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IBM JCL MADE EASY BY MEANS OF ISPF DIALOG APPLICATION

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SUMMARY

An interactive CRT terminal application has been developed, which automatically generates the JCL (Job Control Language) and submits NASTRAN batch jobs at an IBM mainframe installation. The relevant parameters for each NASTRAN batch job are stored in a table. Once a table entry is defined, the corresponding NASTRAN batch job may be submitted as often as desired with a minimum of keystrokes. For most users, there is no need for any knowledge of JCL.

INTRODUCTION

Users of the IBM version of COSMIC NASTRAN sometimes complain about the IBM system's burdensome JCL. Part of the aggravation arises from the fact that the rules change from time to time. Changes are necessitated by operating system upgrades, accounting procedure modifications, and even new releases of COSMIC NASTRAN. The hapless occasional NASTRAN user becomes frustrated when he finds that the JCL he used a few months ago no longer works. These problems can be virtually eliminated by use of an IBM program product, the Dialog Management Services of ISPF (Interactive System Productivity Facility).

At our installation, NASTRAN users access the IBM mainframe by means of TSO (Time Sharing Option) terminals. NASTRAN input data is prepared by use of the ISPF text editor PDF (Program Development Facility) on the IBM host and Supertab, a finite element modeling tool by Structural Dynamics Research Corporation (SDRC) running on a DEC VAX computer. On the IBM system, NASTRAN input data may be stored on disk either as an ordinary sequential data set or under the aegis of PANVALET, a data management system by Pansophic Systems, Incorporated. Thus, while the TSO dialog application described in this paper is specific for our installation, it could serve as an illustration for developers of similar applications at other IBM installations.

As implemented at Magnavox, the NASTRAN dialog utilizes full-screen selection, data entry, and help panels in a format familiar to PDF users. At the beginning of the dialog session, the user is presented with a selection menu that provides methods for creating or modifying a table entry as well as submitting a NASTRAN batch job based on an existing table entry. A new table entry may be defined parameter by parameter through a series of data entry panels, or may be copied automatically from an existing table entry and then modified. An online tutorial is also provided, the appropriate sections of which may be accessed by means of the HELP command from any panel.

DESIGN CONSIDERATIONS

Of primary concern was that the dialog should not itself become a burden to the frequent user. Therefore, it was deemed necessary to retain all user entries relating to the definition of JCL related parameters. A single table was chosen to store the run parameters as opposed to a private "user profile" for each user, since it seemed desirable to be able to share NASTRAN batch job descriptions among the several users. A possible drawback to this approach is that only one user can access the table at a time. However, since the typical session is very brief, conflicts at our installation are very rare.

Another consideration was that the user interface should be as consistent as possible with that of PDF and other familiar ISPF utilities. With this in mind, the main menu items were arranged such that the more frequently used options appear at the top of the list. Conventional use was made of the message display capability for reporting errors in the user's input or confirmation of user requested actions.

Several programming language options including the TSO command language (CLIST) were available. The author chose to implement the bulk of the application in VS FORTRAN (IBM's FORTRAN 77) for its convenience and efficiency. (The FORTRAN code consists mainly of calls to the ISPF Dialog Management Facility routines.) A TSO CLIST is used to allocate the needed libraries and initiate the dialog function.

Finally, the application was designed to fully support all known usage of COSMIC NASTRAN at our installation, including the READFILE and CHECKPOINT/RESTART capabilities. If the need develops, the capability of storing the generated JCL as a data set for further user modification could easily be added.

USING THE NASTRAN DIALOG

Creating a New Table Entry

At the TSO READY prompt, the user enters the command "NASTRAN". After a brief wait for the file allocations, the main selection panel or menu, Figure 1, is displayed. On the first run for a NASTRAN model, the user will either select the "C" option to copy the run parameters from a similar job, or the "A" option to enter the parameters from scratch. In either case, the run-name selection panel, Figure 2, is displayed next.

The run-name panel has two data entry fields, the first of which is a 40-character run description field. For a new entry, the description should be entered at this time to aid in future identification of the NASTRAN model. The second input field is the run name, the name by which a table entry is identified to the system. If this field is left blank, on pressing the <ENTER> key, a table display panel, Figure 3, will appear next.

The run-name table display panel provides a scrollable list of all the current table entries. On this panel, the user may "select" a unique name for his new entry on the command line and proceed immediately to the next data entry panel, or merely press the <ENTER> key to return to the name entry panel. Once an acceptable name for the new entry is provided, the name entry panel will be redisplayed with the prompt for the name of the entry to be copied, if the COPY option had been selected on the main menu. Otherwise, the remaining data entry panels, Figures 4-9, will be displayed in turn.

Default values (sometimes blanks) are provided for all the remaining input fields. In the case of the COPY option, of course the values will be those of the copied entry. The user need only scan through the data entry panels making changes as needed. When the last panel is completed, or at any time the user enters the END command (normally by means of a PF key), the main menu is redisplayed.

Submitting a NASTRAN Batch Job

Once a table entry has been defined, the corresponding batch job may be submitted to the computer by selecting the SUBMIT option from the main menu. When the run-name selection panel is displayed, it will already contain the name of the last entry accessed by that user. A press of the <ENTER> key is all that is needed to then submit that job. If a different job is to be submitted, the user may enter the appropriate run name, or select it from the table display panel.

Reviewing or Modifying a Table Entry

The REVIEW option on the main menu provides for the selection of a table entry in the usual way and the display of all the data entry panels in order. Changes may be made to any of the data values displayed except for the run name itself and the description.

Deleting One or More Table Entries

If it should become necessary to reduce the number of table entries for space considerations, or if any of the entries are no longer useful, deletions may be accomplished by selecting the DELETE option on the main menu. The same run-name selection and table display panels are used for this option, but a couple of differences may be noted. First, the selection character is the letter D instead of the letter S for the table display panel. The second difference is that multiple names may be selected on the table display panel. Upon pressing the <ENTER> key, the main menu is redisplayed with a message indicating the number of entries deleted. As an additional safety feature, the user may enter the CANCEL command at this point to "undo" the deletions.

Using the Tutorial and HELP Screens

The tutorial panels for this application also serve as the HELP screens.

Shown in Figures 10 through 29, these panels may be accessed by selecting the TUTORIAL option from the main menu, or by entering the HELP command on any data entry or selection panel. From any of the tutorial panels, the user may request help on how to use the tutorial by entering the HELP command. At this point, the standard ISPF tutorial on "How to Use Tutorials" is provided, which shows the user how to navigate the hierarchical structure of tutorials.

MAINTENANCE EXPERIENCE

As of this writing, the dialog application described herein has been in use for about 17 months. So far, no difficulties attributable to the dialog itself have been reported. Maintenance has been minimal. The few changes required related mainly to the installation of the April, 1986, Release of COSMIC NASTRAN.

CONCLUSION

IBM System 370 JCL is indeed a language, as its name implies. While it may be easy enough for the systems programmer who uses it regularly, most engineers would rather not be bothered by JCL. The NASTRAN dialog application described in this paper has proved quite successful at our installation, and no doubt equally successful NASTRAN ISPF dialogs could be implemented at other IBM mainframe installations.

REFERENCES

1. MVS/Extended Architecture JCL Reference, GC28-1352. IBM, 1985.

2. Interactive System Productivity Facility (ISPF) Dialog Management Services, SC34-2088. IBM, 1985.

3. OS/VS2 TSO Command Language Reference, GC28-648. IBM, 1978.

```
------------------- NASTRAN BATCH JOB STREAM PROCESSOR ---------------------
OPTION ===>
                                                    USERID   -  D528CEC
    S  SUBMIT    - Submit a NASTRAN batch job       TIME     -  13:03
    R  REVIEW    - Review/Update a NASTRAN job profile  TERMINAL - 3278
    C  COPY      - Copy an existing NASTRAN job profile  PF KEYS - 24
    A  ADD       - Create a NASTRAN job profile
    D  DELETE    - Delete a NASTRAN job profile
    T  TUTORIAL  - Display information about this application
    X  EXIT      - Terminate ISPF using list/log defaults


NOTE: For assistance, call  CHARLIE COOPER, X-5109.


Press ENTER to continue.
Enter END or RETURN command to terminate application.
Enter CANCEL command to abandon updates and terminate application.
```

Figure 1 Main Menu

```
----------------------- NASTRAN -- RUN-NAME SELECTION ----------------------
COMMAND ===>                        ADD NAME

DESCRIPTION OF THIS NASTRAN RUN:

DESCRIPTION ===>                              (Any characters)


ENTER RUN-NAME OR LEAVE BLANK TO DISPLAY CURRENT LIST:

RUN-NAME    ===>          (Up to 8 alphanumeric characters, the
                           first of which must be alpha.)



Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to exit ISPF.
```

Figure 2 Run-Name Selection Panel

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```
 ---------------------- NASTRAN -- RUN-NAME SELECTION ----------------------
COMMAND ===>                        ADD NAME                   SCROLL ===> PAGE

Enter S to left of selected name or S runname on command line.

  Run-name  Userid  Created  Accessed  Description.........................

  D01011A  D528CEC 11/12/85  1/13/87  Demo Problem D01011A
  D01011B  D528CEC 11/12/85 11/12/85  Demo, RESTART with load change.
  D01011C  D528CEC 11/12/85  7/21/86  Demo, RESTART with rigid format switch.
  D01061A  D528CEC  6/02/86  7/30/86  Demo Problem D01-06-1A
  D04011A  D528CEC  8/26/86  8/26/86  Demo 4-1-1, Differential Stiffness Anal.
  S800     D632ARS 12/08/85 10/03/86  S800 air blast analysis
  S800ISO  D632ARS  1/04/86 10/03/86  S800 analysis with isolators
  S800VAX  D632ARS  1/11/86  1/11/86  S800 model to SUPERTAB
  ***************************** BOTTOM OF DATA *****************************
```

Figure 3   Run-Name Scrollable List

```
 ---------------------- NASTRAN -- JCL JOB STATEMENT ----------------------
COMMAND ===>


JOBNAME SUFFIX   ===> N        (Any alphanumeric character)
PROCESS NUMBER   ===> DESIGN   (Departmental process number, 1-6 alphanumerics)
CHARGE NUMBER    ===> 1102     (Valid J.O. #, 1100 series #, or Dept. #)
USER INFO        ===> NASTRAN       (Up to 20 characters)
JOB CLASS        ===> A        (1,A,B,I,Y, corresponding with maximum CPU time:
                                  2 sec, 1 min, 5 min, 30 min, >30 min, resp.)
MSGCLASS         ===> O        (Output class: A=print, O=hold, Z=discard)
PRINT DEST       ===> VAX10A   (TESTCTR, VAX10A, MAHWAH, etc.)
NOTIFY           ===>          (Leave blank to omit; or enter TSO userid.)


Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to terminate application.
```

Figure 4   JCL JOB Statement Panel

```
---------------------- NASTRAN -- JCL PROC OPTIONS --------------------------
COMMAND ===>


            ****************************************************
            **  NOTE:  For most runs, the NASTRAN PROC    **
            **  defaults are adequate.  Therefore, these  **
            **  fields should normally be left blank.     **
            ****************************************************


REGION (K)      ===>         (REGION size in K-bytes, 2500 to 9999)
RELEASE YEAR    ===>         (NASTRAN Release year, 86 or 85)

WORKING DISK STORAGE ALLOCATION:
                ALLOC UNITS    PRIMARY ALLOC    SECONDARY ALLOC
   PRIMARY FILES    ==>            ==>              ==>
   SECONDARY FILES  ==>            ==>              ==>
   TERTIARY FILES   ==>            ==>              ==>


Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to terminate application.
```

Figure 5   JCL PROC Options Panel

```
---------------------- NASTRAN -- INPUT DATA SOURCE -------------------------
COMMAND ===>


MAIN INPUT DATA SET:     (Enter one of the following:)
   PANVALET MEMBER  ===>            (COMMON.PANVALET.STORAGE member)
   DEMO PROBLEM     ===>            (ENGR.NASTRAN.DEMO member)
   OTHER DATA SET*  ===>

READFILE DATA SETS:      (Enter following fields as required:)
        DDNAME           DATA SET NAME*
   ===>             ===>
   ===>             ===>
   ===>             ===>
   ===>             ===>
   ===>             ===>
   ===>             ===>

* Enter fully qualified data set name(s) without quotes.

Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to terminate application.
```

Figure 6   Input Data Source Panel

```
------------------------ NASTRAN -- PLOT OPTIONS ---------------------------
COMMAND ===>


PLOT OPTION         ===> N        (N=No plot, V=Versatec, C=Calcomp)

VERSATEC PLOTTERS:
    PLOT DESTINATION ===> PLOT10A (PLOT10A, PLOT3B, etc.)

CALCOMP 1012 PLOTTER:
    PLOT FILE NAME   ===>         (1-8 alphanumerics, first must be alpha.)
    PAPER TYPE       ===> F10     (Paper type: F00, F01, F10)
    PEN NUMBER       ===> 1       (Pen number: 1, 2, 3, or 4)
    INK COLOR        ===> BLACK   (Color: BLACK, RED, BLUE, GREEN)
    ROTATE OPTION    ===> NO      (YES/NO)

Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to terminate application.



```

Figure 7   Plotter Options Panel

```
---------------------- NASTRAN -- CHECKPOINT/RESTART -----------------------
COMMAND ===>


CHECKPOINT   ===> NO    (YES/NO)
RESTART      ===> NO    (YES/NO)

CHECKPOINT DATA SETS:
    DICTIONARY  ===>       (Output CP-dictionary, final DSNAME qualifier*)
    BULKDATA    ===>       (NPTP output final DSNAME qualifier*)

RESTART DATA SETS:
    DICTIONARY  ===>       (Input CP-dictionary, final DSNAME qualifier*)
    BULKDATA    ===>       (OPTP input final DSNAME qualifier*)

* Enter HELP command for rules regarding Checkpoint/Restart final DSNAME
  qualifiers.

Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to terminate application.


```
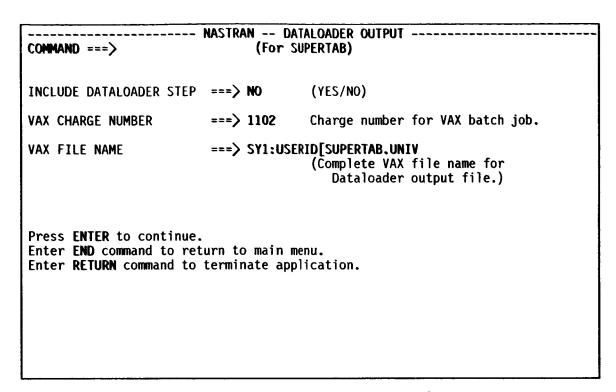
Figure 8   Checkpoint/Restart Panel

```
---------------------- NASTRAN -- DATALOADER OUTPUT -------------------------
COMMAND ===>                    (For SUPERTAB)


INCLUDE DATALOADER STEP  ===> NO      (YES/NO)

VAX CHARGE NUMBER        ===> 1102    Charge number for VAX batch job.

VAX FILE NAME            ===> SY1:USERID[SUPERTAB.UNIV
                                  (Complete VAX file name for
                                      Dataloader output file.)



Press ENTER to continue.
Enter END command to return to main menu.
Enter RETURN command to terminate application.
```

Figure 9   SUPERTAB Dataloader Panel

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

                     ------ INTRODUCTION ------

    This Dialog Application maintains a table of NASTRAN run
    parameters which at the user's option may be used to submit
    NASTRAN batch jobs to the IBM mainframe system.  Each table
    entry is given a name by the user who creates it, and the
    name of the last entry accessed by a user is retained in the
    user's application profile.  Thus, when it is desired to
    resubmit a NASTRAN job after making input modifications, only
    a few keystrokes are required.

                     ------ TUTORIAL CONTENTS ------

    This tutorial consists of two main sections which may be
    viewed sequentially, or selected by entering the corresponding
    one letter code in the OPTION field on line 2.

        S Main selection menu.        D Data entry panels.
```

Figure 10   Tutorial Introduction

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```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

              ------ MAIN SELECTION MENU ------

The options provided on the main menu allow you to create, modify, or
submit a NASTRAN batch job.  The parameters for tailoring the Job Control
Language (JCL) are all stored in a table which is permanently maintained.
Therefore, once a set of parameters is defined, they need not be reentered
for subsequent runs.  However, you may create a temporary entry, or make
temporary updates to a permanent table entry by simply entering the CANCEL
command before exiting the application.

Each of the menu options will be presented in order, or may be selected by
entering the one letter code in the OPTION field on line 2:
      A  ADD a new table entry.        S  SUBMIT a NASTRAN batch job.
      C  COPY an existing entry.       T  TUTORIAL on this application.
      D  DELETE a table entry.         X  EXIT to TSO READY.
      R  REVIEW/UPDATE an entry.
```
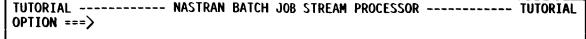
Figure 11 Tutorial for Main Menu

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

              ------ A  -  ADD OPTION ------

This option allows the creation of a NASTRAN job profile table entry
completely from scratch.  Upon selection of this option, a sequence of
data entry panels will be presented covering all the available parameter
options for this application.  Default values are provided for most
parameters; so you will need only to revise the ones which are
inappropriate.  Upon completion, or entry of the END command, the main
selection menu will be redisplayed.

An alternate method for creating a new NASTRAN job profile table entry is
provided via option C (COPY).
```

Figure 12 Tutorial for ADD Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>


                  ------ C  -  COPY OPTION ------

This option allows the creation of a NASTRAN job profile table entry by
copying an existing entry and then making necessary modifications.  Upon
selection of this option you are first asked to supply the name of the new
entry, and in a subsequent panel, the name of the entry to be copied.  In
both cases, you will have the option of viewing the list of current
entries; first to assure the selection of a unique name for the new entry,
and next to choose an available entry to copy.

After the new entry has been thus created, a sequence of data entry panels
will be presented covering all the available parameter options for this
application.  You may then proceed to make the desired changes.. Upon
completion, or entry of the END command, the main selection menu will be
redisplayed.
```

Figure 13   Tutorial for COPY Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>


                  ------ D  -  DELETE OPTION ------

When a NASTRAN job profile table entry is no longer needed, either for
submitting NASTRAN runs or for use as an example for future COPYing, it
may be deleted by means of the DELETE option.  Upon selection of a current
entry name, that entry will be deleted from the table and the main
selection panel will be redisplayed.  Multiple entries may be deleted by
entering a D in the selection field on the name list display panel
opposite each name to be deleted.

Should you change your mind after deleting an entry (or entries), but
before terminating the dialog, simply enter the CANCEL command.  (Note,
however, that CANCEL abandons all table updating activity for the session
in which it is used.)
```

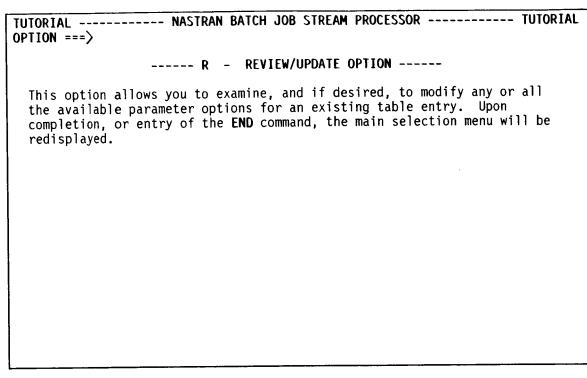Figure 14   Tutorial for DELETE Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

            ------ R  -  REVIEW/UPDATE OPTION ------

This option allows you to examine, and if desired, to modify any or all
the available parameter options for an existing table entry.  Upon
completion, or entry of the END command, the main selection menu will be
redisplayed.
```

Figure 15 Tutorial for REVIEW/UPDATE Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

            ------ S  -  SUBMIT OPTION ------

Once a NASTRAN job profile table entry contains all the desired parameter
settings, the SUBMIT option enables the submission of the corresponding
NASTRAN batch job.  Upon selection of the desired NASTRAN job profile
table entry, the job will be submitted to the internal reader and the main
selection menu will be redisplayed.

Note that the CANCEL command of this dialog has no effect on a job once it
is submitted.  However, you may use the TSO cancel command with the
appropriate job name (your TSO userid with the designated one-character
suffix).
```
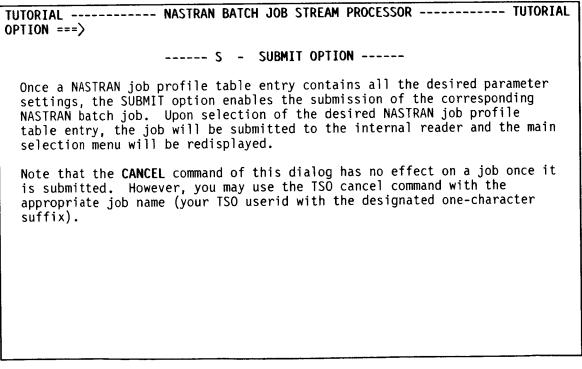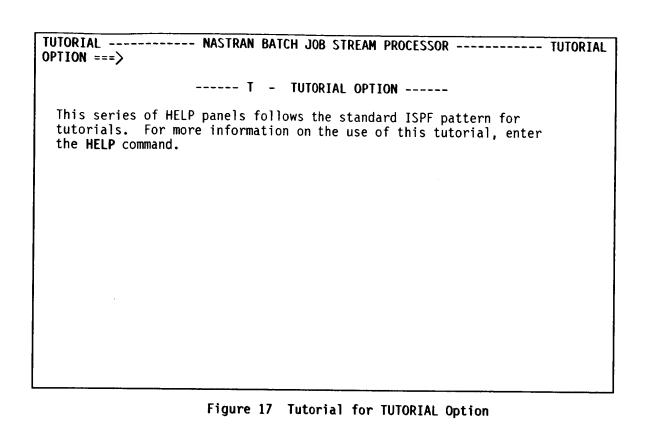
Figure 16 Tutorial for SUBMIT Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>


                    ------ T - TUTORIAL OPTION ------

This series of HELP panels follows the standard ISPF pattern for
tutorials.  For more information on the use of this tutorial, enter
the HELP command.
```

Figure 17 Tutorial for TUTORIAL Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

                    ------ X - EXIT OPTION ------

Entry of the X option is identical to entering the END command from the
primary selection menu.  Any table updates made during the dialog session
will be written to disk and you will be returned to TSO READY mode, or to
the alternate dialog if you are in split screen mode.

The CANCEL command has the same effect except that table updates will be
abandoned.
```

Figure 18 Tutorial for EXIT Option

```
TUTORIAL ------------ NASTRAN BATCH JOB STREAM PROCESSOR ------------ TUTORIAL
OPTION ===>

                       ------ DATA ENTRY PANELS ------

       All the parameters required to tailor a NASTRAN batch job
       stream are collected through a series of data entry panels.
       The user may exit this series of input panels at any time by
       entering of one of the following commands (or pressing a
       corresponding PF key) in the COMMAND field:

         END    - Return to main menu.
         RETURN - Exit to TSO READY (or alternate dialog).
         CANCEL - Same as RETURN except that table updates are abandoned.

       Each of the data entry panels will be presented in order, or
       may be selected by entering the one letter code in the
       OPTION field on line 2:

         R  Run-name selection.        I  NASTRAN Input data source.
         L  List Table entries.        P  Plotter options.
         J  JCL JOB statement data.    C  Checkpoint/Restart options.
         N  NASTRAN JCL proc options.  S  SUPERTAB dataloader option.
```

Figure 19 Tutorial -- Introduction to Data Entry Panels

```
TUTORIAL ------------------ NASTRAN -- RUN-NAME ------------------- TUTORIAL
OPTION ===>

       This panel is used in several contexts as indicated by the subtitle
       shown on line 3.  The two input fields are explained as follows:

         RUN-NAME    - After the first use of this dialog by a user,
                       this field will usually contain the last
                       accessed run-name by that user.  If it is
                       cleared to blanks prior to pressing the ENTER
                       key, the list of entries currently in the table
                       will be displayed on the next panel.  Otherwise,
                       the table display panel will be skipped.  Note:
                       when selecting the run-name for a new entry, the
                       DESCRIPTION field should be filled in even if
                       the RUN-NAME field is left blank.

         DESCRIPTION - This field is significant only in the process of
                       creating a new table entry.  (It may be updated
                       for existing table entries by a series of COPY
                       and DELETE operations.)  Lower case letters are
                       retained for this field; so the shift key should
                       be used where upper case letters are desired.
```

Figure 20 Tutorial for Run-Name Selection Panel

```
TUTORIAL --------------- NASTRAN -- RUN-NAME LIST ---------------- TUTORIAL
OPTION ===>

        The RUN-NAME LIST panel is displayed only if the run-name
        is not supplied on the RUN-NAME SELECTION panel.  The run-name
        of any existing table entry may be selected from the
        scrollable list by keying the letter S to the left of the
        run-name field in the same manner that PDS or PANVALET members
        may be selected in PDF EDIT or BROWSE.

        Also, as in PDF EDIT or BROWSE, a run-name (either new or
        existing) may be selected by keying S runname in the COMMAND
        field where "runname" is any acceptable name.

        If neither method of selecting a run-name on this panel is
        used, the RUN-NAME SELECTION panel will be redisplayed upon
        entry of the END command.  The RETURN command will cause the
        main selection panel to be redisplayed.
```

Figure 21   Tutorial for Scrollable Run-Name List

```
TUTORIAL --------------- NASTRAN -- JOB STATEMENT ---------------- TUTORIAL
OPTION ===>

        All the input fields on this panel relate to the IBM JCL JOB
        statement.  Since the rules for these items are subject to
        change by DP Technical Resources, only minimal verification is
        provided by this dialog.  Each field is treated separately
        below:

        JOBNAME SUFFIX - A single character (alphanumeric or national)
                         which is appended to your TSO userid to form
                         the JCL JOB name.

        PROCESS NUMBER - The first field of the accounting information
                         in accordance with your departments practice.
                         (It is often used to indicate the department
                         number for which the run is made.)

        CHARGE NUMBER  - The second accounting information field.  It
                         must be a valid Job Order number, department
                         number, or other valid charge number.

                              (more)
```

Figure 22   Tutorial for JOB Statement Panel

```
TUTORIAL ----------- NASTRAN -- JOB STATEMENT (Page 2) ------------ TUTORIAL
OPTION ===>

        USER INFO     - This 20-character field is usually for the
                        submitter's name.  DO NOT use quotes; they
                        are provided by the dialog function.  Other
                        special characters are okay, including
                        leading and imbedded blanks.

        JOB CLASS     - The appropriate JOB class character in
                        accordance with DP Operations rules.

        MSGCLASS      - The MSGCLASS serves not only for JCL and JES2
                        messages, it also covers the NASTRAN
                        printouts.  DON'T use class Z unless you want
                        to eliminate ALL printout!

        PRINT DEST    - Enter the appropriate print destination ID to
                        direct the printout to a convenient printer.

        NOTIFY        - Enter your TSO userid if you wish to be
                        notified of your NASTRAN job's status at your
                        TSO terminal.
```

Figure 23   Tutorial for JOB Statement Panel (Continued)

```
TUTORIAL -------------- NASTRAN -- JCL PROC OPTIONS --------------- TUTORIAL
OPTION ===>

        For very large models, it may be necessary to increase the
        amount of main storage and/or disk storage allocations.  Since
        indiscriminate increases in these parameters could have a
        negative impact on total system performance, it is recommended
        that they be used with caution.

        The only parameter on this panel not related to size is the
        RELEASE YEAR.  Normally, only the current release and the most
        recent past release of NASTRAN will be available for use.

        If you have a need to code any field on this panel, please
        notify  CHARLIE COOPER, X-5109.
```

Figure 24   Tutorial for JCL PROC Options Panel

```
TUTORIAL ---------------- NASTRAN -- INPUT SOURCE(S) --------------- TUTORIAL
OPTION ===>

       MAIN INPUT DATA SET:

       The NASTRAN input "deck" from the NASTRAN "card" to the ENDDATA
       "card" may be a member of COMMON.PANVALET.STORAGE or a
       sequential disk data set.  If the NASTRAN deck is a member of a
       Partitioned Data Set (PDS), the member name must also be
       included.  The NASTRAN Demo Problem PDS is included as a special
       case of the sequential data sets for which only the member name
       need be given.  The three fields for identifying the source of
       the main NASTRAN input deck are mutually exclusive, ie. only one
       of the three fields may be coded.  If the input is neither a
       PANVALET member or a DEMO problem, the fully qualified DSNAME,
       including member name in parentheses if a PDS member, must be
       coded in the OTHER DATA SET field.


                              (more)
```

Figure 25   Tutorial for Input Sources Panel

```
TUTORIAL -------------- NASTRAN -- INPUT SOURCE(S) (part 2) ---------- TUTORIAL
OPTION ===>

       READFILE DATA SETS:

       The NASTRAN READFILE facility lets you include data into the
       NASTRAN deck from other sequential disk files.  For data sets
       not already defined in the NASTRAN cataloged JCL procedure,
       the DDNAME and DATA SET NAME fields must be supplied in order
       to identify the disk file to be read.  In the case of PDS
       members, the member name must be coded as a part of the DATA
       SET NAME as shown in the following example:

                In NASTRAN deck:   READFILE MYDATA
                DDNAME:            MYDATA
                DATA SET NAME:     D528CEC.TSO.FORT(MYMBR)

       Note that the DDNAME's must be unique and different from any
       DDNAME in the NASTRAN cataloged JCL procedure, such as RFDATA,
       NPTP, OPTP, ALTERS, DISP1DL, DISP3DL, etc.
```

Figure 26   Tutorial for Input Sources Panel (Continued)

```
TUTORIAL ---------------- NASTRAN -- PLOT OPTIONS ----------------- TUTORIAL
OPTION ===>

   The PLOT OPTION entry is the only required parameter on this panel.
   If N (No plot) is selected, all other input fields will be ignored.
   The other two options (V and C) indicate the type of plotter to be
   used (Versatec or Calcomp 1012).  Parameters for both supported types
   may be supplied, but only the ones corresponding to the selected type
   will be used.

   VERSATEC PLOTTERS:
   The PLOT DESTINATION is the destination ID as assigned by Technical
   Resources for the particular Versatec plotter you wish to use.

   CALCOMP 1012 PLOTTER:
     PLOT FILE NAME - Final DSNAME qualifier for the plot output.
     PAPER TYPE     - F00=plain,short; F01=grid,short; F10=plain,long.
     PEN NUMBER     - Always use 1 (one); others not yet supported.
     INK COLOR      - Indicate desired color; BLACK, RED, BLUE, GREEN.
     ROTATE OPTION  - Enter YES if you want 90 degree rotation.
   Notes:  PLOT FILE NAME must be unique with respect to currently
   active Calcomp 1012 plot file data sets.  PAPER TYPE will normally
   be F10 for structure plots.
```

Figure 27 Tutorial for Plotter Options Panel

```
TUTORIAL -------------- NASTRAN -- CHECKPOINT/RESTART --------------- TUTORIAL
OPTION ===>

          The CHECKPOINT/RESTART input panel provides for the required JCL
          overrides to support runs involving the NASTRAN checkpoint and/
          or restart facilities.  The related data set names will have
          your userid as the leading (high level) qualifier.  Thus, from
          TSO READY, you may check on their existence merely by keying the
          LISTCAT command.

          A data set name (DSNAME) qualifier consists of from 1 to 8
          alphameric characters, the first of which must be alphabetic.
          In a run involving both checkpoint and restart, the respective
          DICTIONARY and BULKDATA final DSNAME qualifiers must differ.

          The restart DICTIONARY and BULKDATA data set names must match
          the respective checkpoint DICTIONARY and BULKDATA data set names
          of a previous run.  Therefore, if you wish to restart a NASTRAN
          run checkpointed by another user, you must first rename or copy
          the checkpoint DICTIONARY and BULKDATA data sets with your own
          TSO userid as the leading qualifier.
```

Figure 28 Tutorial for CHECKPOINT/RESTART Panel

```
TUTORIAL -------------- NASTRAN -- DATALOADER OUTPUT --------------- TUTORIAL
OPTION ===>

        If the DATALOADER step is included in the NASTRAN run, a batch
        job will be submitted to the VAX A computer to create the
        SUPERTAB universal file.  (The NASTRAN data deck must, of
        course, include the necessary DMAP ALTERS to produce the OUTPUT2
        data for DDNAME FT18F001.)

        If YES is coded on the option line, then a valid VAX charge
        number and an appropriate file name must be supplied in the
        designated fields.  Please consult the cognizant VAX support
        personnel for current rules.
```

Figure 29 Tutorial for SUPERTAB Dataloader Panel