under the regulation?

S We would suggest to you, in here, that there may be circumstances, and we're suggesting the same thing to states and cities, in here, that we would like to have a list, as it were, of those property uses which could be defined as compatible.

S And that would be considered as undeveloped, then...?

S Un..it would be into the same thing. Or. Or, another option here, and you can string out several alternatives here, or a different standard could be established. Perhaps, for example, not one that the most stringent level, for example, that we have proposed with regard to hunk yards.

S I was going to say..

S That standard would apply only for incompatible land.

S mmum hum.

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S And that incompatible land definition would then be residential facilities not specifically designed or zoned to accommodate noise. If one looked, for example, here, at a crystal city, something that I'm using as an analogy that is familiar to all of us, built immediately adjacent to US 1 Highway system, adjacent to a major rail yard facility. OK? With two humps in it. And on the other side one of the busiest airports in the nation, albeit with some curfew activity associated with it. A national airport.

S mmum hum.

S Alright? Yet, we know that those buildings were designed to accommodate to those noise levels and the mortgage financing and everything else is the key to certain of those compatible elements including in the criteria. Because they have sealed facilities, sealed windows, etc. The only error in there is that apartment houses were placed in there with balconies. Which are guaranteed to generate complaints in the future. An error in terms of land use zoning planning to permit something of that nature to be built where you know the railroad is going to be there, where you know the airport is going to be there. So, this is a situation here for new development of the property. Of undeveloped property. Where nothing further in the ideal situation that we would be striving for. I mean they would get it but the ideal would be that the railroad should not be required to do anything further to reduce the noise emitted from its property for undeveloped land because that land should be developed in a compatible fashion.

S The key to that is, "should be."

S That's right. It should be. Now, if we don't force the element through the rulemaking process to place the railroad into a situation where it is clearly in their interest to work towards that compatible, have them directly participate in the county's land use planning, and zoning, then there would be no party, in here, except the developer who would be arguing



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for their particular usage of that property and the subsequent inhabitants of that property and users of that property in the high-rise environment don't even realize what they are getting into until it's too late because the property is already developed and it's there. And, so the people who must participate, in here, are the ones who have vested interest from the outset in ensuring the compatible land use. Compatible development of that property. Now, we can do this to some substantial degree through this rule-making process. It is happening now, in regard to aviation and airports. This kind of process is indeed happening now, in here. But, if we don't do something of this nature we leave it so ambiguous in the future as we suspect to be untendable to the railroad and untendable to the federal government. Because once that property is developed in an incompatible fashion, then the pressure resulting on the government, the Federal government, not local at that point, to modify its standards to a more stringent fashion on the railroad will over time become a dominant factor and will force the issue. Because what we have done is remove the ability of the then users of that property to go their local jurisdiction to force action. After the fact of ... invested interest ownership of the property and investments made will be such as to substantially impact on anything happening in an adverse fashion. I mean they wouldn't. So, this is a situation that we find ourselves in. It will call for, I think some subsequent dialogue if we pursue this approach. Alright?

S     mmum hum.

S     Between the principals, such as the AAR, together with authoritative authorities from the state and local government's side, that is people who understand this process and this problem themselves and thoroughly understand the laws associated with taking such action. How then do we write this into a final regulation to optimize both parties interest here.

S     Well, this is an extremely complex subject that we just have not had time to, to address, to evaluate, to analyze.

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S Yeah. I, I'm just mauling around in my mind a hypothetical situation, for example, you have, uh, currently undeveloped property adjacent to an area and a developer wants to go in there and, say, put up a, a, a Hilton Hotel. Now uh, in line with the, the philosophy which you've just described, presumably, what would happen here is, is it would be in the railroad's best interest to enter into the negotiation with the builder and the local community officials to address such issues as, who is going to bear the cost here for, uh, uh, noise abatement. Specifically, the builder obviously would incur additional costs if he were to soundproof the building. Uh, and presumably his argument would be, "Well, why should I have to incur those additional costs. Those are costs that ought to be born by the railroad." And presumably both parties would come in with estimates of what their costs might be in order to meet a, meet the satisfactory noise level. Uh, and it's not clear to me at that juncture who's got what kind of protection, as far as the regulation is concerned. And what the interpretation... as to who indeed would have to bear those costs. You know, eventually, we get down to the point where it's not the, the, the railroad operating people and the architects who are talking, but it's the lawyers and it's at that point that I become concerned. Because then it boils down to a purely economic issue of who winds up having to pay for what, in terms of, of, of noise continuation.

S That's exactly correct. That's exactly what happens. And this is the reason why I suggested to Dr. Harris that the AAR with considerable interest at what has transpired on the aviation side, in here. Because what you are walking into, what you are forcing the Federal government to do, in here is to create a virtually guaranteed future explosion, in this area. I mean, you have created a time bomb of very substantial magnitude. The aviation community is in the middle of this thing. It's been exploding on them now for five years because when we went to the Source Emissions Standards, aircraft, quieter aircraft, it was very clear that it didn't work. It's not working now, with millions of dollars expended for noise control, and it's not working in the future. And, as you go through the

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increase in land evaluations, that we've been seeing, and especially urban redevelopment programs taking place, in here, unless those occur in a compatible fashion to existing facilities, noise emitting facilities, in here, the economics of the situation, because of the massive investments for the development, redevelopment involved, because of those very massive investments, the vested interests brought to bear through the legislative process, then ...

S mmum hum.

S Are guaranteed to bring this whole thing batched, and not very short time in the future, to a comprehensive further review. OK? And, and the dye on the aviation is so cast on the hill, the antagonisms and animosities that have built over the years, of this, and the litigation costs having risen to, fast becoming astronomical proportions. The question becomes immediately, "Who should bear the costs, of the noise control?" Because clearly, some parties are bearing the costs of the noise as receivers.

S mmum hum. mmum hum. mum.hum.

S Now the philosophy of government heretofore, to some modest degree still is, is that respect to pollution control, the polluter must bear the cost because it is the polluter reaping the direct benefits associated with the noise they are generating. Now, however, those costs may be then passed through to society. Through increased rate charges, itself. Whatever those may be. Our federal goal, even if that's the case and so the general revenue... are paid for here. Alright. So what we then have to do is to endeavor to optimize ths so that the developer of that property who would likewise be reaping a direct financial benefit from the polluters having to abate and bear that costs. It's which party in society is best able to bear that.

S Right.

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S So, indeed, what you are suggesting, I would propose, is exactly what should happen, is that when that developer goes in to that local zoning board to request a change and status of that land for purposes of development, the railroad should be present at that time to argue it's case and demonstrate to that zoning board and commission, whatever it may be, that there is no free lunch. Because what has been happening, is, is that indeed it is the developer alone, who has been arguing his case, in terms of the revenues that will be generated, etc., etc., and all the great value it is going to bring to that community. And, there have been very few, to none, present at that time to argue the countervailing cost associated with that action, in terms of the pollution. And so what has happened is, that once the property is developed, then all hell breaks loose. Because once your tenants and occupants move in and realize the situation that they have on their hands.

S Then the issue of who pays is moved.

S That's right. Exactly. And, it cannot be permitted, in our view, to extend to that point. And, of course, the railroads are very clearly aware of this, from an historical perspective point of view, and the railroads perspective on this legislation was, of course, to remove themselves from this impasse, from this problem. And our point, on here, philosophically is, is that we will not permit, if we can avoid it, permitting the railroads to retreat, as it were, exclusively behind their property line and say, "We will not have any further participation in what happens on the other side of our property line. We have no interest in there and we're protected by the Federal government." And our suggestion to you is, is that is a very short perspective.

S And a very expensive one, ultimately.

S A very expensive one, ultimately.

S Yeah.

S Because it cannot endure.

S Yeah.

S That's what our perspective is. So, if we were to try to go with the quick fix, that, essentially a property line standard on a uniform basis throughout the nation, would impose then you're going to find that law modified. The law, the statute will be modified to either clarify the special exemptions process and clearly grant that latitude to states and locals to take action there. Or permit the Federal government to take it without the process which I suspect would now incur, the existing ambiguity perhaps of Section 17(c)2.

S mmum hum.

S Because those politicians in those communities cannot live with that situation. They cannot. And my perspective is, is that they will not. Because the principal issues so far on the aviation's side has been one that does not exist here. And that principal issue is (CHANGE TAPE)

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that no one has taken responsibility for the aviation noise, from the federal government point of view. The federal government's view is, "Hey, we can only set source emissions standards on the product." And that is extremely limited because of the safety factor. It therefore has to remain the prelude of the airport proprietor to reconcile all the differing views, and the land use compatibility use.

S Mmum hum. mmum hum.

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S While the airport proprietor is in the same situation as the railroad is except for him it is more extenuating because the airport proprietor cannot control the noise of his sources. Only the Federal government can do that. He has no say in that at all. That is, the noise level of the aircraft, themselves. He has no control over the numbers of aircraft, or essentially, their scheduling. He has been precluded from establishing curfews, hours of operations, or even limiting the type of aircraft using his facilities. Because that comes under the CAB and other authorities beyond him. He has no control over the flight patterns or paths of those aircrafts. That is exclusively the jurisdiction of the Federal Aviation Administration because of the safety in scheduling aspects. And, so in that case, you have a multiplicity of elements over which the airport proprietor has no control whatsoever. If you take that highly convoluted situation, then, of multiple parties, and you take the perspective of the railroad system, indeed, that problem is absent. Because a given carrier has control over the specifications of the major noise-producing sources at that facility. Alright? There is only one manufacturer, as it were, of locomotives in the nation, with a couple of rebuilt associates. Very limited. You do not have the problem of foreign equipment coming in, such as we do with the SST, the A300. Aircraft coming in from other parties. Ok. You do not have other controllers, such as the FAA, sitting over you dictating how and where and when you will run your equipment. We understand to the extent that the ICC plays, of course, some modest role in this here.

S Mnum hum. Mnum hum.

S Ok. And so, where we are presently resolving the problems on the aviation side in bringing these other parties together, now, in here, the railroads already have an optimum situation, where they don't even have to go through that because they are the principal entity. So, as you look at a comparison between the two, the railroad situation is far more simplistic than that of the aviation community. And, of course, we have exactly the

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S same problem of scheduling and the question of potential interference with interstate commerce, . . . by rail or by air.

S Mmum hum. Mmum hum.

S So, the problem that you all have earlier addressed with us, on, on the potential for interference impact on interstate railroad system, in here, is one which we are reasonably knowledgeable of, in terms of aviation.

Because there you have much the same situation. You must move aircraft. To reposition them to be ready in the morning, etc., and any schedule-flip that happens over here from the right ripples through the whole system. Because of interconnecting schedules and everything else. All the way through.

S Right.

S And servicing facilities and whatever you. So, it is not a situation with which we don't have some modest familiarity. Obviously there's some technical differences between them. So, the problem, as we see it, is one which is more resolvable for railcarriers than it is with the more complex system with aviation. It should be simpler. There are less players involved dramatically.

S Mmum hum. Mmum hum.

S But the problems are, in the context of which you have addressed here, Chuck, are very much the same.

S Yeah. Yeah.

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S And the problem will have to get worse because when we started out with the airports they were in a situation which to some modest degree the railroads were in 30 years ago, or 40 years ago. And they had been encroached upon by the development of that surrounding area. We cannot presume in the future that there will be absence of continued growth. Or that there will not be revitalization, such as occurred immediately adjacent to Potomac Yards out here in the building of Crystal City.

S Right.

S Ok? So we must assume that these things are going to occur. And it seems to us that we ought to bloody take that into our considerations right now and how this final rule is structured and we ought to plan for this kind of a problem five, ten and fifteen years ago that we set in place major federal comprehensive preemptive action. That's the philosophical element that is running behind our theme here.

S Mnum hum. Mnum hum.

S Alright. Well, as I say that's been very helpful and, but, you know, those are the kinds of things that it's difficult to glean from reading the Background Document.

S Of course.

S It's hard to put into plain English sometimes . . . .

S I can appreciate that. I can very well appreciate that.



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S Another point that may amplify. . . is confusing I guess. You know, the concepts and the thoughts . . . develop a data base . . . policy consideration. . . . to do something positive and constructive . . . create a thinking that . . . expertise. . . . expertise . . . help . . . problem. In the analysis that we did we assume . . . The assumption was, in fact, that the railroads would pay because we assumed no undeveloped land is . . .

S Yeah. Right. Mmum hum.

S . . . worst case.

S Mmum hum.

S And . . . saying that is a fact and we know that need not happen. . . has been structured in a way as to give the railroad some potential flexibility in dealing with the local committees and . . . zoning, maybe there could be a buffer or maybe there could be insulated housing . . .

S Mmum hum.

S There are many ways to mitigate the change from undeveloped to developed in a way that makes . . .

S Sure. Yeah. You had to make those simplified assumptions. Otherwise the problem would just be unmanageable.

S Right. Right. But we tried to make them in a way that, we took the worst case.

S Yeah.

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S Assume that that would happen. Undeveloped would become developed and who's going to pay. The railroads are going to pay and that's . .

S Mnum hum.

S To look at it from that perspective . . . overestimate rather than underestimate.

S Yeah.

S Yeah. We don't know where this will lead, of course, at this point but we do know (Hello Joe), we do know that there's several committees in the Congress that understand this problem from having tackled the aviation problem.

S Mnum hum. Mnum hum.

S Very substantial agreement. Certainly Mr. Florio will understand the problem.

S Right.

S Certainly Mr. Culver in the Senate side understands the problem, as does Mr. Cannon, and Mr. Anderson and some others in there that's key figures throughout. What we are concerned in here about now, is, is they have not yet focused on the clear analogy, at least from perspective, between the aviation situation and what will be future in the railroad situation. So, that in one regard, the litigation brought by the AAR, at least in this one regard has, has merit to it. And that is, it will now cause the Congress to have to focus on this problem. It will cause them to have to focus on it.

S Mnum hum. Mnum hum.

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S I do not think there is any way that we could reasonably anticipate, at this point, that the EPA will issue a rule that is so comprehensive in its nature, so fixed in its nature, so economically bearable, that the railroads would therefore be satisfied with the final rule. And, that state and local communities, especially attorney generals, looking at the future problems that they are going to have in here, are going to be prepared to let this go unchallenged with their Congressional delegations.

S Mmum hum. Mmum hum.

S This is now becoming very clear to us as a result of some of the correspondence and telephone calls that we are getting from governors and state attorney generals who have now focused on this problem. So, the issue must be joined. It is not one that will go away quietly, I think, unless, unless we are able to arrive at a final rule-making action which will at least partially satisfy the major concerns of the state and local governments.

S What other major concerns. . . ?

S And concerns that the railroads would have.

S Mmum hum. Mmum hum.

S Well, excuse me. I regret that I have . . I have a meeting at quarter till at the Pentagon, too.

S Ok. . . I don't know if you have any additional questions with regard to specific interpretations.

S Just one and then we can go over it after this and . . .

S Yeah. Yeah. Right. Ok. So, as I say, I've got to leave,  
so . . .

S Very good.

S Well, again, many thanks. This has been most helpful, to me  
certainly and, I appreciate your taking the time to provide these clarifying  
remarks and . . .

S Well, I hope they will be helpful to the AAR and its consideration  
and comments.

S Mnum hum. Mnum hum.

S In it's final rulemaking. . . . ? I assume he hasn't come in  
yet. And we are happy to consider a further meeting with the AAR.

S Mnum hum. Mnum hum.

S At such time as you all deem it appropriate for further clarifica-  
tion to applications.

S Mnum hum. Mnum hum.

S And there is some reasonable possibility, certainly, that you  
should expect a call from us at some time in the future after we've received  
your comments, of course.

S Right.

S To probably discuss those with you.

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Tape 3

S Mnum hum. Mnum hum

S More technical detail.

S . . . he's trying to get in touch right now with . . . and get a consent or to get something. He said he's going to submit it to the court and he will be submitting the request for an extension.

S And he's going to the court with this?

S He said that he thought that was the proper form. He's going to contact . . .

S Thank you very much. Good.

S . . . Coming to the EPA directly.

S Good.

S I can stay a few more minutes . . . before I have to . . .

S On the undeveloped property, I'm a little concerned about where there may be water bordering the railroad facility. What are some of the ramifications there. Would you consider water area, a river or a lake to be recreational and therefore have to meet the . . .

S I can't answer, I can't answer your question because it calls for a, for a statement of what the agency's intent was, so far. The agency has not addressed that question directly and so you don't have an agency policy on that. I can give you a personal view and that would be that I think that that would be a point which the railroad should properly raise. And that

S there would be some reason to believe that based on a previous experience that it could be well considered to be undeveloped land. Or compatible. Directly. Now, there is a currently developing body of law dealing with that, but in most cases it would mean that an existing facility has already been classified as a recreational with specific criteria established around it. For example, National Park area or state park areas where motorboating is prohibited but sailboating is permitted. You know, there is some element of classification and that's what presents part of the problem there. As to how do we draw that definition of water in terms of compatible in compatible.

S That would also get into the problem of dominance, too.

S It would indeed get into a problem of dominance.

S These speed boats out there could be the railroad facility could be nondominant but if you measured at a time when there were no speed boats then the railroad property would be dominant.

S Yeah.

S I would think.

S That's right. And so that would be an element. When we run the regattas out here on the Potomac and those bloody speed boats run up and down this place out here you can't hear yourself think two miles away. The rest of the time it's pristine except for the modest presence of a few 707s and 737s. 707's a National jet. 727. But . . . but the question you posed is an excellent one and this would be the kind of thing that we would want to thrash out and it will probably. . . lawyers present, as well, who are aware, knowledgeable in the various land use classifications and categories as we try to structure what those property classification usage should be.

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Tape 3

S A secondary problem to that is, of course, to estimate the extent of receiving property impact. Because of the attenuation across water is much less.

S That's right.

S Therefore you have to consider properties . . . might not normally think of as being contiguous or within the impact of the railroad . . . because of this ability.

S That's right. If we were dealing with a river, or a lake, out in here, as currently written, the standards would say, at the receiving property. Noise level at the receiving property and we would be looking primarily, this is again parts of clarification, the railroads can aid in ensuring that this clarification occurs, we would be looking at habitations. And so here that distance should serve to attenuate, mitigate the sound at that receiving property. It's the equivalent of the railroad property boundary being extended that distance out, as it were. And, that of course, is in our thinking right now, a reasonable and proper thing to do. I mean, we see no reason to cause the railroad to have to meet a noise level at the inboard side of the river most closely approximate to the railroad facility.

S However, again, if it is recreational it has to meet the, the standard.

S In that regard the present regulation is, is probably ambiguous. That would clearly have to be clarified. We think that there are enough cases in here of that nature that they should be clarified and we should arrive at a legal position on this. That the lawyers are agreeable and that the language of the final rule-making clearly spells out by some definitional process. Because there are very few points I think one would say right now where the river, let's just go, the Potomac River is a simple analogy in

S here, would be classed as recreational in the context of a state park lake where motor boats are prohibited, for example. Because of the noise level. I mean, certainly, the motor boats are going to frequently drown out the aircraft. So, even though it may be recreational in a context, one context, they permit it's use for recreational purposes as opposed to them being banned. Alright? We certainly would not, from a noise consideration, place that into that same recreational context. It wouldn't be that at all. So, we've got some, we've got some legal, uh, wordsmithing that's going to have to be done and we would be looking towards an appendix here that would spell out these. The Slokom Code, for example, could be of value in doing something such as this. But, those are the kinds of questions we would hope you would raise and offer recommendations with respect to.

S My concern there, of course is the time element.

S Mmum hum. . .

S Well, if the AAR is going to court to request the time extension vs. the Agency having to acting unilaterally, that may place a different perspective on it. Because we are bound of course, under the existant statute to promulgate rules within 90 days following proposal and so we are placed in a "damned if you do, damned if you don't." If we extend the comment period we are now in violation of another element of the law and we would be knowingly violating the law under those circumstances. So, it is a proper form for the court to address here, I think. And that's of value to know.

S Apparently that's being taken care of.

S Well, I think you have pretty much answered the questions we had on the receiving property. If you like I could go over some of these questions that were raised the other day?



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S Why don't you do that, here. I have to leave for another meeting . . . further discussions of that. Rick, if you will represent EPA in this regard at this point, that would be most helpful. And if you clarify those. Then if you desire to get back together with us subsequently I'm sure you all will let us know.

S I'm sure other meetings would be equally beneficial. I don't see any need at this, right now to set a time for such a meeting but I would like to leave it open, as I'm sure you would like to contact us and . . .

S Very good.

S We will stand ready to meet with you at any time and if we find need we will contact you.

S I think the previous meeting, from what I understand from the staff that attended that I have spoken with and the tapes that I heard was most helpful, already. Certainly was to us and appears to have been some benefit to you all, as well.

S It definitely was, yes.

S Ok. Good. I'll leave you all at this point. Thank you very much. And we will see you again.

S We have some of the preliminary responses to some of the questions that were raised at the former meeting. The first of which was, request was made for the number of truck-mounted refrigerator units handled by rail industry and TFOC traffic. We have to stress that this is preliminary information. We have a response from one company. The Fruit Growers Press. Which says that they had 6018 loads on contract lines in 1978. No data on off-contract lines-loading.

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Tape 3

S May be significantly more. Now, we will be, as other companies report in, we'll be able to firm that up a little bit. 6018.

S Tony, is it possible that we xerox that information after you . . for the record.

S You are welcome to a xerox of these. Because of the time element.

S Sure.

S Simply hand-written. We can and will have them typed up and have them sent to you if you prefer. But you're also welcome . . .

S . . . ?

S Pardon?

S . . . ?

S Right here.

S In terms of . . . I presume.

S Yes.

S Is it not proper, perhaps that anything we have here that we have in writing . . . expected that these kinds of comments would be submitted. How was that supposed to be handled?

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Tape 3

S Yeah. Well, I guess this is a free exchange of information. It's not . . . official . . . we will be providing . . . information . . . giving us some information in advance . . .

S Whether or not this information will show up in our formal comments, I don't know. This is an exchange of information, such as has gone on over the last year.

S It was my understanding from the meeting the other day that this was an area in which the AAR was able to get more current, better information than had been previously available to EPA or to . . . And that the AAR agreed to try and get some of that . . .

S If we can get a typed version of, of this.

S That's no problem. As I said, this is hand written because of the time problems. Including in that problem is, my secretary is getting married on Saturday (laughter). It gives us a slight problem with regards to typing.

S Ok. Well, I guess it's kind like . . . to us.

S . . . writing down this issue.

S There isn't that much.

S Well, I think we should probably listen now if we could get . . .

S Ok.

S If it doesn't answer our question properly, we can restate the question.

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Tape 3

S I'm not exactly sure where this fits in, this note that I just received. The first question addressed the number of mounted refrigerated units handled. This note that I just received says that there is 3253 mechanical refrigerator trailers as of 5/18/79. And I assume that those are mechanical refrigerator trailers owned by the railroad companies. And that distinction becomes a little bit clearer here under question number 2. Difference between highway refrigerator trailers and those used in PFOC service. There is a distinction. First of all, they all have the same engine, and compressor system, Mercedes Benz 4-cylinder engine. Now, however, the highway trailers are nose-mounted. In other words, mounted high on the trailer.

S Up above the cab.

S That's right.

S Now, this to minimize the air intake following by the road debris. The TFC trailers are under hung to ensure air intake while on the trailer . . . Would be somewhat different. The problem with putting on the top is the first trailer behind the power unit would be receiving nothing be exhaust. So, some consideration should be given to difference in configuration and I see that that number of 3253 does fit in here. We did have a small break down. But we didn't have the total number, which that gives. Question?

S No, not really. There is a question in my mind that there are perhaps this total number three thousand plus that are owned directly by the roads. Yet there may be others that are owned by subsidiaries of the roads. Like . . .

S This would include the subsidiaries, I believe. I think you can safely assume that the 3000 odd are railroad type.

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Tape 3

S Ok.

S To the best of our determination.

S Sure. Sure.

S At this time. This would not include the regular over-the-road type trailer. It would get into the TFOC service.

S On a piggy-back?

S On a piggy-back basis. You requested a noise data on refrigerator cars. I have that available to you in a, in printed form. Typed format. Question number 4 was, meantime between engine overhauls, mechanical refrigerator cars. This again is according to one company. The Fruit Growers Express, which is the largest operator/owner and operator of refrigerator cars. They say between 5 and 8 years mean time between engine overhauls.

S Do they really say that?

S That's the information I have here. Think it's less or more?

S It's less . . . able to operate that long.

S I don't have any knowledge of my own. I'm just reporting what has been reported to us.

S I'm reflecting on a similar size diesel engine experience as a railroad service.

S . . . I think . . .

S You're talking about major?

S Yes. Yes.

S Between engine overhauls.

S Right. Well, that's one company. And you're still to hear from . . .

S We're still to hear from others.

S . . . that is a . . .

S One advantage that this type of unit has is that being in continuous operation you wouldn't get the thermal cycling problems that you frequently get in other types of operation.

Tape 4

S . . . problems that you frequently get in other types of operation. Question #5 is "Clarification on operating practices and terminology on through trains." That is on-going and we don't have an answer. Six was "Faced to install barriers." That is on-going and the data is not . . . in order to be able to provide it to you. I don't have it as a listed question, but I do have some additional data here on estimates on releasable retarders. Inner retarders. Can furnish you. The . . . noise and releasable retarders. You also requested our information that we had on car impact speeds. There are some studies which show the range of speeds obtained and this last one is data published by WAECO on Railroad Freight Car Classification Yards Installations, 1924 to 1976, which shows suppliers, yard names, locations, type of equipment at the various yards. This has ben updated by us to some extent, primarily in the area of conrail.

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Tape 4

S The . . . , for example, no longer exists . . . to conrail and that is shown to the best of our ability.

S Thank you, Sir.

S It is my understanding we also use some materials which we will get to you sometime early next week.

S We'd appreciate it. Particularly considering the June 1st deadline we . . .

S I understand. You will get that.

S Thank you.

S And, my best guess is that it will be Tuesday of next week. And I'll try to get it to you before. And that includes the computer programs, the input data required to . . . sample run and one of the documents that pertain to . . .

S Barrier . . . ?

S Barrier information. Right. And the TSC Document. That we made reference to in terms of barriers.

S Also the BP&M Document.

S Yeah, I called Peter about those and they are both in place. Evidently your contractor didn't file them properly.

S But they were in there.

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Tape 4

S There were there. And they are there.

S Good location for the source material.

S Yeah.

S If you'd send them directly to Peter, I'd appreciate it since he's the one that's compiling all of the information.

S I spoke to Peter about the documents, he, I think he picked them up yesterday.

S Good.

S And, as far as these other items, we will send them immediately.

S Yes.

S When does it look like the other items you were going to supply us . . . AAR . . . be sent?

S I really cannot give you a date on them. Hopefully by the middle of next week.

S Well, Ok.

S The operating practices requires a meeting with the operating people to get that firmed out. That meeting will take place Tuesday and Wednesday of next week. We'll be able to get that to you soon after that. I



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Tape 4

S would say that by the end of next week we'll be able to fill in the remaining blanks.

S I guess I would like to, I'll give you a call on, say on Wednesday and we'll see what the status is of anything.

S Very good.

S Get a better date.

S Again, I'd like to emphasize we're under the June 1st deadline and we need time to evaluate and analyze your data so it can be included in our comments.

S Right.

S So, as soon as we could get yours we would be grateful. We'd appreciate it.

S Very good.

S Are there any more questions that you want to raise right now?

S Yeah. The other area of concern to us, which was expressed some months ago, but that's not, I guess, relevant, really. The desire that we had to identify where, and in what yards the test sites, test facilities were. How many facilities were there. Where they were located. It is a principal area of interest. Of concern to us.

S I believe we furnished you with the number . . .

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Tape 4

S Yeah, that's right.

S Of test site locations. And now you are requesting which yards?

S If possible, yeah. So that we can better estimate some of the costs.

S I'll check to see if that information can be made available.

S Ok.

S I thank you.

S Thank you also.

S Thank you very much.

S This will officially adjourn the meeting at approximately 11:50 and away we go.



GENERAL COUNSEL OF THE  
UNITED STATES DEPARTMENT OF COMMERCE  
Washington, D.C. 20230

27 JUN 1979

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control  
[ANR-490]  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

Enclosed herewith are five (5) copies of the comments of the Department of Commerce, prepared in response to the Environmental Protection Agency's Notice of Proposed Rulemaking governing Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers, which appeared in the April 17, 1979, Federal Register.

Sincerely,

William V. Skidmore  
Acting Deputy General Counsel

Enclosures

79-01-153

RECD ANR-490

JUN 20 6 41 PM '79

(614)

MEMORANDUM OF COMMENT  
ON THE  
ENVIRONMENTAL PROTECTION AGENCY'S NOTICE OF PROPOSED RULEMAKING  
FOR  
NOISE EMISSION STANDARDS FOR TRANSPORTATION EQUIPMENT; INTERSTATE  
RAIL CARRIERS

(44 Fed. Reg. 22960, April 17, 1979)

The Department of Commerce has reviewed the Environmental Protection Agency's (EPA) Notice of Proposed Rulemaking for Noise Emission Standards for Transportation Equipment; Interstate Rail Carriers, and the Background Document for Proposed Revision to Rail Carriers Noise Emission Regulation (EPA 550/9-78-207), dated February, 1979 (hereinafter, BD).

Section 17 of the Noise Control Act of 1972 (Pub.L.95-574), hereinafter "the Act," requires the Administrator of the EPA to promulgate noise emission regulations governing the operation of the equipment and facilities of surface carriers engaged in interstate commerce by railroad. After the effective date of such regulations, no State or political subdivision may adopt a noise emission standard governing such equipment and facilities, other than one which is identical to the one promulgated by EPA, unless the Administrator determines that such regulation is necessitated by special local conditions, and is not in conflict with the EPA-promulgated regulations.

Because EPA wanted to leave State and local authorities freedom to address site-specific problems on a local case-by-case basis, EPA originally promulgated a noise emission regulation which would regulate only railroad locomotives and railcars, thus allowing local regulation of railyard facilities.(41 Fed. Reg. 2184, January 14, 1976) However, those regulations

were successfully challenged in the United States Court of Appeals for the District of Columbia Circuit by the Association of American Railroads (AAR) on the basis that it did not include all railroad equipment and facilities, as required by the Act. Association of American Railroads v. Costle, 562 F.2d 1310 (D.C. Cir. 1977)

In directing the Administrator to reopen the consideration of the standards, the Court did not define the "equipment and facilities" which are to be regulated, but, among other things, directed the Administrator to expand the definition in accordance with the statutory mandate as interpreted by the Court. However, nothing in the remand affects the degree of regulation, nor the validity of railroad noise emission standards already promulgated (governing locomotives and railcars).

The presently proposed regulations are in response to the Court's remand, and would establish noise emission standards for overall railroad facility and equipment noise, as well as specific standards for retarders, refrigerator cars, and car coupling operations.

The Department of Commerce is opposed to promulgation of these regulations in their present form for the reasons set

forth below. We also make recommendations below, which, if implemented, would obviate these objections.

A. Clarity of EPA Future Intentions Concerning Railroad

Noise

As noted above, one of the more important issues discussed in the Court's opinion on remand was the completeness of EPA's definition of the rail carriers' "equipment and facilities." The Court decided that the Administrator had "construed the term 'equipment and facilities' in a narrow and artificial manner", and directed the Administrator to redefine this term so that the "realities of the railroad industry [would] govern the definition...." (562 F.2d at 1321) The Court also noted that, in addition to the narrow definition of "equipment and facilities" in the previous regulation, EPA also "claimed future jurisdiction over a broad range of 'equipment and facilities,'" as well. (562 F.2d at 1320; emphasis in original) According to the Court's opinion, "[i]f the federal level issues all of its regulations concerning 'equipment and facilities' at one time; (sic) the localities can plan their own activities in the area of noise regulation with increased certainty and confidence that their efforts will not go for naught [by being preempted by future EPA regulations]." (562 F.2d at 1321; emphasis added)

We believe some statements in the preamble are ambiguous or could create doubt as to EPA's intentions concerning future federal railroad noise regulations. "The uniform national standards we are now proposing go only part of the way in controlling railroad facility and equipment noise throughout the country." (44 Fed. Reg. 22960, April 17, 1979, Sec. 11.0, emphasis added) "Facilities and equipment not covered by this regulation included: Mainline rail operations, bells and whistles, facilities not directly associated with railroad trackage..., and maintenance-of-way equipment." (44 Fed. Reg. at 22960, footnote 1, emphasis in original) "At this time, no additional noise control is considered necessary for through trains." (44 Fed. Reg. at 22961, Sec. 2.0, emphasis added) In addition, the Noise Sources portion of Section 3.0, Technology and Cost, (44 Fed. Reg. at 22962) lists eight "significant noise sources associated with railyards," implies that the presently proposed regulations cover five of these sources, states that the sixth, (Wheel/Rail noise) is not addressed, states (in Sec. 4.0, 44 Fed. Reg. at 22963) that "Horns, Bells and Whistles" are not to be addressed, but states nothing of the remaining noise source (Trailer on flat car, container on flat car).

In light of the Court's remarks cited above, we recommend that EPA clearly state in the preamble its intention concerning the scope of possible future regulations, if any, under Section 17 of the Act.



B. Possible Measuring Ambiguities and Consequent Enforcement Difficulties

Section 201.33(e) proposes procedures intended to establish the presence of "dominance" when "clear dominance" cannot be demonstrated. This section is not clearly written. The leading sentence refers to both hourly equivalent and day-night sound levels (Ldn), but the remainder of the text appears to be concerned only with day-night sound levels. In the second sentence, it is likely that EPA does not literally mean "the measured sound level less the through trains component sound level" but rather something like "the measured sound level adjusted, on an energy basis, to remove the contribution from through trains." In Subsection (1), there is a requirement that the rail facility component level shall be calculated from values measured under conditions of "clear dominance." However, the provisions of this section would not be followed if "clear dominance" could be demonstrated.

However, beyond the problem of a clear articulation of EPA's intent and procedures, we believe the procedure proposes conditions of sound level measurement which will be difficult or impossible to achieve. The requirement that "the level calculated on an energy basis from these two quantities [be] within 2 dB of the measured sound level less the through trains component sound level" (proposed Section 201.33(e), second sentence) could rarely, if ever, be met, because one

must be able to break down the measured sound levels into rail facility, nonrailroad facility, and through trains component levels, with little uncertainty. This seems most unlikely.

The difficulties in isolating the rail facility component, either by measurement or by modeling, when "clear dominance" cannot be demonstrated, may be so great relative to the probable uncertainties as to prohibit effective enforcement of this portion of the proposed regulation. Therefore, we recommend that Section 201.33(e) be deleted, and that the proposed standards at receiving properties only apply when "clear dominance" of the rail facility component can be demonstrated.

C. Determination of "Clear Dominance" Appears Arbitrary, Imprecise and Incomplete

Under proposed Section 201.33(d), the determination of whether or not the railyard facility is the "clearly dominant sound" depends on showing that the measured sound level exceeds the component nonrailyard facility and through train operations by 6 decibels (dB) or more. (44 Fed. Reg. at 22972; our comment in paragraph E. below demonstrates an apparent inconsistency between this Section and the definition of "clearly dominant sound" in Section 201.1(p).)

1. Arbitrary Determination of Residential Neighborhood  
Component Day-Night Sound Level

One of the nonrailyard components, the "residential neighborhood component day-night sound level" (RNCD-NSL), must be calculated as equal to or less than  $[22+10 \log (\text{population density})]$ . (44 Fed. Reg. at 22972, Sec. 201.33(d)(1)(i)) If the other components of noise from nonrailyard facilities (i.e., aircraft, motor vehicle traffic, and the like) are negligible, it is always possible mathematically to show "clear dominance" of the railyard facility. This comes about because EPA has not specified by whom, by how much, and under what circumstances the calculated RNCD-NSL may be decreased. Therefore, the RNCD-NSL may be arbitrarily decreased until the measured sound level exceeds the RNCD-NSL by 6 dB or more, thus establishing the proposed requirement for "clear dominance." To eliminate possible confusion and the appearance of arbitrariness, we recommend that EPA in Sec. 201.33(d)(1)(i) delete the words "or less than" after "estimated to be equal to", and add the words "rounded to an integer" after " $[22+10 \log (\text{population density})]$ ."

2. Incomplete Determination of "Residential Neighborhood  
Component Day-Night Sound Level" in the Presence of  
Non-neighborhood Sources

There is another difficulty in understanding EPA's intention

concerning the determination of RNCD-NSL, in that the relationship discussed above is for use "in a residential neighborhood, in which the sound from non-neighborhood sources, ...is not identifiable." (44 Fed. Reg. at 22972, Sec. 201.33(d)(1)(i))

It is our understanding that the above relationship was derived empirically from data representing neighborhood sound levels in the absence of non-neighborhood sources, using regression analysis. The use of such a relationship in circumstances other than those used in its derivation is inappropriate. Therefore, the situation in which residential neighborhood noise does have identifiable non-neighborhood sources of sound (besides the railyard) is not covered in the proposed regulation. We further recommend that EPA state in the proposed regulation whether or not the RNCD-NSL is to be estimated under these circumstances; and if so, how.

3. Possible Contradictory Determination Of "Clear Dominance"

The procedure outlined in Section 201.33(d)(2) makes it possible to search for a single hour when the overall sound level is low; and if the sound level in that hour is at least 6 dB below the sound level in an hour (within four hours

of the first hour) when operations from the rail facility are "judged to dominate", "clear dominance" can be stated to exist. We believe that the subjective nature of this judgment is inappropriate in a regulation. Furthermore, use of the procedures of this section could result in identification of the condition of "clear dominance" for railroad facility noise, based upon selected hourly equivalent levels, but for which the day-night equivalent level data fail to establish "clear dominance", let alone "dominance." We recommend that Section 201.33(d)(2) be deleted.

D. Inconsistency Between  $L_{dn}$  as Calculated by Formula and the  $L_d$  and  $L_n$  Value Recalculated Therefrom

EPA further specifies (44 Fed. Reg. at 22972, Sec. 201.33 (d)(1)(i)) that the residential neighborhood component hourly equivalent sound level (RNCHSL) must be calculated from RNCD-NSL, the  $L_{dn}$  which is calculated from the population density. For daytime, RNCHSL must be taken as equal to RNCD-NSL + 1; and for nighttime, RNCHSL must be taken as equal to RNCD-NSL - 6. However, if these daytime and nighttime values are used to recompute  $L_{dn}$  using the usual formula (BD, p. 6-6), one notes that an inconsistency of over 2.3 dB has been introduced, as demonstrated in Attachment A. Part of this inconsistency may arise from rounding, and part from the fact that the formula

$$L_{dn} = 10 \log (1/24) (15 \cdot 10^{L_d/10} + 9 \cdot 10^{(L_n+10)/10})$$

"penalizes" nighttime noise by 10 dB, while EPA's formula

noted above, returns only 6 dB "credit." We recommend that EPA discuss this inconsistency in the preamble to the final regulation, and/or adjust the constants from which daytime and nighttime RNCHSL are to be calculated from RNCD-NSL, so as to be consistent with the basic formula for  $L_{dn}$ . This inconsistency of over 2 dB seems especially important, given the fact that the proposed regulation (Sec. 201.33(e)) would define "dominance" based on sound level calculations differing by "3 dB or less."

E. Inconsistency in Definition of "Clearly Dominant Sound"

The definition of "Clearly Dominant Sound" as given in Sec. 201.1(p) does not appear to be equivalent to the definition as used in Sec. 201.33(d) of the proposed regulation. If  $L_r$  is the sound level from the rail facilities proposed to be regulated, if  $L_c$  is the sum of the nonrail components (e.g., RNCD-NSL, aircraft noise, highway noise and the like), if  $L_a$  is the total sound level from all sources, and if  $L_r$  is to be "clearly dominant", we interpret Sec. 201.1(p) as defining "clear dominance" in terms of the relationship between  $L_r$  and  $L_c$ . Using the same notation, we interpret Sec. 201.33(d) as defining "clear dominance" in terms of the relationship between  $L_a$  and  $L_c$ . We recommend that EPA review these definitions, and make them consistent if they are indeed inconsistent, or explain their consistency in an expanded preamble.

F. Benefits Stated With An Unknown Degree Of Precision

EPA in its previous publication "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," EPA550/9-74-004, March 1974, (hereinafter "Levels Document") has stated that an  $L_{dn}$  of 55 dB has been identified by EPA as being protective of the public health and welfare with an adequate margin of safety (Levels Document, Table 1, page 4). In the following discussion, we use 55 as that identified protective value for  $L_{dn}$ , without necessarily accepting at this time the logic in its derivation, or the value itself as being the appropriate number.

According to EPA, information presented in the Levels Document supports the concept that the degree of annoyance with noise (i.e., its fractional impact) is directly proportional to the noise level, and that the range of "20 dB is a reasonable value to associate with a change from 0 to 100 percent impact" (BD, p. 6-7). Expressed mathematically, EPA's fractional impact, FI, is

$$FI = (1/20)(L-55), \text{ for } L \geq 55, \text{ and}$$

$$FI = 0, \text{ for } L < 55,$$

where L is the observed or measured  $L_{dn}$ , and 55 is the identified protective level.

In order to calculate the number of people who are considered 100 percent impacted, EPA multiplies FI by the population exposed to Ldn values greater than or equal to 55 dB (the exposed population). The exposed population in turn is calculated as the product of the incremental area around the railyards between contours of equivalent sound level, multiplied by the average population density (APD). The APD in turn is calculated as the total estimated 1977 population (projected from 1970 block level Census data) divided by the impacted area. Since EPA's preliminary analysis indicates that railyard noise could impact populations within 2000-5000 feet of the yard boundaries, the study areas chosen were rectangular, equal in length to the length of the yard complex, and equal in width to 2500 feet on either side of the yard for "industrial" and "small yards", and to 5000 feet on either side of the yard for "classification yards."

As described above, EPA estimates population effects by using the APD over each incremental area within which the predicted levels are estimated to within 1 dB. In the estimated impacted area, if the true population density further away from the railyard is greater than the true population density closer to the railyard, the number of affected people will be over-estimated, and vice versa. We recommend that EPA perform further calculations to determine whether or not variation of population densities with distances from railyards within



the affected area is a significant factor. Finally, the width of the study area was originally taken as 2500 feet or 5000 feet from the railyard, as noted above. We also recommend that at least on a sample basis, the calculations be extended to see whether or not the 55 dB contours roughly coincide with the assumed distances of 2500 feet and 5000 feet. If these distances do not approximate the final 55 dB contours, and if a significant variation in population density with distance is found, consideration should be given to recalculating the equivalent noise impact, taking into account the variation in population density within the impacted area.

Miscellaneous Comments and Errata

1. Page A-2 of BD refers to "Figure 1" to illustrate infrequent and continuous operations, and normal and irregular operations, of railroad yards. This Figure is missing from our copies of BD.
2. Page 6-54 of the BD appears to have mistakes in two equations. In the second paragraph we believe the formula " $ENI=(FI)A$ " should be " $ENI=(FI)(A)^2$ "; and that " $A/2=Lo(D/Do)$ " should be " $A/2=Lo(D-Do)$ ." We confirm the formula for "stationary source."

3. Page 6-47 gives 2 equations for  $L_{dn}$  which use the constants "49.4" and "13.8". An explanation of how these constants were derived would be helpful, along with some measure of the goodness of fit of this equation. Since the model is to predict the  $L_{dn}$  baseline values based on the "activity parameters", it would be informative to know, in fact, how accurate that predictive capability is.



UNITED STATES DEPARTMENT OF COMMERCE  
National Bureau of Standards  
Washington, D.C. 20234  
OFFICE OF THE DIRECTOR

MAY 15 1979

MEMORANDUM FOR Sidney R. Galler  
Deputy Assistant Secretary  
for Environmental Affairs

From: Ernest Ambler  
Director

Subject: EPA Notice of Proposed Rulemaking: Noise Emission Standards  
for Transportation Equipment; Interstate Rail Carriers  
44 Fed Reg. 22960, April 1979

In response to your May 1, 1979, request my staff has reviewed those portions of the subject proposed regulations, and the Background Document supporting it, that are concerned with measurement procedures. Their comments follow.

The noise emission measurement procedures are well defined and consistent with the current state of the art. However, a measurement challenge arises in the Subpart D of the regulation because of the need to isolate the railroad facility noise from other sources of noise. EPA shows that they are aware of this need and have laid out procedures for determination of the component sound level resulting from rail facility operations and for demonstration procedures when that level is the clearly dominant sound.

Although, in many cases, it may be difficult to isolate the impact of the railroad facility noise, EPA's procedures appear to be reasonable and, if carried out by competent personnel, should be effective in ensuring that railroad facilities are not required to be quieted in areas where such quieting would not significantly reduce the overall noise impact.



UNITED STATES DEPARTMENT OF COMMERCE  
National Bureau of Standards  
Washington, D.C. 20234  
OFFICE OF THE DIRECTOR

JUN 01 1979

MEMORANDUM FOR Sidney R. Galler  
Deputy Assistant Secretary  
for Environmental Affairs

From: Ernest Ambler *E. Ambler*  
Director

Subject: EPA Notice of Proposed Rulemaking: Noise Emission Standards  
for Transportation Equipment; Interstate Rail Carriers  
44 Fed. Reg. 22960, April 1979

In my memorandum of May 15, 1979, to you on this subject, it was indicated that a measurement challenge arises because of the need to isolate the railroad facility noise from other sources of noise and, further, that in many cases it may be difficult to isolate the impact of the railroad facility noise. On May 22, Mr. John Cox of your office met with my staff to discuss such potential problems with the proposed regulations. In response to the questions raised at this meeting, the following detailed comments are offered concerning Subpart D of this proposed regulation.

1. Further clarification is in order in Section 201.33 as to the hour, or hours, when hourly equivalent sound levels shall be measured.
2. In Section 201.33 (d)(1)(i) it is stated that the day-night sound levels in residential neighborhoods shall be estimated to be "equal to or less than" a calculated value. The phrase "or less than" allows one potentially to neglect this contribution entirely. This phrase should thus be deleted.
3. In Sections 201.33 (d)(1)(iv) and (v), it is not clear how to measure these component contributions since in many cases the noise component levels from these sources would not be distinguishable from other components.
4. The procedure outlined in Section 201.33 (d)(2) makes it possible to search for a single hour when the overall noise level is low and if the level in that hour is at least 6 decibels below the level in an hour when operations from the rail facility are "judged to dominate", clear dominance can be stated to exist. The subjective nature of this judgment is inappropriate in a regulation. Furthermore, use of the procedures of this section might result in identification of the condition of clear

dominance for railroad facility noise, based upon selected hourly equivalent levels, but for which the day-night equivalent level data fail to establish clear dominance let alone dominance. It is recommended that Section 201.33 (d)(2) be deleted.

5. Section 201.33 (e) provides procedures intended to establish the presence of "dominance" when "clear dominance" cannot be demonstrated. This section is not clearly written. The leading sentence refers to both hourly equivalent and day-night sound levels but the remainder of the text appears to be concerned only with day-night sound levels. In the second sentence, the requirement that "the level calculated on an energy basis from these two quantities is within 2 dB of the measured sound level less the through trains component sound level" could rarely, if ever, be met. It is likely that EPA does not literally mean "the measured sound level less the through trains component sound level" but rather something like "the measured sound level adjusted, on an energy basis, to remove the contribution from through trains." The tolerances of  $\pm 2$  decibels seem optimistic. In effect, EPA is saying that one must be able to break down the measured levels into rail facility, non-railroad facility, and through trains component levels with very little uncertainty. This seems most unlikely. In subsection (1), there is a requirement that the rail facility component level shall be calculated from values measured under conditions of clear dominance. However, the provisions of this section would not be followed if clear dominance could be demonstrated.

The difficulties in isolating the rail facility component, either by measurement or by modeling, when "clear dominance" cannot be demonstrated, are so great relative to the probable uncertainties as to prohibit effective enforcement of this portion of the proposed regulation. It is recommended that Section 201.33 (e) be deleted and that the proposed standards at receiving properties only apply when clear dominance of the rail facility component can be demonstrated.



**UNITED STATES DEPARTMENT OF COMMERCE**  
**Industry and Trade Administration**  
Washington, D.C. 20230

May 18, 1979

MEMORANDUM FOR Sidney R. Galler

From: Edwin B. Shykind

Subject: EPA Notice of Proposed Rulemaking:  
Noise Emission Standards for  
Transportation Equipment; Interstate  
Rail Carriers 44 Fed. Reg. 22960,  
April 17, 1979

We have reviewed the subject document and have no comment.  
Also, at your request, we are returning the attachment.

Attachment





UNITED STATES DEPARTMENT OF COMMERCE  
The Assistant Secretary for Industry and Trade  
Washington, D.C. 20230

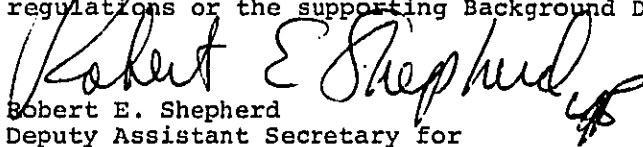
MAY 25 1979

MEMORANDUM FOR: Sidney R. Galler  
Deputy Assistant Secretary  
for Environmental Affairs

Subject: Noise Emission Standards (Rail Carriers)

Reference: Your memorandum of May 1, 1979 on the above  
subject

BDBD has no comments on either the subject proposed  
regulations or the supporting Background Document.

  
Robert E. Shepherd  
Deputy Assistant Secretary for  
Domestic Business Development



UNITED STATES DEPARTMENT OF COMMERCE  
Chief Economist for the Department of Commerce  
Washington, D.C. 20230

May 22, 1979

MEMORANDUM TO Sidney R. Galler  
Deputy Assistant Secretary  
for Environmental Affairs

FROM: David C. Lund *DCL*  
Economist

SUBJECT: EPA Notice of Proposed Rulemaking:  
Noise Emission Standards for Transportation  
Equipment (44 FR22060)

This note is to confirm the telephone comments given to Mr. John Cox on May 18. We do not agree with EPA's finding that the subject regulation is not significant. If they had included indirect effects on the railroads and its customers, the total annual cost would appear to exceed \$100 million.

An interesting aspect of these regulations is that they are the product of a suit by the Association of American Railroads (AAR) and a subsequent court ruling to develop preemptive uniform national standards for railroad equipment and facilities. It is highly unlikely that EPA would have issued these regulations if AAR had not brought legal action and they are now not happy with the regulations. While we are concerned about the use of regulation when it is not required, the AAR has effectively taken away EPA's discretion.

At best, we would hope that your Office would review the regulations and help to detect and correct technical flaws and errors in the proposed rulemaking. Since there is a reasonable, if somewhat limited, presentation of the economic impacts of the proposed legislation we do not see major grounds for objecting to this regulation on the basis of compliance with E.O. 12044. I understand that the Council on Wage and Price Stability will be filing a report on this regulation but it will not be reviewed by RARG.



### ATTACHMENT A

$$L_{dn} = 10 \log(1/24) [15 \cdot 10^{L_{dn}/10} + 9 \cdot 10^{(L_{dn}+10)/10}], \quad (\text{BD, p. 6-6})$$

in which  $L_{dn}$  is the equivalent 24-hour day-night average sound level,  
 $L_d$  is the equivalent daytime sound level, and  
 $L_n$  is the equivalent nighttime sound level.

Let  $L_{dne}$  be the EPA-required  $L_{dn}$  calculated from

$$L_{dne} = 22 + 10 \log [\text{population density}], \text{ and let}$$

$$L_d = L_{dne} + 1, \text{ and}$$

$$L_n = L_{dne} - 6 \quad (\text{Sec. 201.33(d), 44 Fed. Reg. 22972, April 17, 1979}).$$

If these relationships are consistent,  $L_{dn} = L_{dne}$ .

$$\begin{aligned} L_{dn} &= 10 \log(1/24) [15 \cdot 10^{(L_{dne}+1)/10} + 9 \cdot 10^{(L_{dne}-6+10)/10}] \\ &= 10 \log(1/24) [15 \cdot 10^{L_{dne}/10} \cdot 10^{1/10} + 9 \cdot 10^{L_{dne}/10} \cdot 10^{4/10}] \\ &= 10 \log(1/24) (15 \cdot 10^{L_{dne}/10} + 9 \cdot 10^{L_{dne}/10} \cdot 10^{4/10}) \\ &= 10 \log(1/24) (15 \cdot 10^{L_{dne}/10} + 9 \cdot 10^{L_{dne}/10} \cdot 2.5119) \\ &= 2.3744 + L_{dne} \end{aligned}$$

If  $L_{dne}$  is to be equal to  $L_{dn}$ ,

$$(15 \cdot 10^{L_{dne}/10} + 9 \cdot 10^{L_{dne}/10} \cdot 2.5119) \text{ must be equal to } 24.$$

SENATOR HENRY M. JACKSON,  
DEAR SIR,

AN ARTICLE IN THE QUEEN ANNE NEWS  
OF MAY 30, 1979 TELLS OF A NEW REGULATION  
THAT THE E. P. A. IS PROPOSING. IT WOULD  
ALLOW MORE NOISE TO COME FROM RAILROAD  
YARDS. THE REGULATION WOULD NOT DISCRIMINATE  
BETWEEN THE TYPES OF PROPERTY THAT WILL  
BE IMPACTED. CAR COUPLINGS, RETARDERS AND  
REFRIGERATOR CARS WILL BE ALLOWED TO EMIT  
AS MUCH NOISE IN A RESIDENTIAL AREA AS IN AN  
INDUSTRIAL AREA.

WE LIVE ON THE EAST SIDE OF MAGNOLIA  
BLUFF, FACING THE INTERBAY RAILROAD YARDS.  
THE WEST SIDE OF QUEEN ANNE HILL ALSO FACES IT.  
THESE ARE TWO VERY NICE RESIDENTIAL AREAS.  
THE NOISE WE GET FROM THE YARD NOW, IS  
MORE THAN PLENTY. WE DO NOT NEED ANY  
GREATER VOLUME OF NOISE.

SINCERELY YOURS,  
Oslon Mor  
2301 W. LYNN, APT. 304  
SEATTLE, WASH. 98199

79-01-095

14 JUN 29 152 56  
-EARTH ANN-490



of the  
Deputy Minister

Ministry of the  
Environment

416/065-1995

135 St. Clair Avenue West  
Toronto Ontario

June 26th, 1979.

Mr. Charles L. Elkins  
Deputy Assistant Administrator  
for Noise Control Programs  
United States Environmental Protection Agency  
Washington, D.C. 20460

Dear Mr. Elkins:

Re: Comments of Ontario Ministry of the  
Environment concerning Proposed Regulations  
on Railway-Yard Noise.

In response to your request of April 27, 1979 I am pleased to forward this Ministry's comments on the proposed E.P.A. regulations on railway-yard noise. We have limited our comments to those selected aspects of the regulations for which we have background data. We hope that our comments will be of some value to you in bringing the proposed regulations to finality.

Should our comments require further explanation, your staff are invited to contact Mr. John Manuel of the Noise Pollution Control Section in Toronto.

Yours truly,

  
Graham W.S. Scott

Attach.

79-01-149

-SANC APR-679

5 11 79 11: 13

ONTARIO MINISTRY OF THE ENVIRONMENT

INVITED COMMENTS ON

RAIL CARRIER DOCKET NO. ONAC 79-01

Concerning Proposed EPA Regulations on Rail Yard Noise

TORONTO, CANADA

JUNE 1979

## 1. INTRODUCTION

Mr. Charles Elkins, Deputy Assistant Administrator of the EPA in his letter of April 27, 1979 to Mr. Ken Sharpe, Deputy Minister, solicited comments from the Ontario Ministry of the Environment on all aspects of the proposed EPA rail yard noise regulations. As the preamble to our comments, it will be useful to review our involvement in this topic.

The awareness in Ontario of the potential of this noise problem resulted in the Ontario Ministry of the Environment and CP Rail jointly sponsoring a symposium on railway classification yard noise in May 1977.<sup>1</sup> To our knowledge this was the first major initiative undertaken in Canada to afford an opportunity for engineers, researchers, operators, suppliers and other interested groups to jointly discuss the problem and to identify an investigative approach. When the symposium ended, the participants arrived at a consensus that the problem is complex and requires extensive research to gain a better understanding of both the mechanisms of noise generation within the yard and the resulting impact on residents in neighbouring communities.

Implementing the direction set by the symposium, the Ontario Ministry of the Environment in 1978 launched a major project to study the noise impact of railway yard operations on adjacent residential communities. Extensive noise measurements were performed at the perimeter of four railway yards and a scientifically designed questionnaire (see Appendix B) was administered to some four hundred residents to measure sociological response. The nature of land-use policies in the province of Ontario influenced the decision making the project, receiver (resident) oriented rather than source (rail yard) oriented.

The data gathered from this study are just beginning to be analyzed and interpreted. Some preliminary results were recently forwarded to the Office of Noise Control Programs at EPA. The following comments are based on our most recent analysis. The receiver oriented nature of our study enables us to comment, unfortunately, on only selected aspects of the proposed regulations.

## 2. HEALTH AND WELFARE EFFECTS

We support the EPA position that the health and welfare of residents should be the prime consideration in setting standards (Federal Register, page 22963). We are aware that little information for rail yard noise was available in the literature at the time proposed regulations were being drafted by the EPA. Since then health and welfare related data for rail yards had been analyzed by this Ministry as a result of the Ontario study. We would like to offer here a discussion of the relevant Ontario data on community annoyance and sleep disturbance - two major elements of health and welfare effects.

Figures 1 and 2 show the community annoyance outdoors (expressed as a percentage of people highly annoyed) and the sleep disturbance of residents as a function of measured  $L_{dn}$  levels in the community generated by railyard operations.<sup>2,3</sup>

It is interesting to note that despite the complexity of noise sources in rail operations, a high correlation coefficient ( $r = 0.965$ ) exists between the percentage of people highly annoyed in the community and the measured community levels due to yard operations. Sleep disturbance is also significantly correlated to rail yard levels measured in the community ( $r = 0.778$ ). We feel that this type of information should play a key role in the setting of standards. A more detailed discussion of the data will be taken up in the section on standards.

## 3. INDICES FOR RAILWAY-YARD NOISE

In the Ontario study noise measurements were made in residential communities adjacent to four railway yards. There were substantial variations in the nature of operations from one yard to another. Hump operation was the predominant acoustical activity in one of the yards, that we measured. Idling locomotives and noise emanating from the test-cell dominated the noise climate near the second yard. Flat switching and train pass-bys were the eminent activity in the other two yards.

Despite such a wide diversity in the activity between yards, the combined data demonstrates a well defined trend between community annoyance and railway yard exposure levels (Figure 1). The regression models for annoyance and sleep disturbance are summarized in Tables 1 and 2. For the curvilinear annoyance model (Table 1) the coefficient of determination is 0.963 and the standard error of estimate 4.6 dBA. The high value of the coefficient of determination and a small standard error of estimate suggest that the simple measure of  $L_{dn}$  in the residential community can be effectively employed as the index for regulatory purposes and for assessing the annoyance of the exposed population.

To employ hourly  $L_{eq}$  standards for regulation purposes as proposed in Tables 2.1(c) and (d) does not receive strong support in the literature related to annoyance. In fact, there is some suggestion in the literature that the human perception is based on cumulative long-term (typically day, evening, night and 24-hour) exposure rather than short-term (minutes or hours) exposure. We feel that the basic concept of using hourly  $L_{eq}$  should be further investigated and researched before implementing it.

It is interesting to note that while community noise exposure from yard activity is highly correlated with the percentage of people highly annoyed within the residential community, there is no well defined relationship between yard activity category and measured  $L_{dn}$  (Page 4-7 of the Background Document) at the property line. In view of the high correlation between residents annoyance and the community noise levels, it seems that the community noise impact is relatively insensitive to the type or noise category of the rail yard. The implication is that the community noise levels from yard operation is probably a more useful parameter in the development of regulations for railway yard noise than the yard property line noise levels.

It should be pointed out that in Ontario's noise measurements, no distinction was made between the through-train activity on the mainline and the general yard activity. Our measurements encompass noise generated by all facilities and equipment within the yard including that from through-trains. Our rationale for this approach is that firstly it is artificial to separate the contributions of the through trains from yard activity since the two major elements of train pass-by noise (locomotive and the wheel-rail noise) are quite common and already present in the normal switching activity in the yard. Secondly, it is complex to implement measurement procedures with, and without, the through-train contribution. Moreover, the definition of the "through train", in our view, leaves room for discretion and subjectivity in the enforcement of regulations.

There are also other advantages of using noise measurements in the residential community for setting the standards. Yard property line noise measurements can only be used directly, unadjusted for ground attenuation, to assess community impact when people live either immediately adjacent to the railway yard or when they share a joint property boundary.

If the community is located some distance from the yard property line, property line measurements will have to be corrected for distance and ground attenuation to arrive at community levels. These corrections for various yard noise sources are neither reported in the literature, nor clearly understood at present. Direct measurements in the community in resident's outdoor living areas would naturally resolve such a dilemma.

A second point is that the definition of "receiving property" as used in the regulations should be further clarified. "Receiving property" is defined as any property that receives the sound from railroad facility. The regulations also state that noise abatement measures are not imposed in locations where it does not intrude on people (Federal Register, vol. 44, No. 75, Tuesday, April 17, 1979, page 22961). We feel that adjacent industrial, commercial and



agricultural land uses should be exempt from the provisions of the regulation, although admittedly the people within these uses may receive exposure from rail yard noise. The intent of noise abatement should be confined to "receiving property" used for residential purposes only, including schools, hospitals and passive recreational areas, where reduction in noise levels will be most effective in reducing community noise impact. The deletion of industrial and commercial uses from the impacted zone near the periphery of railway yard should substantially lower the requirements of noise reduction at the yard and thus, the associated costs since a small percentage of total land use (27.5%) adjacent to railway yards is residential (Table 3-10, Background Document).

#### 4. RECEIVING PROPERTY STANDARDS

We return to Figure 1 which shows the percentage of people highly annoyed outdoors in the community as a function of the noise levels generated from the rail yard. From this chart, three distinct straight line segments of constant slopes can be discerned in the grouping of data points. These segments range from  $L_{dn} = 51$  to 58 dBA; 57 to 65 dBA; and 65 to 73 dBA; in the order of increasing slopes. Indicating that the most relief to the community for every dB reduction in rail yard noise level would be realized in the range of  $L_{dn} = 65$  to 73 dBA.

The proposed "receiving property" line standards of 70 dBA and 65 dBA (Table 2.1 (a) of Federal Register) would result respectively in 64% and 50% residents being highly annoyed (using the linear regression model for 51-73 dBA range in Table 1). These same noise levels would cause sleep disturbance to 74% and 65% of residents.

By way of a comparison, the road traffic noise exposure of 24 hour  $L_{eq} = 55$  dBA ( $L_{dn} \approx 55$  dBA) would highly annoy approximately 0% and sleep disturb approximately 5% of the residents in the community.<sup>4</sup> If sleep disturbance and high annoyance are to be used as the design criteria in the EPA regulatory process, the proposed property line levels would appear to cause abnormally high annoyance and sleep interference

in the community. Obviously, an attempt to reduce the community annoyance and sleep interference due to the rail yard noise to the nearly same percentages as those due to road traffic exposure of  $L_{dn} \approx 55$  dBA would be very expensive and impracticable. We offer the regression equations of Table 1 and 2 as a design tool so that the "receiving property" standards may be set for any "desired" values of the % highly annoyed and % sleep disturbed.

We have no comments to make on the choice of numbers in one-hour standards for the "receiving property" (Tables 2.1 (b) to 2.1 (d)).

#### 4.1 Retarder Noise Standards

The proposed retarder noise standard of 90 dB at 30 meters is adequately supported by the technological reasons presented in the document. Allowing for approximately 20 dB insertion loss provided by a barrier at the retarders will result in 110 dB at 30 meters being reduced to 90 dB. However, it should also be examined whether this value would be acceptable from the community annoyance and the activity interference viewpoint. Figure 3 and Table 3 reproduce Ontario data showing how residents rate the retarder squeal for various measured retarder noise levels. Although the size of the data base is quite modest, a certain trend can be discerned. When the retarder squeal level in the community is 80 dBA, approximately 80% of the residents report high annoyance. This drastically drops to nearly the 30-40% range corresponding to a squeal exposure of 55-65 dBA. By comparison, the locomotive and wheel-rail noise at the same level (55-65 dBA) would cause a maximum of 21% residents to be highly annoyed (Figure 3). This indicates that retarder squeal is probably one of the most annoying noise sources in the yard operation, and must be tackled on a high priority basis. Community annoyance data of retarder squeal in Figure 3 may be utilized as a guide in setting up residential (community) "receiver property" standards for retarder squeal. As with the general railway yard levels, the development of a residential community oriented standard for retarder noise is highly recommended.

#### 4.2 Mechanical Refrigerator Cars and Car Coupling Standards

In our study the refrigerator car noise in rail yards (not sidings) was identified by residents to be a minor source of community annoyance, especially when compared with the retarder squeal and the coupling noise. As well, we have not been able to collect an adequate data base to offer a substantiated comment.

With respect to the car coupling noise standard, we would like to caution that since this noise is impulsive in nature, technically an impulse sound level meter is required to measure it. Integrating sound level meters used for  $L_{eq}$  measurements do not normally have this measurement mode and would, as a result, read levels 10-20 dB below the true impulse readings. This is attributed to the response time of the integrating sound level meter not being small enough to accurately capture impulse transients.

In Ontario, car coupling noise levels were measured with an integrating sound level meter. It is interesting to note that for the same single event, noise level coupling noise is perceived to be almost as annoying as the retarder squeal. (Figure 3). To illustrate, coupling noise in the range of 55 to 60 dB ( 65-80 dBAI on impulse setting) is reported to highly annoy 20% to 40% of the community. This is compared with the proposed standard of 95 dB at 30 meters. The use of a receiver oriented standard for enforcement purposes is recommended. Controlling coupling noise by limiting car speed would seem difficult to enforce and may conceivably interfere with the smooth running of yard operations.

#### 4.3 Population Fraction Impact Calculations

The procedure to estimate the impacted population utilizes the weighting function proposed by CHABA given on page M-7 of the Background Document. The validity of this mean annoyance curve to railway yard noise applications should be

examined carefully in light of the following observations. First, the curve is synthesized from the annoyance data of a total of eleven surveys of which ten were either in the aircraft or road traffic category. Only one rail traffic noise survey data was incorporated into the averaging procedure, and that too for the train pass-by situation and not for the rail yard noise situation. Moreover, no night-time train operations were reported for this French railroad survey.<sup>5</sup> Secondly, the fundamental assumption in developing this curve seems to be that equal noise levels of all types of transportation noise generate equal community annoyance. A recent study by Hall, Birnie and Taylor<sup>4</sup> seems to convincingly argue that the same noise levels of road traffic and aircraft noise cause significantly different community annoyance and sleep disturbance patterns. In the interest of improving the reliability of the estimates of the impacted population, it would be prudent to consider the curvilinear regression model of Table 1 also given below.

$$\% \text{ Highly Annoyed} = 206.44 - 8.27 L_{dn} + 0.0894 L_{dn}^2 - (1)$$

$$\text{Coefficient of Determination } r^2 = 0.963$$

$$\text{Standard error of estimate} = 4.6 \text{ dB}$$

## 5. CONCLUSION

Health and welfare considerations in the community due to rail yard noise should play a key role in the EPA regulatory process. Community reaction data for rail yard noise from a recent province of Ontario study is discussed with a view to providing health and welfare oriented input to the proposed standards. It is suggested that the definition of the "receiving property" requires a review to include residential properties only, exempting all non-residential uses. Rail yard generated  $L_{dn}$  noise level in the residential community seems a very effective parameter in predicting and assessing community reaction.

Retarder squeal and car coupling noise warrant priority in the overall noise reduction program at the yard in view of very high community reaction associated with them.

Receiver oriented standards for residential areas should be favoured over yard property line standards or noise emission standards at fixed distance, for the reasons of easier enforcement and accurate community annoyance assessment. Annoyance and sleep disturbance data presented here will enable standards to be developed not just for the technological and the economic factors but also for community health and welfare considerations.

The proposed EPA regulation, in our view, is a major initiative to control one of the most complex sources of community noise. The approach represents a development of a rather innovative and practicable regulation strategy. The background research and preparation is very adequate and even excellent, especially in the areas of economic impact analysis and the collection of noise measurement data.

J. MANUEL, P.ENG. & A.K. DIXIT, P.ENG.

Ontario Ministry of the Environment

Noise Pollution Control Section

Pollution Control Branch

Toronto, CANADA

June 1979

## 6. REFERENCES

1. "Railway Yard Noise" Report on Joint C.P. Rail/MOE Symposium on Railway Noise, Ontario Ministry of the Environment, Toronto, Canada, July, 1977.
2. "Noise Generating Mechanisms in Rail Yards". Ministry of the Environment, Experience '78 Project, Internal Report, Toronto, Canada, 1979.
3. "Correlation of Community Reaction to Rail Yard Noise", Ontario Ministry of the Environment, Experience '79 Project, Internal Report, Toronto, Canada, 1979.
4. "Comparison of Response to Road Traffic Noise and Aircraft Noise" by Fred L. Hall, Susan E. Birnie and S. Martin Taylor, McMaster University, Hamilton, Ontario, Canada, March 1979.
5. "Acoustical and Sociological Survey to Define a Scale of Annoyance Felt by People in Their Homes Due to Noise of Railroad Trains" Dominique Aubree, an English Translation by Bolt Beranek and Newman Inc., Technical Information Report No. 88, August 1973.

APPENDIX A

FIGURE 1

% HIGHLY ANNOYED (OUTDOORS) vs.  $L_{dn}$  dBA

NOTE: The number appearing beside the data point represents the actual number of residents exposed to that noise level.

- (1) 51 to 73 dBA range: % Highly Annoyed =  $-136.38 + 2.866 L_{dn}$   
 $r^2 = 0.930$ , Std. Error = 5.40 dBA
- (2) 51 to 58 dBA range: % Highly Annoyed =  $-38.9 + 1.1 L_{dn}$   
 $r^2 = 0.458$ , Std. Error = 2.92 dBA
- (3) 57 to 65 dBA range: % Highly Annoyed =  $-57.9 + 1.537 L_{dn}$   
 $r^2 = 0.976$ , Std. Error = 0.73 dBA
- (4) 65 to 73 dBA range: % Highly Annoyed =  $-243.7 + 4.42 L_{dn}$   
 $r^2 = 0.906$ , Std. Error = 4.31 dBA

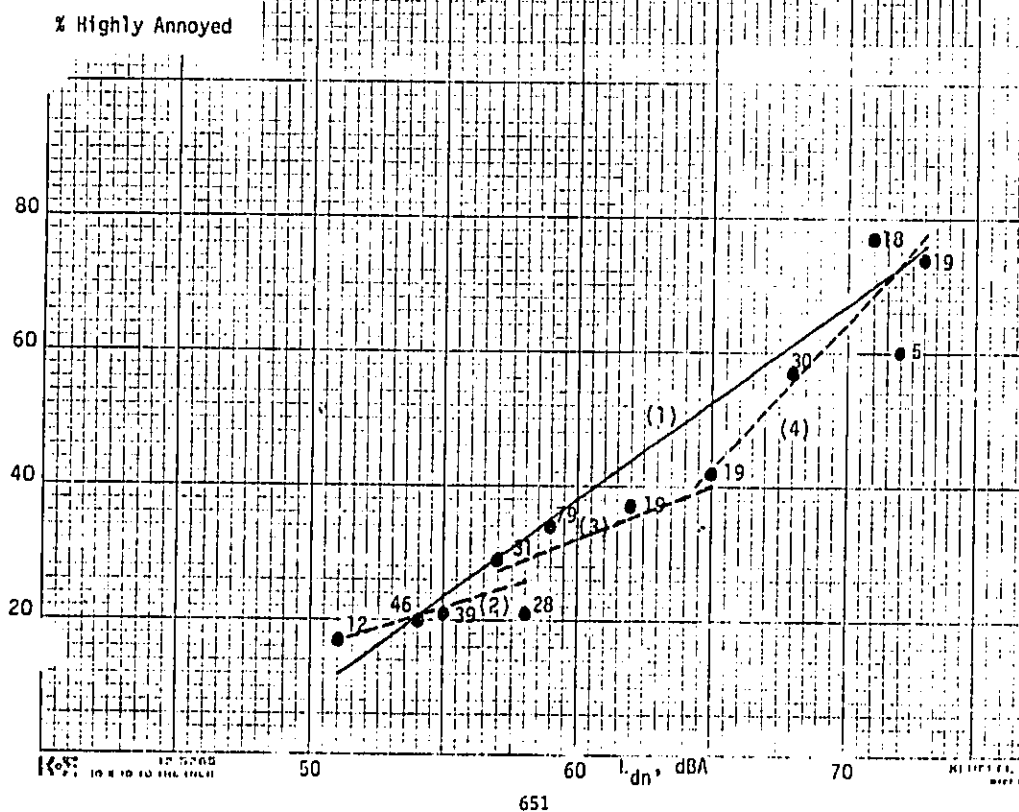




FIGURE 2

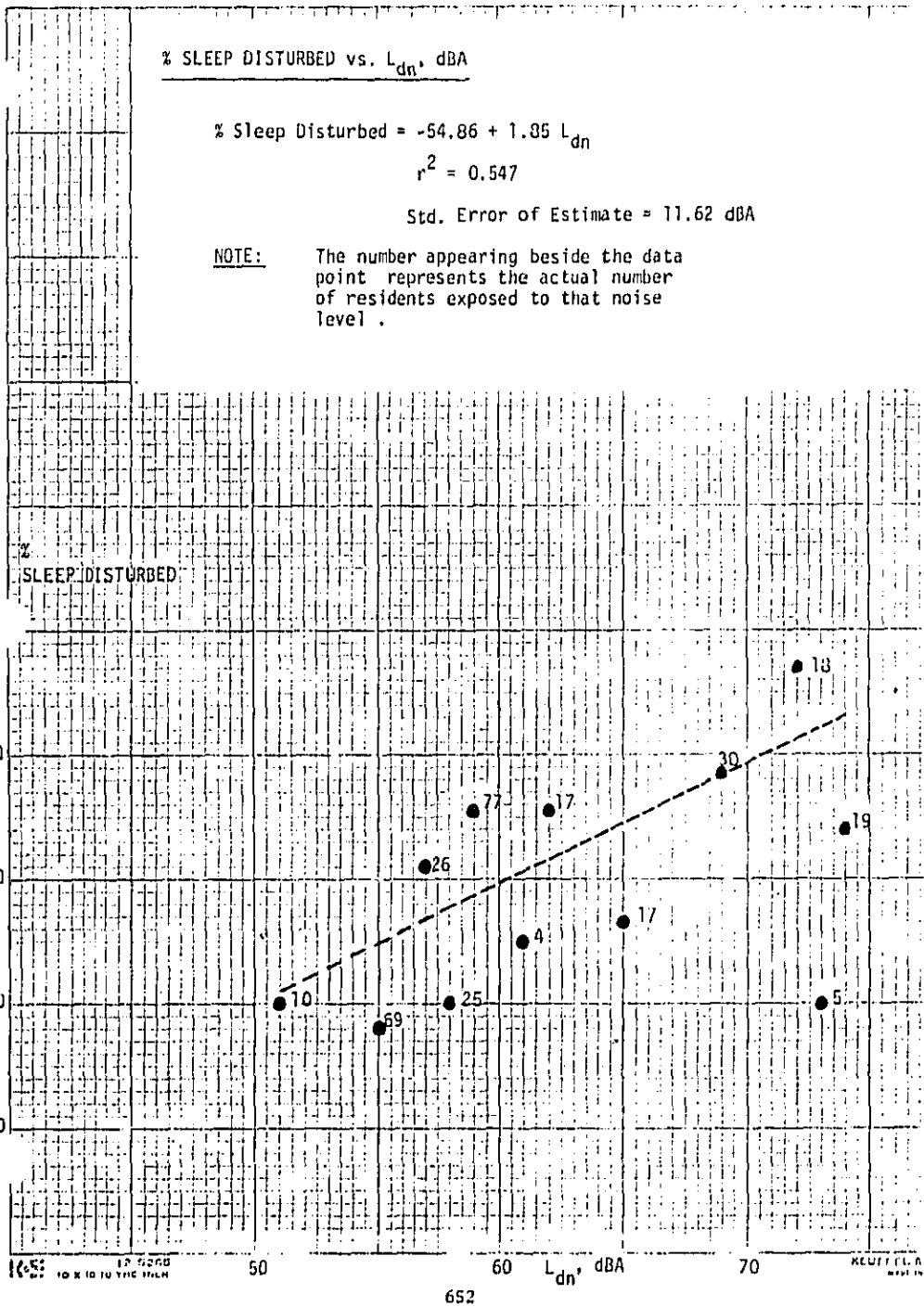


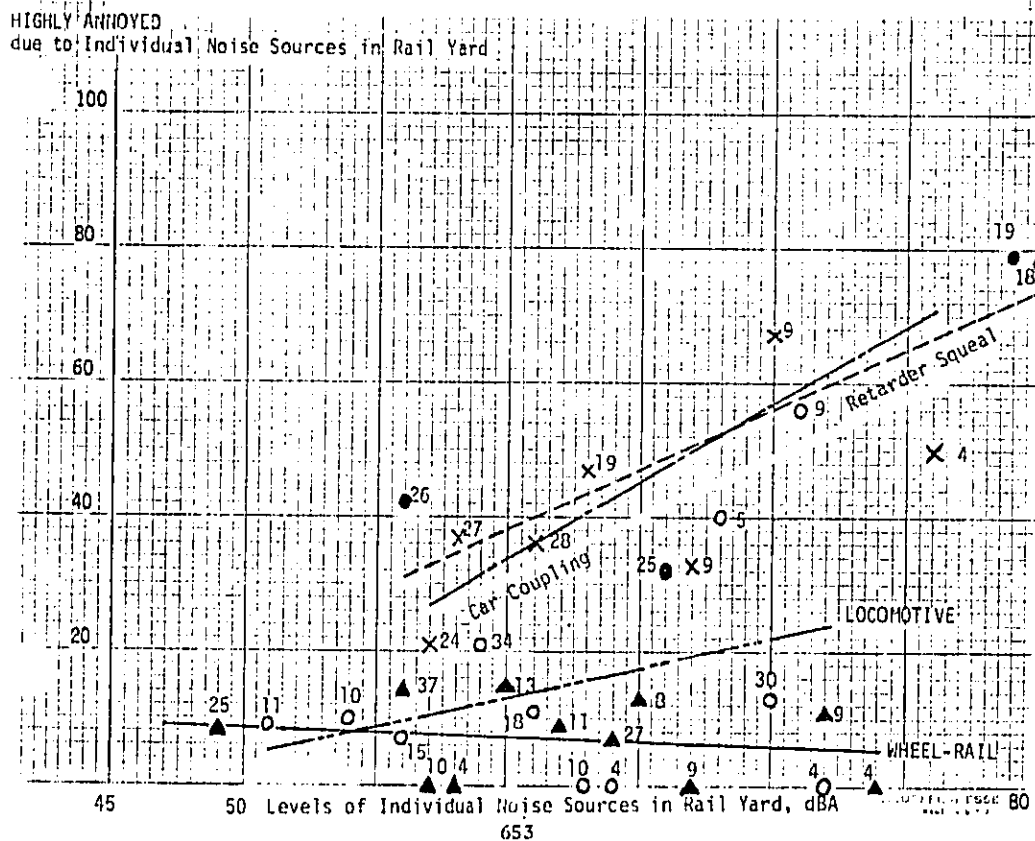
FIGURE 3

% HIGHLY ANNOYED DUE TO INDIVIDUAL SOURCES OF RAIL-YARD NOISE  
vs. LEVELS OF INDIVIDUAL NOISE SOURCES, dBA

Legend:

- Retarder Squeal Data
- × Car Coupling Data
- Locomotive Data
- ▲ Wheel/Rail Data

- NOTES:
1. The number appearing beside the data point represents the actual number of residents exposed to that noise level.
  2. We recommend the use of this graph for qualitative purposes only due to the limited data size.



<u>Regression Model</u>	<u>Range dBA</u>	<u>Coefficient of Correlation, r</u>	<u>Coefficient of Determination, r<sup>2</sup></u>	<u>Standard Error of Estimate, dBA</u>
<u>Linear Model (entire range):</u>				
% Highly Annoyed = -136.38 + 2.866 L <sub>dn</sub>	51 - 73	0.965	0.930	5.40
<u>Linear Model (3 segments):</u>				
% Highly Annoyed = -38.9 + 1.1 L <sub>dn</sub>	51 - 58		0.458	2.92
% Highly Annoyed = -57.9 + 1.537 L <sub>dn</sub>	57 - 65		0.976	0.731
% Highly Annoyed = -243.7 + 4.42 L <sub>dn</sub>	65 - 73		0.906	4.31
<u>Curvilinear Model:</u>				
% Highly Annoyed = 206.44 - 8.27 L <sub>dn</sub> + 0.0894 L <sub>dn</sub> <sup>2</sup>	51 - 73		0.963	4.62

TABLE 1: Regression Models for Percentage People Highly Annoyed Outdoors vs Outdoor Noise Exposure due to Rail Yard Operation

<u>Regression Model</u>	<u>Range dBA</u>	<u>Coefficient of Correlation, r</u>	<u>Coefficient of Determination, r<sup>2</sup></u>	<u>Standard Error of Estimate dBA</u>
<u>Linear Model:</u>				
% Sleep Disturbed = $-54.86 + 1.85 L_{dn}$	51 - 74		0.547	11.617
<u>Curvilinear Model:</u>				
% Sleep Disturbed = $-170.35 + 5.56 L_{dn} - 0.029 L_{dn}^2$	51 - 74		0.553	13.528

TABLE 2: Regression Models for Sleep Disturbance vs Outdoor Noise Exposure Due to Rail Yard Operations

<u>Regression Model</u>	<u>Range</u> <u>dB</u>	<u>Coefficient of</u> <u>Correlation, r</u>	<u>Coefficient of</u> <u>Determination, r<sup>2</sup></u>	<u>Standard Error</u> <u>of Estimate</u>
<u>Linear Models:</u>				
% Highly Annoyed by Retarder = $-70.5 + 1.8 L$ Squeal where L: log average of single event squeal level measurements in dBA	56-80	.860	.739	10.76
% Highly Annoyed by Car Coupling Noise = $-104.4 + 2.3 L$ where L: log average of single event car coupling noise level measurements in dBA	57-70	.753	.567	9.35
% Highly Annoyed by Locomotive noise = $-39.4 + 0.87 L$ where L: log average of single event locomotive level measurements in dBA.	51-72	.351	.123	15.88
% Highly Annoyed by Wheel/Rail Noise = $15.1 - 0.13 L$ where L: log average of single event wheel/rail noise measurements in dBA	49-74	-.156	.024	5.70

Caution: The number of data points for some regression models in this Table is considered too few to derive any quantitative information accurately. The use of this Table is recommended for qualitative purposes only.

**TABLE 3:** Regression Models for Percentage People Highly Annoyed Outdoors due to Individual Noise Sources inside Rail Yard

APPENDIX B

NEIGHBOURHOOD QUESTIONNAIRE

INTERVIEWER : \_\_\_\_\_

SITE: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

RESULT OF CALL: \_\_\_\_\_

DATE	TIME IN	TIME OUT	NOT HOME	REASON FOR REFUSAL	DATE&TIME OF CALL BACK

Hello, my name is \_\_\_\_\_. I am a student at the university of \_\_\_\_\_. I have been employed by the Ontario Government to conduct a survey of different neighbourhoods. Could you spare 15 minutes to answer some questions? All your answers will be treated confidentially and will assist in planning future residential communities.

1. How long have you lived in this area, at your present address?

years \_\_\_\_\_ = \_\_\_\_\_ months

2. What are three things that you particularly like about living in this area ?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

3. What are three things that you particularly don't like about living in this area ?

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

SHOW CARD # 1

4. How would you rate the following things in your area ?

a. Shopping facilities -----

b. Garbage pick-up -----

c. Street maintenance -----

d. Quiet -----

e. Recreational facilities -----

f. Public transportation -----

(SCALE: 1.very good 2.good 3.average 4.poor 5.very poor)



SHOW CARD # 2

5. How would you rate the following in your area ?

- a. Parking spaces -----
- b. Vandalism -----
- c. Noise -----
- d. Traffic congestion -----
- e. Unclean air -----

(SCALE: 1.no problem 2.slight problem 3.average 4. quite a problem  
5.severe problem)

6. Have you experienced any of the following health problems ?

- |                        |     |    |
|------------------------|-----|----|
| a. Ulcers              | YES | NO |
| B. Allergies           | YES | NO |
| c. High blood pressure | YES | NO |
| d. Asthma              | YES | NO |

SHOW CARD # 3

7. Which of the following best describes how often you have  
experienced these ?

- a. Headaches -----
- b. Tiredness -----
- c. Nausea -----
- d. Nervousness -----
- e. Irritability -----
- f. Difficulty in hearing -----

(SCALE : 1.never 2.rarely 3.occasionally 4.frequently 5.all the time)

SHOW CARD # 3

8. Which of the following best describes whether or not you  
have had trouble falling asleep during the past year.

(SCALE: 1.never 2.rarely 3.occasionally 4.frequently 5.all the time)

SHOW CARD # 3

9. Which of the following best describes whether or not you  
have been awakened from sleep.

(SCALE : 1.never 2.rarely 3.occasionally 4.frequently 5.all the time)

10. During the summer, not including sleeping hours, how much  
time per week on the average do you spend inside your house ?  
on weekdays \_\_\_\_\_ on weekends \_\_\_\_\_

11. During the summer, how much time per week on the average  
do you spend outdoors at home ?  
on weekdays \_\_\_\_\_ on weekends \_\_\_\_\_

b) Where do you spend most of your time outdoors ?

1. Front of house
2. Back of house
3. Side of house
4. Other \_\_\_\_\_

SHOW CARD # 4

12.. When you are at home outdoors, which of the following do you hear ?

- |                 |   |   |   |   |   |   |   |
|-----------------|---|---|---|---|---|---|---|
| a. Power tools  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b. Neighbours   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c. Children     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d. Road traffic | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e. Railway yard | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f. Industries   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| g. Aircraft     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| h. Others _____ |   |   |   |   |   |   |   |

b) Which on this card best describes how annoyed you are by each of the sounds you just mentioned ? DEFINE ANNOYANCE

(SCALE: 1.not at all      2.a little    3.partially    4.moderately  
5.considerably      6.greatly    7.tremendously )

13. When you are at home indoors, which of the following do you hear ?

- |                 |   |   |   |   |   |   |   |
|-----------------|---|---|---|---|---|---|---|
| a. Power tools  | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| b. Neighbours   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| c. Children     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| d. Road traffic | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| e. Railway yard | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| f. Industries   | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| g. Aircraft     | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| h. Others _____ |   |   |   |   |   |   |   |

b) SAME AS PRECEDING QUESTION

SHOW CARD # 5

14. In comparison to other neighbourhoods in Ontario which you may have visited or where you may have lived, how annoying do you find the noise in this area ?

(SCALE : 1.less 2.equally 3.a little more 4.somewhat more  
5.moderately 6.much more 7.extremely more)

REFER TO QUESTIONS 8 AND 9

15. IF SLEEP DISTURBED : Do you feel that any of the following contribute to your having trouble sleeping ?

a. Road traffic noise	YES	NO
b. Personal matters	YES	NO
c. Railway yard noise	YES	NO
d. Noise from neighbours	YES	NO
e. Aircraft noise	YES	NO
f. Industrial noise	YES	NO
g. Other _____		

16. When you are at home indoors or outdoors, what noises from the railway yard can you hear ?

b) Here are some other noises common to railway yards, can you hear any of these (ANY SOUNDS BELOW NOT MENTIONED IN THE PREVIOUS QUESTION SHOULD NOW BE STATED )

NOISE	VOL	ELI	INDOORS	OUTDOORS	DAY	EVE	NIGHT
a. screeching, squealing							
b. banging of cars							
c. loud speaker							
d. rolling noise							
e. air whistle							
f. locomotive noise							
g. vibrations							
h. refrigeration equipment on cars							
i. others							

SHOW CARD#4

17. Which of the following best describes how annoyed you are by (LIST SPECIFIC RAIL NOISE ) when you are indoors at home ?

(SCALE : 1.not at all 2.a little 3 partially 4.moderately 5.considerably 6.greatly 7.tremendously )

18. Which of those best describes how annoyed you are when outdoors at home by (SPECIFIC RAIL NOISE)

(TABULATE SAME AS ABOVE)

18. Which of those best describes how annoyed you are by

(LIST SPECIFIC NOISE FROM RAIL YARD) during :

- a. the daytime (7am-7pm)
- b. the evening (7pm-11pm)
- c. the night (11pm-7am)

SHOW CARD # 6

19. To what extent have you become used to the noise from the  
railway yard ?

(SCALE : 1.not at all 2.not very 3.medium 4.quite 5.completely)

20. Do you think anything can be done to reduce the noise from the  
railway yard ?

- 1. yes
- 2. neither
- 3. no

21. a) Do you or your family own or rent this dwelling

- 1. own
- 2. rent

IF 'OWN' ANSWERED TO ABOVE QUESTION :

b) If you could no longer hear the railway yard when you are  
at home do you think the value of your home would increase?

- 1. yes
- 2. neither
- 3. no

c) IF 'YES' ANSWERED TO ABOVE QUESTION : By how much ?

\_\_\_\_\_ thousands of dollars

d) How much of this would you be willing to spend to reduce  
the railway yard noise that you hear ?

\_\_\_\_\_ DOLLARS

22. Have you taken any of the following measures in your home in order to reduce the noise problem ?

- |  |     |    |
|--|-----|----|
| 1. closing windows -----                       | YES | NO |
| 2. installing permanently sealed windows ----- | YES | NO |
| 3. turning up radio or T.V. -----              | YES | NO |
| 4. changing location of bedroom -----          | YES | NO |
| 5. Other _____                                 |     |    |

23. Do you have air conditioning in your home ?

1. yes
2. no

b) IF YES ANSWERED TO ABOVE QUESTIONS : What type ?

1. central
2. window

c) IF WINDOW ANSWERED TO ABOVE QUESTION : On which side of the house is the air conditioner located ?

1. not exposed
2. semi-exposed
3. exposed

24. What is the year of your birth ? 19 \_\_\_\_\_

25. How many years of schooling have you completed ? \_\_\_\_\_

26. How many adults presently live in this household ? \_\_\_\_\_

27. What is your occupation (job) ? \_\_\_\_\_

Do you work :      regular hours/shift work

28. What is the occupation of the Head of the Household ?

---

SHOW CARD # 7

29. Which of the following best describes how noisy it is at your work ?

(SCALE : 1.not at all 2. a little 3.not very 4.average 5.rather  
6. very 7.tremendously )

SHOW CARD # 8

30. Please look at this next card and indicate the letter which is closest to the total income of this household before taxes:

- |                   |    |                    |     |
|-------------------|----|--------------------|-----|
| a. less than 4000 | -1 | h. 20-24 999       | -8  |
| b. 4-5999         | -2 | i. 25-29 999       | -9  |
| c. 6-7999         | -3 | j. 30-34 999       | -10 |
| d. 8-9999         | -4 | k. 35-39 999       | -11 |
| e. 10-11 999      | -5 | l. 40 000 and over | -12 |
| f. 12-14 999      | -6 |                    |     |
| g. 15-19 999      | -7 |                    |     |

31. How long have you lived in Canada?

1. all my life

2. \_\_\_\_\_ years

b) IF LESS THAN TEN YEARS :What is your cultural background ?

---



OBSERVATION SHEET

1. Respondant was : Male / Female

2. Building Capacity :

- a. One-Family house detached from any other house
- b. One-family house attached to one or morehouses
- c. Building for two families or Duplex
- d. Building for three or four families
- e. Building for five to nine families
- f. Building for 10 to 19 families
- g. Building for 20 or more families
- h. Mobile home or trailer
- i. Other \_\_\_\_\_

3. Building size:

- a. Single story detached building, similar to a home
- b. One or two story building
- c. three to five story building
- d. six to 10 story building
- e. 11 or more story building ; high-rise
- f. Other \_\_\_\_\_

4. Construction type

- 1. Masonry
- 2. Wood frame
- 3. OTHER \_\_\_\_\_

5. Command of the English language

1. Poor
2. Relatively good
3. Fluent

6. Audible noise during interview (if any) Rate on the following scale:

1. Barely audible      2. Clearly audible      3. Interferes with speech

TYPE OF NOISE	LOUDNESS	CONTINUOUS	INTERMITTENT
1.			
2.			
3.			
4.			
5.			

7. Observable buffer features

1. Garage
2. Walls
3. Land topography
4. Dense vegetation
5. Street parking
6. None
7. Other \_\_\_\_\_



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460  
10 MAY 1979

Mr. Charles E. Taylor, Director  
Analytic Studies Division  
Research and Test Department  
Association of American Railroads  
American Railroads Building  
1920 L Street, N.W.  
Washington, D.C. 20036

Dear Mr. Taylor:

Based on the most recent meeting of Dr. Harris of the Association of American Railroads (AAR), Mr. Thomas of the Environmental Protection Agency, Office of Noise Abatement and Control (EPA/ONAC) and Dr. Gellman of Gellman Research Associates, Inc., it was suggested that a series of meetings be held on key areas of interest on the EPA's proposed noise emission standards for the nation's railroads. Since the EPA's Notice of Proposed Rulemaking (40 CFR Part 201) dated April 17, 1979 stipulates the date of June 1, 1979 for closure of the time period for public comment, we strongly recommend that the contemplated meetings take place as soon as possible between now and the end of the month. As you know, we have previously attempted to schedule these meetings but some of the proposed dates have conflicted with the already scheduled arrangements of your staff as well as your own schedule. Based on discussions with Peter Conlon of your staff earlier this week, I would like to propose a schedule for the first two meetings on May 15 and 18th. The May 15th meeting would begin at 1:00 p.m. on the respective days in the 10th floor conference room at 910 17th Street, N.W., Washington, D.C. If further meetings are determined necessary they would be during the week of May 21, 1979.

For planning purposes, we have prepared an agenda for the first meeting (see enclosure). This agenda is intended to describe the data components and elements which were collected and used for the development of the proposed noise emission standards for transportation equipment/interstate rail carriers. The meeting for May 18th which will begin at 10:00 a.m. at the same location would address the philosophy of economic and cost analysis of the railroad impact.

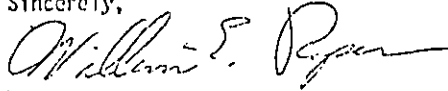
Due to legal regulatory development record keeping requirements, we do plan to tape each meeting for the record, but we do not plan to prepare transcripts of these meetings. The recorded tapes of such meetings will be placed in the public docket of this rulemaking for interested parties to review, should they so desire.

79-01-115

We have notified our Regional Offices of the planned schedule of meetings and they have indicated to us that they and some state/local officials desire to attend the meetings. Several technical staff representatives from such offices will therefore be in the audience.

I hope that the proposed dates and times for the meetings next week will be satisfactory. If you have any questions or require further clarification of some points, please feel free to contact me by telephone at 557-7747.

Sincerely,



William E. Roper, Chief  
Surface Transportation Branch (AMR-490)

Enclosure

cc: H. Thomas, EPA  
A. Gellman

(Meeting #1)

AGENDA

Subject Area: Data Used to Develop Proposed Noise Emission Standards

1. Overview of Regulatory Analysis Process

(Flow diagram of major components such as baseline noise levels of sources and yards, Health and Welfare Analysis, Noise Abatement Technology, Cost and Economic Impacts and Regulatory Options)

2. Outline of Rail Yard Noise and Health and Welfare Models to identify Input Data Requirements

3. Description of Rail Yard Data Base

- Type of Yard of by Function
- Number of Yards by Type
- Number of Yards by Size or Traffic Rate
- Categorization of Yards for Noise Modeling

4. Description of Rail Yard Activity/Traffic Rates

- Activity Data by Type of Yard
- Additional/Extension of Data for Noise Modeling, including Idling Locomotives, Receiver Cars, and Load Test Sites
- Yard Dimension

5. Description of Rail Yard Noise Sources

- Reference Sources
- Identification of Noise Sources by Type of Yard, and Number of Such Sources
- Activity Rates (assumptions)
- Activity Levels

6. Description of Noise Levels for Each Noise Source

- Reference Sources
- Average Noise Level per Noise Source
- Noise Sources not Modeled
- Technology/Availability
- Cost/Economic

7. Description of Acoustical Characteristics and Propagation
  - Propagation, Attenuation, and Shielding Factors
8. Description of CACI Population Data at Rail Yards
  - Population Density Analyses
9. Number of Load Cell Test Sites
  - Enclosure Size
  - Types of Load Cells
10. Maintenance Cycles for:
  - o Switcher Locomotives
  - o Refrigerator Cars
11. Description of Rail Yard Noise Level Measurements
  - Inventory of Measurement Locations
  - Measured Noise Levels at Sampled Rail Yards
12. Discussion of Rail Yard Statistics
  - Rail Yards by Type, Number, and Rail Carrier
  - Rail Carrier Economics and Financies



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
WASHINGTON, D.C. 20410

MAY 21 1978

OFFICE OF THE ASSISTANT SECRETARY  
FOR COMMUNITY PLANNING AND DEVELOPMENT

IN REPLY REFER TO:

CSP

Mr. Henry E. Thomas  
Director, Standards and  
Regulations Division  
Office of Air, Noise, and  
Radiation  
Environmental Protection Agency  
Washington, D. C. 20460

Dear Mr. Thomas:

We have reviewed the proposed revisions and have only one major comment. In Section 201.32 the regulation states that "no measurement shall be made within 10 meters distance from any substantially vertical reflecting surface..." Our experience has shown that a separation of 2 meters is normally adequate to compensate for the increased sound pressure level caused by the reflection. The 10 meters required seems excessive, particularly when it is not clear if the same separation requirement applies to measurements made at residential sites.

As you may know our own noise regulations will be published for effect very soon. In them we require that noise measurements be made 2 meters from a reflecting surface. In the interests of consistency among agencies we recommend that you review your 10 meter requirement. We would be happy to discuss it further.

The proposed regulation with some minor editorial comments is enclosed.

Sincerely,

*Richard H. Brown*  
Richard H. Brown  
Director, Office of  
Environmental Quality

Enclosure

79-01-029

RECEIVED ANK-490

MAY 29 1978

UNITED STATES  
ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

April 5, 1979

NOTICE:

THIS IS AN ADVANCE COPY SIGNED BY  
DOUGLAS COSTLE, EPA ADMINISTRATOR OF  
THE NOTICE OF PROPOSED RULEMAKING  
FOR NOISE EMISSION STANDARDS FOR  
TRANSPORTATION EQUIPMENT INTERSTATE  
RAIL CARRIERS WHICH WILL BE PUBLISHED  
IN THE FEDERAL REGISTER APRIL 17, 1979.



ENVIRONMENTAL PROTECTION AGENCY  
(40 CFR Part 201)  
[Docket No. ONAC 79-01]  
NOISE EMISSION STANDARDS FOR TRANSPORTATION EQUIPMENT  
Interstate Rail Carriers  
(FRL 1053-8)

AGENCY: U. S. Environmental Protection Agency

ACTION: Notice of Proposed Rulemaking

SUMMARY: The United States Court of Appeals for the District of Columbia Circuit has directed the U.S. Environmental Protection Agency to propose and promulgate final noise emission regulations for facilities and equipment of the nation's interstate rail carriers.

This notice proposes an amendment to the existing railroad noise emission regulation. Standards are being proposed which would limit overall facility and equipment noise emissions. Standards are also being proposed which would limit the noise caused by specific pieces of equipment, or operations of equipment.

The standard to control overall facility and equipment noise is a receiving property limit. Measurements are made on property around railroad yards to determine whether the standard is being met.

The standards for specific pieces of equipment, or operations of equipment, apply to retarders, mechanical refrigeration cars and car coupling. Measurements are made at a specific distance from the equipment, or where the activity takes place, to determine whether the standards are being met.

824

Listed below are the standards being proposed. Information and comments are presented in the Supplementary Information section of this notice to provide more specifics for each standard.

<u>Source</u>	<u>Receiving Property Standards, dB</u>			<u>Effective Date</u>
	24-hour period, $L_{dn}$	1 hour period, $L_{eq(1)}$ daytime    nighttime		
All Yard Facilities & Equipment	70	84	74	1982
Hump Yard Facilities & Equipment	65	79	69	1985

<u>Source</u>	<u>Standards, <math>L_A</math></u>	<u>Effective Date</u>
Retarders	90 dB at 30 meters	1982
Refrigerator Cars	78 dB at 7 meters	1982
Car Coupling	95 dB at 30 meters	1982

029

.DATES: All interested persons are invited to submit comments on the proposed regulation up until 4:30 pm, Friday June 1, 1979.

.ADDRESSES: A docket, No. ONAC 79-01 has been established for this rulemaking and will be open to public inspection and copying during normal business hours at the U. S. Environmental Protection Agency's Public Information Reference Unit, Room 2922, 401 M Street, SW, Washington, D. C. 20460. Written comments to the docket should be forwarded to the following address:

Rail Carrier Docket Number ONAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D. C. 20460

Commenters may submit one copy to the docket, although five (5) copies would be appreciated.

FOR FURTHER INFORMATION CONTACT:

Dr. William E. Roper  
Office of Noise Abatement and Control (ANR-490)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460  
(703) 557-7747

To receive copies by mail of the proposed regulation, and/or the Background

Document contact:

Mr. Charles Mooney  
EPA Public Information Center  
(PM-215), Room 2119  
U. S. Environmental Protection Agency  
401 M Street, S.W.  
Washington, D. C. 20460  
(202) 755-0717

SUPPLEMENTAL INFORMATION:

1.0 BACKGROUND INFORMATION

The U. S. Environmental Protection Agency developed a noise emission regulation for railroad locomotives and railcars operated by interstate carriers. The regulation was promulgated on December 31, 1975. The Association of American Railroads challenged the regulation (Association of American Railroads vs Costle, 562 F. 2d 1310, D.C. Cir. 1977) on the basis it did not include standards for all railroad equipment and facilities as required by Section 17 of the Noise Control Act of 1972.

In developing the December 31, 1975 railroad noise emission regulation, we addressed the issue of broadening the scope of the regulation to include facilities and additional equipment. We decided that railroad facility and equipment noise, other than locomotives and railcars, was best controlled by measures which did not require national uniformity of treatment. We wanted to leave State and local authorities freedom to address site specific problems, on a case by case basis, without Federal hindrance. If the Federal government establishes standards for railroad facilities and equipment, States and local authorities cannot adopt or enforce any standard (for facilities and equipment covered by the Federal standard) unless it is identical to the Federal standard. In instances, however, where a local situation demands a more stringent noise regulation, State and local authorities could establish and enforce standards or controls and take other actions, provided there is no conflict with the Federal regulation. However, before a State or local government can implement this right, Federal review of their contemplated action is required. We decided that the health and welfare of the Nation's population being jeopardized by railroad facility and equipment noise, other than locomotives and railcars, was best served by specific controls at the State and local level and not by the Federal government regulations which would have to address railroads on a national and therefore on a more general basis.

As a result of the Association of American Railroads' (AAR) legal action, the U. S. Court of Appeals for the District of Columbia Circuit ruled that we must broaden the scope of the existing regulation to include virtually all\* railroad facilities and equipment. The regulation being proposed broadens the scope of the December 31, 1975 regulation to comply with this directive. The standards have been developed in terms of typical and average situations, as indeed they must, to arrive at national uniformity of treatment. We were unable to translate the solutions to the many local and site-specific problems to a single Federal solution. The uniform national standards we are proposing go only part of the way in controlling railroad facility and equipment noise throughout the country. This is because of the lack of control technology at costs which are reasonable on an aggregate basis to reduce the noise to acceptable levels. Our health and welfare analysis indicates there are an appreciable number of people in the nation who will still be significantly and adversely impacted by railroad noise once this rule is in effect. Because of the preemptive nature of the Federal law, States and localities may not be able to provide further relief to their citizens in many of these cases.

The current date by which the Court has ordered publication of final regulations is February 23, 1979. We will seek an extension of this date to facilitate public comment and to prepare our response to those comments in preparation of the final regulations. The 45 day comment period identified for public comment in this NPRM anticipates the Court's granting an extension. Should the Court's action necessitate a change in this schedule, we will publish a notice in the Federal Register announcing such a change.

\*Facilities and equipment not covered by this regulation include: Mainline rail operations, bells and whistles, facilities not directly associated with railroad trackage (e.g. an office building in a downtown area) and maintenance-of-way equipment.

## 2.0 THE PROPOSED REGULATION

The regulation establishes standards for overall railroad facility and equipment noise, as well as specific standards for retarders, refrigerator cars and car coupling operations. The regulation applies to most railroad facilities and equipment contained within the facilities, including equipment previously regulated by 40 CFR 201.

### Overall Facility and Equipment Noise

It is proposed that, effective on the dates listed, noise levels on property on or beyond a railroad yard boundary line shall not exceed the levels of Table 2.1(a), (b), (c), and (d). Noise levels are to be measured as prescribed in Subpart D.

Measurements are made only on developed adjoining or nearby property, so that costs of noise abatement are not imposed on railroads in locations where the noise does not intrude on people. Receiving property is defined in (201.1(kk)) as any property that receives the sound from railroad facility operations, but that is not undeveloped or owned or controlled by a railroad; except that occupied residences located on property owned or controlled by the railroad are included in the definition of "receiving property." Railroad crew sleeping quarters located on property owned or controlled by the railroad are not considered in this rulemaking since these quarters are the subject of regulation by the FRA of DOT.

Through trains (as defined in (201(ss))) are also not subject to the receiving property standards below, since they are already regulated under the noise control standards earlier promulgated by EPA. Through train operation on mainline roadbed from a noise emission standpoint is essentially the same whether the roadbed is located within a rail yard facility or elsewhere. At this time no additional noise control is considered necessary for through trains.

TABLE 2.1(a)  
PROPOSED RECEIVING PROPERTY STANDARDS - 24 Hour Period

<u>Effective Date</u>	<u>Standard, (L<sub>dn</sub>)</u>	<u>Facility</u>
January 1, 1982	70 dB	All Facilities & Equipment
January 1, 1985	65 dB	Hump Yard Facilities & Equipment

TABLE 2.1(b)  
PROPOSED RECEIVING PROPERTY STANDARDS - 1 Hour Period

<u>Effective Date</u>	<u>Standard, (L<sub>eq(1)</sub>)</u>		<u>Facility</u>
	daytime	nighttime	
January 1, 1982	84 dB	74 dB	All Facilities & Equipment
January 1, 1985	79 dB	69 dB	Hump Yard Facilities & Equipment

The letters L<sub>dn</sub> stand for Day-Night Sound Level. Further definition, and the rationale for the use of this descriptor appears in Section 4.

These standards meet the requirement of the Court order of providing comprehensive exemption, because they encompass essentially all equipment within the facilities.

Table 2.1(c)

Equivalent of 70 L<sub>dn</sub> for 24 hours in A-weighted dB\*

<u>Cumulative hours</u>	<u>Day (15 hours)</u>	<u>Night (9 hours)</u>
2	81	71
3	79	69
4	78	68
5	77	67
6	76	66
8	75	65
10	74	
12	73	
15	72	

\*values are rounded up to next dB

Table 2.1(d)

Equivalent of 65  $L_{dn}$  for 24 hours in A-weighted dB\*

<u>Cumulative hours</u>	<u>Day (15 hours)</u>	<u>Night (9 hours)</u>
2	76	66
3	74	64
4	73	63
5	72	62
6	71	61
8	70	60
10	69	
12	68	
15	67	

Tables 2.1(c) and 2.1(d) provide a simplified reference for determining the compliance or non-compliance of a railroad facility. The tables delineate the mathematical maximum  $L_{eq}$  limits, for a specified number of hours over one hour, that are equivalent to the  $L_{dn}$  70 and  $L_{dn}$  65. (E.g. If one is measuring  $L_{eq}$  at a railroad facility for 2 hours during the day and attains a value of 81  $L_A$ , from Table 2.1(c), this would be considered equivalent to 70  $L_{dn}$ . Thus the facility would be considered in compliance, unless a subsequent  $L_{dn}$  measurement shows otherwise. If the measured  $L_{eq}$  value does not exceed the appropriate value of Table 2.1(c) or 2.1(d), it is still possible that the  $L_{dn}$  standard is exceeded, meaning the facility is not in compliance. A facility is not in compliance if its measured noise level exceeds either the  $L_{dn}$  standard or the  $L_{eq}$  standard. If the measured  $L_{eq}$  were to be greater than 81  $L_A$ , for the 2 hour daytime measurement period, the facility would be considered in non-compliance since the equivalent  $L_{dn}$  would mathematically exceed the 70  $L_{dn}$  standard).

#### Retarder Noise

It is proposed that, effective on the date shown, retarder noise levels shall not exceed the level specified in Table 2.2, when measured at a distance of 30 meters as prescribed in Subpart C.

\*values are rounded up to next dB



TABLE 2.2  
PROPOSED RETARDER NOISE STANDARD

<u>Effective Date</u>	<u>Standard, L<sub>A</sub></u>
January 1, 1982	90 dB

The rationale for a specific standard for retarders also appears in Section 4.

Refrigerator Car Noise

It is proposed that, effective January 1, 1982, refrigerator car noise, when the car is not in motion shall not exceed 78 dBA at 7 meters, as shown in Table 2.3. Noise levels are to be measured as prescribed in Subpart C.

TABLE 2.3  
PROPOSED REFRIGERATOR CAR NOISE STANDARD

<u>Effective Date</u>	<u>Standard, L<sub>A</sub></u>
January 1, 1982	78 dB

The rationale for a separate standard for refrigerator cars appears in Section 4.

Car Coupling Noise

It is proposed that, effective January 1, 1982, noise measured during car coupling operations shall not exceed 95 dBA at 30 meters, as indicated in Table 2.4, when measured as specified in Subpart C. This requirement is waived for situations where it is demonstrated that cars creating levels in excess of the standard are not traveling at greater than 4 mph at the point of impact.

TABLE 2.4  
PROPOSED CAR COUPLING NOISE STANDARD

<u>Effective Date</u>	<u>Standard, L<sub>A</sub></u>
January 1, 1982	95 dB

The rationale for a car coupling standard appears in Section 4.

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### 3.0 TECHNOLOGY AND COST

According to Section 17 of the Noise Control Act of 1972, entitled Railroad Noise Emission Standards, and as ordered by the Court, we are required to publish noise emission standards which set limits on the noise emission resulting from the operation of equipment and facilities of interstate rail carriers. Standards established must reflect the degree of noise reduction achievable through the application of the best available technology, taking into account the cost of compliance.

In order to fulfill the requirements of Section 17, we undertook a study of the interstate rail carrier industry, the principal sources of railroad noise, available noise control technology to quiet the sources of railroad noise, and the costs to implement the noise control and technology.

#### Technology

In our study to identify the best available technology, we were guided by the following definitions.

"Best available technology" is that noise abatement technology or technique available for application to equipment and facilities of surface carriers engaged in interstate commerce by railroad which produces the greatest achievable reduction in the noise produced by such equipment and facilities. "Available technology" is further defined to include:

1. Technology or techniques which have been demonstrated and are currently known to be feasible.
2. Technology or techniques for which there will be a production capacity to produce the estimated number of parts required in reasonable time to allow for distribution and installation prior to the effective date of the regulation.
3. Technology or techniques that are compatible with all safety regulations and takes into account operational considerations including maintenance, and other pollution control equipment.

### Noise Sources

Noise resulting from rail facilities is a complex mixture of sounds generated by many different pieces of equipment and operations. Before identifying whether and what technology was available to quiet the noise from such facilities, we first had to identify the specific sources and operations causing the noise. Studies and investigations were conducted to give us this information.

Railyard facilities may be categorized into two basic types: hump yards and flat yards. Hump yards perform both the classification and industrial service functions for U.S. railroads. This type of yard generally consists of a subyard to receive incoming line-haul traffic, a subyard where these trains are broken up and reassembled into outbound configurations, and a subyard for outbound traffic. The unique characteristic of hump yards is that they employ a gravity-feed system between the receiving subyard and the classification subyard. This system consists of a hump crest and a series of devices called retarders to control the speed of cars as they are routed to areas where trains are assembled.

Flat yards also perform the classification and industrial service functions for the railroad system. Yard switch locomotives replace the crest/retarder system of the hump yards to move cars out of the receiving tracks and use either continuous push or acceleration/braking techniques to distribute them into specific classification tracks. The continuous push or the accelerate/brake action of the switch locomotive accomplishes the same function in a flat yard as the "crest-roll-retard" action in a hump yard.

Listed below are the significant noise sources associated with railyards:

- o Engine noise from locomotives and switch engines
- o Retarder squeal
- o Refrigerator car noise
- o Car-coupling noise
- o Load cell testing, repair facilities and locomotive service area noise
- o Wheel/Rail noise
- o Horns, bells, whistles.
- o Trailer on flat car, container on flat car (TOFC/COFC)

The above sources of noise are common in both flat and hump yard facilities, except for retarder squeal which is common only in hump yard facilities. In flat yards, locomotives are a particularly important noise source due to their number and high activity requirement to physically move rail cars within the yard in the car classification process.

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Because of such differences in importance of various individual noise sources between hump and flat yard facilities, different degrees of technology would be required for important noise sources to enable hump and flat yard facilities to meet the same property line noise level. In the case of flat yards where locomotives are an important noise source the amount of noise reduction technologically achievable at this time is more limited than the noise reduction technologically achievable for retarders for example. As a result of these differences it is expected to be more difficult and costly for flat yard facilities to meet property line noise levels at this time as low as hump yard facilities.

We investigated whether technology existed to control all but the wheel/rail noise and the warning or information imparting systems. The noise from wheel/rail interactions was not addressed. Present railroad main-

tenance practice of grinding car wheels (to assure their roundness) and rails (to assure their smoothness) is one of the principal currently available methods for reducing moving railcar noise. Both of these maintenance practices are addressed in the December 31, 1975 regulation. Federal Railroad Safety Regulations require wheel and rail grinding. Continued adherence to these regulations should minimize wheel/rail noise.

We have determined that technologies listed below are currently available to control the sources listed. It is these technologies that we have factored into our cost of compliance assessment.

<u>Noise Source</u>	<u>Noise Control Technology</u>
Switch Engine Noise	Exhaust muffling and cooling fan treatment
Retarders (master & group)	Barriers; retarder lubricating and ductile iron shoes
Inert Retarders	Replace with releasable type
Refrigerator Car Noise	Exhaust muffler and partial enclosure
Load Cell Testing, repair facilities and service areas	Enclose facility or relocate facility
Car Coupling	Speed control

0.2.1

Cost

"Cost of compliance" is the cost of identifying what action must be taken to meet the specified noise emission level, the cost of taking that action, and any additional cost of operation and maintenance caused by that action.

We have estimated the capital investment necessary to apply the available noise control technologies. The estimates consider the capital resources to purchase, fabricate and install the noise control technology. Capital investment represents the initial and subsequent investments that would

be required to implement the technologies. We have also estimated total compliance costs on an annualized basis. The annualized costs also include incremental operating costs such as maintenance and fuel. These costs were developed from considerations of the elements of capital recovery, based on a 10 percent interest factor and the expected useful life for each type of noise abatement procedure.

In developing the cost of compliance, we have not included costs for disruption of service or removal of equipment and facilities from service. We believe we have established noise limits and allowed sufficient time for the implementation of the standards to avoid disrupting effects on rail operations. We are particularly interested in hearing from any who do not share this view and solicit information or data we may factor into our analysis.

We request comment not only on the cost and feasibility of attaining the standard, but also on the additional cost and financial impact on railroads due to moving from a 70 decibel to a 65 decibel standard for hump yards. This information will help the Agency to conclude whether the incremental costs of the 65 decibel standard for hump yards is reasonable.

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#### 4.0 RATIONALE FOR STANDARDS SELECTION

##### Need for Health and Welfare Analysis

The Association of American Railroads has argued that public health and welfare related to noise are to be totally absent from the Agency's consideration. EPA does not share this view.

The Noise Control Act of 1972, 42 U.S.C. 4901 et seq., which places the duty upon EPA to reduce the noise from certain sources by regulations, declares that the policy of the United States is "to promote an environment for all Americans free from noise that jeopardizes their health or welfare." 42 U.S.C. 4901. Section 17 of that Act, which requires the EPA Administrator to publish regulations establishing noise emission limits on the facilities and equipment of interstate rail carriers, directs EPA to set standards that reflect the degree of noise reduction achievable through application of the best available technology taking into account the cost of compliance. 42 U.S.C. 4916 (a). While that charge does not include a requirement for the consideration of the necessity for the protection of the public health and welfare, it is manifest that the standards cannot and should not be set in a void of information concerning those needs.

First, it is not possible to assess the best available noise reduction technology without having as a guide a noise control objective. There must be a target noise reduction in order to assess how effective technology is in accomplishing its objective. Since the reason that noise is sought to be reduced by any level of government to prevent the impingement on health and welfare, it is reasonable that the noise descriptor used be one that relates best to protecting the public health and welfare. For this reason, EPA has used a descriptor ( $L_{dn}$ ) which correlates well with human response to assess the effectiveness of various types of available technology and to identify the "best".

Second, it is not possible to meaningfully take into account the cost of compliance without having an objective toward which those costs are imposed. The very best available technology is not always affordable. By the same token, the greatest reasonable cost that could be imposed is not always justifiable by the objectives of the regulation. Yet the Noise Control Act does not say that no costs should be imposed upon the industry. Rather, it is inherent in Section 17(a) that the costs that are imposed for noise control must be reasonable. The only means of judging whether they are reasonable is to scrutinize what they purchase, and the only utility of noise reduction is the protection of public health and welfare.

An additional way in which public health and welfare must affect cost determinations is in selecting the types of controls that the Agency will require. For instance, if EPA were to determine that the railroad industry could expend "x" million dollars per year for noise control, it would be irrational public policy to require that these funds be spent in areas where no one would benefit from them, if there were another way to benefit "y" people by spending the same "x" million dollars. This rationale is applied in this proposal by limiting facility noise measurements to receiving property as defined in §201.1(kk), thereby eliminating the requirement to comply where people are not exposed to railroad noise.

In summary, EPA has concluded that public health and welfare plays an important role in setting standards under Section 17 of the Noise Control Act. The Act does not authorize the Agency to set standards at costs that are unreasonable in order to protect the public health and welfare. For this reason, the standards proposed in this regulation do not require abatement to the levels necessary to provide total protection to the public health and welfare. However, in assessing what available technology can accomplish in terms of meaningful noise reduction, in determining the limits beyond which costs should not be imposed, and in selecting the types of controls that should be imposed at that level of expenditure, consideration of the effects of noise reduction on public health and welfare are



within the intent of the Act.

Overall Standard for Facilities and Equipment

Our studies show there exists available technology to reduce rail facility noise significantly at reasonable cost. We therefore are proposing standards which will limit the noise emissions from railroad equipment and facilities.

Specifically, the proposed regulation is applicable to all railroad equipment and facilities except: Mainline rail operations, horns, bells and whistles, facilities not directly associated with railroad trackage (E.g. an office building in a downtown area) and maintenance-of-way equipment.

- o Mainline Rail: The control of noise from locomotives and rail cars is the principal noise abatement approach to the control of noise along the main lines. EPA could impose further limitations on the main line, but probably not without imposing major restrictions on the frequency of operations or the construction of barriers at an exorbitant cost. We therefore have proposed that the locomotive and rail car regulation limits contained in our previous regulation will be the only EPA restrictions on mainline operations.
- o Horns, Bells and Whistles: Horns, bells and whistles and other warning devices produce a form of noise intended to be heard for safety reasons, instead of being an unwanted by-product of some activity. We do not intend therefore to set standards affecting these devices through this regulation.
- o Facilities Not Directly Associated with Railroad Trackage: These regulations are not applicable to facilities such as tug boats, downtown office buildings and micro-wave relay towers. These items are not considered to be common noise sources forming the typical mix of railroad equipment and facilities.

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o Maintenance-of-Way Equipment: EPA has identified some 17 pieces of equipment, not counting variations, comprising this category. To date, the Agency has been unable to identify clearly the noise levels of the specific pieces of equipment or the collective levels of possible combinations in which they might be used. Without this, the availability of technology or the costs of compliance cannot be determined. Consequently, EPA cannot set a specific aggregate noise limit (such as a not-to-exceed property-line limit circumscribing given maintenance-of-way work situations) or source limits on individual pieces of equipment.

To characterize rail facility noise and to place a limit on its level, we have chosen  $L_{dn}$ .  $L_{dn}$  is the Day-Night Sound Level. It is the primary community noise descriptor used by EPA to correlate with known effects of the noise environment on an individual and the general public. In the process of arriving at an  $L_{dn}$  value, noise levels occurring during the nighttime hours are weighted, 10 dB is added to the noise occurring during nighttime hours, to account for a greater degree of intrusiveness and its impact during the quieter nighttime ambient.  $L_{dn}$  is recognized within the scientific community as a good descriptor of the effect of noise on people and has been used by EPA in all of its previous noise control regulations in assessing the health and welfare benefits of regulatory actions.

Before settling on the  $L_{dn}$  descriptor, we reviewed several types of descriptors, including  $L_{eq(24)}$  which has been recommended by the AAR. The  $L_{eq}$  descriptor does not account for the greater degree of nighttime intrusiveness of noise by the addition of 10 dB to noise occurring during nighttime hours.\* As such,  $L_{eq}$  does not correlate as well with known effects of the noise environment on the public. Since a noise control program is designed to reduce noise as it adversely affects the public health and welfare, it appears

\*The AAR recommendation for  $L_{eq}$  is to avoid the application of 10 dB nighttime weighting factor. They are concerned that such an imposition "has the potential of severely hampering rail operations unless great care is taken in setting the allowed levels."

fundamental to us to account for known effects at nighttime. The disruption of sleep is one known effect. In this spirit, we have incorporated two  $L_{eq}$  descriptors; one for daytime and one for nighttime. Thus, we have not dismissed the use of the  $L_{eq}$  descriptor. We are proposing an hourly equivalent sound level,  $L_{eq(1)}$  which is a separate standard independent of the  $L_{dn}$  standard. In actual use a one hour  $L_{eq(1)}$  measurement would be made and compared with the daytime or nighttime  $L_{eq(1)}$  limit as appropriate. A principal reason for including the hourly equivalent standards was to provide a short, simpler method for determining compliance with this regulation.

The standard as proposed sets limits for hourly  $L_{eq}$  values that are equivalent to a 24-hour  $L_{dn}$  assuming all of the acoustic energy which occurred during a 24-hour period occurred only during the hour or hours included in the  $L_{eq}$  measurement. More simply put, it is physically impossible to exceed the hourly  $L_{eq}$  value and not also exceed the 24-hour  $L_{dn}$  standard. Tables are also provided to determine compliance, based on the same principal if cumulative  $L_{eq}$  measurements are made for more than 1 hour. Because the  $L_{eq}$  and  $L_{dn}$  24-hour standards are independent, it is possible to meet the hourly  $L_{eq}$  standard or its equivalent as specified in the tables and still fail the 24-hour  $L_{dn}$  standard. The technology and cost considerations upon which this regulation is proposed are based on the 24-hour  $L_{dn}$  standard, which is the most stringent of the standards required under this proposal. Therefore, the cost and technology projections presented are conservative from this perspective. It is anticipated however, that the principal compliance actions which may result from this regulation would utilize the shorter, simpler hourly  $L_{eq}$  standard. We welcome comments on this approach to an hourly  $L_{eq}$  standard.

We have determined that technology associated with the noise abatement techniques listed in Table 4.1 is available to limit flat and hump yard noise to an  $L_{dn}$  of 70, at or beyond the yard boundary. Details of the technology are discussed in the Background Document.

Table 4.1  
Noise Abatement Techniques to Limit  
Flat and Hump yard Noise to  $L_{dn} = 70$

<u>Technique</u>	<u>Flat Yard</u>	<u>Hump Yard</u>
Refrigerator Car Treatment	x	x
Switch Engine Treatment	x	x
Relocate or Enclose Load Cell Test Site	x	x
Relocate or Shut Down Idling Locomotive	x	x
Retarder Noise Barriers		x

We have also determined that technology associated with the noise abatement techniques listed in Table 4.2 is available to further limit flat and hump yard noise to an  $L_{dn}$  of 65, at or beyond the yard boundary. Details of the technology are discussed in the Background Document.

Because of the differences between hump yard facilities and flat yard facilities previously discussed, different techniques are required to control the noise level. The two types of yards require the same techniques to meet an  $L_{dn} = 70$  (aside from retarder noise barriers for hump yards); however meeting an  $L_{dn} = 65$  requires hump yards to further control retarder noise while flat yard facilities must make operational changes.

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Table 4.2  
Noise Abatement Techniques to Limit  
Flat and Hump Yard Noise to  $L_{dn} = 65$

<u>Technique</u>	<u>Flat Yard</u>	<u>Hump Yard</u>
Refrigerator Car Treatment	x	x
Switch Engine Treatment	x	x
Relocate or Enclose Load Cell Test Site	x	x
Relocate or Shut Down Idling Locomotive	x	x

Retarder Noise Barriers		x
Fully Enclose Engine Repair/Car Service Facility	x	
Reschedule Nighttime Activities/ Limit Number of Classifications	x	
Ductile Iron Retarder Shoes		x
Releasable Inert Retarders		x

We have assessed the cost of compliance, including the economic impact associated with the cost, and taken it into account in selecting our standards. This assessment led to the conclusion that the cost to quiet flat yards to an  $L_{dn}$  of 70 and hump yards to an  $L_{dn}$  of 65 was not unreasonable. The  $L_{dn}$  65 standard for hump yards increases the cost of the regulation over a general  $L_{dn}$  70 standard and does not improve the benefit/cost ratio. We are proposing this standard because the technology required is available and we believe that the costs are reasonable. Our analysis of the cost for flat yards to achieve an  $L_{dn}$  of 65 indicated it would cost over 200 times the cost to quiet hump yards to this level because of the necessity for the flat yard to alter operations to achieve the 65  $L_{dn}$  value and because of the very large number of flat yards. We therefore concluded it would not be reasonable to impose an  $L_{dn}$  of 65 on flat yards until noise abatement techniques, other than the alteration of existing railyard activities, became available, or unless an appropriate subcategorization of flat yards could reasonably be made thus requiring only some to attain this noise level. Comments contending operational changes should clearly demonstrate that all available noise control hardware were assessed before operational changes were considered necessary.

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### Standards for Specific Pieces of Equipment or Operations

In addition to the  $L_{dn}$  property line standard, standards are being proposed for three specific sources of railroad noise. These standards would limit the noise emissions from retarders, mechanical refrigeration cars and railcar coupling operations. Specific standards are being proposed for these three sources for the following reasons.

**Retarder Standard.** The retarder is a braking device used to reduce rail car speeds during classification operations in hump yards. The clamping action of the retarder against the wheels of the rail cars causes a highly audible and annoying screech to be emitted. Though the screeches are each of short duration, their character is such that they represent a major problem in terms of annoyance. A property line limit in terms of  $L_{dn}$  that measures the average level of noise occurring over a 24 hour period and does not account sufficiently for this source of irritating and intrusive noise. Technology is available to control retarder noise and we are, therefore, proposing an A-weighted sound level standard of 90 dB at 30 meters. Compliance with the standard would reduce retarder noise by as much as 20 dB or more.

The retarder standard does not apply to the inert retarders commonly located near the end of each classification track. Inert retarders act to hold the first rail car in place while additional cars are coupled to it forming a consist of cars on a classification track. Squeals may be produced by inert retarders when the consist of rail cars are coupled to a locomotive and the train pulled through the inert retarder. Due partly to lower braking pressure, shorter retarder length, and very short duty cycle inert retarders generally create lower noise levels and much less frequent squeals than the other types of retarders described above. Consequently, EPA is not proposing a specific noise source standard for inert retarders. However a good noise abatement approach that is available for inert retarders is to install releasable units (which create no noise) for all new construction and replacement applications.

The only case where replacement requirement for and cost of releasable inert retarder replacement was considered necessary was to meet the proposed final hump yard facility receiving property standard.

Mechanical Refrigerator Car Standard. Refrigerator cars are special purpose cars used to transport perishable goods. The car cooling systems are powered by diesel engine-driven compressor units. The cars are often parked in large groups consisting solely of these units. They are often parked near a rail carrier's property line and the incessant drone created by the equipment on the cars can be a serious noise problem. Since refrigerator cars travel from yard to yard, a source standard for this equipment is being proposed to place the burden of compliance on the car owner and not on each yard operator where the cars travel. Better mufflers for the diesel engine and engine enclosures treated with absorptive foam are available for quieting these noise emission levels at a reasonable cost. Compliance with the proposed A-weighted sound level standard of 78 dB at 7 meters is expected to reduce mechanical refrigerator car noise by about 10 dB in the noisiest known situation.

Car Coupling Standard. Impact noise resulting from the coupling of railroad cars is a major noise problem for those living around railyards. Where few couplings occur in a yard over a 24-hour period, it is possible for the overall facility and equipment standard to be met without the best available technology being applied to reduce noise emissions. The reason for this again relates to the short duration of peak noise levels.

We have conducted car coupling noise tests to determine the relationship between car coupling speed and noise. The results of our study show a direct relationship between noise and speed. As car coupling speed increases so does the level of noise emitted upon car coupling.

We reviewed car coupling practices of several yards to learn of the rules that govern the speeds at which cars are coupled. Our information indicates that a 4 mile per hour guideline has been adopted as a generally accepted "best practice" by rail carriers to prevent damage to cars and freight alike.

The studies we conducted show that for all known situations noise levels resulting from car couplings at or below 4 miles per hour do not exceed an average A-weighted sound level of 95 dB at 30 meters. Therefore, we are proposing a standard to limit car coupling noise to an A-weighted sound level of 95 dB at 30 meters, since this limit has offsetting benefits in protection of cars and freight, and appears to be an accepted "best practice" present procedure in use by many rail carriers as well. This regulation essentially codifies existing general practice and thus should result in no additional costs to rail carriers. This standard is waived where it is demonstrated that cars are not travelling at greater than 4 mph at point of impact and yet exceed the specified noise level.



## 5.0 IMPACT OF THE PROPOSED REGULATION

### Health and Welfare

The impact of the proposed regulations on rail carrier facility and equipment noise can be expressed as the reduction in the number of people subjected to noise that may jeopardize their health and welfare. The number of people affected depends upon the penetration of the noise into the community and the number of people in proximity to the railroad property. To investigate this impact we selected over 100 railroad yard sites throughout the country and studied information relative to population densities and types of land use around the site. We combined these results with the total number of railroad yard facilities by type of yard and predicted noise impact on the population. From the analysis, we estimate that there are about four million people in the United States exposed to day-night average railyard noise levels of 55  $L_{dn}$  or greater. An outdoor  $L_{dn}$  value of 55 dB is the level of noise EPA has identified as being protective of public health and welfare with an adequate margin of safety.\* Compliance with our proposed standards for existing yards is, therefore, expected to provide an environment free from railroad noise that jeopardizes the health and welfare for about 830 thousand of our Nation's people. The benefits are likely underestimated since they were computed from census data and, thus, only include residential impact while ignoring commercial and industrial impact.

\*Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, 550/9-74-004, U. S. EPA, Washington, D. C., 1974.

Cost

In developing the estimated cost of this proposed regulation the following sequential procedure was used:

1. Identify noise sources located in rail yards.
2. Identify noise abatement procedures that can be applied to each source.
3. Estimate the noise abatement resulting from the application of each procedure.
4. Determine the number and type of procedures which must be applied to achieve selected noise levels at yard boundaries.
5. Estimate the costs incurred to measure yard noise levels.
6. Calculate the costs incurred to apply all necessary procedures.
7. Estimate the costs incurred to measure yard noise levels.
8. Calculate the total costs to achieve specified maximum noise levels at yard boundaries for all rail yards.
9. Develop cost estimates to achieve the same maximum noise level at yard boundaries through the acquisition of additional property around each yard.
10. Apply the above cost estimates to all major and other railroad companies.

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In summary from table 4.3 presents the estimated cost by noise source and railroad facility type for compliance with a 70 L<sub>dn</sub> standard effective in 1979.

Table 4.3  
COST ESTIMATES FOR NOISE ABATEMENT OF U.S. RAILROADS  
TO REACH L<sub>dn</sub> 70

Noise Sources		Control Techniques		Capital Costs (\$000)	Annualized Costs (\$000)
Type	Type	Unit Cost \$			
<u>Hump Yards: 124</u>					
Master Retarders	Barrier Sets	\$22,500		2,790	594
Group Retarders	Barrier Sets	15,000		11,160	2,374
Switch Engines	Mufflers and Fan Treatment	1,200		372	170
Load Test Site	Relocate or Enclose	90,000		2,790	575
Measurement	Instru.	10,000		1,240	582
SUBTOTAL HUMP YARD COSTS				18,352	4,295
<u>Flat Classification Yards: 1113</u>					
Switch Engines	Mufflers and Fan Treatment	1,200		3,340	1,527
Load Test Site	Relocate or Enclose	90,000		16,650	3,430
Measurement				1,013	
SUBTOTAL FLAT CLASSIFICATION YARD COSTS				19,990	5,970
<u>Industrial Yards: 1381</u>					
Switch Engines	Mufflers and Fan Treatment	1,200		4,142	1,894
Measurement	Instru.	10,000		4,630	4,311
SUBTOTAL INDUSTRIAL YARDS				8,772	6,205
Refrigerator Cars	Mufflers and Fan Treatment			110	2,640
GRAND TOTAL				49,764	16,798

Table 4.4 identifies the additional control technique and costs that would be necessary for hump yard facilities to meet a 65  $L_{dn}$  standard in 1979.

ADDITIONAL COSTS FOR HUMP YARD FACILITIES TO GO FROM  
 $L_{dn}$  70 TO  $L_{dn}$  65

Noise Sources		Control Techniques		
Type	Type	Unit Cost \$	Capital Costs (\$000)	Annualized Costs (\$000)
Hump Yards: 124				
Master and Group Retarders	Ductile Iron Shoes	112,000		13,061
Inert Retarders	Releasable Retarders	10,000	10,960	10,496
TOTAL	HUMP YARD COSTS		39,960	24,357

After making the necessary adjustment for the effective dates in the proposed regulation, the total capital investment to the railroad industry for compliance with the proposed regulation is estimated to be approximately \$91 million. The total annualized cost for compliance is estimated to be about \$27 million industry-wide. By contrast, were we to require a level of 65  $L_{dn}$  at all railyards (both flat yards and hump yards), the annualized cost would be over 4 billion dollars. This large increase in cost is due to the non-availability of technology to further quiet flat yard equipment, thus requiring either curtailment of operations or purchase of additional buffer land around rail yard facilities. Because the cost of operational curtailment was extremely difficult to estimate with any confidence, purchase of noise buffer land was assessed and resulted in the 4 billion dollar estimate. On this basis, it was determined that the more stringent standard cannot be imposed at a reasonable cost at this time.

#### Economic Impact

A separate analysis of the economic impact upon the railroad industry and individual firms comprising Class I and Class II railroads\* was undertaken. Our analyses are purely statistical in nature and rely on assumptions regarding future conditions of the railroad industry and the U.S. economy. The economic impact analysis (cash flow/closure analysis) is based on projections determined from the previous three years of historic data. The financial ratio analysis is based on 1976 statistics. The possible loss of revenue to trucks is likely to be mitigated as a result of the noise regulations which are presently in effect for new medium and heavy duty trucks and motor carriers. However, EPA solicits additional information on the cross-elasticities of transportation modes. Therefore, our estimates of the impact on railroad cost of doing business and employment are at best a first approximation.

Although we recognize the financial problems of the railroads we conclude that the proposed noise regulation will not result in a significant burden on either the railroad industry or any of the individual Class I and Class II railroads that are in relatively good financial condition. We realize that the borrowing capacity to finance noise abatement equipment is limited and that railroads already have negative net worth or cash flows. Those railroad companies that are in marginal financial condition and whose parent company (where applicable) is also in marginal financial condition may be more severely impacted. Based upon our analysis of potential closure, we feel there is limited potential for closure directly caused by the regulation and request

\*Operating railroads (including switching and terminal companies) are classified by the Interstate Commerce Commission in terms of annual operating revenues. Effective January 1, 1976 the break point between Class I and Class II railroads was \$10 million; and on January 1, 1978 it was raised to \$50 million.

limited potential for closure directly caused by the regulation and request comments from individual railroads on this. It is anticipated that the implementation of the proposed standards could increase the average unit price of principal freight shipment services by 0.4 percent. It is also anticipated that the demand for rail carriers to transport freight could decrease on the average by 0.5 percent.

To assess the potential impact on employment that might occur as the result of this rulemaking, we first looked at present employment levels and revenues of the railroad industry. Extrapolating from the costs that could be incurred to meet the proposed rule, we statistically determined the net railroad revenue reductions could affect employment in two sectors: the railroad industry and suppliers of noise abatement materials and equipment. After the regulations are in effect, and over a subsequent 19 year compliance period, the railroad industry could experience a cumulative decrease of up to fourteen hundred employees. This decrease accounts for anticipated changes in the total operating revenues of railroads resulting from the estimated compliance costs to meet the regulation proposed. The suppliers on the other hand could experience an increase of up to two hundred employees. This increase takes into account the average employment change resulting from the procurement and fabrication of the noise control materials and equipment. The overall employment effect is, then, estimated to be an approximate cumulative twelve hundred worker decrease between the year 1981 and 2000.

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We conducted an analysis of economic impact of bankrupt roads as well as those recently reorganized to form the Consolidated Rail Corporation (Conrail). The bankrupt roads included Boston and Maine; Chicago, Milwaukee, St. Paul & Pacific; Chicago, Rock Island & Pacific; and Morristown & Erie. From the analyses, we concluded that the proposed noise regulation could increase the average unit price of commodity shipments by up to 0.4 percent. Further, we concluded that there could be a decrease in the demand for railroad carrier services up to 0.5 percent on all bankrupt roads, except Boston and Maine Railroad where the decrease could approach 0.6 percent. We estimate a net employment decrease in the workforce of these roads by a total of about 400 workers, with over 300 workers related to those firms comprising Conrail.

The proposed regulation is not expected to have a measureable effect upon the Gross National Product (GNP).

In developing the proposed regulation, we endeavored to acquire and use all available and accessible data in the timeframe available to us under the court order. We will continue our efforts to evaluate the impact on all railroads for which the regulations apply as we move to finalize our revised regulation. We welcome comments on the impact of the proposed regulation on individual railroads, with specific indication of the role which financial assistance already being made available by the Federal Government might play in mitigating any adverse economic impact.

## 6.0 ENFORCEMENT

The Noise Control Act places primary enforcement responsibility with the the Federal Railroad Administration (FRA) of the Department of Transportation (DOT). Specifically, Section 17 of the Act directs the Secretary of DOT to promulgate regulations to ensure compliance with the EPA railroad noise standards. In addition, Section 17 directs the Secretary of DOT to carry out such regulations through the use of his powers and duties of enforcement and inspection authorized by the Safety Appliance Act, the Interstate Commerce Act, and the Department of Transportation Acts.

The FRA has indicated to EPA that it will promulgate compliance regulations and will conduct compliance investigations. However, resource constraints may result in limited enforcement activity at the Federal level.

Since the needs for strict enforcement of the regulations may vary considerably among localities, EPA anticipates that the major enforcement activity will need to be conducted by State and local agencies if the regulations are to be effective. In fact, EPA has designed these regulations in a manner which will facilitate the adoption and enforcement of identical regulations by State and local governments. In addition EPA does plan to provide some technical assistance to State and local agencies to assist them with their enforcement programs.



#### 7.0 PUBLIC COMMENT

The Agency is committed by statute and policy to public participation in the decision making process for its environmental regulations. We encourage and solicit communications and comments from as many diverse views as possible on all aspects of the proposed regulation. Normally the Agency allows 90 days for public comment on a proposed rule such as this. However, Section 17 of the Noise Control Act limits the amount of time between proposal and final publication of railroad noise emission standards to 90 days. This means we must limit the public comment period to allow time to fully review comments received so that we may weigh them appropriately in drafting the final regulation. Therefore, the public comment period will close at 4:30 pm on (FR to insert date, 45 days after date of publication in the Federal Register).

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## 8.0 BACKGROUND DOCUMENT

We have compiled information and data used as a basis for the proposed regulation into a single document entitled "Background Document for Proposed Revision to Rail Carrier Noise Emission Regulation .

The document may be obtained from:

U. S. Environmental Protection Agency,  
Public Information Center (PM-215, Room M2194D)  
Waterside Mall  
Washington, D. C. 20460  
(202) 755-0717

### Evaluation Plan

We intend to review the effectiveness and need for continuation of the provisions contained in this action no more than five years after initial effective date of the final regulation. In particular, we will solicit comments from affected parties with regard to actual cost incurred and other burdens associated with compliance and will also review noise data after the interstate rail carrier noise emission regulations go into effect as to its effectiveness.

### Reporting and Recordkeeping Requirements

We are not aware that this proposed regulation would impose any significant new or additional reporting or recordkeeping requirements on affected parties. We, therefore, specifically invite comment as to any substantial additional burdens and how they might be reduced.

### Regulatory Analysis

We have determined that this action is not a "significant" regulation and therefore have not prepared a Regulatory Analysis as would be required by Executive Order 12044.

Environmental Impact Statement

We have prepared a draft Environment Impact Statement which presents the effect of the proposed regulation. This document may be obtained from our Public Information Center whose address appears above.

This regulation is proposed under the authority of Section 17 of the Noise Control Act of 1972, (42 U.S.C. 4916).

Dated:

*April 4, 1977*  
*Douglas M. Collins*  
Administrator

It is proposed to amend 40 CFR Chapter 1 by revising Part 201 to read as follows:

Subpart A - General Provisions

Sec.  
201.1 Definitions

Subpart B - Interstate Rail Carrier Operations Standards

- 201.10 Applicability
- 201.11 Standard for locomotive operation under stationary conditions
- 201.12 Standard for locomotive operation under moving conditions
- 201.13 Standard for rail car operations
- 201.14 Standard for refrigeration cars under stationary conditions
- 201.15 Standard for car coupling operations
- 201.16 Standard for retarders
- 201.17 Standard for noise on receiving property

Subpart C - Measurement Criteria For Specific Equipment/Facility Items

- 201.20 Applicability and purpose
- 201.21 Quantities measured
- 201.22 Measurement instrumentation
- 201.23 Acoustical environment, weather conditions and background noise for locomotives and rail cars
- 201.24 Procedures for the measurement of locomotive and rail car noise
- 201.25 Acoustical environment, weather conditions background noise for stationary refrigeration cars, car coupling operations and retarders
- 201.26 Procedures for the measurement of stationary refrigerator cars, car coupling operations and retarders

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Subpart D - Measurement Criteria for Noise on Receiving Property

- 201.30 Applicability and Purpose
- 201.31 Measurement Instrumentation
- 201.32 Measurement locations and weather conditions
- 201.33 Procedures for measurement

Authority: Section 17 of the Noise Control Act of 1972, (42 U.S.C. 4916).

40 CFR Part 201

Railroad Noise Emission Standards  
Subpart A - General Provisions

§201.1 Definitions.

[No Change (a) - (n) except for deletion of (l) "sound level" and appropriate relettering from (a)-(m)].

(n) "Adjusted Measured Sound Level" means the measured day-night sound level of the combination of all sounds received at the measurement location minus one decibel.

(o) "Car Coupling Test" means measurements made to determine the level of noise produced when one or more rail cars couple with one or more other rail cars or when a locomotive couples with one or more rail cars.

(p) "Clearly Dominant Sound" means a sound which contributes 4/5 of the total value of the day-night weighted, or hourly, A-weighted squared sound pressure resulting from that sound and all other sounds. The level of a clearly dominant sound <sup>should be (2)</sup> is within one decibel of the adjusted measured sound level; or equivalently, the component day-night sound level associated with the combination of all other sounds <sup>should be (2)</sup> is at least 6 decibels below the level of the component which is clearly dominant.

(q) "Component Sound Level" means the sound level, in decibels, associated with a single class of sounds, or with the sound from a specific source or type of source.

(r) "Component Sounds from Railroad Facility Operations" means all sounds emanating from equipment operating within railroad facilities, except for the sounds of through trains.

(s) "Component Sounds from Non-railroad Facility Operations" means all sounds that contribute to the measured sound at a community measurement location which emanate from sources not under the operational control of a railroad; e.g. residential neighborhood component, aircraft component, traffic component, etc.

(t) "Component Sounds from Through Trains" means all sounds emanating from through trains.

(u) "Day-night <sup>Average</sup> Sound Level" means the 24-hour equivalent sound level, in decibels, for the period from midnight to midnight, obtained after addition of ten decibels to sound levels produced from midnight to 7 a.m. and 10 p.m. to midnight (0000 to 0700 and 2200 to 2400 hours). When the day-night sound level is measured, it is not necessary that the measurement period begin at midnight. It is abbreviated by ~~L<sub>dn</sub>~~ as DNL. The numerical symbol is <sup>L<sub>dn</sub></sup>.

(v) "Day Sound Level" means the equivalent sound level, in decibels, over the 15-hour time period from 7 a.m. to 10 p.m. (0700 to 2200 hours).

(w) "Decibel" means the unit measure of sound level and other kinds of levels. It is abbreviated as dB.

(x) "Dominant Sound Component" means that the sound from a defined class of sound contributes at least one-half of the total value of the day-night weighted, or hourly, A-weighted squared sound pressure resulting from that sound and all other sounds.

(y) "Energy Average Level" means a quantity calculated by taking ten times the common logarithm of the arithmetic average of the antilogs of one-tenth of each of the levels being averaged. The levels may be of any consistent type, e.g. maximum sound levels, sound exposure levels, equivalent sound levels, day-night sound levels, etc.

(z) "Energy Summation of Levels" means a quantity calculated by taking ten times the common logarithm of the sum of the antilogs of one-tenth of each of the levels being summed. The levels may be of any consistent type, e.g. day-night sound level, equivalent sound level, etc.

(aa) "Equivalent Sound Level" means the level, in decibels, of the mean-square A-weighted sound pressure during a stated time period, with reference to the square of the standard reference sound pressure of 20 micropascals. It is the level of the sound exposure divided by the time period.

(bb) "Hourly Equivalent Sound Level" means equivalent sound level, in decibels, over a one-hour time period, usually, but not necessarily, reckoned between integral hours. It may be identified by the beginning and ending times, or by the ending time only. It is abbreviated as  $L_{eq(1)}$ .

(cc) "Mainline Operations" means the movement of trains over the rail lines classified as "main track". "Main track" means a track, other than an auxiliary track, which may extend through yards or between stations, upon which trains are operated by timetable or train order or both, or the use of which is governed by a signal system.

(dd) "Maximum Sound Level" means the greatest A-weighted sound level in decibels measured during the designated time interval or during the event.

(ee) "Measured Day-night Sound Level" means the level measured in accordance with the procedures in this part during any continuous 24-hour period with an integrating sound level meter set to read out the day-night sound level, or calculated using the measured hourly equivalent sound levels.

(ff) "Measured Hourly Equivalent Sound Level" means the level measured in accordance with the procedures in this part during a total period of one hour.

(gg) "Night Sound Level" means the equivalent sound level, in decibels over the split 9-hour period from midnight to 7 a.m. and from 10 p.m. to midnight (0000 to 0700 and 2200 to 2400 hours).

(hh) "Partial Day-night Sound Levels" means the quantity calculated in accordance with the rules for calculating day-night sound level, but utilizing only some of the hourly values of equivalent sound level and substituting zeros for the hourly values not utilized.

(ii) "Railroad Equipment and Facilities" encompasses most equipment and facilities for the maintenance or operation of common carriers engaged

in the transportation of persons or property by rail and directly associated with track operations. These terms are more particularly specified as including, but not necessarily limited to, the following:

(1) Equipment

(A) Locomotives (self-propelled vehicles designed for and used on railroad tracks in the transport of rail cars, including self-propelled rail passenger vehicles),

(B) rail cars (non-self-propelled vehicles designed for and used on railroad tracks),

(C) special purpose equipment (including but not limited to ballast cribbing machines, bolt machines, brush cutters, compactors, welding machines, snow plows, and other numerous types of maintenance-of-way equipment), and

(D) car ferries, and carfloats.

NOTE: Items (A) and (B) above are controlled by 40 CFR Part 201, {{201.11, 201.12, and 201.13.

(2) Facilities

(A) Track, roadbed, and related structures, such as retarders, switches, tunnels, bridges, trestles, stations, yards and shop buildings and the real property upon which they are placed.

(B) Railroad yards such as flat yards, hump yards, trailer-on-flat car and container-on-flatcar yards, freight house facilities, and locations used for routine maintenance or performance testing of railroad equipment.

(C) Railroad owned or operated terminal and storage facilities and their related structures used for loading and unloading bulk commodities.

(D) Railroad owned or operated shops, equipment maintenance facilities, equipment service and testing facilities and engine houses.

(jj) "Railroad Facility Boundary" means the line that separates the property owned or controlled by the railroad and used for movement of rail



equipment on railroad track and for other railroad purposes from receiving property. Railroad facilities are linked together to form an extensive, continuous railroad system (i.e., railroad yard, railroad line, railroad station, railroad line, etc.). Separate boundaries shall be determined for each facility; that is, the simple continuous boundary around each such facility shall be continued through the juncture with any adjacent facility which serves as a link in the rail system; i.e., through a juncture between a mainline roadbed facility and a railroad yard facility, or between a railroad yard facility and a branch line roadbed facility.

(kk) "Receiving Property" means any property that receives the sound from railroad facility operations, but that is not undeveloped or owned or controlled by a railroad; except that occupied residences located on property owned or controlled by the railroad are included in the definition of "receiving property." Railroad crew sleeping quarters located on property owned or controlled by the railroad are not considered as residences.

-> This doesn't make sense

(ll) "Receiving Property Measurement Location" means a location on receiving property that is on or beyond the railroad facility boundary, or on a residential dwelling measurement surface, and that meets the receiving property measurement location criteria of Subpart D.

(mm) "Refrigeration Car Test" means measurements made to determine the level of noise produced by stationary mechanical refrigerator cars.

(nn) "Retarder Test" means measurements made to determine the level of noise produced when rail car wheels pass through a retarder.

(oo) "Residential Dwelling Measurement Surface" means a connected set of surfaces that are parallel to and are spaced  $2 \pm 0.5$  meters, outside the walls of a residential dwelling.

(pp) "Sound Exposure Level" means the time integral of squared A-weighted sound pressure over a given time period or event, with reference

to the square of the standard reference sound pressure of 20 micropascals and a reference duration of one second. When used to characterize the noise of a single event, the sound exposure level is measured over the time interval between the initial and final times for which the noise level of the single event exceeds a specified threshold sound level. For implementation in these procedures, the threshold sound level shall be at least ten decibels below the maximum sound level of the event, and otherwise selected such that the sound exposure level measured during the interval in which the sound level exceeds the threshold is within 1.0 decibel of the sound exposure level for a threshold that is 20 decibels below the maximum sound level.

(qq) "Sound Level" means the level, in decibels, measured by an instrument which satisfies the requirements of American National Standard Specification for Sound Level Meters S1.4-1971 Type 1. For the purpose of these procedures the sound level shall be measured using the A-frequency weighting and the FAST dynamic averaging characteristic, unless designated otherwise.

(rr) "Sound Pressure Level" (in stated frequency band) means the level, in decibels, calculated as 20 times the common logarithm of the ratio of a sound pressure to the reference sound pressure of 20 micropascals (20 micronewtons/square meter). The frequency band must be stated.

(ss) "Through Trains" means trains operating on a mainline roadbed moving continuously (without stopping) through a railroad facility regulated under §201.17.

(tt) "Undeveloped Property" means any land property that has not been developed for human use in any of the following Standard Land Use Coding Manual (SLUCM) general land use classifications: residential; manufacturing; transportation; communication and utilities; trade; services; and cultural, entertainment and recreational.

SUBPART B - Interstate Rail Carrier Operations Standards

§201.10 Applicability

The provisions of this subpart apply to equipment and facilities which operate within a railroad facility boundary and under the control of interstate rail carriers, except they do not apply to street, suburban, or interurban electric railways unless operated as a part of a general railroad system of transportation, or as noted in the following.

(a) Provisions are made for noise emission standards which are applicable to the following equipment/facility items:

1. All locomotives, except steam locomotives, manufactured before December 31, 1979; and except that Sec. 201.11 does not apply to any locomotive type that cannot be connected by any standard method to a load cell.
2. All rail cars in motion
3. All mechanical refrigeration cars when stationary
4. All car coupling operations
5. All retarders

(b) Provisions are made for noise radiated across the railroad facility boundary to receiving property. These provisions apply to the total noise from all equipment/facility operations within the railroad facility, except that part of the total noise resulting from the operation of through trains that move continuously through the facility. The provisions apply to all receiving property except undeveloped property. When undeveloped property is developed for human use, the initial standards shall become effective 3 years after the change in land use and the final standards effective 6 years after the change.

§201.11 Standard for Locomotive Operations under Stationary Conditions (No Change)

§201.12 Standard for Locomotive Operation under Moving Conditions (No Change)

§201.13 Standard for Rail Car Operations (No Change)

§201.14 Standard for Mechanical Refrigerator Cars under Stationary Conditions

After January 1, 1982, the sound level from stationary mechanical refrigerator cars shall not exceed an A-weighted sound level of 78 dB at 7 meters from the centerline of the refrigerator car track at any throttle setting. Compliance with this limit shall be based on measurements made in accordance with the procedures of Secs. 201.25 and 201.26 for any throttle setting of the engine.

§201.15 Standard for Car Coupling Operations

After January 1, 1982, the sound level for car coupling operations shall not exceed an A-weighted sound level of 95 dB at 30 meters from centerline of the track on which the coupling occurred. Compliance with this limit shall be based on measurements made in accordance with the procedures of Secs. 201.25 and 201.26. The car coupling requirement can be alternatively met by demonstrating that the car coupling operations are not performed at speeds greater than 4 miles per hour at point of impact.

§201.16 Standard for Retarders

After January 1, 1982, the sound level for retarders except inert retarders shall not exceed an A-weighted sound level of 90 dB at 30 meters from the centerline of the retarder track. Compliance with this limit shall be based on measurements made in accordance with Secs. 201.25 and 201.26.

§201.17 Standards at Receiving Properties

a) The component day-night <sup>average</sup> sound level resulting from railroad facility operations shall not exceed the following limits, except that if it is not the dominant sound component at the appropriate limit level, it shall not exceed the component day-night <sup>average</sup> sound level resulting from non-railroad operations.

Effective Date	Limit $L_{dn}(24)$ in dB	Facility
January 1, 1982	70	All Facilities & Equipment
January 1, 1985	65	Hump Yard Facilities & Equipment, only

(b) The component hourly equivalent sound level resulting from railroad facility operations shall not exceed the following limit levels, except that if it is not the dominant sound component at the appropriate limit level, it shall not exceed the component hourly equivalent sound level resulting from non-railroad facility operations.

Effective Date	Limit $L_{eq}(1)$ in dB		Facility
	Day	Night	
January 1, 1982	84	74	All Facilities & Equipment
January 1, 1985	79	69	Hump Yard Facilities & Equipment, only

A railroad facility shall also be found in non-compliance with this standard if the measured  $L_{eq}$  for a specified number of hours, over one hour, exceeds the associated  $L_{eq}$  limits delineated in Tables 1 and 2, for  $L_{dn}$  70 and  $L_{dn}$  65 respectively.

(c) The determination of the component sound level resulting from railroad facility operation and the demonstration of its dominance for (a) and (b), above, shall be made in accordance with the procedures of Subpart D.

Table 1

Equivalent of 70  $L_{dn}$  for 24 hours in A-weighted dB\*

<u>Cumulative hours</u>	<u>Day (15 hours)</u>	<u>Night (9 hours)</u>
2	81	71
3	79	69
4	78	68
5	77	67
6	76	66
8	75	65
10	74	
12	73	
15	72	

Table 2

Equivalent of 65  $L_{dn}$  for 24 hours in A-weighted dB\*

<u>Cumulative hours</u>	<u>Day (15 hours)</u>	<u>Night (9 hours)</u>
2	76	66
3	74	64
4	73	63
5	72	62
6	71	61
8	70	60
10	69	
12	68	
15	67	

\*values are rounded up to next dB

Subpart C - Measurement Criteria for Specific Railroad Equipment/  
Facility Items

§201.20 Applicability and Purpose - No Change

§201.21 Quantities Measured - No Change

§201.22 Measurement Instrumentation

(a) A sound level meter or alternate sound level measurement system that meets, as a minimum, all the requirements of American National Standard S1.4--1971\* for a Type 1 instrument shall be used with the "fast" meter response characteristic. To insure Type 1 response, the manufacturer's instructions regarding mounting of the microphone and positioning of the observer shall be observed.

(b) In conducting the sound level measurements, the general requirements and procedures of American National Standard S1.3--1971\* shall be followed, except as specified otherwise herein.

(c) A microphone windscreen and an acoustic calibrator of the coupler type shall be used as recommended by: (1) the manufacturer of the sound level meter or (2) the manufacturer of the microphone.

§201.23 Acoustical Environment, Weather Conditions and Background Noise during Locomotive and Rail Car Noise Measurements

(a) - (h) No change

§201.24 No change

§201.25 Acoustical Environment, Weather Conditions and Background Noise during Retarder, Car Coupling, and Mechanical Refrigeration Car Noise Measurements

(a) Measurement locations shall be selected such that the maximum sound level from railroad equipment is not increased by more than 1.0 dB by sounds reflected from any surface located behind the microphone.

\* American National Standards are available from the American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018

The phrase "located behind the microphone" means located beyond a line (or family of lines) drawn through the microphone and perpendicular to the line(s) between any point on the rail equipment and the microphone. (Area A in Figure 2). This acoustical condition shall be considered fulfilled if the following conditions exist:

1. No substantially vertical surfaces of greater than 1.2 meters height (i.e. walls, cliffs, etc.) are located within an arc of 30 meters radius behind the microphone (Area B in Figure 2).
2. No substantially vertical surfaces, placed so they reflect significant railroad sound to the microphone, which subtend an angle of greater than 20 degrees when measured from the microphone in either the vertical and most nearly horizontal planes, are located within an arc of 100 meters behind the microphone (Area C in Figure 2).

(b) Miscellaneous objects may be located between the railroad equipment and microphone, except that all objects which break the line-of-sight of the equipment must be closer to the equipment than to the microphone; that is, along a line between the microphone and any point on the equipment, at the point of intersection with the object the distance to the equipment must be shorter than the distance to the microphone.

(c) Other railroad equipment may be located behind the equipment whose noise is being measured (Area D in Figure 2).

(d) The ground elevation at the microphone location shall be within plus 5 ft. or minus 10 ft. of the ground elevation of the source whose sound level is being measured.

(e) Measurements shall not be made during precipitation.



(f) Noise measurements may only be made if the average measured wind velocity is 12 mph (19.3 kph) or less, and the maximum wind gust velocity is less than 20 mph (33.2 kph).

§201.26 Procedures for the Measurement of Retarder, Car Coupling, and Mechanical Refrigeration Car Noise

(a) Refrigeration Car Test. The microphone shall be positioned at any location 7 meters from the centerline of the refrigeration car track, and between 1.2 meters above the ground and the height corresponding to the top of the refrigeration car. The microphone shall be oriented with respect to the equipment in accordance with the manufacturer's recommendations. No observer shall stand between the microphone and the equipment being measured. The observer shall position the microphone in accordance with the manufacturer's instructions for Type 1 performance. The standard shall not be exceeded during any thirty second period after the throttle setting is established.

(b) Car Coupling Test. The microphone shall be positioned at a location 30 meters from the centerline of the coupling track, and at a height between 1.2 and 1.5 meters above the ground. The microphone shall be oriented with respect to the equipment in accordance with the manufacturer's recommendations. No observer shall stand between the microphone and the equipment being measured. The observer shall position the microphone in accordance with the manufacturer's instructions for Type 1 performance. The maximum sound level,  $L_{max}$  of individual car impacts shall be measured, and the average value (energy average) of these maximum levels,  $L_{max}$ , shall not exceed the standard.

The total number of measurements shall be at least ten.

(c) Retarder Test. The microphone shall be positioned at a location 30 meters from the centerline of the retarder track, and at a height between 1.2 and 1.5 meters above the ground. The microphone shall be oriented with respect to the equipment in accordance with the manufacturer's recommendations. No observer shall stand between the microphone and the equipment being measured. The observer shall position the microphone in accordance with the manufacturer's instructions for Type 1 performance. The maximum sound level,  $L_{max}$ , of individual retarder squeals shall be measured, and the average value (energy average) of these maximum levels  $L_{max}$  shall not exceed the standard.

Inert retarders shall be deemed to comply with the standard, and shall not be subjected to this test when engaged for the purpose of stopping rail cars.

The total number of measurements shall be at least ten.

(d) Alternative Microphone Locations. (1) If the criteria of Sec. 201.26 do not permit measurements at the distances defined above, the measurement location may be adjusted within the distance limits listed in Table 1 below. When such an alternate location is selected, the measured maximum sound level shall be adjusted by addition of the amount listed in Table 1 for the appropriate distance.

(2) The microphone shall be oriented with respect to the equipment in accordance with the manufacturer's recommendations. No observer shall stand between the microphone and the equipment being measured. The observer shall position the microphone in accordance with the manufacturer's instructions for Type 1 performance.

Table 3

Adjustment to  $L_{max}$  for Variable Measurement Distances

<u>Measurement Distance from Equipment, Meters</u>		<u>Adjustment to</u>
<u>Retarders and</u>	<u>Refrigerator Cars</u>	<u><math>L_{max}</math> dB</u>
<u>Car Couplings</u>		
16.0 - 17.8		-5
17.9 - 20.0		-4
20.1 - 22.5		-3
22.6 - 25.2		-2
25.3 - 28.3		-1
28.4 - 31.7	6.7 - 7.3	0
31.8 - 35.6	7.4 - 8.2	1
35.7 - 39.9	8.3 - 9.2	2
40.0 - 44.8	9.3 - 10.4	3
44.9 - 50.3	10.5 - 11.7	4
50.4 - 56.4	11.8 - 13.1	5
--	13.2 - 14.7	6
--	14.8 - 16.5	7
--	16.6 - 18.5	8
--	18.6 - 20.8	9
--	20.9 - 23.2	10

Subpart D - Measurement Criteria for Receiving Property

§201.30 Applicability and Purpose

The following criteria are applicable to the measurement of the sound levels prescribed in the standards of Subpart B of this Part for receiving property.

§201.31 Measurement Instrumentation

(a) An integrating sound level meter, or instrumentation system, that meets all of the requirements of American National Standard for Sound Level Meters S1.4-1971, Type 1 shall be used. The integrating sound level meter shall be capable of meeting the Type 1 tolerances for the sound level meter when used with an ideal integrator for the following functions (where applicable) and signals:

1. Sound Exposure Level: For sinusoidal signals in its stated operating range with duration varying between 1 second and 3600 seconds, with the maximum sound exposure level of at least 135 dB re (20 micro pascals) squared and one second. An additional tolerance of  $\pm 1$  dB is allowed for events which have a duration of between 100 milliseconds and 1 second.
2. Equivalent Sound Level: For sinusoidal signals with sound levels varying between 45 and 125 dB, and frequencies between 200 and 1000 Hertz, and for any combination of sound levels whose durations range between 1 second and 3600 seconds for hourly equivalent sound level, except that the maximum hourly equivalent sound level need not exceed 100 dB.
3. Day-Night<sup>average</sup> Sound Level: For signals specified in (2) above during daytime hours and for signals that are ten decibels lower during nighttime hours (0000 to 0700) and (2200 to 2400).

(b) A microphone windscreen and an acoustic calibrator of the coupler type shall be used as recommended by: (1) the manufacturer of the sound level meter or (2) the manufacturer of the microphone.

§201.32 Measurement Location and Weather Criteria

(a) Enforcement measurements shall be conducted only at receiving property locations where the sound from railroad facility operations is dominant.

(b) No measurement shall be made within 10 meters distance from any substantially vertical reflecting surface that exceeds 1.2 meters in height, except for measurements on a residential dwelling measurement surface.

(c) No measurement shall be made when the average wind velocity during the period of measurement exceeds 12 mph (19.3 kph) or when the maximum wind gust velocity exceeds 20 mph (32.2 kph).

(d) No measurements shall be taken when precipitation (rain, snow, sleet, etc.) occurs for a period exceeding 20% of the measurement period, unless it can be demonstrated that the precipitation does not increase the sound level at the microphone.

§201.33 Procedures for Measurement

(a) General Approach

The procedures for determination of the component sound level resulting from railroad facility operations and demonstration that it is the dominant sound component for the purpose of Part B of this part are as follows:

- (1) Select a location for measurement;
- (2) Determine the level, either hourly equivalent sound level, or day-night sound level, by measurement;
- (3) Determine the railroad facility component sound level and demonstrate dominance by using either the procedures for clear dominance when it exists, or the procedure for dominance where the existence of clear dominance cannot be demonstrated.

(b) Microphone Location

The microphone shall be positioned at a height between 1.2 and 1.5 meters above the ground, except that on a residential dwelling measurement surface as exemplified in Figure 3 the microphone may be positioned at any height that is greater than 1.2 meters above the ground and less than the height of the uppermost interior ceiling immediately adjacent to the location on the measurement surface, or 7 meters, whichever is less. The location shall be selected where it is expected that dominance can be demonstrated, and the conditions of measurement shall be selected such that the criteria of Sec. 201.32 are satisfied.

(c) Determine the Measured Level

The hourly equivalent sound level in any daytime or nighttime hour, or the day-night <sup>and night</sup> sound level in any continuous 24-hour period, as desired, shall be measured.

(d) Rail Facility Component Hourly Equivalent Sound Level or Day-Night Sound Level When it is the Clearly Dominant Sound

Clear dominance exists when the measured hourly equivalent or day-night <sup>and night</sup> sound level exceeds the component hourly equivalent or day-night <sup>and night</sup> sound level from non-railroad facility and through train operations by 6 dB or more. When clear dominance is shown to exist, the rail facility component hourly equivalent sound level or day-night sound level for the purpose of Subpart B shall be determined by subtracting one decibel from the measured level. For this purpose, the following procedures shall be used to estimate the non-railroad facility component hourly equivalent or day-night sound level:

- (1) The component hourly equivalent sound level or day-night sound level resulting from non-railroad and through train operations shall be calculated by summing on an energy basis the component sound levels from each of the significant

source components present. For this purpose a source is considered significant if its component sound level is within 12 dB of the measured sound level. Methods for determining the component sound levels for several types of sources are given in the following:

- (A) For a measurement location in a residential neighborhood, in which the sound from non-neighborhood sources, such as major streets or highways, industrial, commercial, or public establishment, aircraft, construction, etc., is not identifiable, the residential neighborhood component day-night sound level shall be estimated to be equal to or less than the quantity  $[22 + 10 \log (\text{population density})]$ . The population density shall be determined by dividing the population of the census tract which contains the measurement location, by the area in square miles of the residential portion of the census tract. The residential neighborhood component hourly equivalent sound level for day time hours shall be estimated by adding 1 dB to the estimated day-night sound level, and for nighttime hours by subtracting 6 dB from the estimated day-night sound level.
- (B) For a measurement location where a significant source of noise is civil aircraft, the aircraft component hourly equivalent sound level or day-night <sup>civil</sup> sound level shall be estimated using the procedures contained in the EPA document, "Calculation of Day-Night Levels Resulting From Civil Aircraft Operations," EPA 550/9-77-450 (January 1977). In using these procedures,

the number of aircraft operations on flight tracks which affect the noise at the community location shall be that occurring during the period of measurements.

- (C) For a measurement location where a significant source of noise is the motor vehicle traffic on a nearby roadway, the traffic component hourly equivalent sound level or day-night sound level shall be estimated using the procedures contained in the Federal Highway Administration document, "User Manual: TSC Highway Noise Prediction Code: Md 04," FHWA-RD-77-16 (January 1977). In using these procedures, the traffic flow characteristics during each hour of the measurement day shall be used to estimate the hourly equivalent sound levels throughout the day; these shall be weighted for time of day and summed on an energy basis to obtain the traffic component day-night sound level.

- (D) For a measurement location where a significant source of noise is through trains which move continuously through a railroad facility during the measurement period the through train component hourly equivalent sound level or day-night sound level shall be measured during the period.

Alternatively, if through trains operate on a regular basis, the through train component hourly equivalent and day-night sound level for these trains may be computed, assuming the scheduled times for purposes of nighttime weighting (unless the actual times are known), from the average sound exposure level measured for through trains at the location. The average sound exposure level shall be determined from an energy average of the measured sound exposure levels. For computation, the total number of measurements shall be at least five through trains.



(E) For a measurement location where a significant source of noise is other than the above, the component hourly equivalent sound level or day-night sound level for each significant source shall be determined from measurements.

(2) For any measurement at a receiving property location the demonstration of clear dominance for the measured hourly equivalent sound level may be based on a comparison of the value of the measured hourly equivalent sound level obtained in an hour in which operations in the railroad facility were judged to dominate the sound with the value of an hourly equivalent sound level obtained in a prior or subsequent period, or a combination of both, in which the sound from operations in the railroad facility were judged to be less dominant, with both of these values measured within a total elapsed time not exceeding four hours. When the difference between the former and latter values of measured hourly equivalent sound level equals or exceeds 6 dB, clear dominance is demonstrated.

(e) Rail Facility Component Hourly Equivalent or Day-Night Sound Level and Dominance when Clear Dominance cannot be Demonstrated

Dominance exists when the measured hourly equivalent or day-night sound level exceeds the rail facility component level by 3 dB or less. Dominance of the rail facility component day-night sound level shall be demonstrated for the purpose of subpart B of these regulations by showing that the calculated rail facility component sound level is zero to 6 dB above the non-railroad facility component sound level, and that the level calculated on an energy basis from these two quantities is within 2 dB of the measured sound

level less the through trains component sound level. For this purpose the non-railroad facility component sound level and the through train component sound level may be determined by the procedures in Sec. 201.33d, and the rail facility component level determined by the following, or functional equivalent thereof:

- (1) Calculate the rail facility component partial day-night sound level from the values of rail facility component equivalent sound level measured under conditions of clear dominance, Sec. 201.33d above.
- (2) Determine the energy average sound exposure level for each noise source which contributes significantly to the noise at the measurement location. For this determination, the average value for each type of source should be based on at least five measurements or a number equal to the range of measured levels in decibels. Compute the rail facility component sound level from the energy average sound exposure levels for each significant source, type, the number of such source types operating per hour or day (by time of day), and the distance between source and receiver.

GPO 1964 772



REGION X

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
PORTLAND AREA OFFICE  
CASCADE BUILDING, 520 S.W. SIXTH AVENUE, PORTLAND, OREGON 97204

June 19, 1979

IN REPLY REFER TO:

Rail Carrier Docket Number ONAC - 79-01  
Office of Noise Abatement and Control (ANR-490)  
U.S. Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

Low and moderate income housing currently meeting the HUD standard of 65 Ldn may be placed out of compliance by your 70 Ldn standard proposed April 17, 1979 in the Federal Register (40 CFR Part 201).

Seventy-five Ldn would require an Environmental Impact Statement and concurrence from the Assistant Secretary in addition to a 10 dBa attenuation. This requirement would effectively rule out almost all low and moderate income housing located within the higher noise levels since the time delays and costs of attenuation could not normally be absorbed within the current cost of affordable housing.

Mainline rail operations requiring horns, bells and whistles provide an "intended" warning where rail lines are accessible and an unintended "noise" to receiving properties not accessing the rail lines. That is, the warning pervades a broader expanse than that required to meet its intended audience.

Thank you for the opportunity to comment.

Sincerely,

Clifford T. Safranski  
Environmental Clearance Officer

79-01-122

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25 JUN 79 12 17



United States Department of the Interior

OFFICE OF THE SECRETARY  
WASHINGTON, D.C. 20240

JUN 25 1979

ER 79/384

Rail Carrier Docket Number  
ONAC 79-01  
Office of Noise Abatement and  
Control (ANR-490)  
Environmental Protection Agency  
Washington, D.C. 20460

Dear Sir:

We have reviewed the proposed rule for noise emission regulations  
for facilities and equipment of the nation's interstate rail  
carriers and have no comments.

Sincerely,

*[Handwritten Signature]*  
Larry E. Meierotto

Assistant SECRETARY

*79-01-124*

RECORD ANR-490

29 JUN 79 11:47

Interstate Commerce Commission  
Washington, D.C. 20423

OFFICE OF POLICY AND ANALYSIS  
Energy and Environment Branch

MAY 31 1979

Charles L. Elkins  
Deputy Assistant Administrator  
for Noise Control Program (ANR-490)  
Environmental Protection Agency  
Washington, DC 20460

Dear Mr. Elkins:

Chairman O'Neal appreciates your advance invitation to comment on the proposed revised and expanded railroad noise regulations. The Chairman has referred the matter to me for response because environmental affairs are a function of this unit.

We have reviewed the proposed regulations for railroad yard activity and concur generally with the proposed receiving property noise standards. Although not considered in the proposed regulations, we are concerned about the potential impact of noise generated from through-train activity on mainline operations. Although there are standards of permissible noise levels from locomotives, these may be insufficient to protect the public health and welfare. The Ldn value is not only a function of the noise generated from a single event but also is a function of the frequency and time of day that trains pass through an area.

With the increase in railroad mergers and line constructions, existing ambient noise levels will change significantly for communities adjacent to rights-of-way. Investigation by our staff of the potential changes in existing noise levels as a result of mergers or line constructions has indicated that the noise level may double due to the expected increase in through train traffic. We suggest that an investigation be undertaken into methods of mitigating exacerbated noise levels due to increased train

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Letter to Mr. Elkins  
Page 2

operations. In the alternative, we propose establishment of acceptable Ldn values specifically for all types of railroad activity.

If I may be of assistance in any respect, please contact me.

Sincerely yours,

*Carl Bausch*  
Carl Bausch  
Supervisor

cc: Chairman O'Neal

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

DATE:

SUBJECT: Transmittal of Department of Housing and Urban Development's Comments  
on the Proposed Rail Carrier Amendments

FROM: Deborah J. Yamamoto *D. J. Yamamoto*  
Noise Control Representative

TO: Rail Carrier Docket (ONAC 79-01)  
Office of Noise Abatement and Control (AN-490)

Attached are comments received by the Environmental Protection Agency  
Region 10 Noise Program from the Department of Housing and Urban Develop-  
ment on the proposed expanded noise emission standards for interstate  
rail carriers. I would appreciate having them included in the Rail  
Carrier Docket (ONAC 79-01).

Thank you.

Attachment

79-01-021

AN-490

5 JAN 79 15: 58



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
 REGIONAL OFFICE  
 ARCADE PLAZA BUILDING, 1321 SECOND AVENUE  
 SEATTLE, WASHINGTON 98101  
 May 29, 1979

REGION X  
 Office of Community Planning  
 & Development

IN REPLY REFER TO:  
 10C

WASTE MANAGEMENT BRANCH

Ms. Debbie Yamamoto  
 Noise Control Program  
 Environmental Protection  
 Agency, M/S 530  
 1200 Sixth Avenue  
 Seattle, Washington 98101

RECEIVED  
 MAY 21 1979

Dear Ms. Yamamoto:

Re: Noise Emission Standards for Transportation Equipment;  
 Interstate Rail Carriers

I am not certain if the proposed regulations would impact  
 our programs, however, here are some of our concerns.

- 1) Normally on our projects we would expect compliance with  
 local rules and regulations, however, it appears that  
 these regulations would preempt local requirements.
- 2) The noise receiving property standards are in excess of  
 what we would consider acceptable for our housing  
 sites. This can create potential conflicts.

We support your efforts to establish rules to minimize ad-  
 verse noise impacts, however, if receiving property standards  
 are to be established I believe the type of property usage  
 needs to be considered.

Thank you for the opportunity to comment.

Sincerely,

*Ry Tanino*

Ry Tanino  
 Regional Environmental Officer

AREA OFFICES  
 Portland, Oregon • Seattle, Washington • Anchorage, Alaska • Boise, Idaho  
 Insuring Office  
 Spokane, Washington





OFFICE OF THE SECRETARY OF TRANSPORTATION  
WASHINGTON, D.C. 20590

JUL 2 - 1979

Rail Carrier Docket ONAC-79-01  
U.S. Environmental Protection Agency  
Office of Noise Abatement and  
Control (ANR-490)  
Washington, D.C. 20460

Dear Sirs:

The Department of Transportation (DOT) is vitally concerned with the preparation and issuance of Railroad Noise Emission Standards as prescribed by the Noise Control Act of 1972 (P.L. 92-574). The statute recognizes the appropriate concern of DOT in this matter by requiring (in section 17) that the Administrator of EPA consult with the Secretary of Transportation prior to promulgation of the standards. The views of the Department are to be obtained not only regarding "safety and technological availability" but also regarding "the cost of compliance" with such standards.

It is particularly toward this question of the cost of compliance that the Department wishes to direct its comments; and to recommend related changes in the regulation.

In summary, the Department believes the costs estimated by EPA for the proposed regulation are understated, as discussed below. Even given EPA's cost estimates, EPA's cost/benefit analysis (Appendix L of the Background Document) indicates that approximately 85 percent of the identified health and welfare benefits could be achieved at slightly more than half the cost of compliance if Option 3 (70 Ldn for all yards) were selected instead of the proposed Option 4 (70 Ldn for all flat yards within three years, and 65 Ldn for hump yards within six years). We believe it is unwise to double the cost of the regulation in order to gain such a relatively modest increment in benefits, particularly in light of the current economic conditions of the rail industry. It should also be noted that selection of Option 3 would make railroad noise levels comparable to those currently regulated for the highway mode and contained in 23 CFR Part 772. Finally the selection of Option 3 would avoid adoption of a regulatory provision that would, by virtue of the additional

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\$40 million in capital costs associated with lower noise levels in a hump yard, serve as an economic disincentive for railroads to use the more efficient and cost effective hump yard facilities.

One example of cost under-estimation relates to locomotive noise. Examination of the available noise measurement data indicates that locomotive noise accounts for the largest percentage of acoustic energy of any source in the yard. It, therefore, has a marked influence on Ldn, which is essentially an energy-average noise descriptor. Consequently, in small yards, with limited trackage, even idling locomotives can cause the receiving property standard to be exceeded if located near a yard boundary even though these locomotives comply with EPA locomotive standards. This situation may result in a major increase in the number of locomotives that will require installation of mufflers and cooling fan modifications, compared to the number used in EPA's cost estimates. The increased number of locomotives needing retrofit would result in significant out-of-service costs for locomotives that EPA has not accounted for in assessing the cost of this regulation.

Turning to some specifics of the proposed regulation, EPA proposes an emission standard for refrigerator cars of 78 db at 7 meters in 3 years. Compliance with this provision will necessitate the installation of mufflers and sound-absorptive materials. EPA proposes that this retrofit program be completed within a 2-1/2 year period and indicates that this work could be done during the normal maintenance cycle for the refrigeration units. Based on the information available to the Department, the normal maintenance cycle for this equipment is approximately six years. Consequently, if these cars must be retrofitted within the EPA proposed time period, it will be necessary to remove these cars from service for the specific purpose of retrofitting with the attendant imposition of significant out-of-service costs. This analysis is also reflected by the Background Document in which EPA states that retrofit of refrigerator cars will take up to five years in order to avoid operating disruptions.

Accordingly, we recommend that, at the minimum, EPA make the effective date requirement consistent with the inspection provisions contained in the FRA Railroad Freight Car Safety Standards, 49 CFR Part 215, in order to avoid such out-of-service costs.

It should also be noted that trailers and containers on flatcars are equipped with similar refrigeration units and are more significant contributors to rail yard noise than refrigerator cars. The problem of yard noise caused by these truck related units is not addressed by this regulation and accordingly we recommend that EPA provide a mechanism for excluding these noise emissions from any determination of whether a facility is in compliance with these standards instead of placing a burden of compliance on a yard operator who is handling these unmuffled units.

The Department is also concerned over the omission of "out-of-service" costs in the cost analysis of the proposed retarder standard. The Department has supplied data to EPA which indicates that some hump yards are physically constructed in such a manner that the application of barriers, to control noise emissions from the retarders, may require redesign of existing hump yards. The costs, associated with taking a portion of such a facility out of service to accommodate relocation of tracks, would be significant and would include such costs as track construction, land acquisition or reduction in yard capacity, and disruption costs while such work was being performed.

In part because of these costs, we recommend that the requirement of a 30 meter measurement distance for retarders be amended, setting the noise level at the receiving property line, as is the case for the overall yard noise standard. We also recommend that the standard not apply when outside noises dominate or when surrounding land use is undeveloped again as in the case for the overall yard noise standard.

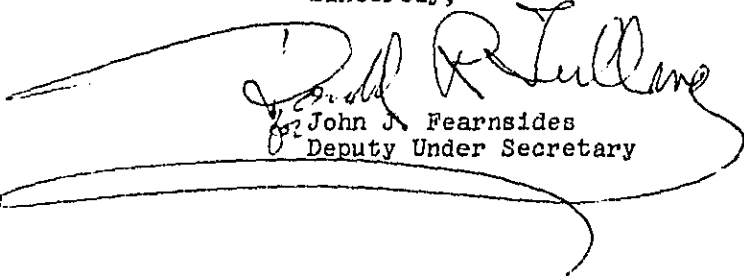
Regarding car coupling, based on the measurement data in the Background Document, it appears that car coupling speeds just slightly above 4 mph will violate the proposed noise limit. Therefore, the Department does not agree with the EPA contention that the car coupling standard imposes no additional costs because it "codifies existing general practice". The Department's review of the material furnished to us regarding the EPA survey of car coupling practices of major railroads does not convince us that the 4 mph car guideline is strictly or universally adhered to in the industry. For example, close to 20 percent of the respondents cited the applicable operating rule as "take proper precaution to prevent damage" or to "couple so as to avoid injury to persons or damage to property." Another 20 percent claimed adherence to the guideline by verbal instruction, but without its incorporation as an operating rule. Finally, close to seven percent of the respondents stated that slightly higher than 4 mph coupling speeds were permitted on their railroads, with speeds of up to 7 or 8 mph allowed for empty cars.

The Department contends further that it is difficult to consistently achieve the optimal speed of 4 mph and at least one study has shown that more than 70 percent of coupling occurs at speeds higher than 4 mph. Additionally, EPA has not considered other factors in their measurement program which also affect car coupling speeds. For example, although both loaded and unloaded cars were tested, consideration was not given to the type of load and different car weights. Other important parameters are the effects of car type, date of manufacture, track conditions and gradient, mechanical conditions affecting the rollability of the car, foreign substances on the wheels and the retarders, and human factors in speed control.

In view of these facts, the Department believes that EPA has underestimated the cost of the proposed car coupling standards. We recommend that the coupling operation standard apply at the receiving property line and be modified to correspond with a coupling speed of 6 or 7 mph, or another level which reflects the distribution of expected coupling speeds above 4 mph that are likely to occur.

Enclosed are additional, more detailed views, prepared by the Federal Railroad Administration, regarding specific provisions of the proposed regulation and regarding the Background Document.

Sincerely,



John J. Fearnside  
Deputy Under Secretary

Enclosure

Enclosure

GENERAL COMMENTS

Enforcement

The Department equally encourages local and State participation in enforcement of these Standards. However, we are also concerned that such efforts are in keeping with the spirit and the statutory intent of the Noise Control Act in order to minimize any interference with the flow of interstate commerce. In other words, local and State regulation of the railroads must be identical not only to the EPA Noise Emission Standards, but also to the forthcoming FRA Compliance Regulations. In view of the fact that different compliance procedures could prevent uniform application of the standards to rail facilities, the Department strongly believes that State or local officials must follow the same rules as Federal personnel.

The Department urges EPA to incorporate the above in the discussion on Enforcement in the preamble to these rules. Only then can we be assured that State and local participation will maintain the national uniformity of enforcement and compliance effort required by the Statute.

Wheel/Rail Grinding. The statement in the preamble that Federal Railroad Safety Regulations require wheel and rail grinding is not accurate. Although compliance by the industry may result in grinding, FRA regulations do not specifically require this practice.

## Reporting and Recordkeeping Requirements

Additional recordkeeping requirements should be anticipated as a result of FRA enforcement regulations or those promulgated by State and local jurisdictions enforcing these Standards. These costs are quantifiable and would include such items as documentation of noise surveys, status of muffler retrofit on refrigeration cars and locomotives, track construction, and operational restrictions.

### Specific Comments on the EPA Proposed Interstate Rail Carrier Operations Standards

#### Section 201.1 Definitions

(l) Equipment. The term "special purpose equipment" is defined in this Section even though it is not used in the standard. Its inclusion is also inconsistent with the statement in the preamble that specific noise limits have not been set for the use of this equipment in maintenance-of-way work situations.

(kk) Receiving Property. Receiving property standards should be restricted to residential property or similar to the definition used by the Department in its Procedures for Abatement of Highway Traffic Noise and Construction Noise, 23 CFR Part 772. Also, the flexibility of a railroad

would be limited by requiring them to reduce noise levels to those residences located on their property rather than availing themselves of other options.

Section 201.10 Applicability

EPA's analysis in the Background Document focuses on the identification of over 4,000 yards in the contiguous 48 States that meet the criterion of serving as the interchange or terminal point of rail cars and the trains which they form. This was based on the Stanford Research Institute (SRI) report prepared for the Department entitled, "Railroad Classification Yard Technology," (FRA/ORD-76/304). It appears that EPA's intent is to apply the proposed noise limits only to operations and facilities in these yards as well as the identified automatic hump class yards and not operations involving railroad equipment (idling locomotives or refrigerator cars) located on a spur or branch line.

EPA's intention to exempt main AND branch-line rights of way should be clearly stated in this Section. DOT suggests that EPA use as a reference point for applicability those specific facilities identified by the SRI index. Periodic updating of that index would then suffice to reflect any changed conditions occurring subsequent to the compilation of the SRI data.



Section 201.14 Standard for Mechanical Refrigerator Cars

The Department has the following specific comments concerning EPA's proposed noise limits for mechanical refrigerator cars:

Applicability. EPA indicates, in its background material distributed with the NPRM, that truck trailer refrigeration units placed on flat bed rail cars are not covered by these regulations. However, this intention is not repeated in this Section, nor in the preamble to the NPRM. Assuming that these standards do not apply to truck trailers, these units should not be included in the overall yard noise measurement, and the regulatory language should directly reflect this fact.

Control Technology. EPA states in the preamble that refrigerator car noise can be reduced by the use of a better muffler for the diesel engine and the application of sound-absorptive foam. However, there is not sufficient data supplied in the Background Document to enable the Department to assess the validity of this claim. In particular, the phrase, "requires quieting" used in the Background Document needs to be quantified.

DOT is concerned that the application of available muffler technology may not be totally successful in reducing refrigerator car noise to the EPA proposed limit.

According to the EPA's proposed measurement procedures, the limit of 78dB at 7 meters is to be measured on the "A" scale. However, the authors of a DOT-TSC report, "Diesel-Powered Heavy-Duty Refrigeration Unit Noise", which focused on noise measurement and muffler application on trailer mounted units, concluded that although total refrigeration noise may be reduced with muffling, the "A" scale noise level reduction was not significant. This was because the diesel engine's fundamental frequency amplitude reduction is masked in the "A" weight network attenuation. Although the DOT report dealt with trailer mounted units, the conclusions reached appear to be applicable to refrigerator cars as well.

#### 201.17 Standards at Receiving Properties

The Department, as requested by EPA during the drafting of this NPRM, furnished a list of "technical hot-spot" yards for further noise testing. Selection of these yards was based on the criteria specified by EPA--special topographical restrictions such as the location of a yard in a valley

with residences on surrounding hills, or conditions where noise sources, not amenable to control are in close proximity to the receiving property. Although detailed site characterization or acoustical analysis was not involved in this study, it is interesting to note that, based on the EPA Railroad Yard Noise Measurement Data, measured Ldn levels both at and inside the railroad property line were generally higher for these yards than the others studied by EPA. Our concern is that the proposed receiving property standard does not recognize these unique situations. This becomes especially significant when considered in light of the waiver procedures of the Noise Control Act which do not give the EPA or the Department the alternative of issuing waivers of compliance with these standards. Accordingly, it may be appropriate to establish an alternative limit for those yards which meet specified topographical criteria similar to those described above.

The EPA data base for Ldn variation does not account for seasonal effects. As the majority of the yard measurements were performed in a period of January to August, the standard may not account for increased activity levels during the harvest season. A provision for seasonal variation should also be incorporated in the receiving property standard to allow for these temporary high noise levels.

Noise Level Descriptor. The Department objects to the use of Ldn as the noise descriptor for overall yard noise. We are mainly concerned with potential compliance difficulties and excessive costs involved when this descriptor is mandated. Receiving property noise levels, measured in accordance with Section 201.33 will be very difficult to substantiate considering background noise and the through train exclusion. Although the proposed equivalent hourly Leq values are useful for determining instances of non-compliance, oftentimes a complete 24-hour measurement will have to be performed (for those instances where the one hour measurement exceeds the specified level).

The level of effort and the cost involved to obtain a 24-hour Ldn measurement is not warranted for either the yard operator or enforcement official. In our opinion, this regulation could be simplified a tremendous amount without sacrifice to the public health and welfare by the use of a decile level (L10) or some such time statistic. This concept is presently incorporated in other Departmental noise regulations such as the Procedures for Abatement of Highway Traffic Noise and Construction Noise, 23 CFR Part 772. The benefits are quite substantial for measurement procedures - a sound level meter with suitable timing devices would be sufficient to determine compliance with a

L10 standard. A manual override button could also be used to preclude recording noise during the intrusion of identifiable noise from non-railroad operations. Ldn determination, on the other hand, requires complex measurement techniques normally associated with detailed acoustical analysis. In addition, as identified in the Background Document, minimum equipment costs are \$10,000 with an attendant high cost for data analysis, exclusion of non-railroad noise, and verification of railroad dominance or non-dominance.

The Department maintains it is possible to correlate measured Ldn values at different railroad yards with L10 values without a sacrifice in accuracy. A reliable relationship can be made between the proposed Ldn criteria and time criteria such as L10. The correction only becomes poor when the noise is dominated by very loud and brief duration events, such as car impacts and retarder squeals. However, these events would be covered if the source standards proposed in Sections 201.15 and 201.16 are retained.

The use of Ldn as a noise level descriptor could severely impact those yards that operate on a 24-hour basis and prevent capacity increases in those yards

that do not currently have sufficient demand to justify 24-hour operation. This could be an impediment to the increased use of coal for power production as an example. Also, the 10dB night time differential inherent in the Ldn calculation is not a fully accepted criteria.

Section 201.22 Measurement Instrumentation

The "fast" response is not appropriate for refrigerator car measurements as it imposes an unnecessary degree of variability to the measurements. This response mode can produce levels up to 3dB higher than would be measured under calm wind conditions (within the requirements of Section 201.25) even with use of a windscreen. Furthermore, this mode is inconsistent with technical practices today where most noise data is recorded and processed by computer which results in averaged data. The average value of the "slow" response more accurately measures the true noise output since transient noise may be generated by other sources.

The Department also does not not agree with the specification of Type 1 instrumentation. While the specifications for Type 2 meter accuracy are less stringent than those for Type 1 meters, the cost of a Type 2 meter is about half that of a Type 1 instrument. This additional cost will increase the railroads' monitoring expenditures and will also undoubtedly influence State and local noise authorities

who are considering the enforcement of these standards.

Although potential errors in the Type 2 instrumentation when measuring high frequency free field sound may be fairly large, the increased accuracy of Type 1 instrumentation is counterbalanced by the estimation procedures outlined in Section 201.33 to determine non-railroad sound levels.

Section 201.25 Acoustical Environment, Weather Conditions, and Background Noise

A wind speed direction should be specified in addition to the wind speed. Wind speed increases with elevation and may enhance propagation in down wind direction. Accuracy obtained particularly with Type 1 instrumentation may be compromised.

Section 201.26 Procedures for the Measurement of Retarder Car Coupling, and Mechanical Refrigerator Car Noise

As proposed, the limits for noise emissions from retarders, mechanical refrigerator cars, and car coupling operations are based on specific measurement locations and are not dependent on receiving property usage as is the case for the overall yard standard. Therefore, it is possible that noise controls may have to be implemented for these sources in a particular yard with negligible population impact.

Additionally, these measurement distance specifications do not account for the presence of stationary rail cars or other fixed objects, and topographical considerations, outside the measurement location. These factors may be equally as effective as the EPA-required controls.

If these source standards are retained in the final rule, the Department suggests that the measurement distance requirements be modified by setting the noise limits at the receiving property line, as is the case for the overall yard noise standard. At the same time, these standards should not apply when outside noise dominates, or when surrounding land use is undeveloped.

We have the following additional comments in this Section:

#### Refrigerator Car Test

The term "throttle setting" is not really applicable to refrigerator car operation and is more appropriate for locomotive engine characterization. Rather, the load conditions of the car under test should be described. The previously referenced DOT-TSC report on trailer mounted refrigeration units demonstrated that a differential of up to 10dB can occur between what can be considered maximum and minimum load conditions. These load conditions were



determined by either opening or closing the trailer doors and setting the trailer compartment thermostat, and then noting the refrigeration unit compressor suction pressure.

#### Retarder Test

This Section requires that individual "retarder squeals" be measured to determine compliance with the standard. However, no description of the term "squeal" is furnished. This term should be clarified to eliminate individual interpretation of when a particular measurement is to be included in the minimum of 10 required.

#### Section 201.33 Procedures for Measurement

The method for substantiating the receiving property noise levels will be difficult with the exclusion of through trains and background levels. An alternate technique to that suggested by EPA would be to develop mathematical models for receiving property noise using single event noise levels for the various railroad noise sources to determine compliance. (A similar approach is used for airport noise regulation.) The model would also have the capability to analyze noise levels of new facilities and changes in yard capacity.

It could also be used to optimize operations for minimal noise impact on adjacent communities.

#### Microphone Location

The tolerance on the 2 meter measurement distance in Figure 3 (residential dwelling surface) would allow measurements to be made at 1.5 meters from a building side facing railroad property. These measurements could be higher (up to 3dB), because of acoustic reflections, than measurements made in a free field. In addition, noise from the adjacent community would be significantly reduced because of the barrier effect of the building. These compound effects could increase railroad costs for noise abatement without any significant reduction in the noise climate if community noise were dominant. To minimize this problem receiving property noise should be measured under free field conditions only.

#### BACKGROUND DOCUMENT

EPA should conduct a similar cost/benefit analysis for the individual source standards that was done for the overall yard standards. For example, it appears that no consideration was given to the effects to the impacted population of the limits selected nor the associated costs and whether an equivalent cost/benefit ratio could be achieved by the selection of alternative regulatory levels.

### Switch Engine Noise

EPA's estimate of 6,500 switch engines should be revised to include road locomotives which, in some yards, perform virtually all of the "switching" function and thus, would have to be quieted as well. EPA identifies exhaust muffling and cooling fan treatment as the technology required to quiet switch engine noise. However, this contention merits further analysis. Mufflers are only effective at full throttle conditions where it is desirable to silence the exhaust frequency noise. At the lower throttle settings, the main contribution is mechanical noise rather than exhaust. The document should recognize the "low idle" option presently being offered by one locomotive manufacturer as an option for fuel savings purposes. This setting with its lower engine speed also achieves an attendant noise reduction.

The muffler costs shown in the EPA Background Document do not account for labor installation.

According to EPA, the options of shutting down or re-locating idling locomotives do not involve significant costs. This is not accurate since in many locations, during periods of cold weather, the units must be kept idling to avoid mechanical damage, and in some yards, track for storing, idling locomotives will not be available unless new construction

is undertaken.

Appendix A

This discussion on Page A-1 concerning frequency of railroad operations should be deleted as it is not relevant to the proposed standard.



U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
WASHINGTON, D.C. 20590

MAY 22 1979

IN REPLY REFER TO:  
HEV-21

Rail Carrier Docket Number OMAC 79-01  
Office of Noise Abatement and Control (ANR-490)  
Environmental Protection Agency  
Washington, D.C. 20460

Gentlemen:

The following comments are submitted in response to the Advance Notice of Proposed Rulemaking on Interstate Rail Carriers:

- (1) Paragraph 201.1(kk) - Defining "receiving property" as any developed property not owned or controlled by a railroad seems to us unnecessarily broad. It does not seem reasonable to apply a noise standard to industrial and commercial developments which are insensitive to noise. We suggest the following definition for receiving property:

any developed property (not owned or controlled by a railroad) on which there is frequent human use or habitation which could be adversely affected by noise.

- (2) Paragraph 201.17 - Standards at Receiving Properties. Paragraph (a) specifies a day-night sound level standard and paragraph (b) specifies an hourly equivalent sound level standard. The proposed regulation requires both standards to be met. Since the specified hourly equivalent sound level is mathematically identical to the specified day-night sound level, it is a meaningless standard. The enclosed technical discussion explains this identity.

The purpose of a short-term standard ( $L_{eq}(1)$ ) should be to protect public health and welfare in those situations where the long-term standard ( $L_{dn}$ ) does not. The proposed  $L_{eq}(1)$  does not do that because anytime the  $L_{eq}(1)$  is exceeded,  $L_{dn}$  will also be exceeded. Based upon any real situations, the  $L_{dn}$  would always be exceeded before the  $L_{eq}(1)$  was reached. Any meaningful 1-hour standard should be more stringent than a 24-hour standard. Obviously, such a standard should be based on health and welfare effects. We do not have any information on health and welfare effects

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to assist in setting a 1-hour standard. We do feel, however, that in relation to the proposed 24-hour standard, an hourly Leq standard in the midseventies would be reasonable.

- (3) Paragraph 201.33 - Procedures for Measurement. Subparagraph (d)(1)(iii) indicates that the noise level from nearby roadways should be estimated by using the Federal Highway Administration (FHWA) document, "User Manual: TSC Highway Noise Prediction Code: MOD 04," FHWA-RD-77-18. This model has been replaced. Estimates of traffic noise should be based upon a methodology consistent with that described in "The FHWA Highway Traffic Noise Prediction Method," FHWA-RD-77-108.

Sincerely yours,



Michael Lash  
Director, Office of Environmental  
Policy

Enclosure

Technical Discussion of the Identity:  
Proposed L<sub>dn</sub> = Proposed 1-hour L<sub>eq</sub>

The proposed EPA L<sub>dn</sub> standard for 1982: 70 dBA

The proposed EPA L<sub>eq</sub>(1) standard for 1982: Daytime - 84 dBA  
 Nighttime - 74 dBA

$$L_{dn} = 10 \text{ LOG } \frac{1}{24} \left[ \sum_{i=1}^{15} 10^{L_{di}/10} + \sum_{i=1}^9 10^{L_{ni}+10/10} \right]$$

Daytime: Let L<sub>eq</sub>(1) = 84 dBA and assume that the rail facility remains completely quiet the remaining 23 hours.

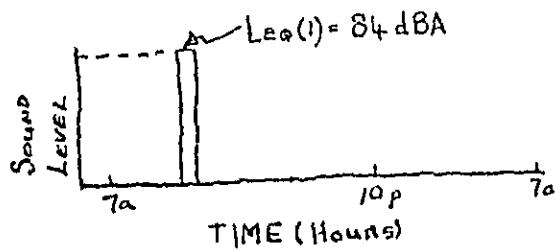


Figure 1: Sound Level Vs. Time

025

$$L_{dn} = 10 \text{ LOG } \frac{1}{24} \left[ 10^{84/10} \right] = 70 \text{ dBA}$$

Nighttime: Let  $L_{eq}(1) = 74$  dBA and assume that the rail facility remains completely quiet the remaining 23 hours.

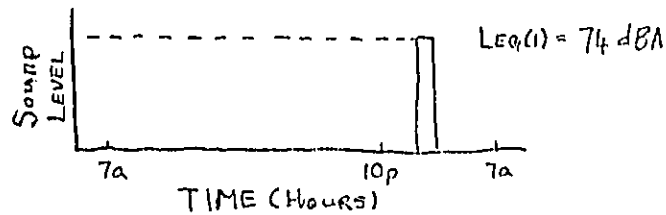


Figure 2: Sound Level Vs. Time

$$L_{dn} = 10 \log \frac{1}{24} \left[ 10^{74+10/10} \right] = 70 \text{ dBA}$$

The time histories shown in Figures 1 and 2 would never occur in the real world. Activity goes on at rail facility 24 hours a day. Figure 3 would be more realistic.

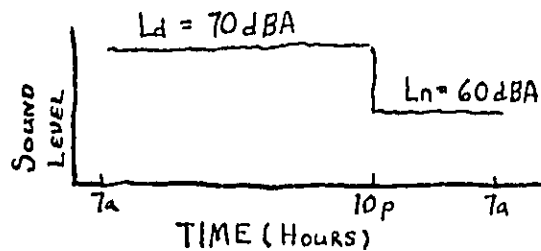


Figure 3: Sound Level Vs. Time

$$L_{dn} = 10 \log \frac{1}{24} \left[ 15 \left( 10^{70/10} \right) + 9 \left( 10^{60+10/10} \right) \right]$$

$$= 70 \text{ dBA}$$



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REF. No: G.IX.12.11.83(46682)  
(à rappeler dans la réponse)



Palais des Nations  
CH-1211 GENEVE 10

15 June 1979

Dear Mr. Thomas,

Thank you for your interesting letter and documentation on railroad noise regulations which your Organization is preparing for 1982.

I would like to inform you that, whilst the ECE is concerned with road vehicle noise, railroad noise is not a subject which it deals with in depth. I regret, therefore, that we are not in a position to make an official comment on the subject. We will, however, ensure that the Working Party on Rail Transport, the relevant ECE body, is informed of your comments.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'J. Kladiwa', written over a horizontal line.

J. Kladiwa  
Transport Division

Mr. Henry E. Thomas,  
Director,  
Standards and Regulations  
Division (ANR-490),  
Office of Air, Noise and  
Radiation,  
United States Environmental  
Protection Agency,  
WASHINGTON, D.C. 20460, USA.

79-01-090



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

MAY 24 1979

Richard J. Flynn, Esquire  
Sidley & Austin  
1730 Pennsylvania Ave., N.W.  
Washington, D.C. 20006

OFFICE OF  
GENERAL COUNSEL

Re: AAR v. Costle, D.C. Cir. No. 76-1353

Dear Dick:

As we discussed yesterday, EPA is granting a 30-day extension of the comment period for the proposed railroad noise regulations which EPA is promulgating as directed by the Court in AAR v. Costle. A notice announcing the new July 2 deadline for comments will appear in the Federal Register within the next few days.

This will mean, of course, that the amount of time EPA has to address the comments and publish its final notice by the Court-ordered date will be reduced to 20 days, an insufficient amount. As we agreed this morning, we will not go back to the Court seeking more time for final promulgation until we receive the last comments on July 2, because EPA may, after looking at the comments, decide that it needs more time than was originally allowed for that purpose.

On behalf of your client, you have agreed to join in EPA's request for thirty additional days when it is filed with the Court. You are not committed with respect to any extension longer than thirty days.

If any of the foregoing is inconsistent with your recollection of our discussion, please call me immediately. Otherwise, we will contact you the first week in July regarding a joint motion for extension of time.

Thank you for preparing the draft motion, and for agreeing that we may use it in preparing our motion in July.

Yours very truly,

Jeffrey O. Cerar  
Deputy Associate General Counsel  
Air, Noise and Radiation  
Division (A-133)

cc: Erica Dolgin

-EARD ANR-490

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79-01-085

SIDLEY & AUSTIN

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May 24, 1979

Jeffrey O. Cerar, Esq.  
Deputy Associate General Counsel  
Environmental Protection Agency  
401 M Street, S.W.  
Washington, D.C. 20460

Re: Association of American Railroads, et al. v.  
Douglas M. Costle, Administrator of the  
Environmental Protection Agency, and the  
Environmental Protection Agency, Docket No.  
76-1353

Dear Mr. Cerar:

On behalf of our clients, the Association of  
American Railroads et al., Petitioners in the above -  
referenced proceeding, we request an extension of time until  
July 2, 1979, for public comment with respect to the proposed  
railroad noise emission standards required by 42 U.S.C.  
§4916 and published in the Federal Register on April 17,  
1979.

In its Notice setting forth these proposed regula-  
tions, the EPA set June 1, 1979, as the deadline for receipt  
of these comments. AAR intends to file comments with respect

to these proposed regulations on behalf of the rail industry. As shown below, in light of the complexity of the subject matter and the history of these proceedings, the short comment period now provided is entirely inadequate to permit a full and adequate response to the proposed regulations.

On April 23, 1977, the United States Court of Appeals for the District of Columbia issued a decision in this proceeding directing the EPA to promulgate in final form the noise emission standards presently in issue here by August 23, 1978. Referring to the time frame in which these regulations were to be promulgated, that Court stated:

"The original statutory command was that the Administrator publish proposed regulations within nine months from 27 October 1972; these proposed regulations were then to be promulgated as final regulations within ninety days after the publication of the proposed regulations. We believe that this original timetable evidences a Congressional concern that the regulations be issued expeditiously. Accordingly, we believe that our mandate should embrace this concern for a prompt treatment of the noise emission standards. Therefore, we direct that the consideration on remand proceed as promptly as possible and, in any event, that the final regulations be issued within one year from the date on which the mandate in this case is issued. 562 F.2d 1310, 1321-22 (1977) (Emphasis added)."

The EPA was unable to publish these regulations by the Court-directed date of August 23, 1978. With the consent of Petitioners, Respondents, on two separate occasions, sought extensions of time in which to promulgate these noise emission regulations. By order of August 29, 1978, the District of

Columbia Circuit extended the time for publication of these regulations to and including February 23, 1979. By order dated March 1, 1979, the Court extended the time period for promulgation of these regulations in final form to and including July 23, 1979.

With the publication of these proposed regulations on April 17, 1979, Petitioners were given until June 1, 1979, in which to file public comments. In view of the complexity of these noise emission standards as evidenced by their subject matter and the amount of time it has taken the EPA to promulgate them, we seek an additional thirty days in which to comment. It is clearly in the interest not only of Petitioners and Respondents in this proceeding, but of the public generally, to allow adequate time for the publication of carefully developed regulations. By extending the date for receipt of public comments regarding these proposed regulations in the manner set forth above, the EPA will insure the public an adequate public-comment period.

Respectfully submitted,



Richard J. Flynn  
Peter J. Vaghi  
Attorneys for Petitioners

ORIGINAL

BEFORE THE U.S.

ENVIRONMENTAL PROTECTION AGENCY

Noise Emission Standards  
for Transportation Equipment

Interstate Rail Carriers  
40 CFR Part 201

COMMENTS OF THE

COUNCIL ON WAGE AND PRICE STABILITY 1/

I. Introduction

The Noise Control Act of 1972 requires the Environmental Protection Agency (EPA) to promulgate noise emission standards for railroad equipment and facilities. 2/ These standards are to "reflect the degree of noise reduction achievable through application of the best achievable technology, taking into account the cost of compliance." 3/ State and local governments are forbidden to set different standards for equipment or facilities whose noise emissions EPA has regulated unless EPA determines that the local standard "is necessitated by special local conditions and is not in conflict with regulations promulgated under this section." 4/ In the absence of such a determination, local regulation of noise emission is essentially preempted by any Federal action.

1/ The Council on Wage and Price Stability is an organization created by the Council on Wage and Price Stability Act (P.L. 93-387), within the Executive Office of the President. The authority of the Council to intervene in governmental rulemaking and rate-making proceedings, conferred by Section 3(a)(8) of the Act, has been delegated to the Director of the Council (see 40 FR 52882).

2/ P.L. 92-574, §17(a)(1)

3/ §17(a)(1)

4/ §17(c)(2).

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EPA originally set standards only for rail cars and locomotives. It did this in order to allow state and local governments freedom to address the site-specific problems posed by other types of rail equipment and by rail facilities. 1/ However, the Association of American Railroads (AAR) challenged EPA's decision, asserting that Congress intended a broader range of regulation and, hence, preemption. The AAR argued that Congress wished to reduce the burden on railroads of participating in multiple local rulemakings and of complying with varied and inconsistent local rules. The U.S. Court of Appeals for the District of Columbia Circuit accepted these arguments and ordered EPA to set standards for a broader range of facilities and equipment. 2/ EPA is proposing to do so in the current rulemaking. 3/

EPA estimates that the proposed regulations will eliminate railroad noise for about 830 thousand persons. The quantitative value of this benefit has not been calculated. EPA estimates total annualized cost for compliance to be about \$27 million industry-wide, with total industry wide capital costs to be about \$91 million.

## II. Council Recommendations

EPA believes that much of the noise emanating from railroad facilities and equipment does not require nationally

1/ 44 FR 22960.

2/ Association of American Railroads vs. Costle, 562 F. 2d 1310.

3/ The Notice of Proposed Rulemaking was published in the Federal Register on April 17, 1979 (44 FR 22960).

uniform regulation. 1/ We agree. We also strongly endorse EPA's conclusion that, in setting standards, it should balance incremental benefits in improved public health and welfare against incremental compliance costs. 2/

However, we question EPA's apparent conclusion that it must set standards which are nationally uniform in the sense that they do not take local conditions into account. 3/ The D.C. Circuit Court of Appeals carefully restricted its opinion to the question of the types of equipment and facilities that EPA must regulate. It expressly observed that the manner and form of regulation is up to EPA in the first instance. 4/

We urge EPA to explore a broader range of options than it has apparently addressed up to now. In particular, we urge EPA to consider carefully at least three options not addressed in its Notice of Proposed Rulemaking (NPRM). We feel that each of these options, or all in combination, would improve the final regulations by taking local needs and conditions into account. If EPA determines that these options should not be pursued, we believe that it should set forth its reasons in detail and invite public comment on them.

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1/ 44 FR 22960.

2/ Ibid, at 22962-3.

3/ Ibid, at 22960.

4/ 562 F2.d 1310 at 1321.



First, we urge EPA to consider setting a range of acceptable noise emission levels. Specifying bounds would meet Congress' concerns about local aberrations that unduly burden railroads or residents. At the same time the existence of a range of acceptable noise levels would provide a framework within which local choice could be exercised to obtain location specific noise emission levels which are consistent with local needs. If it developed guidelines for measuring the costs and the benefits of noise control, EPA also could help localities to determine appropriate location specific standards and thereby reduce the cost of multiple local proceedings.

Second, we urge EPA to consider establishing, and publicly announcing, a liberal policy for considering exceptions to accommodate "special local conditions." 1/ We believe that the Act grants EPA ample discretion to do this. 2/ Apparently EPA believes it has such discretion only to exempt more stringent local standards, but not less stringent ones. 3/ We think the EPA is not so restricted. The statute requires that the EPA Administrator make only two determinations in deciding

1/ The DC Court of Appeals observed that the waiver provision "performs a valuable function in its recognition that local conditions may dictate some degree of flexibility in the approach to noise control" 562 F 2d 1310 at 1313.

2/ See Appendix A.

3/ 44 FR 22960.

whether to waive preemption of a local standard. He must determine, first, that the local standard is necessitated by special local conditions and, second, that it is not in conflict with EPA regulations. He need not make an additional determination that the local standard is more stringent than the EPA standard that would otherwise apply. 1/

Finally, we urge EPA to consider taking local conditions into account by setting standards that vary with important local factors. One analogue for such a flexible standard is EPA's proposed water quality criteria for carcinogens. These criteria set target pollutant concentrations that vary with the use to which the water body is put, the hardness of the water, whether the water is salt or fresh, whether fish in the water are to be eaten, and the degree of acceptable risk. 2/ In proposing its noise emission standards, EPA noted that "it would be irrational public policy to require that (x million dollars per year) be spent in areas where no-one would benefit from them, if there was another way to benefit "y" people by spending the same "x" million dollars." 3/ We

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1/ See Appendix A.

2/ 44 FR 15929, 15930.

3/ 44 FR 22960 at 22963.

agree, and we urge that EPA consider standards that reflect local variations in the costs and benefits of noise reduction. We believe that this approach helps further EPA's own objective, which we heartily endorse, of taking local conditions into account.

### III. The EPA Proposal

The proposed regulations would establish noise emission standards for overall railroad equipment noise, and in addition specific standards for retarders, refrigerator cars and car coupling operations. Railroad facilities may be categorized into two basic types: hump yards and flat yards. Hump yards utilize a gravity feed system for the classification and assembly of cars, whereas flat yards use yard switch locomotives for that operation. The proposed regulations establish an overall Day-Night Sound Level ( $L_{dn}$ ) of 70 decibels (dB) for all facilities and equipment effective January 1, 1982, and an  $L_{dn}$  of 65 dB for hump yards effective January 1, 1985. Overall facility noise emissions are to be measured at the property line that receives the sound from railroad equipment operations (and at the outer edge of any adjacent property which is undeveloped or controlled by a railroad). 1/ Through

1/ Occupied residences located on property owned or controlled by the railroad are included in the definition of "receiving property."

trains are not subject to the receiving property standards since they are already regulated by EPA.

Additionally, specific noise emission standards are being proposed for three pieces of railroad equipment. Those standards are presented in Table 1. They are proposed to become effective on January 1, 1982. Each standard is based upon what EPA believes to be a proven technology which is currently available.

TABLE I

<u>Equipment</u>	<u>Standard</u>
Retarder	90 dB at 30 meters
Refrigerator Car	78 dB at 7 meters
Car Coupling Noise	95 dB at 30 meters

The retarder is a device used to reduce railcar speeds during classification operations in hump yards. The clamping action of the retarder against railcar wheels emits a highly audible and annoying screech of short duration. A specific standard is being proposed because a 24-hour average level of total facility noise does not capture the effect of this type

of short impulse noise problem. The same reasoning underlies the proposal of a specific standard for the impact noise which results from car coupling operations.

Refrigerator cars are special purpose cars used to transport perishable goods. The cooling mechanism emits noise in the form of a low drone. The rationale put forth by EPA in support of a specific noise standard for refrigerator cars is to "place the burden of compliance on the car owner and not on each operator where the cars travel." 1/

#### IV. Council Analysis

##### A. A Uniform National Standard

Efficient resource allocation in noise emission control is achieved when the marginal social value of further reduction is equal to the marginal social cost of more abatement. Noise from railroad facilities clearly affects parties other than those responsible for yard operations. It is a well established principle that resources will be allocated efficiently only when individual economic agents are forced explicitly to account for the external effects caused by their

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1/ 44 FR 22963.

activities. 1/ Government regulation has been employed extensively for this purpose. When external effects transcend state and local boundaries, intervention by the Federal Government is necessary.

Noise emissions control is valued by persons who live or work near rail yards. The marginal value of noise reduction will therefore be a function of such things as the types of activities which surround the facility, the demography of the local population, and the extent to which the local citizenry values and can afford freedom from a noisy environment. The value of noise reduction can therefore be expected to vary significantly across local jurisdictions. Unlike more conventional forms of pollution which are carried considerable distances by air currents and networks of water, noise emissions disperse more or less symmetrically and attenuate significantly over relatively moderate distances. External benefit effects are therefore usually limited to the local jurisdiction(s) bordering the facility, and the interjurisdictional spillover of noise pollution alone does not provide a justification for Federal intervention.

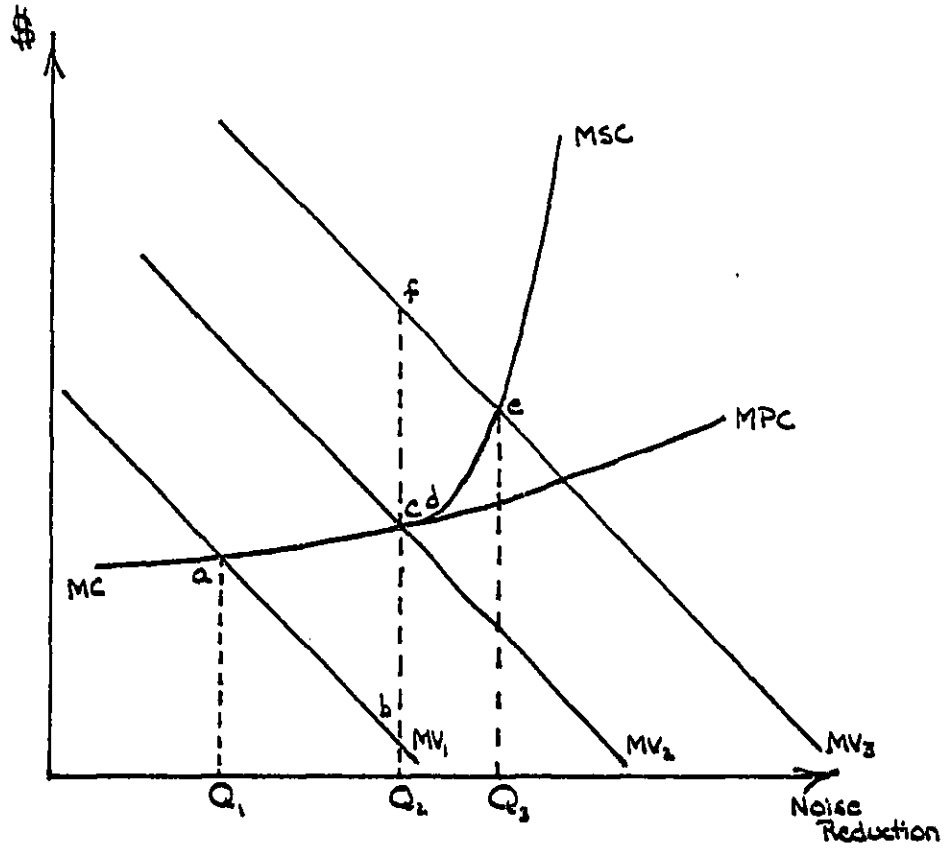
1/ There is of course an entirely separate issue of equity (as distinct from efficiency). The "polluter pays" principle generally has been asserted as the answer to the question of who should bear the burden of noise reduction. Yet many rail yards initiated operations before current neighbors occupied their residence. The existence of facility noise may thus have been reflected in lower purchase prices for the adjoining residences and businesses of the current occupants. It is not apparent that switching yard noise has become worse in the past decades. And, unlike the case of some air and water pollutants whose ill effects have only recently been discovered, the unpleasant aspects of noise have long been apparent. Thus, current neighbors, who bought their property cheaply because of the noise, might well be expected to contribute to the abatement from which they will benefit immediately through lower noise levels and ultimately through higher property sale values.

Over a considerable range of noise reduction the marginal cost of abatement will be a function of the physical characteristics of a particular facility and the existing technologies available for noise control. Noise reduction beyond that which is achievable through "add-on" technologies can in general be obtained only through adjustments in facility operations. Such adjustments typically will affect rail traffic and involve costs in the form of interference with the transportation of goods. The private cost of compliance to a particular rail yard may then diverge from the total cost to society. This difference may arise because traffic adjustments at one yard can exert a ripple effect on the flow of goods through the entire rail system. When this occurs, efficient resource allocation requires that the marginal social cost of abatement be employed in the calculation of the optimal level of noise reduction. Since the ripple effects of traffic adjustments might well transcend state boundaries, Federal intervention may be required to ensure that total social costs are considered in determining the efficient level of noise reduction at any particular facility.

The implications of this analysis are illustrated in Figure 1. Assume for simplicity that the marginal cost of facility noise abatement is the same for all facilities. <sup>1/</sup> This marginal cost function is represented by MC up to point d

<sup>1/</sup> Relaxing this assumption would have no effect upon the qualitative conclusions of this analysis except in the extremely unlikely situation that the facility specific marginal cost functions for all railroad yards just happen to intersect the respective location specific marginal value functions at the same level of noise control.

FIGURE 1





after which the marginal social cost and the marginal private cost are represented by MSC and MPC respectively. Consider three local jurisdictions with distinct marginal value functions for noise control as illustrated by  $MV_1$ ,  $MV_2$ , and  $MV_3$  in the figure. Efficient resource allocation in the area of noise control would be achieved if the governments of the three jurisdictions imposed noise control level regulations of  $Q_1$ ,  $Q_2$ , and  $Q_3$  respectively.

Now consider the effect of imposing a uniform standard of noise control which prohibits any individual jurisdiction from selecting a separate and different standard. If the median local optimum,  $Q_2$ , is selected, jurisdictions 1 and 3 will suffer deadweight efficiency losses  $abc$  and  $cef$  from the overprovision and underprovision, respectively, of noise emission control. 1/ These deadweight losses are allocative inefficiencies brought about solely by the collective choice of a uniform standard. 2/

1/ The theory of public choice would suggest that the median optimum would be selected under a broad set of underlying assumptions. For a review of that literature see D.C. Mueller, "Public Choice: A Survey," Journal of Economic Literature Vol. 14, No. 2, June 1976.

2/ For a more thorough discussion of this concept see J.M. Buchanan, The Demand and Supply of Public Goods, Rand McNally and Company, Chicago, 1968, pp. 182-186.

The analysis thus far has implicitly assumed that the regulatory process itself is costless. In fact this is not the case. Establishment of a noise standard, either at the Federal or the local level, usually involves an investment of resources by both the regulator and the regulated party; and an unsatisfactory outcome from either side's perspective may lead to a further investment in litigation in an effort to secure a more favorable result. Because many aspects of multiple proceedings would be repetitious, the aggregate regulatory costs associated with universal local choice of location specific noise standards would undoubtedly be greater -- and quite possibly substantially greater -- than the regulatory costs required to establish a uniform national standard.

Efficient resource allocation from society's viewpoint requires that both regulatory costs and the costs of allocative inefficiency be considered in structuring railroad noise regulation. In order to do so effectively two features which make these costs difficult to compare must be addressed. In the first place, regulatory costs are highly visible and readily measured in terms of dollars. Since allocative inefficiency generally takes the form of foregone consumer or producer surplus, it is somewhat more difficult to quantify, but nonetheless just as real in terms of resource

costs. Secondly, regulatory costs occur during a specified time period. Allocative inefficiencies, on the other hand, can persist ad infinitum, and must therefore be considered in discounted present value form.

A final point to be addressed in analyzing the issue at hand is the perception of who bears the burden of railroad compliance costs. It can be argued that localities, when left to regulate at their own discretion, will have little incentive to relate the costs of compliance to the benefits obtained from noise control. That is, they may perceive that these costs are borne in large part by nonresidents of the locality and hence desire a superoptimal level of protection from noise. The potential impact of this problem is mitigated, however, by certain other practical considerations. The railroad industry provides a service to local jurisdictions, and excessive regulation can affect operations and interfere with that service. Furthermore, rail yards also provide local employment which might be perceived as sensitive to the effects of regulation. Finally, the victims of rail yard noise are only a subpart of the citizenry of any local jurisdiction, and their ability to extract rents in the form of a superoptimal level of noise control is limited by their influence on the normal political process of local government.

Based upon this analysis, the Council believes that noise emissions from railroad facilities cannot be regulated efficiently through a uniform national standard. The potential costs of allocative inefficiency appear to be too great to disregard completely in order to minimize the costs of regulatory proceedings. Further, as outlined above, we believe alternative regulatory strategies are available to EPA that would result in more efficient resource allocation in noise emission control (without excessive regulatory costs) than can be expected through promulgation of the proposed rule.

The Council believes that one alternative would be the establishment of a range of acceptable noise emission levels, rather than a uniform national standard. EPA could establish the maximum level of noise emissions, measured at the "receiving property line" as defined in the proposed rule-making, compatible with human health standards. This level would be somewhat analogous to  $Q_1$  in the figure. Establishment of the Federal limit, which would apply in the absence of a local standard, would eliminate the cost of developing local regulations to jurisdictions requiring the minimum amount of noise abatement. EPA could also set the maximum level of noise control (i.e., the minimum receiving line emission level) which is consistent with the marginal value of noise reduction in any jurisdiction being equal to the marginal social cost of abatement. This level is represented by  $Q_3$  in the figure. A

Federally established "most stringent standard permissible" would prohibit localities from imposing standards which would unreasonably interfere with rail traffic. Within this range local jurisdictions could establish standards consistent with local needs. In order to promote efficient resource allocation, EPA could develop guidelines to help jurisdictions measure the costs and benefits of different levels of noise control so that socially optimal local standards might be adopted.

Another regulatory strategy for promoting efficient resource allocation would be for EPA to announce a liberal policy for the consideration of exemptions to the national uniform standard. This could have much the same effect as the establishment of a range of acceptable noise emission standards.

A final regulatory strategy would be the establishment of a functionally specified national standard with parameters that reflect local circumstances. In this way EPA could try to approximate local optima for different jurisdictions. While the technical problems associated with developing this type of a standard are undoubtedly formidable, the potential gains in efficiency which could result would seem to warrant the necessary investment on the part of EPA. The Council understands that EPA did pursue this strategy initially. We believe that in the preamble to the final regulations the reasons why this approach was abandoned should be fully explained.

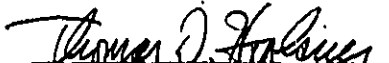
B. Features of the Proposed Rulemaking


In many respects it appears that a reasonable approach has been taken in the development of this proposal. Setting a general facility noise limit measured at the receiving property line corresponds to a performance rather than design standard, and allows individual facilities to achieve the most cost-effective means of compliance.

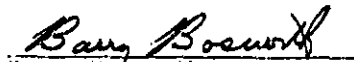
Separate standards for retarders and car coupling operations do indeed appear warranted since the short duration of these noise emissions precludes the capture of their effect within a time averaged noise standard. However, the Council questions the appropriateness of a separate standard for refrigerator cars. Since the noise emissions of this source are constant over time, it would seem that they should be included within the "bubble" of the general facility standard. If the muffler system technology upon which this source specific standard is based is always the most cost-effective method of control, then the cost minimizing behavior of facility operators can be expected to lead to the universal application of that device. However, if alternative methods, such as routing muffler free cars solely between facilities which can store these


cars far enough away from receiving property lines that their emissions are naturally attenuated, are more cost-effective, then inclusion of this source within the general facility standard represents a superior regulatory strategy.

Respectfully submitted,

  
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July 2, 1979

## APPENDIX A

### Waivers under Section 17(c)(2) of the Noise Control Act

#### Summary

State and local governments may establish local noise emissions standards for railroad equipment and facilities regulated by EPA even though those standards differ from the EPA standards that would otherwise apply. EPA approval is required, and may be granted whenever the Administrator determines that the local standard is "necessitated by special local conditions and is not in conflict with (EPA's noise regulations)." EPA may approve any local standard for which it makes the two statutory determinations (necessity and lack of conflict). In particular, it may approve a local standard that is less stringent than the EPA standard that would otherwise apply.

#### Discussion

Section 17(c)(1) of the Noise Control Act preempts local regulation of railroad noise that is regulated by the EPA. <sup>1/</sup> However, Section 17(c)(2) provides that nothing in Section 17 diminishes the right of local governments to establish noise standards if the Administrator of EPA determines that the proposed local standard is "necessitated by special local conditions and is not in conflict with regulations

<sup>1/</sup> This section does permit local governments to set and enforce standards that are identical to the EPA standards.



promulgated under (Section 17)." EPA may thus approve local standards on one substantive condition: the Administrator must make the statutory determinations of necessity and lack of conflict. This section grants EPA broad authority to allow local standards in appropriate situations by waiving preemption.

By requiring a determination that a proposed local standard is "necessitated by special local conditions", the statute creates a presumption against whole-sale waivers of preemption. However, the statute equally clearly gives the Administrator the authority to waive preemption at his discretion, provided only that he makes the two required determinations. The section is explicit in this regard, providing that nothing in the section otherwise diminishes local powers.

By requiring that local standards not conflict with EPA regulations, the statute assures that local standards will yield to EPA standards (and other Section 17 regulations) that are declared by rule to be unvaryingly preemptive. It also assures that EPA may require local jurisdictions to comply with any reasonable conditions that it places by rule on waivers of preemption. However, it does not require the Administrator to determine that conflict exists, and thus that waivers are forbidden, in cases where EPA regulations do not forbid preemption. EPA has the power to remove any possible ambiguity on this score by affirmatively stating in its regulations that it will allow waivers whenever it makes the two statutory determinations.

EPA appears to have tentatively concluded that pre-emption may be waived only for standards that are more stringent than the EPA standards that would otherwise apply. 1/ However, the statute plainly allows the Administrator to grant waivers provided only that he makes the two determinations already discussed; it does not require him also to determine that the local standard is more stringent than the EPA standard that would otherwise apply.

In discussing the waiver provision on the floor of the Senate, Senator Hartke did say that a local community may "prescribe standards which are at a higher level than the Federal standards...but they cannot lower the standards." 2/ Read broadly, this statement is simply incorrect. Read more carefully, it merely restates the second statutorily required determination, that local standards not actually conflict with EPA regulations.

Senator Tunney also made a statement on the Senate floor that could be broadly read as asserting that the statute allows waivers only for more stringent local standards. He said, "the Administrator is permitted to take into account special

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1/ 44 FR 22960.

2/ 118 Cong. Rec. 5-18002 (daily ed. Oct. 13, 1972).

local considerations and waive application of the preemption provision to assure that public health and welfare is protected." 1/ However, it is clear that public health and welfare can in some cases be assured by local standards that are less stringent than the EPA standards that would otherwise apply, and this is the plain reading of the statutory language, "necessitated by special local conditions." Moreover, it is clear from the context that the Senator is at this point describing the Administrator's determination about the necessity for a local standard. 2/

1/ 118 Cong. Rec. S-18645 daily ed. October 18, 1972.

2/ In context, the Senator's statement runs as follows:

"The Administrator is permitted to take into account special local considerations and waive the application of the preemption provision to assure that public health and welfare is protected. In addition, he may waive the application of preemption where local regulations are not in conflict with Federal regulations, as where local law requires lower speeds or different operating procedures, or modifications of routing."

At the time the Senator was speaking, the relevant portion of the bill read, "is necessitated by special local conditions or is not in conflict..." (emphasis supplied).

Cabinet Council Dr. Holl  
in the  
Federal Ministry for Youth,  
Family and Health

To.... etc.

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the 13th of June 1979  
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## TRANSLATION

Dear Mr. Thomas,

Thank you for your letter of 13 April 1979 and for your kindness in forwarding the documents on the planned regulation for the control of railroad noise in the USA. In accordance with the Federal Health Department in Berlin, I can only applaud the basic attitude of the US-EPA which properly considers the interest of public health and well-being in noise control guidelines.

In the ONAC 79-01 document " Noise Emission Standards for Transportation Equipment Interstate Rail Carriers, Copy April 5, 1979" this aspect is considered under Point 5, although the Association of American Railroads (AAR) wanted to disregard public health from an economic viewpoint.

In Point 5 of the above-mentioned document, in agreement with US-EPA Document No. 550/9-74-004 (1974) "Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" an immission limit for the outside measurement of

$$L_{dn} = 55 \text{ dB(A)}^*$$

is considered sufficient health protection against noise. This value is in accordance with the standard pair, 55 dB(A) daytime and 45 dB(A) nighttime, which is also required by the Environmental Protection for Housing Developments in the draft of the Traffic Noise Protection Legislation of the German Federal Government.

However, the from 1982 onward emission-limit required for all railroad stations and installations lies with  $L_{dn} = 70 \text{ dB(A)}$ , in our opinion, about 15 dB(A) above the representative health policy standard of  $L_{dn} = 55 \text{ dB(A)}$  as immission limit.

\*  $L_{dn}$ : Equivalent permanent noise limit for 24 hours with a 10-dB increase for nighttime.

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In railroad traffic noise one can, in fact, count on a lesser disturbance than in road traffic noise. This fact was also brought out in the Hearing of the German Federal Diet on the Traffic Noise Protection Legislative draft (1979). A rail-bonus, however, should not exceed 10 dB(A). It should also be remembered that this rail-bonus refers to train traffic noise but not to the noise from railroad (work)shops, shunting yards, and others.

From 1985 forward an emission limit of  $L_{dn} = 65$  dB(A) will be required for railway shops. Besides that, limits for brake installations, cooling systems and coupling systems will be determined.

It is understandable that in existing railway shops an immission limit of  $L_{dn} = 55$  dB(A) cannot be accomplished with subsequent noise protection measures at economically feasible costs. In our opinion, such planning should in the long run aim at that limit. We therefore think that in new construction or in actual expansion of existing railway shops an immission limit of  $L_{dn} = 55$  dB(A) ggf. plus 10 dB(A) rail-bonus should be established.

In order to make the current situation more acceptable from the Public Health Service point of view, we propose additional measures for the protection of nighttime quiet in the Federal Republic, because, in our opinion, nighttime quiet is not sufficiently protected by the currently used 10 dB(A) increase. Because sleep is especially severely disturbed by noises in abrupt level increases - e.g., starting noise with coupling of carriages - carriage coupling should generally be prohibited during nighttime hours in inhabited areas.

Also, the routine practice of signal whistles and horns on approach to railroad crossings should, in principle, be prohibited. With adequate safeguarding of railroad crossings the acoustic warning systems of trains need to be employed only in acute emergencies. With the above, the grievances which have running through the press, will have been considered.

Finally, I would like to point out that the limit of  $L_{dn} = 70$  dB(A) can be viewed by us as harmful from a health point of view. The quoted standard conforms to an equivalent continuous noise level per daytime hour of  $Leg(1) = 84$  dB(A).

In the latest study on noise effects by the Federal Health Department, Berlin, 50 test subjects were studied for 7 consecutive hours while working under controlled conditions and in traffic noise of  $Leg + 85$  dB(A). A highly significant increase in blood pressure during noise exposure was found in the group average. In susceptible test subjects (about 50%) the average systolic and diastolic blood pressure increased between 5 and 15 mm Hg during the observation time.

These remarks can perhaps supplement your discussion. We don't know either whether above-mentioned proposals will be the responsibility of the Legislation or the Federal Department. In any case, I thank you for the interesting information you have sent us.

Sincerely yours,

Ministerialrat Dr. Holl  
in  
Bundesministerium  
für  
Jugend, Familie und Gesundheit  
345 - 4517 - 151/EPA

33 BONN-BAD GODESBERG 1, den 17. Juni 1979

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An die  
United States Environmental  
Protection Agency  
Office of Air, Noise, and  
Radiation  
2.Hd. Mr. Henry E. Thomas  
Director Standards and Regu-  
lations Division (ANR - 490)  
Washington D.C. 20460

Sehr geehrter Herr Thomas,

verbindlichen Dank für Ihr Schreiben vom 13. April 1979 sowie für die freundliche Überlassung der Unterlagen über die geplanten Vorschriften zur Bekämpfung des Eisenbahnlärms in den USA. Im Einvernehmen mit dem Bundesgesundheitsamt in Berlin kann ich nur die Grundeinstellung der US-EPA begrüßen, bei Lärmbekämpfungsrichtlinien die Belange der öffentlichen Gesundheit und Wohlfahrt gebührend zu berücksichtigen.

In dem Dokument CHAC 79 - 01 "Noise Emission Standards for Transportation Equipment Interstate Rail Carriers, Copy April 5, 1979" wird unter Punkt 5 dieser Aspekt behandelt, obwohl die Association of American Railroads (AAR) aus wirtschaftlichen Gründen die öffentliche Gesundheit unberücksichtigt lassen wollte. In Punkt 5 des o. g. Dokuments wird in Übereinstimmung mit dem Dokument US-EPA Nr. 550/9-74-004 (1974) "Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" ein Immissions-Grenzwert für den Außenpegel von

$$L_{dn} = 55 \text{ dB(A)}^*)$$

als hinreichender Gesundheitsschutz gegen Lärm bezeichnet. Dieser Wert entspricht dem Wertepaar 55 dB(A) tags und 45 dB(A) nachts, das auch bei dem Entwurf des Verkehrslärmschutzgesetzes der Deutschen Bundesregierung von der Seite des Umweltschutzes für Wohnsiedlungen gefordert wird.

\*  $L_{dn}$ : Äquivalenter Dauerschallpegel für 24 Stunden mit einem 10 dB-Zuschlag für die Nachtzeit

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Der von 1982 an für alle Eisenbahnhöfe und Einrichtungen geforderte Emissions-Grenzpegel liegt mit  $L_{dn}=70$  dB(A) jedoch unseres Erachtens um 15 dB(A) über dem gesundheitspolitisch vertretbaren Wert von  $L_{dn} = 55$  dB(A) als Immissions-Grenzpegel.

Beim Eisenbahn-Verkehrslärm kann zwar mit einer geringeren Störung gerechnet werden als beim Straßenverkehrslärm. Dieser Umstand wurde auch auf dem Hearing des Deutschen Bundestages zum Verkehrslärmschutzgesetz-Entwurf (1979) dargelegt. Der Schienenbonus sollte aber 10 dB(A) nicht überschreiten. Zudem muß festgehalten werden, daß dieser Schienenbonus für den Zugverkehrslärm gilt, nicht aber für den Lärm von Eisenbahnwerkstätten, Rangierbahnhöfen u.a. .

Von 1985 an soll für Eisenbahneinrichtungen in Hallen ein Emissions-Grenzpegel von  $L_{dn} = 65$  dB(A) gefordert werden. Außerdem werden Grenzpegel für Bremsvorgänge, Kühlaggregate und Kupplungsvorgänge festgelegt.

Es ist zwar verständlich, daß an den bestehenden Eisenbahnanlagen nicht durch nachträgliche Schallschutzmaßnahmen zu wirtschaftlich tragbaren Kosten ein Immissions-Grenzwert von  $L_{dn} = 55$  dB(A) zu erreichen ist. Langfristig sollte die Planung jedoch nach unseren Vorstellungen diesen Grenzwert anstreben. Deshalb sollte u. E. bei Neubauten oder wesentlichen Erweiterungen von bestehenden Eisenbahnanlagen ein Immissions-Grenzpegel von  $L_{dn} = 55$  dB(A) ggf. plus 10 dB(A) Schienenbonus festgelegt werden.

Um die bestehende Situation vom Standpunkt der öffentlichen Gesundheit erträglicher zu gestalten, schlagen wir daher in der Bundesrepublik zusätzliche Maßnahmen zum Schutz der Nachtruhe vor, da u. E. Nachtruhe durch den verwendeten 10 dB-Zuschlag nicht ausreichend geschützt wird. Da der Schlaf besonders stark durch Geräusche mit steilem Pegelanstieg gestört wird - z. B. Impuls-Geräusche beim Waggon-Kuppeln - sollte das Kuppeln von Waggons zur Nachtzeit in bewohnten Gegenden generell untersagt werden.

Auch die routinemäßige Bestätigung der Signalpfeifen und -hörner vor Bahnübergängen sollte grundsätzlich untersagt werden. Bei ausreichender Sicherung der Bahnübergänge brauchen die akustischen Signalanlagen an den Eisenbahnhöfen nur im akuten Notfall eingesetzt zu werden. Damit würde den diesbezüglichen Beschwerden, die durch die Presse gingen, Rechnung getragen.

Abschließend gestatte ich mir den Hinweis, daß von uns der Grenzwert von  $L_{dn} = 70$  dB(A) gesundheitlich als nicht unbedenklich angesehen werden kann. Dem angeführten Wert entspricht ein äquivalenter Dauerschallpegel für eine Tagesstunde von  $L_{eq}(1) = 84$  dB(A). In der neuesten Lärmwirkungsstudie des Bundesgesundheitsamtes, Berlin, wurden 50 Testpersonen je 7 Stunden lang



bei Arbeit unter Kontrollbedingungen und Verkehrsfließ mit  
 $L_{eq} = 85 \text{ dB(A)}$  untersucht. Er fand sich im Gruppenmittel ein  
statistisch hochsignifikanter Anstieg des Blutdrucks unter  
Lärmeinwirkungen. Bei empfindlichen Testpersonen (ca. 20%)  
stieg der Blutdruck im Mittel während der Untersuchungszeit  
systolisch und diastolisch zwischen 5 und 15 mm Hg an.

Vielleicht können diese Anmerkungen Ihre Diskussion erweitern.  
Auch wir wissen nicht, ob o. g. Vorstellungen vom Geschlechts-  
bzw. den Bundesressorts übernommen werden. Jedenfalls bedanke  
ich mich für die interessante Information, die Sie uns gegeben  
haben, sehr.

Mit freundlichen Grüßen

*Sehr ergebener*

*Karl H. H. H.*