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INSTITUTE OF NOISE CONTROL ENGINEERING

## SURFACE TRANSPORTATION--INFORMATION GROUP

A Surface Transportation and Equipment Information Group, formed under Institute of Noise Control Engineering (INCE) sponsorship, met on 13 January 1987 in Washington, D.C. The group resolved to develop an Annotated Bibliography spanning the broad scope of surface transportation topics. This Bibliography is intended to be a comprehensive resource which will:

- Provide a conduit for the transfer of technology, lessening the likelihood of duplicated research;
- Define the state of the art for various topic areas, such that misinformation that may arise in the lay media can be more easily counteracted; and
- Establish a base upon which in-depth evaluations and analyses can be conducted on topics of current interest (e.g., motor vehicle regulation, barrier implementation, compatible land use, tire-pavement interaction, ground-borne vibration, and audible warning devices).

### --CALL FOR VOLUNTEERS--

The 13 January meeting was a successful, enthusiastic initiation of the Information Group. However, the development of an Annotated Bibliography encompassing the range of surface transportation topics is a very ambitious goal. To support this goal, the group needs to further increase its membership. Anyone willing to volunteer his/her time and actively participate in this group should contact the group chairman:

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### --NEXT MEETING--

The next meeting will be held on the evening of 28 April 1987 in conjunction with the Society of Automotive Engineers (SAE) 1987 Noise and Vibration Conference 28-30 April at the Grand Traverse Village in Traverse City, Michigan. (For Conference information contact Cathy Joyce at: SAE, 400 Commonwealth Drive, Warrendale, Pennsylvania 15096; 412-776-4841.) Actions planned: discussion of surface transportation subject categories and information sources, and definition of work delegation procedures.

INCE INFORMATION GROUP  
SURFACE TRANSPORTATION AND EQUIPMENT

13 JANUARY 1987 MEETING SUMMARY

A surface transportation noise workshop was conducted on 13 January 1987 in conjunction with the Transportation Research Board (TRB) Annual Meeting in Washington D.C. The meeting was co-sponsored by the TRB Committee on Transportation-Related Noise and Vibration. Its purpose was to define a course of action for the Information Group. Twenty-four individuals attended the meeting, representing: state and local government (11--primarily state highway administrations), consulting (4), Federal government (3), academia (2), barrier product suppliers (2), and vehicle manufacturers (2). Sixteen of the attendees volunteered to actively participate in the Information Group.

The meeting format consisted of open discussion addressing the question: "What activity should be undertaken by professional organizations to encourage the control of noise and vibration from surface transportation sources?" The discussion focused on nine topic areas:

- *Motor Vehicle Regulation Effectiveness*--Some sentiment was expressed for reduced vehicle levels such as might be derived by more stringent new-product or in-use regulations. However, discussion indicated that little documentation exists on the effect of current regulations. Some states have performed vehicle emission level tests, primarily to verify the Federal Highway Administration (FHWA) computer prediction model input data, but this information has never been assembled and reviewed in a comprehensive way.

- *International Standards and Regulations*--International standards and regulations may constitute trade barriers to American products. The United States is represented in this area by the Society of Automotive Engineers (SAE) which has adopted some of the international (ISO) procedures in its standards. Light vehicle driving cycles and tire noise are now key issues on the international agenda. The SAE has this area covered; although, support from "non-manufacturer" representatives may be useful.
- *Tire-Pavement Interaction Noise*--Tire-pavement interaction noise is the limiting noise mechanism of high-speed roads. Research has been performed by the rubber industry and also by state highway administrations and transport ministries. Apparently, however, at least some of the researchers have been unaware of previously conducted work, so better transfer of information is required.
- *Barrier Implementation Guidelines*--Barriers are being widely constructed for highway noise mitigation. Two needs exist: sharing of implementation experiences (such as the viability of products, constructions, and installation techniques); and advancing the state of the art of barrier design by disseminating the results of foreign research and also by clearly identifying needs to assist barrier manufacturers in developing products to meet these needs. The best currently available guidance is an "implementation package" that was prepared by the Federal Highway Administration ten years ago but is now out of date--with no prospect of being up-dated.
- *Compatible Land-Use Implementation*--Enforcement of compatible land-uses is required for any permanent solution to transportation noise problems but has been very difficult to implement and maintain. Federal funding for highway noise barriers includes provision for compatible land-use control; however, this requirement has often been overlooked or forgotten. To increase the effectiveness of compatible land-use controls planning officials, developers, and the real estate industry must be better educated to the effects of noise (such as on land values). The noise exposure information contained in environmental impact statements has to be better integrated into the development judgements in affected areas. These problems are best resolved by improved transfer of information, coordination, and publicity to the real estate development industry.
- *Groundbourne Vibration*--Public awareness and concern about structural vibration appears to be increasing. This concern often focuses on fears of building damage. Vibration prediction procedures developed for rail

transit systems are applicable with some modification to highway installations. Better transfer of this experience is necessary.

- *Use of FHWA Highway Noise Prediction Model*--Although use of the FHWA Noise Prediction Procedure is required for essentially all Federally funded road projects, the competency of the computer model users is not evaluated in any systematic way. While quality assurance is up to the states to implement, definition of minimum qualifications may be useful to aid in the selection of consultants. Also, due to funding limitations, the FHWA has developed extensions and modifications of its noise prediction models but has not disseminated these tools widely. The availability of these items needs to be more widely known.
- *Audible Warning Devices*--Warning devices used by emergency vehicles and locomotives are a concern with respect to annoyance from, effectiveness of, and hearing loss caused by these devices. While the SAE has initiated work on this area and apparently a number of studies have been performed, comprehensive collection and review of the available work is needed. Definition of performance requirements would enable the manufacturers to focus effectively in developing new products.
- *Advocacy*--Noise and vibration are esoteric phenomena, frequently misunderstood by laymen. Misinformation can travel quickly, resulting in inappropriate public reactions and irrational decisions by government agencies and legislative bodies. A need exists for an organization which can react to misperceptions when they arise. INCE appears to be well situated to address this need.

In conclusion, the attendees noted a consistent pattern throughout the discussions of a need to define what has been done and to collect it in a coherent fashion. By consensus, *the resolve of the meeting was to develop a general surface transportation annotated bibliography* which would then provide the basis both for responding to disinformation and for conducting possible future in-depth projects (particularly with respect to such topic areas as: motor vehicle regulations, barrier implementation, compatible land use, groundbourne vibration, and audible warning devices).

#### FUTURE ACTIONS

The 13 January meeting was a successful, enthusiastic initiation of the Surface Transportation and Equipment Information Group. The development of an annotated bibliography, encompassing the wide scope of all surface transportation is, however, a very ambitious goal. To support this goal, the group needs to further increase its membership. Work must then be initiated after small, workable portions of effort have been delegated.

The immediate goals are:

- Increase group membership,
- Define surface transportation subject categories and reference sources,
- Develop bibliographic listings with cross referencing,
- Acquire the documents, and
- Review and summarize documents in an annotated listing.

#### Next Meeting

The next scheduled activity is planned for the evening of 28 April 1987 to coincide with the 28-30 April Noise and Vibration Conference of SAE at Traverse City, Michigan. Actions planned: solicitation for additional group participants, discussion of surface transportation subject categories and information sources, and definition of work delegation procedures.