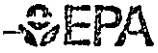


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Noise Abatement Control
Washington DC 20460

EPA 550/9-
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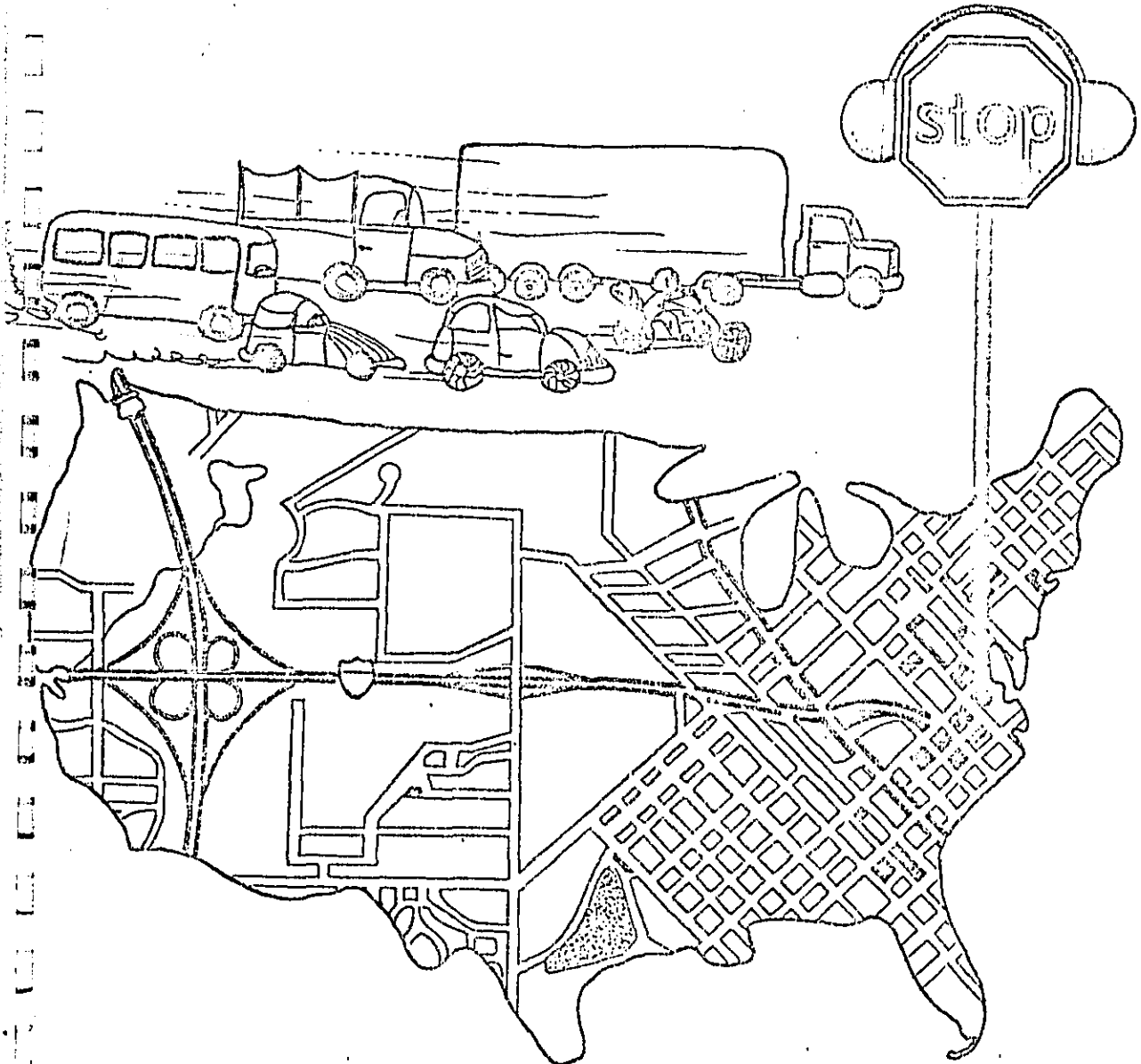


NATIONAL ROADWAY TRAFFIC NOISE EXPOSURE MODEL

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PART IV: Programming User's Manual; Level 1



NATIONAL ROADWAY TRAFFIC
NOISE EXPOSURE MODEL

PART IV
Programming User's Manual; Level 1

March 1979

U.S. Environmental Protection Agency
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Washington, D. C. 20460

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1.0 SCOPE OF THE MANUALS

The User's Manual for the National Roadway Traffic Noise Exposure Model consists of two volumes: Level I, which describes the system and provides basic information for regular users of the system; and Level II, which describes in detail how the system works. As described in Section 4 of the Level I Manual, a regular user may change the Regulation Scenario, time stream net and other control strings. In addition to running the Model, the system also provides for easy data file construction and a comprehensive job record system, including an interrogator. The Level I Manual is the 'how-to' manual; the aim is to allow one to use the model with minimum pick-up time.

The Level II Manual contains a detailed description of the system, and consists of nine sections: Section 1 is this Scope of the Manuals, Sections 2 through 7 are the documentation of the Main Code, and Sections 8 and 9 are the documentation of the Support Procedure System (SPS). Section 8 contains a detailed description of the inner workings of the SPS, including full I/O specifications for the procedures and default values. Many error messages are also explained.

2.0 HOW TO USE THE LEVEL I MANUAL

- o Read this section and Section 1, Scope of the Manuals.
- o The Level I Manual contains all the information required for selecting options available to the user. It is the "how-to" manual. Level II is the "how it does all that" manual.
- o Important points are marked with a ▶. Multiple triangles indicate even more important points.
- o Since the instructions ask for input when they need it, most of them can be learned through using them.
- o There are examples of the use of the commands in Section 6.
- o As used in this Manual, the following terms have the given meaning:

- o "Programmer" refers to the programmer of the System.
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- o "System" refers to the computer program of the National Roadway Traffic Noise Exposure Model, also called the "Main Code", plus all data sets, the Support Procedure System commands, record files and data dictionary.
- o "Documentation" refers to Sections 2 through 7 of Manual II.
- o "Model" refers to the National Roadway Traffic Noise Exposure Model, as described in the documentation.
- o Manual I refers to the Level I Manual of the Model.
- o Manual II refers to the Level II Manual of the Model.

3.0 DESCRIPTION OF THE SYSTEM

The System consists of the following parts:

- o The main code, written in H-Fortran, compiled and stored as a load module;
- o A constant input file;
- o A Support Procedure System, which directs and manages the submission of runs, while automatically keeping a record of many of the submission parameters. The System is written in Alpha command language;
- o User-supplied data files; and
- o A data-dictionary and interrogator.

The user changes only the user-supplied data files.

4.0 INPUT/OUTPUT SPECIFICATIONS OF THE MAIN CODE *

4.1 In normal use, the main program accepts the following input:

- o A regulation scenario, giving:
 - MYREG, the regulation years for each mode of each vehicle type.
 - NLEV, the number of regulation years for each mode and each vehicle type.
 - ALREG, the regulation levels.

The exact format of the input file containing the scenario is given in Appendix II. The scenario file can be constructed using the \$BUILD command, files constructed using \$BUILD can be edited with the \$MODIFY command.

- o A net of time stream years, consisting of: a sequence of up to nine years, and the number of years in the net. Net years must be within the interval 1974 to 2013. The first net year must be 1974.
- o Control Strings
 - KMASK is a 6-bit string. If the mask bit of a roadway type is zero, the noise level at the edge of the clear zone (see the documentation) will be set to zero. If KMASK is not changed via the MODIFY option of the \$SUBMIT command, its default value will be 111111.
 - IMASK is a 14-bit string. If the mask bit of a vehicle type I is set to zero, the noise contribution of that vehicle type I is ignored. If IMASK is not modified using the \$SUBMIT command, its default value will be 14 1's, i.e., all vehicle noise contribution is summed.

* The Main Code is documented in Part 2 of the Level 2 Manual.

- PRINT mask is a 12-bit string. It selects the output tables. The i^{th} bit controls SUBROUTINE PRINT i : if the i^{th} bit is 1, PRINT i is called; if the i^{th} bit is 0, PRINT i is not called. The PRINT subroutines are described in the documentation. A description may also be found in Appendix III. If the print mask is not changed via the \$SUBMIT command, all printing subroutines will be invoked.
- Dump mask is a 12-bit string. It selectively activates any combination of 12 strategically-placed dump statements. See Appendix IV for a list of the arrays dumped. The dump statements are intended for debugging purposes. They give a good idea of what the intermediate values are.

▶ Consideration: While the dumps will not appreciably increase the execution time, the number of lines printed will increase. For example, if DUMP at point 10 and 11 are activated, they dump two pages of data for each ID, each J and each year.

- The default value of IDUMP is a string of 0's, i.e., no dumping will be performed.

4.2 Given the above inputs, the Main Code adds other constant data and computes the following metrics of noise exposure:

- o Overall Impact Metrics for each year in the time stream net:
 - PEXP, number of people exposed to a level above a local criterion. In the current version, the local criteria are uniformly 55dB.
 - PIMP, number of people impacted. It is equal to $FI \cdot PEXP$, where FI, fraction impacted, is a factor less than one and depends only on J, the area type.

- ALWPOP, number of level-weighted people.
- REXP, relative exposure in percent, = $PEXP/TOTAL$ U.S. population
- NII, the noise impact index, = $LWP/TOTAL$ U.S. population
- DLWP, the change in LWP from the baseline value = LWP baseline - LWP.
- RCI, relative change in LWP, = $DLWP/LWP$ baseline.

o Detailed Impact Metrics for each year in the time stream net:

- PEXPJ, number of people exposed by area type.
- NIIJ, noise impact index by area type.
- ALWPJ, number of level-weighted people by area type.
- PEXPK, number of people exposed by roadway type.
- PIMPK, number of people impacted by roadway type.
- ALWPK, number of level-weighted people by roadway type.
- ENIDB, level-weighted exposure in dB bands.
- EXPDB, number of people exposed in dB bands.

o In addition, the code also tabulates constant data and intermediate results, as described in Appendix III of this manual. When required, plots of the major overall impact metrics can be specified as an option in the \$SUBMIT command.

5.0 SUPPORT PROCEDURE SYSTEM

The Support Procedure System (SPS) is a collection of Alpha command procedures with mnemonic names. These procedures are designed to simplify the submission of runs. The system must be acquired by the command: \$LOAD: EPABHM.

The commands are:

- o \$SUBMIT: submits a run and keeps a record.
- o \$BUILD: builds a data file of a regulation scenario.
- o \$MODIFY: edits a data file built with \$BUILD.
- o \$REDUCE: reduces size of \$RECORD file for large series runs.
- o \$TABLE: tabulates a regulation scenario file in the format of Table 4, Appendix III.
- o \$QUERY: queries the submission record in \$RECORD.
- o \$MEANING: data dictionary interrogator.

A record file, \$RECORD, is created at the time the system is acquired.

These commands will take up about 1027 lines in the user's source library.

Many commands prompt the user for input data. They can be learned by trying them out.

Old files in the user's source library with the above names will be replaced. They should be renamed before \$LOADING.

The commands are described below.

5.1 \$SUBMIT

- o Command for submitting runs of the model.
- o Complete data file 4 by filling in run information.

- o Optionally, modify the control strings (Section 4, Manual I), and time stream net in file 4.
- o Keeps a record after submitting the job.
- o Uses the latest version of load module.

Considerations:

- o Typical uses of the command can be found in Section 6.
- o Each time \$SUBMIT is used, the \$RECORD file is saved. Using the command \$REDUCE to break up the big \$RECORD file prior to a large number of runs and to remerge the files afterwards will reduce SLIB space usage.
- o To restart when an error is detected after a carriage return, the command must be broken and re-invoked.
- o If plots are specified, they will always be routed to the printer, irrespective of the mode specified.
- o The LINES parameter is 30, giving a maximum of 30000 lines.
- o The TIME parameter depends on the number of net years, NYRN.
 $TIME = 2 + NYRN * 2/3$ in minutes using integer arithmetic.
- o Appendix V contains a job submission form.

5.2 \$BUILD

- o Prompts for input data for a regulation scenario.
- o Structures the data to the requisite format.
- o Checks for consistency of number of noise levels with number of regulation years.

Considerations:

- o See Section 6 for examples of the use of this command.
- o To restart \$BUILD after an error, use the \$MODIFY command described in this section. If error does not terminate procedure, 'SKIP' may be used. Type in 'SKIP' in response to a prompt for 'MYREG' or 'ALREG'.

- o Appendix II describes the format for this file.
- o Appendix I contains a blank form for noise levels.
- o \$TABLE will tabulate a data file containing a regulation scenario in the output format of the code. (See Appendix III, part 2.)
- o Duplicate regulation years and levels can be indicated by an '*' after the prompt. The last entry to that prompt will be used (see Examples).
- o There are three prompt options for regulation years:
 - Option B: A prompt is issued once. All following vehicle types use the same regulation years.
 - Option I: A prompt is issued for each vehicle type. All operational modes of that vehicle type use the same regulation years.
 - Option D: (Default) A prompt is issued for each mode of each vehicle type.

Since the procedure performs a number of tests on the noise level data, it takes a few seconds, up to 30, to respond to a data entry. Three levels of tests are allowed:

LEVEL D: Highest level - longest time. Tests are performed for: 1) consistency between commas and periods; 2) between number of levels and number of regulation years; and 3) for length of data.

LEVEL I: Only tests 2 and 3 are performed.

LEVEL B: Lowest level - least time. Only test 3 is applied.

▼See Manual II for more details.

The regulation levels input may not exceed 30 characters for each speed range. See Manual II.

The user may elect to inspect the data as each line is being formatted. Reply 'Y' (for yes) to the first prompt, 'RESULTS LISTED?'

5.3

\$MODIFY

- o Modifies an input file containing a regulation scenario in the correct format (see Appendix II).

Considerations:

- o Once invoked, \$MODIFY will continue to modify the file for all I, L, M after the initial values specified.
- o To end the modification before I, L, M run through their ranges, type in 'WRAP' after a prompt for input data. To edit another section, type in 'SKIP' and give the new I, L, M values to skip to.
- o The modification must end normally or with 'WRAP', otherwise some numbers will not turn out right.
- o The initial file must be the requisite format (see Appendix II) in order to use this command.
- o To restart after an error, break and \$MODIFY again.
- o Each time the procedure is invoked, the command will prompt the user for a new file to load. The following options are allowed:
 - (Carriage return) No file is loaded. Workspace is not resequenced.
 - * No file is loaded. Workspace is resequenced.
 - Filename. Filename is any valid Alpha filename. The file will be loaded and resequenced.
- o If a prompt is followed by a carriage return, no editing is performed. If a prompt for ALREG and MYREG is followed by an '*', the last entry to that prompt is used as the current value.
- o See example, Section 6, and also the items under \$BUILD.

5.4 \$QUERY

- o Queries the job submission record in \$RECORD.

Considerations:

- o Four modes of operation are allowed: A JOBID search, a keyword search, a listing by line range, and a listing by an Alpha search string.
- o Use the HELP option of the command for a full description.
- o Examples of use of this command can be found in Section 6
- o If the \$RECORD file has been broken up using \$REDUCE, the two files must be merged before using \$QUERY. Otherwise, the 'recent' (R=) option may not work properly.

5.5 \$MEANING

- o Queries the variable dictionary for the meaning of a variable.
- o A general search of the dictionary is allowed.

Considerations:

- o Six modes of query are allowed:

- Search by keyword	: K =
- Search by variable name	: V =
- Search by ALPHA search string	: S =
- Listing by line range	: L =
- Help option	: H
- Explain option	: E

- o The 'Help' option explains the options allowed for this command. The 'Explain' option explains the format of the data dictionary.
- o See Section 6 for examples of use.

5.6 \$TABLE

- o Tabulates a data file containing a regulation scenario in the format described in Appendix II.
- o Permits visual data checking before job submission.

Considerations:

- o The output format will be identical to the final output format, as shown in Appendix III, Part 2.
- o A record of the job submitted will be placed in \$RECORD.

5.7 \$REDUCE

- o Permits more efficient use of SLIB space by temporarily breaking up \$RECORD into two parts. Only the smaller file is saved each time \$SUBMIT or \$TABLE is used.

Considerations:

- o Options are 'BREAK and 'MERGE':
 - BREAK will cause the old, big \$RECORD field to be broken up into a new \$RECORD file and an old \$RECORD file.
 - MERGE will cause the two files to be merged and renamed \$RECORD.
- o REDUCE is intended for the following situations:
 - \$RECORD is quite large from previous runs.
 - A series of say ten runs are to be \$SUBMITTED. Normally this would entail the saving of a large \$RECORD file ten times. By using \$REDUCE, only the new, much smaller \$RECORD file will have to be saved ten times.
- o Since \$QUERY only queries \$RECORD, the two record files should be merged as soon as the series of runs is completed.
- o An example of the use of this command can be found in Section 6.

6.0 EXAMPLES OF USE OF COMMANDS

6.1 Job Submission Commands

6.1.1 \$SUBMIT

6.1.1.1 \$SUBMIT with Change of Net Years and Vehicle Mask

The following example shows a run of the Model with a data file named SCN10, two net years and vehicle type 9 suppressed. The job is to be run in the Batch mode with priority one, and two copies of the output are to be made. Plots are not wanted; neither are comments. The CR after the prompt for printing data file means that the data file is not printed.

```
?$SUBMIT
****SAVE WORKSPACE?<Y/N> N
****MODIFY: (PDRK1) I
>>>>OLD I MASK IS: 1111111111111111
****ENTER NEW I MASK: 11111111011111
****MODIFY: (PDRK1) N
>>>>NET YEARS ARE : 1974,1979,1984,1989,1994,1999,2004,2009,2013
****ENTER NEW NET YEARS: 1974,2013
****MODIFY: (PDRK1)
****YOUR NAME: SMITH
>>>>NET YEARS ARE : 1974,2013
****DATAFILE= SCN10
SCN10, TYPE=DATA, 177 LINES, UPDATED 11/27/78
****RUN NAME (8 CHARS): NOTRUCKS
>>>>RUNNAME=NOTRUCKS
****PLOTS?? N
****COMMENTS??<Y/N> N
****ENTER MODE,PRI,CPY: B,1,2
199: PN SUBMITTED
****PRI DATAFILE,CPY=
185: $RECORD REPLACED
?
```

- o Notice the commas separating the mode, priority and copy.
- o Notice the response to the last 'MODIFY' prompt. A carriage return after that response ends modification of control strings and proceeds with the remainder of the procedure.

6.1.1.2 \$\$SUBMIT with Change of Roadway Mask and Net Years

The following example is submitted after the job in example 6.1.1.1. Only roadway type 2 is considered as a noise source.

The response to the prompt for data file, a carriage return, results in the previously-mentioned data file being used. In this case it is SCN10.

```
?$$SUBMIT
****SAVE WORKSPACE? (Y/N) N
****MODIFY: (PINKI) N
>>>>NET YEARS ARE : 1974,1979,1984,1989,1994,1999,2004,2009,2013
****ENTER NEW NET YEARS: 1974
****MODIFY: (PINKI) K
>>>>GLD K MASK IS : 111111
****NEW K MASK : 010000
****MODIFY: (PINKI)
****YOUR NAME:
>>>>NET YEARS ARE : 1974
****DATAFILE=
SCN10, TYPE=DATA, 177 LINES, UPDATED 11/27/78
****RUN NAME (8 CHARS): RDRWAY2
>>>>RUNNAME=RDRWAY2
****PLOTS?? N
****COMMENTS?? (Y/N) N
****ENTER MODE, PRT, COPY: B, 1, 2
199: PU SUBMITTED
```

6.1.2 \$QUERY

6.1.2.1 Use of \$QUERY to Check Job Submission Record

The following example illustrates the use of \$QUERY to check the job submission record for jobs PU and PN, \$SUBMITTED in examples 6.1.1.1 and 6.1.1.2.

- o The prompt for input is '****'. A CR after this prompt terminates the procedure, as indicated in the last two lines of this example.
- o The 'J=' option takes an operand of length two. In the first response, the excessive length caused an error message.
- o In the third task, the record of job PN is not in the \$RECORD file. \$REDUCE has been used, so the record of PN is in \$RECORD. \$QUERY automatically goes through \$RECORDØ if the search fails in \$RECORD.
- o In the fifth task, the output from the procedure is broken at the terminal, but \$QUERY takes over again and issues a new prompt.
- o Task six is a straightforward listing by line range.

```
?$QUERY
****J=PU
####ERROR: JOBID HAS INCORRECT LENGTH.
****J=PU
PU ROADWAY2 12/07/78 17:18:14 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PU IPLDT=N SY= MDD=B,PRT=1 TIME=2
****J=PN
    LIS $RECORD(-PN-1)
005: LINE ($) NOT FOUND
PN NDRUCKS 12/07/78 10:43:38 PGMER=SMITH ,CDP=2 **VIR $SUBMIT
PN IPLDT=N SY=SCN10 MDD=B,PRT=1 TIME=3
****S=ROADWAY-
PT ROADWAY1 12/07/78 17:17:11 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PU ROADWAY2 12/07/78 17:18:14 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PV ROADWAY3 12/07/78 17:19:01 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PW ROADWAY4 12/07/78 17:19:52 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PX ROADWAY5 12/07/78 17:30:03 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PY ROADWAY6 12/07/78 17:31:03 PGMER=PGW ,CDP=2 **VIR $SUBMIT
****K=SCN08
    LIS $RECORD(-SCN08-)
005: LINE ($) NOT FOUND
FG IPLDT=Y SY=SCN08 MDD=PPRT=2 TIME=8
FQ IPLDT=N SY=SCN08 MDD=PPRT=1 TIME=8
FU IPLDT=Y SY=SCN08 MDD=BPRT=1 TIME=5
FY IPLDT=N SY=SCN08 MDD=PPRT=1 TIME=8
FZ IPLDT=N SY=SCN08 MDD=R
****L=300-500
                                1400
PT ROADWAY1 12/07/78 17:17:11 PGMER=PGW ,CDP=2 **VIR $SUBMIT
PT IPLDT=N SY= MDD=B,PRT=1 TIME=2
****
?
```

6.1.2.2 The HELP Message

This example illustrates the use of the 'HELP' option.

```

$QUERY
****HELP
THE ALLOWABLE OPTIONS ARE AS FOLLOWS:
S=(ANY VALID ALPHA SEARCH STRING)  E.G. S=-PRONTO-1
K=(KEYWORD)                          E.G. K=PRONTO
L=(LINE RANGE)                       E.G. L=10900-11000
J=(JOBID)                             E.G. J=R0
H
R=(OPTION)

THE H (HELP) OPTION TYPES THIS MESSAGE
THE R (RECENT) OPTION IS A SEARCH FOR THE MOST RECENT JOB SUBMITTED
VIA ANY SUPPORT SYSTEM PROCEDURE. THE MEANING OF THE OPTIONS ARE:
S OR E  LAST $SUBMIT-ED JOB ( E FOR EXECUTION.)
P       LAST PRINTING OF DATAFILE VIA $SUBMIT
T       LAST TABULATION OF DATAFILE VIA $TABLE

```

6.1.2.3 Error Message

This example shows a variety of the error messages which are returned. Most error messages are self-evident. In the second error message, a sub-option is the operand of the Recent option. See Section 8.2.4 C, Manual II.

```

$QUERY
****J-LPH
****ERRCP: JOBID HAS INCORRECT LENGTH.
****R=0
****SUB: OPTION NOT ALLOWED.
****R#
****OPRAND MISSING.
****J=J
****OPTION# ARE: KSLJHR. TYPE H FOR HELP
****S#
****SYNTAX ERROR: OPRAND MISSING.
****K=--
      LIS $RECORD(---)
005: LINE(S) NOT FOUND
      LIS $RECORD(---)
017: MEMBER NOT FOUND
****L=ALL
THIS FILE CONTAINS THE RUN RECORDS OF
****
****
?
```

6.1.3 \$REDUCE

6.1.3.1 Merge Option

Notice the number of lines in each file before and after merging. They do not add up as some header lines are deleted.

```
DES $RECORD,$RECORD0
$RECORD, TYPE=DATA, 18 LINES, UPDATED 12/11/78
$RECORD0, TYPE=DATA, 182 LINES, UPDATED 12/07/78
? $REDUCE
****OPTION#1
185: $RECORD REPLACED
?DES $RECORD,$RECORD0
$RECORD, TYPE=DATA, 197 LINES, UPDATED 12/11/78
DES $RECORD,$RECORD0
^
017: MEMBER NOT FOUND
?
```

6.1.3.2 Break Option

The following example shows the use of the Break option. Notice that after breaking, \$RECORD0 is identical to \$RECORD before breaking.

```
DES $RECORD,$RECORD0
$RECORD, TYPE=DATA, 208 LINES, UPDATED 12/20/78
DES $RECORD,$RECORD0
^
017: MEMBER NOT FOUND
?
```

```
$REDUCE
****OPTION#1
184: $RECORD SAVED
?
DES $RECORD,$RECORD0
$RECORD, TYPE=DATA, 3 LINES, UPDATED 12/20/78
$RECORD0, TYPE=DATA, 208 LINES, UPDATED 12/20/78
?
```

6.2 Data File Five Utilities

6.2.1 \$BUILD

6.2.1.1 Building a File Named TRIAL14, Replacement Results Not Listed

The following examples illustrate building a file named TRIAL14. The replacement results are not listed, and the regulation year prompts for each vehicle type.

Refer to Figures 6.2.1.1 through 6.2.1.3. Notice the correspondence between the format of the input and the table from which the input is produced. When the data file so produced (part of which is shown in Figure 6.2.1.3) is tabulated with \$TABLE, we get back a table just like Figure 6.2.1.2.

User response to prompts begins after the equal signs.

```
?$BUILD
****RESULTS LISTED?(Y/N)      =N
****TEST LEVEL (DIB)          =D
****MYREG PROMPT OPTION(DIB)=I
****FILE NAME                  =SCN14
>>>>VEHICLE TYPE 1 RCCL MODE
**** MYREG=1974,1983,1985,1987
****1 ALREG=59.3,59.3,59.3,59.1
****2 ALREG=61.3,61.3,61.3,60.3
****INCONSISTENT WITH # OF REGULATION YEARS.
****2 ALREG=61.3,61.3,61.3,60.3
****3 ALREG=63.0,63.0,63.0,62.3
****4 ALREG=64.8,64.8,64.8,64.4
****5 ALREG=66.7,66.7,66.7,66.4
>>>>VEHICLE TYPE 1 DECL MODE
****1 ALREG=50.5,50.5,50.5,50.1
****2 ALREG=56.1,56.1,56.1,55.8
****3 ALREG=60.1,60.1,60.1,59.9
****4 ALREG=63.2,63.2,63.2,63.0
****5 ALREG=65.8,65.8,65.8,65.6
>>>>VEHICLE TYPE 1 CRUISE MODE
****1 ALREG=56.7,56.7,56.7,56.3
****2 ALREG=62.4,62.4,62.4,62.1
****3 ALREG=66.4,66.4,66.4,66.1
****4 ALREG=69.5,69.5,69.5,69.3
****5 ALREG=72.0,72.0,72.0,71.9
>>>>VEHICLE TYPE 1 IBLE MODE
****1 ALREG=46.0,46.0,46.0,46.0
>>>>VEHICLE TYPE 2 RCCL MODE
**** MYREG=+
****1 ALREG=
?
```

Figure 6.2.1.1 USER'S INPUT TO \$BUILD


```

LIS 100-1300 LIS 14300-15200
100 4REGSCN
200 4LREG=
300 59.3,59.3,59.3,59.1,0.0, 61.3,61.3,61.3,60.3,0.0,
400 63.0,63.0,63.0,62.3,0.0, 64.8,64.8,64.8,64.4,0.0,
500 66.7,66.7,66.7,66.4,0.0, 68.5,68.5,68.5,68.1,0.0,
600 56.1,56.1,56.1,55.8,0.0, 60.1,60.1,60.1,59.9,0.0,
700 63.2,63.2,63.2,63.0,0.0, 65.8,65.8,65.8,65.6,0.0,
800 56.7,56.7,56.7,56.3,0.0, 62.4,62.4,62.4,62.1,0.0,
900 66.4,66.4,66.4,66.1,0.0, 69.5,69.5,69.5,69.3,0.0,
1000 72.0,72.0,72.0,71.9,0.0, 46.0,46.0,46.0,46.0,0.0,
1100 46.0,46.0,46.0,46.0,0.0, 46.0,46.0,46.0,46.0,0.0,
1200 46.0,46.0,46.0,46.0,0.0, 46.0,46.0,46.0,46.0,0.0,
1300
14300 4LEV=
14400 4,4,
14500 4,
14600 4,
14700 4,
14800 4YREG=
14900 1974,1983,1985,1987,2*2014, 1974,1983,1985,1987,2*2014,
15000 1974,1983,1985,1987,2*2014, 1974,1983,1985,1987,2*2014,
15100 1974,1983,1985,1987,2*2014,
15200
7

```

Figure 6.2.1.3 Portion of datafile constructed by \$BUILD as demonstrated in Figure 6.2.1.1

- Note padded in zeros and '2014's.
- Note the automatically duplicated idle levels

TABLE 1.1 FICULATION LEVELS, DBA. (TABLE 1 OF 7)

TYPE 1 ACCELERATION MODE				
YEARS>	1974	1983	1985	1987
0-20 MPH	59.30	59.30	59.30	59.10
20-30	61.30	61.30	61.30	60.30
30-40	63.00	63.00	63.00	62.30
40-50	64.80	64.80	64.80	64.40
50-60	66.70	66.70	66.70	66.40

DECELERATION MODE				
YEARS>	1974	1983	1985	1987
20-0 MPH	50.50	50.50	50.50	50.10
30-0	52.10	52.10	52.10	51.80
40-0	54.00	54.00	54.00	53.90
50-0	56.20	56.20	56.20	56.30
60-0	58.80	58.80	58.80	58.60

CRUISE MODE				
YEARS>	1974	1983	1985	1987
<25 MPH	56.70	56.70	56.70	56.30
25-34	62.40	62.40	62.40	62.10
35-44	66.40	66.40	66.40	66.10
45-54	69.50	69.50	69.50	69.30
>55	72.00	72.00	72.00	71.90

IDLE MODE				
YEARS>	1974	1983	1985	1987
	46.00	46.00	46.00	46.00

Figure 6.2.1.2 Table from which data items are read

6.2.1.2 Building a File Named TRIAL14, Replacement Results Listed

In this example of building a file named TRIAL14, the replacement results are listed, and the regulation year prompts for each vehicle type.

- o Refer to Figure 6.2.1.4.
- o Options chosen are: results listed, intermediate test level, intermediate year prompt. File named SCN14.
- o As data are entered, lines are listed as soon as they are completed.
- o Since the intermediate year prompt option is specified, no prompt is issued for the deceleration, cruise or idle modes. However, the regulation year data are automatically entered and listed for these modes.
- o The data are identical to those in Example 6.2.1. Therefore Figures 6.2.1.2 and 6.2.1.3 also apply to this example.

```

$BUILD
****RESULTS LISTED? (Y/N)      =Y
****TEST LEVEL (DIB)           =I
****MYREG PROMPT OPTION (DIB)  =I
****FILE NAME                   =SCH14
>>>>VEHICLE TYPE 1 ACCL MODE
**** MYREG=1974,1983,1985,1987
14400      4,
****1 ALREG=59.3,59.3,59.3,59.1
****2 ALREG=61.3,61.3,61.3,60.3
300 59.3,59.3,59.3,59.1,0.0,      61.3,61.3,61.3,60.3,0.0,
****3 ALREG=63.0,63.0,63.0,62.3
****4 ALREG=64.8,64.8,64.8,64.4
400 63.0,63.0,63.0,62.3,0.0,      64.8,64.8,64.8,64.4,0.0,
****5 ALREG=66.7,66.7,66.7,66.4
>>>>VEHICLE TYPE 1 DECL MODE
14500      4,
14900 1974,1983,1985,1987,2*2014,      1974,1983,1985,1987,2*2014,
****1 ALREG=50.5,50.5,50.5,50.1
500 66.7,66.7,66.7,66.4,0.0,      50.5,50.5,50.5,50.1,0.0,
****2 ALREG=56.1,56.1,56.1,55.8
****3 ALREG=60.1,60.1,60.1,59.9
600 56.1,56.1,56.1,55.8,0.0,      60.1,60.1,60.1,59.9,0.0,
****4 ALREG=63.2,63.2,63.2,63.0
****5 ALREG=65.8,65.8,65.8,65.6
700 63.2,63.2,63.2,63.0,0.0,      65.8,65.8,65.8,65.6,0.0,
>>>>VEHICLE TYPE 1 CRUISE MODE
14600      4,
****1 ALREG=66.7,66.7,66.7,66.3
****2 ALREG=62.4,62.4,62.4,62.1
800 66.7,66.7,66.7,66.3,0.0,      62.4,62.4,62.4,62.1,0.0,
****3 ALREG=66.4,66.4,66.4,66.1
****4 ALREG=69.5,69.5,69.5,69.3
900 66.4,66.4,66.4,66.1,0.0,      69.5,69.5,69.5,69.3,0.0,
****5 ALREG=72.0,72.0,72.0,71.9
>>>>VEHICLE TYPE 1 IDLE MODE
14700      4,
15000 1974,1983,1985,1987,2*2014,      1974,1983,1985,1987,2*2014,
****1 ALREG=46.0,46.0,46.0,46.0
1000 72.0,72.0,72.0,71.9,0.0,      46.0,46.0,46.0,46.0,0.0,
1100 46.0,46.0,46.0,46.0,0.0,      46.0,46.0,46.0,46.0,0.0,
1200 46.0,46.0,46.0,46.0,0.0,      46.0,46.0,46.0,46.0,0.0,
>>>>VEHICLE TYPE 2 ACCL MODE
**** MYREG=
14400      4,4,
****1 ALREG=
?
```

Figure 6.2.1.4 \$BUILD with the list option.

NOTES:

- o Prompts begin with '****' and end with '='.
- o Informative messages begin with '>>>>'.
- o Filled lines in the data file are listed beginning with their line numbers.

6.2.2 \$MODIFY

6.2.2.1 Taking the Data File Constructed Using \$BUILD in Example 6.2.1, Change All Vehicle One Levels by Rounding to the Nearest Integer (TRIAL14 in example 6.2.1 was saved under the name SCN13.)

In this example, the results are listed as data are processed and inserted into the file. (See Figure 6.2.2.1.) The input is read from the table shown in Figure 6.2.1.2. The affected section of the file is shown in Figure 6.2.2.2.

Notice the four error messages:

- o TYPE L DECL MODE, L=2. The input data have a trailing comma. Another prompt is issued.
- o The second data entry to this prompt is also in error. The comma after the second 56 should be after the second period. Notice that it is a detailed level error message; if a lower test level were specified, this error would not have been caught.
- o TYPE L DECL MODE, L=5. This error is identical to the first one, above, i.e., the existence of a trailing comma. This is an intermediate level error.
- o TYPE L CRUISE MODE, L=4. The last data item, which should be 69.0, is erroneously entered as 569. The lack of a period in this item led to a detailed level error message.

Notice the listing of the affected lines as soon as each line is completed. Also, since a 'brief' MYREG prompt option is specified, only one prompt for regulation levels is issued. The old regulation years are used. As each line is automatically filled with the old years, they are listed.

The completed section of the data file is shown in Figure 6.2.2.2. Compare it with Figure 6.2.1.3, the original section before the change.


```

LIS 100-1500; LIS 14300-15300
100 $REGSCH
200 $LREG=
300 59.,59.,59.,59.,0.0, 61.,61.,61.,60.,0.0,
400 63.,63.,63.,62.,0.0, 65.,65.,65.,64.,0.0,
500 67.,67.,67.,66.,0.0, 51.,51.,51.,50.,0.0,
600 65.,65.,65.,66.,0.0, 60.,60.,60.,60.,0.0,
700 63.,63.,63.,63.,0.0, 66.,66.,66.,66.,0.0,
800 57.,57.,57.,56.,0.0, 62.,62.,62.,62.,0.0,
900 66.,66.,66.,66.,0.0, 70.,70.,70.,69.,0.0,
1000 72.,72.,72.,72.,0.0, 46.,46.,46.,46.,0.0,
1100 46.,46.,46.,46.,0.0, 46.,46.,46.,46.,0.0,
1200 46.,46.,46.,46.,0.0, 46.,46.,46.,46.,0.0,
1300 60.5,60.5,60.1,58.1,0.0, 62.2,62.2,61.7,60.3,0.0,
1400 63.7,63.7,63.4,62.3,0.0, 65.3,65.3,65.1,64.4,0.0,
1500 67.0,67.0,66.9,66.4,0.0, 50.5,50.5,50.3,49.7,0.0,
14300 $LLEV=
14400 4,4,4,4,4,4,4,4,1,1,1,1,
14500 4,4,4,4,4,4,4,4,1,1,1,1,
14600 4,4,4,4,4,4,4,4,1,1,1,1,
14700 4,4,4,4,4,4,4,4,1,1,1,1,
14800 $MREG=
14900 1957,1983,1985,1987,2*2014, 1957,1983,1985,1987,2*2014,
15000 1957,1983,1985,1987,2*2014, 1957,1983,1985,1987,2*2014,
15100 1957,1983,1985,1987,2*2014, 1957,1983,1985,1987,2*2014,
15200 1957,1983,1985,1987,2*2014, 1957,1983,1985,1987,2*2014,
15300 1957,1983,1985,1987,2*2014, 1957,1983,1985,1987,2*2014,
?
```

Figure 6.2.2.2 Affected Section of Datafile.
Original Segment can be Found
in Figure 6.2.1.3

6.2.2.2 Using the Same Data File, SCN13, Change the Regulation Years for Type 4

The regulation years for vehicle type 4 are to be moved one year forward. This example shows one way to accomplish this.

In the lower part of Figure 6.2.2.3, we can see the affected lines, 15500-15600, above the same portion of the original file. Notice that the baseline year, 1974, has been changed to 1957 in the completed file, SCN13. This would have been done automatically if the procedure had been terminated with a 'WRAP' control option, or if it had terminated normally.

Notice that even though only one 'MYREG' prompt is issued for vehicle type 4, the regulation years for modes 2, 3 and 4 have also been changed, as we go through each mode, keeping all levels untouched.

The same function is duplicated in the following example using the 'SKIP' control option.

```

$MODIFY
****RESULTS LISTED(YR)      =N
****TEST LEVEL (DIB)       =1
****MYREG PROMPT OPTION(DIB)=1
****FILE TO MODIFY         =SCH13
>>>>MS RESEQUENCED.
****BEGINNING WITH I,M,L   =4,1,1
>>>>PROCEEDING WITH I,M,L  =4,1,1
>>>>VEHICLE TYPE 4 RCCL MODE
**** MYREG=1974,1982,1984,1986
****1 ALREG=
****2 ALREG=
****3 ALREG=
****4 ALREG=
****5 ALREG=
>>>>VEHICLE TYPE 4 DECL MODE
****1 ALREG=
****2 ALREG=
****3 ALREG=
****4 ALREG=
****5 ALREG=
>>>>VEHICLE TYPE 4 CRUISE MODE
****1 ALREG=
****2 ALREG=
****3 ALREG=
****4 ALREG=
****5 ALREG=
>>>>VEHICLE TYPE 4 IDLE MODE
****1 ALREG=
>>>>VEHICLE TYPE 5 RCCL MODE
**** MYREG=SKIP
****BEGINNING WITH I,M,L   =14,1,1
>>>>PROCEEDING WITH I,M,L  =14,1,1
>>>>VEHICLE TYPE 14 RCCL MODE
**** MYREG=
?

```

```

LIS 15500-15600
15500 1974,1982,1984,1986,2*2014,      1974,1982,1984,1986,2*2014,
15600 1974,1982,1984,1986,2*2014,      1974,1982,1984,1986,2*2014,
7LIC SCH13(15500-15600),M=L
15500 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15600 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
?

```

Figure G.2.2.3 Second Example for \$MODIFY, and Affected Portion of File

6.2.2.3 Using the Same Data File, SCN13, Change the Regulation Years for Types 1 and 2

This example demonstrates the use of the 'SKIP' control option to any MYREG or ALREG prompt.

The levels are to be unchanged. Hence a 'SKIP' option is issued for the first ALREG prompt of each mode. Each time, we skip to the next mode of the same vehicle type. Each mode of the vehicle types must be gone through, otherwise the regulation years for that mode will remain unchanged.

The 'SKIP' option results in a destination prompt for an I, M, L to skip to. Notice the use of blank fields in the response, to indicate the values defined at the issuance of the prompt. Therefore, ',2,' would mean: 'mode 2 of the current vehicle type, starting with the current speed range, 1.'

A 'WRAP' option is issued at the end. This results in the changing of 1974's to 1957's. This change is evident in the workspace lines listed. In addition, a series of tests for data error are also performed. No error was found, hence the next prompt is issued for a file name.

Notice the use of '*', to indicate the previously defined regulation years, in the response to the second MYREG prompt.
(VEHICLE TYPE 2 ACCL MODE.)

```

$MODIFY
****RESULTS LISTED? (Y/N)      =N
****TEST LEVEL (DIB)          =
****MYREG PROMPT OPTION(DIB)=1
****FILE TO MODIFY            =SCH13
>>>>MS RESEQUENCED.
****BEGINNING WITH I,M,L      =
>>>>PROCEEDING WITH I,M,L     =1,1,1
>>>>VEHICLE TYPE 1 RCCL MODE
**** MYREG=1974,1982,1984,1986
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =,2,
>>>>PROCEEDING WITH I,M,L     =1,2,1
>>>>VEHICLE TYPE 1 DECL MODE
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =,3,
>>>>PROCEEDING WITH I,M,L     =1,3,1
>>>>VEHICLE TYPE 1 CRUISE MODE
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =,4,
>>>>PROCEEDING WITH I,M,L     =1,4,1
>>>>VEHICLE TYPE 1 IDLE MODE
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =2,1,
>>>>PROCEEDING WITH I,M,L     =2,1,1
>>>>VEHICLE TYPE 2 RCCL MODE
**** MYREG=*
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =,2,
>>>>PROCEEDING WITH I,M,L     =2,2,1
>>>>VEHICLE TYPE 2 DECL MODE
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =,3,
>>>>PROCEEDING WITH I,M,L     =2,3,1
>>>>VEHICLE TYPE 2 CRUISE MODE
****1 ALREG=SKIP
****BEGINNING WITH I,M,L     =,4,
>>>>PROCEEDING WITH I,M,L     =2,4,1
>>>>VEHICLE TYPE 2 IDLE MODE
****1 ALREG=WRAP
****FILE NAME                  =
?LIS 14800-LR
14800 MYREG=
14900 1957,1982,1984,1986,2*2014,      1957,1982,1984,1986,2*2014,
15000 1957,1982,1984,1986,2*2014,      1957,1982,1984,1986,2*2014,
15100 1957,1982,1984,1986,2*2014,      1957,1982,1984,1986,2*2014,
15200 1957,1982,1984,1986,2*2014,      1957,1982,1984,1986,2*2014,
15300 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15400 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15500 1957,191
?

LIS SCH13(14800-15300),N=L
14800 MYREG=
14900 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15000 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15100 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15200 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
15300 1957,1983,1985,1987,2*2014,      1957,1983,1985,1987,2*2014,
?

```

Figure 6.2.2.4 Example .3 for \$MODIFY

- (1) User input and procedure prompts
- (2) Section of workspace affected
- (3) Same section of the original file, SCH13.

6.2.3 \$TABLE

6.2.3.1 \$TABLE Used to Tabulate SCN13, The Data File Constructed and Edited in the Examples for \$BUILD and \$MODIFY.

\$TABLE is very simple to use. Notice the commas in the response to the prompt for MODE, PRTY and COPY.

The workspace has been secured before the command is used. Therefore, it is not saved, (first prompt).

```
?$TABLE
****SAVE WORKSPACE? (YN): N
****DATA FILE           : SCN13
SCN13, TYPE=DATA, 177 LINES, UPDATED 12/18/78
****MODE, PRTY, COPY    : B, 1, 2
****RUNNAME            : SCN13
****PRINT DATAFILE? (YN): Y
199: R6 SUBMITTED
185: $RECORD REPLACED
?
```

6.3 Data Dictionary Interrogator

6.3.1 \$MEANING

The following example shows the use of the various options of \$MEANING, except for listing by line range.

- o Item one, two: searching for two variables named BONE and ELREG.
- o Item four: searching for all derived constants. These constants are denoted by C:D starting at column 23. This search was terminated by a terminal break, and \$MEANING issued another prompt.
- o Item five, six: searching for all Input File 3 [item five] or Input File 4 [item six] variables. These are denoted by C:I3 or C:I4 starting at column 23.
- o Item seven: a keyword search for the word 'NET'.
- o Item eight: a carriage return terminates the procedure.

```
?$MEANING
****V=BONE
BONE (ID,J,K) C:D ATTENUATION CURVE COEFFICIENT ONE
****V=ELREG
ELREG (LEVEL,L,K,I) C:D NOISE LEVEL EQUATION CONSTANT DERIVED FROM ALREG
****S=-C:D-22
~ LIS CH.EPBBHM.S2KC.PMMVDICT((-C:D-22)
005: LINE(S) NOT FOUND
****S=-C:D-23
AML (J,K,ID,LEVEL) C:D LINEAR VEHICLE DENSITY=ADT/V/HLANE
BONE (ID,J,K) C:D ATTENUATION CURVE COEFFICIENT ONE
BYUD (ID,J,K) C:D ATTENUATION CURVE COEFFICIENT TWO
BVPDP (I) C:D BASELINE VEHICLE POPULATION BY VEHICLE TYPE
CDRR (J,IBB) C:D COMPLEMENTARY DB LEVELS
****S=-C:I3-13
FLOWIX(J,K,FLD,JFLD) C:I3 FLOWIX OF TYPE I VEHICLE
MILE (K,J,IB,L) C:I3 MILES OF ROADWAY
PERCNT(K,KPER,IPER) C:I3 PERCENT OF TIME IN EACH OPERATING MODE
SIG (L,K,LEVEL,I) C:I3 STANDARD DEVIATION OF ALREG, THE VEHICULAR NOISE LEV
EL.
****S=-C:I4-23
ICDNT (I2) C:I4 A CONTROL STRING. SEE MANUAL TWO FOR FULL DESCRIPTIO
N.
IDUMP (I2) C:I4 ARRAY CONTROLLING THE DUMPING OF VARIABLES
IPRINT (8) C:I4 ARRAY CONTROLLING THE SELECTION OF TABLES TO PRINT
IVMASK(I) C:I4 VEHICLE MASK. IF MASK BIT OF THE ITH TYPE IS ZERO, N
DISE CONTRIBUTION FROM THAT TYPE IS ZERO.
KMASK (K) C:I4 ROADWAY TYPE MASK--IF MASK BIT IS ZERO, THE NOISE LE
VEL OF THAT ROADWAY TYPE IS SET TO ZERO.
MYRNET(IYRI) C:I4 A NET OF YEARS FOR WHICH THE COMPUTATION IS TO BE DO
NE.
MYRN C:I4 NUMBER OF YEARS IN YEAR NET
****K= NET
VERSION 3, VARIABLE NET MODEL (VARNET4,VARNET4D AND VARNETD)
CLWP VIA NET INCREASE IN LWP FOR A GIVEN ID,J & K
EXPDEC(IBB,K) VIA DETAILED NET EXPOSURE DECREASE(SHIFTED FROM IBB TO A
NOTHER IBB) INTERMEDIATE ACCUMULATOR
ENPINC(IBB,K) VIA DETAILED ~
****
****
7
```

APPENDIX I
NOISE LEVEL FORM

TABLE REGULATION LEVELS, IN DBA
TYPE

ACCELERATION MODE					
YEARS>	1974				
0-20 MPH 0-30 0-40 0-50 0-60					
DECELERATION MODE					
YEARS>	1974				
20-0 MPH 30-0 40-0 50-0 60-0					
CRUISE MODE					
YEARS>	1974				
<25 MPH 25-34 35-44 45-54 >55					
IDLE MODE					
YEARS>	1974				

APPENDIX II
 FORMAT OF REGULATION SCENARIO DATA FILE

The data file for the regulation scenario, Fortran File 5, must have the following format in order to use the \$MODIFY command:

▶ A data file built using \$BUILD will automatically be in this format.

o Type of data file: Data o Sequence: 100 increment 100

o Line Number	Contents (starting in column 2)	NOTE
100	®SCN	1
200	ALREG =	2
300-14200	item, item,..., item, item,...,n*item	3
14300	NLEV =	2
14400-14700	item, item, ...,item, item, item,...,	4
14800	MYREG =	2
14900-17600	item, item, item, item	5
17700	&END	6

Notes:

1. Name of namelist.
2. Names of arrays.
3. Each item is a floating point number, giving a noise level. Repeated items may be indicated by a repeating factor thus: n*0.0. Total number of items (a repeated item counts as n items) on each line is ten, in two groups of five items. The first group occupies columns 2 to 36, and the second group columns 37 to 71 of a line.
4. Each item is an integer from one to five. Each line has exactly 14 items, one for each vehicle type. With the commas, they occupy columns 7 through 34 of the line.
5. Each item is a regulation year. Repeated items may be coded n* item. They are 12 items per line, in two groups of six items each. The first group occupies columns 2 to 36; the second occupies column 37 to 71.
6. End of namelist.

The data file may be in the less stringent namelist format. However, \$BUILD and \$MODIFY cannot be used with such a data file. The specification are:

- o Type of file: Data o Sequence: irrelevant.
- o Contents: a namelist named REGSCN.

The namelist contains three arrays:

- o ALREG (LEVEL, L, M, I) -- in floating point or real format. These are the regulation levels for each Level, L, M, I. There are 1400 items.
- o NLEV (I,M) -- in integer format. There are 56 items, one for each I, M. NLEV is the number of regulation years for an I, M.
- o MYREG (LEVEL, M, I) -- in integer format. These are the regulation years for an I, M. The first 'regulation year' is always 1957. (It will print as 1974 in the tables.) There are 336 items.

The meaning of the indices are as follows:

- o I is one of 14 vehicle types.
- o M is one of 4 operating modes, e.g., idle mode, cruise mode.
- o L is one of 5 speed ranges.
- o LEVEL is one of 5 regulation years. The first LEVEL corresponds to baseline values. LEVEL ranges from 1 to 5 for ALREG. It ranges from one to six for MYREG, to allow for an upper bound.

APPENDIX III
PRINT SUBROUTINES

Name	Tables printed.
PRINT1	Title page.
PRINT2	Description of control strings and suppressed roadway/vehicle types.
PRINT3	Constant data: o Mileage of roadway. o Population by area, density type. o Population density.
PRINT4	Regulation scenario.
PRINT5	Vehicle population for each net year.
PRINT6	Primary impact metrics for each net year.
PRINT7	Impact metrics by area type.
PRINT8	Impact metrics by roadway type.
PRINT9	Impact metrics in dB bands.
PRNT10	Population growth factor for each year.
PRNT11	Vehicle breakdown ratio for each year for vehicle type, 1 through 7.

A complete set of output tables for a trial run follows. Similar tables have been omitted, i.e., only part 1 of table 4 is shown and there are 7 parts; and only part 1 of table 12 is shown and it has 3 similar parts.

APPENDIX IV
 ARRAYS DISPLAYED BY DUMP STATEMENTS

<u>Mask bit #</u>	<u>Variables dumped</u>	<u>Frequency</u>
1	CDBA, MIXDB, CON, CON2, DBSUM VBD74, VBD77, VBD85, XINC	
2	WDTHPZ, EDGE, BONE, BTWO, XK	once before
3	FACT3, FACT4, AML	the time stream
4	FACT2	
5	YINC, VINC	
6	ELREG	
7	IYRN, PGF	
8	VPOP	once each year
9	IYRN, VML	
10	IYRN, J, ID, ALEVEL	
11	IYRN, J, ID, EXPINC, EXPDEC, PMYLWP, PMYEXP	once for each ID, J in each year
12	POPEXP, STOPGF, POPIMP, ALWPOP, TOPOP, PIMPK, PEXPK, ALWPK, PIMPJ, PEXPJ, ALWPJ, POPLTN, ENIDB, EXPDB	once after time stream

APPENDIX V
JOB SUBMISSION FORM

Job submission request (check appropriate boxes and give all information:

- Requested By:
- Run Name: (Up to 8 characters, beginning with a letter)
- Data File Name:
- Plots: Y() N()
- Comments: (Up to six lines) Y() N()
- Net years: (Up to nine) () Default () change to:
- KMASK: () Default () change to:
- IVMASK: () Default () change to:
- Print Mask: () Default () change to:
- Dump Mask: () Default () change to:
- Mode, priority Copy if BATCH:
- Print Data file? () Yes, Copy = () No

To be filled in by programmer submitting program:

- JOBID Name of programmer
- NOTES