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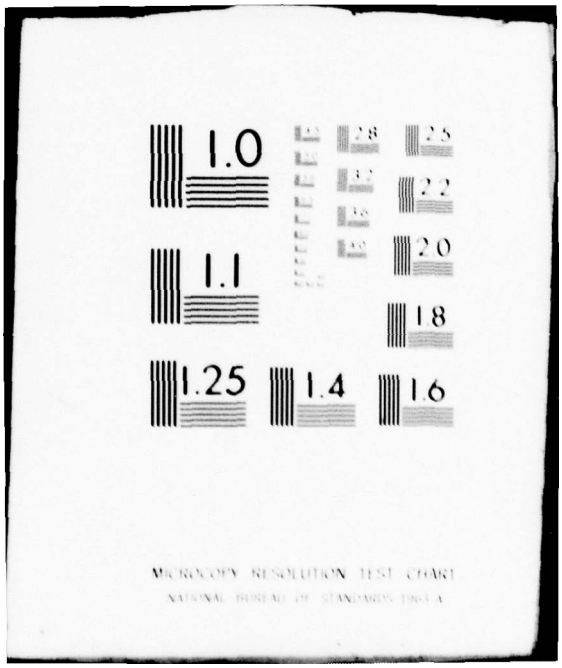
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SCHEDULE

Managerial Tool For Project/Product Managers

Dr. Vernon Allen
Mr. Lonnie Antwiler
Mr. Michael Garsik

MAY 1979

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FINAL REPORT

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US ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND
Directorate for Development and Engineering
Scientific and Engineering Computational Office
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Schedule is an interactive computer program designed to organize and present schedule information. It enables the user to maintain a master file of schedule type information for each of many projects, from which current status, change impact analysis or "what if" studies can be obtained.

The program, which was developed on an IBM 360/65, provides graphic output on a Tektronix 4014 or tabular output on most printers/typewriters. It was written in PL/1 language except for the graphics routines, which are combinations of Fortran IV and Tektronix Advanced Graphics, Release 3.

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FORWARD

SCHEDULE was written by Dr. Vernon Allen. Graphics routines and interactive features were provided by Mr. Lonnie Antwiler. The documentation was written by Mr. Michael Garsik. The three authors are all employed by the US Army Aviation Research and Development Command (AVRADCOM).

Funds were provided by the Aircraft Survivability Equipment (ASE) Project Manager's Office, St. Louis, MO.

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1.0 INTRODUCTION

1.1 ABSTRACT

SCHEDULE is an interactive computer program which serves as a management tool by helping to organize project schedule information. It enables the manager to maintain a master file of schedule information on one or many projects from which reports may be prepared that display the most recently updated schedule status. The creative user can use SCHEDULE to "play" with the data and prepare alternative schedules showing the impact of delays or changes on a project.

1.2 LANGUAGE

With the exception of one subroutine SCHEDULE is written in PL/I. The exception to this is the graphics portion of the program which is a combination of FORTRAN IV and TEKTRONIX Advanced Graphics, Release 3. Any later release of the TEKTRONIX graphics package will also be suitable for the operation of SCHEDULE.

1.3 HARDWARE

SCHEDULE was developed and debugged using an IBM 360/65 Computer System located at the U.S. Army Troop Support and Aviation Materiel Readiness Command in St. Louis, MO. The program was designed to provide a graphic report on a TEKTRONIX 4014 Computer Display Terminal or a tabular report on most types of printer or typewriter TSO terminal, such as the Texas Instruments Silent 700 or a Digital DECWRITER II. Schedules may be edited from any kind of TSO terminal.

1.4 OVERLAY STRUCTURE

Because of the amount of storage required to load both the program and the data into core, it became necessary to design an overlay structure for SCHEDULE to facilitate the execution of the program. Figure 1.1 is the single-region tree that is used to structure SCHEDULE into an overlay. Subroutine OVR.CLIST will create this overlay structure when executed in conjunction with OVR.OBJ which it references. How to do this is outlined in Section 3.2.

1.5 FILES

To allow a program such as SCHEDULE to deal primarily with the logical aspects of data rather than with its physical organization in a data set, PL/I employs a symbolic representation

of a data set called a file. SCHEDULE employs two files named INDEX and DATA.DATA.

INDEX is used to permanently store schedule data and is used for no other purpose; this is done in order to decrease the chance of data being lost when SCHEDULE is being executed. Data to be edited or reported on is read into the buffer file, DATA.DATA, where all data manipulation takes place; data which has been edited is then rewritten back into INDEX for permanent retention. All data transmission is record oriented.

1.6 DATA TYPES

There are four different kinds of records, each with its own format. The record types and the data included in each are:

a. Header Record - Major Title, Subtitle, As-Of-Date, Start Year, and Number Of Years In Report.

b. Task Record - Standard Title I.D. (if used, otherwise blank), Application Code, Task Title, and up to three Stop Date/Start Date/Percent Completion combinations.

c. Event Record - Standard Title I.D. Number (if used, otherwise blank), Application Code, Task Title, and up to nine separate Event Dates.

d. Remark Record - Application Code, Remark Text.

1.7 NUMBER OF SUBROUTINES

SCHEDULE is made up of seventeen subroutines that are arranged in an overlay structure as previously discussed. Listings of all the subroutine which make up SCHEDULE are included in Appendix A. There are also two other groups of programs which are included in the SCHEDULE package whose functions are not directly related to the execution of the program but without which it could not be run. The first of these is required to setup the program on a computing system and to allow users to set themselves up so that they may use SCHEDULE. The second group is necessary to maintain the data files in order to save space in the memory of the machine and to aid in the trouble-shooting of the files should problems develop. Both groups of programs and their use are covered in Section 3.0

1.8 SCHEDULE GRAPHICS

The graphics routine FORM.FORT was written by Mr. Lonnie Antwiler using FORTRAN IV and TEKTRONIX Advanced Graphics Release 3.0 routines. Complete documentation of this routine is currently

being prepared for future publication, hence a complete discussion of it will not be included here.

2.0 SCHEDULE PROGRAM

2.1 INTRODUCTION

As mentioned, SCHEDULE is made up of 17 subroutines of which 12 are major, that is, they perform a task or tasks which are user directed or controlled. The remaining 5 subroutines are minor, performing tasks that are, in most cases, transparent to the user who has no control over them. Herein are descriptions of each of the major subroutines covering their basic purpose and functions, followed by a brief look at the minor programs.

2.2 Subroutine ADDD

When a new record is to be added to a system, ADDD is called to prompt the user for the new information. ADDD will display the proper formats to be followed and write the new data into the buffer file as it is entered. After the complete record has been inputed, control returns to the editing routine UPDATE, note that the data is not written into the permanent storage file at this time.

2.3 Subroutine CHANGE

This subroutine allows users to change a part of an existing record that has been copied into core from an earlier step that specified what record was to be changed. CHANGE will display the current data that is stored in the record and will prompt the user by displaying the proper format for the new data. After the change has been entered, control will be returned to the editing routine UPDATE, note again that the new data is not entered into the permanent storage at this time.

2.4 Subroutine FORM

This subroutine is completely responsible for all of the graphics required by SCHEDULE. It is called when a graphic report is to be displayed on a TEKTRONIX 4014 and generates the form for the report along with the appropriate data symbology. Upon completing the report, control is returned to subroutine MASTER.

2.5 Subroutine LLIST

Also part of the editing portion of SCHEDULE, this subroutine will provide the user with either a listing of all the records

contained within a system or with a listing of the heading information for all the systems contained in the permanent storage file. This listing may be obtained during the TSO session and displays the application code and record code number when listing records. After the list is complete control will be returned to the editing routine UPDATE.

2.6 Subroutine MASTER

This subroutine is the initial entry point to SCHEDULE and acts as the main procedure as required in PL/I. This subroutine is unique in that it receives arguments passed form the clist that executes SCHEDULE (How to initialize these arguments is covered in Section 3.3). These arguments enable or disable the currently available special options: Application Code Prompting List, Cross System Reporting, Lines Per Page and Windowing.* The Position Dependent Application Code is not available at the present time. Briefly, these options do the following:

Application Code Prompting List - allows the user to display a specific list of application codes to be used as a prompt to the request for the codes.

Cross System Reporting - allows the user to prepare a report on all systems at one time rather than on a system-by-system basis.

Lines Per Page - allows the user to change the default value of thirty lines maximum per report page, to a value ranging from nine to thirty.

Windowing - allows the user to display, in a report system, SCHEDULE data from a specified period of time.

MASTER is also responsible for determining the task to be accomplished and routing control to the correct portion of SCHEDULE, as well as sending control back to the user when the session is concluded.

2.7 Subroutine NEW1

NEW1 is called when a user decides to enter a new system from the keyboard. Before proceeding into the input phase, NEW1 will ask if an old job of inputting data is being restarted and if so, will search the buffer file to determine if enough data is present to pick up from the last record entered. If that is the case, the last record entered will be displayed and the user will be prompted to continue inputing data. If enough data is not present, however, or if an old job is not being restarted, the subroutine will prompt the user for header data, development step data, and remark data if any. Regardless of what path is followed, the data will only have been written out to the buffer file when

*These options are discussed in detail in the Special Options section of the User's guide (Section 4.5).

the input is complete and control is returned to the input subroutine NEW.

2.8 Subroutine NEW

This subroutine initiates the input portion of SCHEDULE by determining from the user where the new data is to be entered from either a file or the keyboard. In the case of entering data from the keyboard, control is sent to NEW1 and returns when the new system is stored in the buffer file. If the data to be entered is already in the buffer file, NEW goes directly to it for the information. In any event, when the new data is ready, this subroutine writes it out to the permanent storage file when instructed to do so and assigns a system code to the new system. Control is then returned to subroutine MASTER.

2.9 Subroutine REPORTS

REPORTS is designed to provide an interface between the language and graphics portions of SCHEDULE. It combines format and title information supplied by the user, along with system data taken from the permanent storage file together in the buffer file in such a way that it is understood by the graphics subroutine FORM.

2.10 Subroutine SSLIP

SSLIP is called when the user decides to slip (i.e., move back in time) any of the tasks or events that make up the schedule data of a system. Part or all of the data may be moved back based on the respective application code of the individual records or tasks may be extended beyond their original ending date. When the "slip" is complete control is returned to the editing routine.

2.11 Subroutine TYREPT

This subroutine is called when a user decides to print out a report on any terminal other than a TEKTRONIX 4014. It reads data from the buffer file which has been stored there by subroutine REPORTS and prints it out in tabular form. As with the graphic report it may consists of individual reports on any number of the systems in the permanent file or of a single report covering all the systems. When the report is complete, control is returned to subroutine MASTER.

2.12 Subroutine UPDATE

All editing done to individual records is controlled through

this subroutine. UPDATE will determine from the user the record to be changed and the type of change to be made to it. It then proceeds to call up the appropriate editing routine, either ADDD, CHANGE, or LLIST, to which it will pass this information. When the editing is complete, UPDATE will return control to subroutine MASTER.

2.13 Subroutine WINDOW

When the window option has been enabled and requested, this subroutine will be called up to determine from the user the upper and lower (start and stop) dates of the window. This information is passed to REPORTS when the system data is being prepared for reporting.

2.14 Minor Subroutines

The five minor subroutines and their functions are:

a. Subroutine FDATE - Converts a day-month-year formatted response to a numeric calendar code used internally by SCHEDULE.

b. Subroutine GRAP - Employed by MASTER to route control to the proper subroutine based upon what the user has requested to do.

c. Subroutine OCFILE - Opens the permanent data file INDEX in such a way that is compatible with the direction of the data transmission that is to take place.

d. Subroutine RDATE - Converts the numeric calendar code used internally by SCHEDULE to a day-month-year format for display on the terminal.

e. Subroutine REVERSE - Used to properly position the cursor on a CRT terminal over the format prompts displayed by SCHEDULE.

3.0 PROGRAMMERS GUIDE

3.1 Introduction

This section is intended to assist in preparing SCHEDULE for operation and setting up the catalogs of new users such that they may execute the program. The following instructions can be carried out once SCHEDULE and all of its associated routines have been successfully copied into a users catalog or a catalog of its own. It will be necessary to change any fully qualified dataset names in the clists or routines to reflect the new catalog name. Attempts should be made not to change any of the dataset names, however, if this is not possible care should be taken to see that

all references to that dataset are also changed accordingly.

3.2 SCHEDULE SETUP

Complete the following steps in sequence:

a. Compile the subroutines listed in Figure 3.1 and save the resulting object modules.

b. Create a partitioned data set named MODLIB.OBJ and copy the following object modules into it assigning the member names shown in parenthesis after the module names: OCFILE.OBJ (OC), REVERSE.OBJ (R), RDATE.OBJ (RDT), and FDATE.OBJ (DT).

c. Allocate in the same catalog in which SCHEDULE will be stored two files named STDTIT.DATA and ACHGN (see sections 3.5 and 3.6).

d. Execute OVR.CLIST to create the overlay structure required by SCHEDULE.

When the overlay has been created, the result will be a load module named MASTER.LOAD which contains the overlay of SCHEDULE. This is the load module that is called by all users of SCHEDULE.

3.3 USER SETUP

Prior to setting up SCHEDULE users, it will be necessary for the programmer to initialize the passed parameters in the SCHEDULE.CLIST dataset, which is copied onto all the users catalogs during the setup procedure. As previously discussed in Section 2.6, these parameters are passed to SCHEDULE and enable or disable the special options that are available. Figure 3.2 is a listing of SCHEDULE.CLIST that shows the parameter format and Figure 3.3 is a list of possible parameter values. Note from Figure 3.2 that regardless of the initial parameter values, the user may override them through the use of positional parameters.

The SCHEDULE support routines are written to allow any user to set themself up simply by executing SETUP.CLIST, which is part of the documentation package. This routine will create in the users file, the buffer dataset DATA.DATA and the permanent dataset INDEX, both of which are required by the program. A background job is also submitted by the setup routine to initialize INDEX and enter some sample data consisting of one system SCHEDULE into it. Finally, the CLIST required by the user to execute the program, SCHEDULE.CLIST, is copied into their catalog. This completes the setup procedure, most of which the user will be unaware of, however, there will be a dataset named JBA.CNTL present in the user's catalog that is a by-product of the setup process. This dataset is not required by SCHEDULE and in the interest of saving space should be deleted. When all the data sets required by

SCHEDULE are present, the user is then able to begin using the program, hopefully after reading the User's Guide in Section 4.0.

3.4 MAINTENANCE PROGRAM

These routines are provided to permit the user to perform some basic "maintenance" on the permanent master data file, INDEX, that can prevent or solve problems which might occur during the routine use of SCHEDULE. Each routine performs a particular task, however, they all operate in basically the same way. When one of these routines is called, it edits a dataset named COMPRS.CNTL, which contains a general list of Job Control Language that employs an IBM Utility Program, IEBISAM. The editing consists of adding, deleting, or changing lines in COMPRS.CNTL and saving the result in a newly created temporary dataset. This revised control listing is then submitted as a background job.

Listings of all the routines are contained in Appendix C and it is suggested that before attempting to use any of them that the user become familiar with the IBM Utility Program, IEBISAM. Following are brief descriptions of the tasks performed by each of the routines:

a. COMPRS - Copies INDEX from one direct access volume to another and back to the original volume. During this process deleted records are removed and records in the overflow area of the original dataset are moved onto the primary area.

b. DUMP - Copies INDEX to tape from disk.

c. LIST - Copies INDEX and routes the output to a line printer.

d. RESTORE - Copies tape created by DUMP into INDEX.

3.5 STANDARD TITLE

The purpose of Standard Titles is to allow an office or organization to employ a standard set of titles to describe the various tasks and events that make up the system SCHEDULES. When a new system is being entered from the keyboard, the user is given the chance of using a standard title or entering one of their own. The standard titles are stored in the dataset, STDTIT.DATA, which should be kept in a general catalog available to all users of SCHEDULE. This dataset is allocated to the user when the program is executed and accessed when a standard title is requested. The file itself should be structured using fixed blocking, along with a logical record length and blocksize of 80 characters. A sample listing of a standard title dataset is shown in Figure 3.4. If the Standard Title option is to be used, it will of course, be necessary to place the titles in this dataset, otherwise, this file may be left empty without affecting the operation of the

program as long as Standard titles are not requested by the user.

3.6 CHANGE RECORDING

The ability to record significant changes made to different system SCHEDULES was requested by users to enable them to list from a separate file, all the major changes rather than having to look for them system-by-system. This option is currently not included as part of SCHEDULE, however, the dataset in which these changes would be stored is required for the operation of the program. Similar to the standard title dataset, a dataset named ACHGN must be set up in the general catalog in which SCHEDULE is to be kept so that it can be accessed by all of the users. ACHGN should be allocated using fixed blocking and a logical record length of 114 characters and a blocking size of 1140 characters.

4.0 USER'S GUIDE

4.1 INTRODUCTION

This section is intended to familiarize the new user with all the options available under SCHEDULE and how to use them. Each example introduces a new feature and presents it as a separate task, that is, it begins from a READY mode and concludes with a READY mode. This should not be taken to mean that it is necessary to leave the main program each time a different task is required, the fact is that several opportunities are given to start a new task prior to leaving the program. The reasons for presenting the material in this manner are to illustrate each feature in a straight-forward manner and avoid confusing the user by attempting to present several concepts at once. Points to keep in mind when covering this material are:

a. Whenever "none" is available as a response to a question its selection will result in control being returned to the next higher level.

b. The SCHEDULE prompts shown are accurate in their content, however, the format may be slightly different when displayed on the screen.

c. The "lost time" spent reading this material will be more than recovered by the improved performance of the first-time user who will have a better grasp of what is required by the system and how the data can be prepared to facilitate the task of entering it.

4.2 ENTERING A NEW SYSTEM

4.2.1 ENTERING A NEW SYSTEM FROM THE KEYBOARD

From the READY mode, call up SCHEDULE as shown:

```
READY
EXEC SCHEDULE
```

The screen will erase and SCHEDULE will inquire:

```
DO YOU NEED FULL PROMPTING?
```

to which a yes/no reply is required. A yes response will cause acceptable responses to be displayed after multiple choice questions and a no response will suppress this. An example of both cases is shown in Figure 4.1. Full prompting will be used for this example, so the response to this question is yes (Y):

```
DO YOU NEED FULL PROMPTING?
Y
```

SCHEDULE will then ask for the system type;

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A FILE CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
```

which must be responded to with "N" when a new system is to be entered:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A FILE CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
N
```

At this point SCHEDULE must be told where the new data is to be entered from:

```
WILL YOU ENTER THE DATA FROM THE KEYBOARD OR
IS IT PRESENTLY ON A FILE?
   ENTER
   K - KEYBOARD
   F - FILE
   N - NONE
```

Entering data from a file involves some additional steps beyond this example and is covered in Section 4.2.2. For this case, assume that data is to be entered from the keyboard (which by the way will be the rule rather than the exception) and indicate this by entering "K":

```
WILL YOU ENTER THE DATA FROM THE KEYBOARD OR
IS IT PRESENTLY ON A FILE?
   ENTER
   K - KEYBOARD
   F - FILE
   N - NONE
K
```

SCHEDULE then asks:

```
IS THIS A RE-START OF AN OLD JOB?
```

This may seem like an odd question, yet it offers the user the opportunity to recover seemingly lost data. When a new system is originally being entered, it is first stored in an intermediate storage file separate from the permanent master storage file. Only after the input is complete is the intermediate storage copied into the master file. Unfortunately, if the system should go down for some reason while the data is being entered, the information contained in the intermediate storage file will never get to the permanent main file.

This does not necessarily mean that the data entered to that point is lost, since it may be recoverable from the intermediate storage file. A yes response to this question will cause a search to be made of it to see if there is data present and if it is of sufficient quantity, to allow the user to pick up from where they left off or slightly before that point. If this is the case, SCHEDULE will display the last record saved and proceed to prompt for the next required entry.

If not, this will be indicated and the data input must be started from the beginning. Of course, for the first run through a new system the answer to this question should be "No" (N).

```
IS THIS A RE-START OF AN OLD JOB?
N
```

At this point SCHEDULE will enter the input mode which begins with a prompt for the system title followed by several requests for additional descriptive information:

```
ENTER MAJOR SYSTEMS
/-------------/--------------/*
```

This title becomes part of the master storage file and will be displayed on any report (with the exception of a cross system report discussed later) that lists all or part of the information contained in this system. For this example:

```
ENTER MAJOR SYSTEMS
/AIRCRAFT------/SUPPORT SYSTEM------/
```

The next prompt is for a project title:

```
ENTER PROJECT TITLE
/---------------------/-----------------/
```

which also becomes part of the permanent master storage file under the major systems. Note in the example response it is not necessary to enter a character(s) in both sections of the prompting format:

```
ENTER PROJECT TITLE
/GROUND SUPPORT UNIT----/-----------------/
```

SCHEDULE will next ask for:

```
AS OF DATE
/--*---*--/
```

*On the typewriter terminals, always skip the first space following the slash.

The answer to this should not necessarily reflect the current date, but rather the most recent date on which the information was last updated. It should also be in a day-month-year format as shown:

```
AS OF DATE
/15*MAY*78/
```

The response to the next prompt:

```
ENTER THE NUMBER OF TASKS PLUS EVENTS
/-----/
```

should be the total number of types of tasks and events, not the total number of times tasks or events occur.* For example, if there were two tasks, each occurring once during a program, and two events, one occurring twice and the other three times, the total of tasks and events would be four rather than seven. For this example, assume the answer is:

```
ENTER THE NUMBER OF TASKS PLUS EVENTS
/6----/
```

SCHEDULE will next inquire:

```
ENTER THE NUMBER OF REMARKS
/------/
```

Any number of remarks may be made (even zero), however, only up to six lines of remarks may be displayed on each page of the report. For this example, the number of remarks will be:

```
ENTER THE NUMBER OF REMARKS
/1-----/
```

SCHEDULE is now prepared to accept the input of the various development steps. The screen will blank and display the prompt:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
   TASK OR EVENT
   FOLLOWED BY NUMBER
```

*A minimum of four tasks and events is required!

There is no restriction as to the sequence of entering; tasks and events maybe interspersed with one another with different numbers of tasks or events dates. It is necessary, though, when responding to the prompt to identify the element type, either task or event, and the number of elements (i.e., the number of task or event dates). A task is entered by responding with a "T" followed by the number of task dates. The maximum allowable number of task dates is three and if no number is entered, one is assumed. For example, after responding with a "T":

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
T
```

the system will prompt the user for the task I.D. number*, task title, start date, stop date, and percent completion:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
T

/ ID#  /      TASK            / STR.DT. / STP.DT. / COMPLT  /
/*----*/----------------------/--*---*--/--*---*--/***---***/
```

An example response is shown below in which the ID number has been left blank because standard titles are not available and the percent completion is zero**:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
T

/ ID#   /      TASK          / STR.DT. /  STP.DT / COMPLT  /
/*----*/CONCEPT TESTING-----/15*JAN*78/15*MAY*78/*** 0 ***/
```

At this point the system would normally recycle by erasing the screen and asking for the next element type and number of elements. This would not occur for a task with multiple elements (i.e., multiple dates or occurrances). In the event of more than one task date, two for instance, the response to the original prompt would be:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS

T2
```

*The task ID number may be used to identify a standard title to be used for the task title. Standard titles are up to the user and are discussed in detail in Section 3.5.

**Percent completion numbers should be entered as decimals (e.g., 10% = .10, 75% = .75, 100% = 1.).

SCHEDULE would prompt as before for the initial task data, but instead of recycling at this point a request for additional information, namely the second start/stop date and percent completion of the second portion of the task, would be displayed:

```
T2
/ ID#   /       TASK          / STR.DT. /  STP.DT / COMPLT  /
/*----*/DEVELOPMENT TESTING-/ 1*JUN*78/ 1*SEP*78/*** 0 ***/
/ STR.DT. /  STP.DT / COMPLT  /
/--*---*--/--*---*--/***---***/
```

Once this had been completed as shown:

```
T2
/ ID#  /       TASK          / STR.DT. /  STP.DT / COMPLT  /
/*----*/DEVELOPMENT TESTING-/ 1*JUN*78/ 1*SEP*78/*** 0 ***/
/ STR.DT. /  STP.DT / COMPLT  /
/ 1*OCT*78/ 1*DEC*78/*** 0 ***/
```

the system would recycle and prompt for the next type and number of element. The sequence of operations is essentially the same when entering an event but, of course, the necessary responses are not. An event is identified by an "E" and rather than three, a maximum of nine event dates may be entered. Also, only one date is required and no percent completion. For brevity, two complete operations are shown in Figure 4.2, one for a singular event date and one for a multiple event date. After the system has cycled through either of these processes the number of times equal to the number entered in response to the question about the total number of tasks and events, it will automatically move on to the input of the remarks.* The remark prompt will be displayed:

```
ENTER REMARKS    1

/*-----------------------------------*/
```

*This assumes that a certain number of remarks (i.e., > 0) were requested. Otherwise this section would be skipped completely.

indicating the remark format and the number of the remark, in this case, one. The remark must be entered after spacing twice as shown below:

```
ENTER REMARKS     1

/*-----------------------------------*/

  THIS IS A DRAFT SCHEDULE
```

Since it was indicated earlier that there was only one remark in our example, the system would continue on at this point. If more than one remark had been indicated, the system would recycle that number of times through the remark entering process. Once the input of the remarks is complete, the user will be asked:

```
DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
```

This question should be answered yes. If a no response is given, the data entered up to this point will not be written out to the permanent main data file and control will be returned to the next higher level, thus:

```
DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
Y
```

This does not cause the data to be entered into the main file yet, but it does start the process through which this will be accomplished. The first step is completed by the program which assigns a system file code to the new system and displays it to the user:

```
DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
Y
FILE CODE FOR THE SYSTEM IS 0020000
```

Next, the user will be asked to input the application code to be assigned to all the data that has been inputed:

```
ENTER APLI CODE
```

The user has the option of selecting any combination of alphabetic characters, with the exception of the letters A and N. The letter combination "SET" is chosen for this example:

```
ENTER APLI CODE
SET
```

At this point, SCHEDULE will write the new system data out to the master storage file and control will return to the main program which will ask:

```
DO YOU WISH TO CONTINUE?
```

A yes answer will continue the session and allow the user to go on to a new task. A no response will terminate the session and return the user to the READY mode:

```
DO YOU WISH TO CONTINUE?
N

READY
```

4.2.2 ENTERING A NEW SYSTEM FROM A FILE

From the READY mode, call up SCHEDULE as shown:

```
READY
EXEC SCHEDULE
```

The screen will erase and the user will be asked:

```
DO YOU NEED FULL PROMPTING?
```

to which a yes/no reply is required. A yes response will cause acceptable responses to be displayed after multiple choice questions and a no response will surpress this. An example of both cases is shown in Figure 4.1. Full prompting will be used for this example, so the response to this question is yes ("Y"):

```
DO YOU NEED FULL PROMPTING?
Y
```

SCHEDULE will then ask for the system type,

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A FILE CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
```

which must be responded to with an "N" because a new system is being entered:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A FILE CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
N
```

SCHEDULE will next ask to be told where the new data is to be entered from:

```
WILL YOU ENTER THE DATA FROM THE KEYBOARD OR IS IT PRESENTLY
ON A FILE?
   ENTER
   K - KEYBOARD
   F - FILE
   N - NONE
```

Since this example covers entering data from a file, the reply should be:

```
WILL YOU ENTER THE DATA FROM THE KEYBOARD OR IS IT PRESENTLY
ON A FILE?
   ENTER
   K - KEYBOARD
   F - FILE
   N - NONE

F
```

Before proceeding, it would be helpful to briefly cover how the data is originally entered into the file and what format it is in.

SCHEDULE employs two separate data files, the main data file and a buffer file. The main data file is used to permanently store system data; no manipulation of the data is performed within this file other than reading and writing of the records to and from the file. The buffer data file is where the system record data is temporarily stored and data manipulation occurs. Prior to writing a report, the data from the systems to be reported on is written from the main data file to the buffer file in a report format. This means that the data is organized in such a way that will be understood by the graphics section of the SCHEDULE program enabling it to properly display the report.

After a new system has been entered from the keyboard, it is stored in the buffer file in a non-report form in such a way that will be understood by SCHEDULE, allowing it to write the data out to the main data file. If it is ever necessary to copy a system SCHEDULE, or if data entered from the keyboard is not entered into the main data file, it is possible to copy or enter this data, whatever the case may be, without being forced to re-enter all the data. The steps to perform either of these tasks are discussed herein.

4.2.2.1 REPORT FORM

In order to copy a system already in the master file, it must be stored in report form in the buffer file. This is accomplished by following the steps outlined in Section 4.4.1 on writing graphics reports, using the system to be copied up to the point at which the program indicates that the file is properly stored in the buffer file in a report format and is ready to be displayed:

```
FILE 001 IS READY
```

At this point SCHEDULE will ask if there is another system to be included in the report and if so what is its system code:

```
ENTER FILE FOR SYSTEM
   XXX0000 - FILE CODE
      N - NONE / NO MORE SYSTEMS
```

It is only possible to copy one report at a time, so the response to this question must be "N":

```
ENTER FILE FOR SYSTEM
   XXX0000 - FILE CODE
      N - NONE / NO MORE SYSTEMS
N
```

SCHEDULE will next inquire where the report is to be printed:

```
ENTER TERMINAL TYPE
ENTER
   G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)
   P - TEXAS INSTRUMENTS (PRINTER OUTPUT)
   N - NONE
```

The task of storing the system to be copied in the buffer file in the proper format is accomplished at this point, so there is no reason to display the report (although it may be if desired with no harm being done to the data stored in the buffer file). Thus, the response to the terminal type prompt will be:

```
ENTER TERMINAL TYPE
ENTER
   G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)
   P - TEXAS INSTRUMENTS (PRINTER OUTPUT)
   N - NONE
N
```

After completing the above steps, and the steps in the previous section, to arrive at the point at which SCHEDULE is informed that the date is in a file:

```
WILL YOU ENTER THE DATA FROM THE KEYBOARD OR IS IT PRESENTLY
ON A FILE?
   ENTER
   K - KEYBOARD
   F - FILE
   N - NONE


F
```

a prompt will be displayed asking for the format of the data in the buffer file:

```
IS YOUR DATA IN A REPORT FORM?
```

Since this was just accomplished, the response is:

```
IS YOUR DATA IN A REPORT FORM?
Y
```

SCHEDULE will next want to know:

```
DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
```

If, for some reason, it was not necessary to enter the data into the main file, a negative response would cause the data in the buffer to remain there and control would return to the main program:

```
DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
N
DO YOU WISH TO CONTINUE?
```

from which the session could be terminated or a different task undertaken. After having gone through all these steps, however, it would normally be desirable to respond positively to this question:

```
 DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
Y
```

This does not cause the data to be entered into file yet, but starts the process through which this will be accomplished. The first step is completed by the program which assigns a system file code to the new system which is displayed to the user:

```
 DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
Y
   FILE CODE FOR THE SYSTEM IS 0020000
```

The system will then prompt for up to an eleven character application code:

```
ENTER APLI CODE
```

which for the example will be:

```
ENTER APLI CODE
E
```

It is at this point, the data is entered into the main data file. When that operation is complete, the system will inquire:

```
DO YOU WISH TO CONTINUE?
```

at which time the operator may go on to other tasks by responding "Y" or obtain the READY mode, thusly:

```
DO YOU WISH TO CONTINUE?
N

READY
```

4.2.2.2 NON-REPORT FORM

For one reason or another, data which had been previously entered into the buffer file may still be written into the master data file even though it may be after writing reports or even a different schedule TSO session altogether.* Returning to the point left earlier:

```
WILL YOU ENTER THE DATA FROM THE KEYBOARD OR IS IT PRESENTLY
ON A FILE?
   ENTER
   K - KEYBOARD
   F - FILE
   N - NONE
```

*If this is the case, it would be wise prior to executing SCHEDULE to list the buffer data file DATA.DATA to determine that the data in question is still there.

The system will next inquire as before:

```
IS YOUR DATA IN A REPORT FORM?
```

Since this is not the case here, the response is:

```
IS YOUR DATA IN A REPORT FORM?
N
```

Again, the system will inquire:

```
DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
```

to which a negative answer would cause the data to be left in the buffer file and control to return to the main program. For this example though, the response is:

```
 DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
Y
```

It should be pointed out that this step does not cause the data to be entered into the main data file, but rather it initiates the process through which this will be accomplished. The first step is completed by the program which assigns a system file code to the new system which is then displayed to the user:

```
 DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?
Y

 FILE CODE FOR THE SYSTEM IS 0030000
```

Then the system will prompt for an application code to be assigned to all the records:

```
ENTER APLI CODE
```

which for the example is:

```
ENTER APLI CODE
E
```

It is at this point that the data is copied into the main data file for permanent storage. When that operation is complete the system will ask:

```
DO YOU WISH TO CONTINUE?
```

at which time the user may go on to other tasks by responding "Y" or obtain the READY mode by responding "N" as shown:

```
DO YOU WISH TO CONTINUE?
N

READY
```

4.3 EDITING OLD SYSTEMS

4.3.1 General

There are presently five edit commands available under the edit mode. The steps leading up to the point where the system inquires as to what type of editing is desired are common to all the commands and will be covered once here at the beginning, rather than repeated for each command. This will be followed by individual discussions of the steps required under each of the commands.

From the READY mode call up the SCHEDULE program as shown:

```
READY
EXEC SCHEDULE
```

The screen will be erased and SCHEDULE will inquire:

```
DO YOU NEED FULL PROMPTING?
```

to which a yes/no reply is required. A yes response will cause acceptable responses to be displayed after multiple choice questions and a no response will suppress this. An example of both cases is shown in Figure 4.1. Full prompting will be used through all sections of this example, therefore, the response to this question is yes (Y):

```
DO YOU NEED FULL PROMPTING?
Y
```

SCHEDULE will next inquire as to the type of system:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A FILE CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
```

Since editing may only be performed on data sets presently part of the master storage file, the response to this query must always be old ("O").

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A FILE CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
O
```

SCHEDULE will then ask:

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
```

Since it is desired to edit data, the appropriate response is "E":

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
E
```

This will direct SCHEDULE to the edit mode from which all editing can be accomplished, regardless of what system the record to be edited is in. It will then request that the type of editing required be defined:

```
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   R - COPY
   L - LIST
   F - FIND
   N - NONE
```

The seven editing options listed here are discussed individually in the following sections. The sample report shown in Figure 4.3 will be "edited" to help illustrate practical applications of some of the edit commands, so it might be wise to look at it along with its listing* (Figure 4.4) before continuing, as well as while covering the material contained herein.

4.3.2 Add

After responding with an "A" to the edit code query to indicate that a new record is to be added to a system, the program will ask for the new record number to be assigned to this piece of information:

```
ENTER RECORD CODE
```

The response must be the full seven digit code. Suppose for this example it was necessary to insert an event between lines 3 and 4 of the report (Figure 4.3). Referring to the listing, (Figure 4.4) it is seen that the new record number must be somewhere between records number 0010030 and 0010040. Selecting 0010035 for the new record code*:

```
ENTER RECORD CODE
0010035
```

*It is not necessary to choose a new code exactly between the old codes, 0010031 could have been used just as well as for the new code.

the system will then inquire as to the type of information that is to be contained in this new record:

```
ENTER ADDITION TYPE
   D - SYSTEM DEVELOPMENT STEP
   R - SYSTEM REMARK
   N - NONE
```

Because system development step refers to either a task or an event, the response is "D", since our example calls for entering an event:

```
ENTER ADDITION TYPE
   D - SYSTEM DEVELOPMENT STEP
   R - SYSTEM REMARK
   N - NONE
D
```

The screen will erase and display the prompt.

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
   TASK OR EVENT
   FOLLOWED BY NUMBER
```

As can be seen, it is necessary to identify the element type, either task or event, and the number of elements (i.e., the number of task or event dates). An event is entered by responding with an "E" followed by the number of event dates. The maximum allowable number of event dates is nine and if no number is entered, a one is assumed. Assuming there is only one date associated with the example event the response would be:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
   TASK OR EVENT
   FOLLOWED BY NUMBER
E
```

SCHEDULE then prompts for the event title and event date:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
   TASK OR EVENT
   FOLLOWED BY NUMBER
E
/          TITLE            /  DATE   /
/---------------------------/--*---*--/
```

An example response is shown below:

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
   TASK OR EVENT
   FOLLOWED BY NUMBER
E
/             TITLE         /  DATE   /
/ADD EXAMPLE--------------/01*JAN*80/
```

At this point had additional event dates been specified, the system would prompt the user for them; this is not the case in our example. The operation is similar for entering a task except that a task is identified by a "T" and instead of a single date a start and stop date is required along with a percent completion. Also rather then a maximum of 9 dates only up to three start/stop date combinations are permitted. Two complete example operations of adding single and multiple tasks are shown in Figure 4.5 along with the changes to the system record file. Regardless of the type of element added the next prompt will ask the user for the application code to be assigned to this record:

```
/          TITLE            /   DATE  /
/ADD EXAMPLE---------------/01*JAN*80/
APLICATION CODE
/-----------/
```

The user has the option of selecting any combination of alphabetic or numeric characters with the exception of the letters A and N. The letter combination "SET" is chosen for this example:

```
/          TITLE            /   DATE  /
/ADD EXAMPLE---------------/01*JAN*80/
APLICATION CODE
/SET--------/
```

SCHEDULE will now go ahead and add the new record to the proper system as identified by the system record code. It will indicate when the task is complete and that it has recycled and is ready for another addition:

```
ADDITION COMPLETE.  READY FOR NEXT ADDITION.
ENTER RECORD CODE
```

If, by mistake, the requested new record code was identical to an existing record code, the program will notify the user and ask for another new code. When a good code is re-entered, the program will add the new record and recycle as above:

```
ENTER RECORD CODE
0010040
DUPLICATE
RECORD0010040
ENTER RECORD CODE
0010035
ADDITION COMPLETE.  READY FOR NEXT ADDITION.
ENTER RECORD CODE
```

If any more addition were required, they could be made at this time by repeating the process discussed herein. Having completed the additions the add loop can be left by responding with "N" to the record code query:

```
ADDITION COMPLETE.  READY FOR NEXT ADDITION.
ENTER RECORD CODE
N
```

This will cause the edit code menu to be displayed:

```
ADDITION COMPLETE.  READY FOR NEXT ADDITION.
ENTER RECORD CODE
N
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
```

allowing the user to leave the edit mode (enter "N") or to select another edit mode. As a point of interest, Figure 4.6 is the new system listing which contains the change entered as the example. (See record 0010035.)

For the sake of completeness and assuming there are no further addition, the READY mode can be returned to by entering "N" for the edit code and followng these steps:

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
N
DO YOU WISH TO CONTINUE?
N


READY
```

4.3.3 Delete

After responding with "D" to the edit code query to indicate that a record is to be deleted, the system will prompt the user for the record code of the record to be deleted:

```
ENTER RECORD CODE
```

After responding with the seven-digit record code number:

```
ENTER RECORD CODE
0010035
```

the program will next indicate that the requested record has been found and successfully deleted and prompt the user for the record code of the next record to be deleted.

```
DELETION COMPLETE.  READY FOR NEXT DELETION.
ENTER RECORD CODE
```

At this point, the user may continue making deletions or return to the edit menu by entering "N":

```
DELETION COMPLETE.  READY FOR NEXT DELETION.
ENTER RECORD CODE
N
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
```

If, by mistake, the user entered a record code that was not in the master file, that system would indicate that it was unable to find the requested record and prompt the user for another record code*:

```
ENTER RECORD CODE
0010033
0010033RECORD NOT FOUND
ENTER RECORD CODE
```

When the edit menu is obtained, the user may request another edit mode or obtain the READY mode by typing "N" and completing the following steps:

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
N
DO YOU WISH TO CONTINUE?
N
READY
```

*It would be best at this point to return to the edit menu and obtain a listing of the system which contains the record in question.

4.3.4 List

After responding with an "L" to the edit code query to indicate that a listing is desired, the program will offer the option of three different types of listings:

```
ENTER LIST TYPE
   A- SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
```

Each of these options is discussed separately herein.

System Heading Records

Responding to the list type query with an "A":

```
ENTER LIST TYPE
   A- SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
A
```

will provide a listing giving the System Number, Major System, Project Title, and As-Of-Date as shown below for all the systems contained in the master data file.

```
SYSTEM NUMBER: 001
MAJOR SYSTEM:  DEV COMAND BUSINESS SYSTEMS
PROJECT TITLE:       SCHEDULES
AS OF DATE:  12 AUG 77
```

After all the information on all the systems has been listed, the program will return with the next unused system record code and the list type query:

```
0020000RECORD NOT FOUND
ENTER LIST TYPE
   A - SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
```

All Records of System X.

Responding to the list type query with an "S":

```
ENTER LIST TYPE
   A - SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
S
```

will provide a listing of all the records contained within the system identified in the next prompt question:

```
ENTER SYSTEM CODE
```

It is only necessary to enter the system number (first three digits of the system code) in response to this question:

```
ENTER SYSTEM CODE
001
```

SCHEDULE will then display a listing which gives the heading date, all development steps and all the remarks of the requested system. This is the command which was used to obtain the listing shown in Figure 4.4. This is immediately followed by the list type query:

```
ENTER LIST TYPE
   A - SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
```

Subset of All Records of System X

Responding to this query with a "P":

```
ENTER LIST TYPE
   A - SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
P
```

will allow the user to look at a specific subset of records within a system identified by a particular application code. After the above response is made, the program will ask the user what system is to be examined:

```
ENTER SYSTEM CODE
```

The response should be a three digit number identifying the system number:

```
ENTER SYSTEM CODE
001
```

Next, the program will inquire for the aplicode code (aplicode) that will identify the records within the system that are to be displayed. Remember that the aplicode entered must match the code within the record in both letters and sequence in order to be displayed:

```
ENTER APPLICATION CODE
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
```

Referring to the example listing in Figure 4.7, it is seen that all the records have an aplicode of "E" and within that set, two of the records have an aplicode of "SET." If these last two records were of interest, they could be listed by responding to the prompt with:

```
ENTER APPLICATION CODE
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
SET
```

This would produce a listing as shown in Figure 4.8.:

If instead, for example, it was necessary to list all records with an aplicode of "E", the response to the aplicode query would be:

```
ENTER APPLICATION CODE
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
E
```

This would produce the listing contained in Figure 4.9. Notice that the records whose application code is SET are also listed because the aplicode code requested "T" is a subset of "SET". The end of the listing is indicated by the phrase "END OF MAIN FILE", which is immediately followed by the list type query:

```
ENTER LIST TYPE
   A - SYSTEM HEADING RECORDS
   S - ALL RECORDS OF SYSTEM X
   P - SUBSET OF ALL RECORDS OF SYSTEM X
   N - NONE
```

When all the lists have been compiled, the user can respond with an "N" to the list type query which will cause the edit code menu to be displayed:

```
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
```

Allowing the user to leave the edit mode by entering "N" or to select another edit mode. If the editing was complete, the user could return to the READY mode by completing these steps:

```
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
N
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
N
DO YOU WISH TO CONTINUE?
N


READY
```

4.3.5 Change

After responding with a "C" to the edit code query to indicate that a change is to be made SCHEDULE will prompt the user for the record code number of the record to be changed:

```
ENTER RECORD CODE
```

The response must be the full seven digit record code number. There is no need to differentiate between a development step record, a remark record, or a heading record, SCHEDULE is able to do this on its own and choose the correct logic path. Changes to all of these record types are discussed in the following sections.

4.3.5.1 DEVELOPMENT STEP RECORD CHANGES

Referring to the example system listing in Figure 4.4 (System number 001) and assuming that it is necessary to make changes to record number 80, the response to the record code query is:

```
ENTER RECORD CODE
0010080
```

SCHEDULE will recognize this record as an event and prompt the user to identify the portion of the record to be changed:

```
ENTER INFORMATION TYPE TO BE CHANGED
   ENTER
      T - TITLE
      D - DATA
      A - APPLICATION CODE
      E - ELEMENT TYPE
      N - NONE
```

If instead the record had been a task, SCHEDULE would display the same prompt, however, some of the options would be slightly different in their purpose. This will be covered in the discussion of the individual change types contained herein.

4.3.5.1.1 TITLE

After responding with a "T" to indicate that a change is to be made to the title, the program will list the development step type, in this case event, the current title, and the allowable format in which the new title can be entered:

```
T
/             EVENT            /
THIS IS A 31 DEC 76 EVENT
/----------------------------/
```

After entering the new title:

```
/              EVENT              /
THIS IS A 31 DEC 76 EVENT
/THIS IS A NEW TITLE---------/
```

The system will recycle and redisplay the change menu. At this point, the user may type "N" in which case the program will indicate that the new change has been entered and then prompt for a new record code:

```
ENTER INFORMATION TYPE TO BE CHANGED
   ENTER
      T - TITLE
      D - DATA
      A - APPLICATION CODE
      E - ELEMENT TYPE
      N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or select a new type of change.

4.3.5.1.2 DATA

After responding with a "D" and depending on the type of development step that the record contains, the start date/stop date/percent completion or event data can be changed (The former refers to a task and the latter to an event). The basic process is the same for either case with the information type displayed along the current date and correct input format, thus, for this example of an event record, the prompt would be:

```
D
/ EVENT DATE /
 31*DEC*76
/--*---*--/
```

and in the case of a task record (See Figure 4.4, RECORD 0090) it would be:

```
D
/ STR.DT. / STP.DT. / COMPLT /
 31*DEC*75 09*JAN*78    0.60
/--*---*--/--*---*--/***---***/
```

After entering a new date into the example record:

```
/ EVENT DATE /
 31*DEC*76
/ 1*JAN*77/
```

the system will recycle and redisplay the change menu. At this point, the user may type "N" in which case the program will indicate that new change has been entered and then prompt for a new record code number:

```
ENTER INFORMATION TYPE TO BE CHANGED
   ENTER
   T - TITLE
   D - DATA
   A - APPLICATION CODE
   E - ELEMENT TYPE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE
ENTER RECORD CODE
```

or select a new change type.

4.3.5.1.3 APPLICATION CODE

After responding with an "A" to indicate that a change is to be made to the application code of the record, the program will display the current application code contained in the record and the allowable format for the new application code.

```
A
            E
/-----------/
```

This will be the same for either development step type. After responding with the new application code:

```
            E
/T----------/
```

the system will recycle and redisplay the change menu. At this point, the user may type "N", in which case the program will indicate that the new change has been entered and then prompt for a new record code:

```
ENTER INFORMATION TYPE TO BE CHANGED
   ENTER
      T - TITLE
      D - DATA
      A - APPLICATION CODE
      E - ELEMENT TYPE
      N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE
ENTER RECORD CODE
```

or select a new change type.

4.3.5.1.4 ELEMENT CODE

This is a very useful change step in that it allows the user to change an event to a task and visa-versa. After responding with an "E", the program will display the current element and prompt the user for the new element type and number of elements.

```
E
 THE ELEMENT TITLE IS ... THIS IS A NEW TITLE
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
  TASK OR EVENT
  FOLLOWED BY NUMBER
```

A change to a task is accomplished by entering "T", followed by the number of individual elements, up to a maximum of three, within the task, if it is greater than one. The system will then prompt for the start date, stop date, and percent complete:

```
T
/ STR.DT. / STP.DT. / COMPLT /
/--*---*--/--*---*--/***---***/
```

After entering the requested data, the program will either recycle and request the same data a number of times equal to the number of elements previously entered, or display the change type menu.

A change to an event is accomplished by entering "E", followed by the number of individual event dates, up to a maximum of nine if greater than one. The system will then prompt for the event date:

```
E
/ EVENT DATE /
/--*---*--/
```

After entering the new date, the program will either recycle and request the same information equal to the number of dates entered above or display the change menu.

From the change menu, the user may type "N", in which case, the program will indicate that the change has been entered and then prompt for a new record code:

```
ENTER INFORMATION TYPE TO BE CHANGED
   ENTER
      T - TITLE
      D - DATA
      A - APPLICATION CODE
      E - ELEMENT TYPE
      N - NONE
   N
    CHANGE COMPLETE.  READY FOR NEXT CHANGE
   ENTER RECORD CODE
```

or select a new change.

4.3.5.2 REMARKS RECORD CHANGES

Referring to the example system listing in Figure 4.4 (System Number 001) and assuming it is necessary to make changes to Record 170, the response to the record code query is:

```
ENTER RECORD CODE
0010170
```

The system will recognize this record as a remark and prompt the user to identify the portion of the record to be changed.

```
ENTER ITEM TO BE CHANGED
   R - REMARK
   A - APPLICATION CODE
   N - NONE
```

A detailed discussion of these options follows.

4.3.5.2.1 REMARK

After responding with an "R" to indicate the remark itself is to be changed, the system will prompt the user for the new remark by displaying the remark currently contained in the record and the format to be followed when entering the new remark:

```
R
ENTER REMARKS
MIDWEST SCIENTIFIC & ENGINEERING COMPUTER.
/*-------------------------------------------------*/
```

After spacing over twice and entering the new record as shown:

```
MIDWEST SCIENTIFIC & ENGINEERING COMPUTER.
/*-------------------------------------------------*/
 SOUTHWEST SCIENTIFIC & ENGINEERING COMPUTER
```

The system will recycle and display the change menu. At this point, the user may type "N", in which case the program will indicate that the new change has been entered and then prompt for a new record code:

```
ENTER ITEM TO BE CHANGED
   R - REMARK
   A - APPLICATION CODE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or elect to also change the application code.

4.3.5.2.2 APPLICATION CODE

After responding with an "A" to indicate that the application code of the remark is to be changed, the program will display the current application code of the record and the proper format in which the new code should be entered:

```
A
            E
/------------/
```

After entering the new application code:

```
A
            E
/T-----------/
```

the system will recycle and display the change menu. At this point, the user may type "N", in which case the program will indicate that the change has been entered and then prompt for a new record code:

```
ENTER ITEM TO BE CHANGED
   R - REMARK
   A - APPLICATION CODE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or elect to also change the remark.

4.3.5.3 HEADER INFORMATION CHANGES

Referring to the example system listing in Figure 4.3* (System Number 001) and assuming it is necessary to make changes to the heading information contained in Record 0000, the response to the record code query is:

```
ENTER RECORD CODE
0010000
```

The system will recognize this as a header card and prompt the user to identify what item in the header data is to be changed.

```
ENTER HEADING ITEM TO BE CHANGED
   M - AIRCRAFT SYSTEM
   T - SYSTEM TITLE
   D - AS OF DATE
   E - START YEAR FOR REPORT
   R - NUMBER OF YEARS IN REPORT
   A - APPLICATION CODE
   N - NONE
```

Detailed discussions of these options follow.

4.3.5.3.1 AIRCRAFT SYSTEM

After responding with an "M" to indicate that a change is to be made to the aircraft system title, the system will prompt the user by displaying the current title and the correct format for the new title:

```
M
ENTER MAJOR SYSTEMS
 DEV COMMAND   BUSINESS SYSTEMS
/------------/--------------------/
```

*All the information contained in the header record is not displayed in this type listing. A systems header listing is a better source for this information.

After entering the new title:

```
M
ENTER MAJOR SYSTEMS
 DEV COMMAND   BUSINESS SYSTEMS
/NEW COMMAND /NEW BUSINESS--------/
```

the system will recycle and display the change menu. At this point, the user can type "N", whereupon the program will indicate that the change has been entered and prompt the user for a new record code:

```
ENTER HEADING ITEM TO BE CHANGED
   M - AIRCRAFT SYSTEM
   T - SYSTEM TITLE
   D - AS OF DATE
   E - START YEAR FOR REPORT
   R - NUMBER OF YEARS IN REPORT
   A - APPLICATION CODE
   N - NONE
NN
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or select a new type of change.

4.3.5.3.2 SYSTEM TITLE

After responding with a "T" to indicate that a change must be made to the system title, the system will prompt the user by displaying the current title and the correct format for the new system title:

```
T
ENTER TITLE
    SCHEDULES
/-------------------/-----------------------/
```

After entering the new system title:

```
ENTER TITLE
    SCHEDULES
/NEW SCHEDULES-------/-----------------------/
```

the program will recycle and display the change menu. At this time, the user can type "N", in which case the system will indicate that the change has been made and prompt the user for a new record code:

```
ENTER HEADING ITEM TO BE CHANGED
   M - AIRCRAFT SYSTEM
   T - SYSTEM TITLE
   D - AS OF DATE
   E - START YEAR FOR REPORT
   R - NUMBER OF YEARS IN REPORT
   A - APPLICATION CODE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or select a new type of change.

4.3.5.3.3 AS-OF-DATE

After responding with "D" to indicate that a change is to be made to the As-of-Date, the program will prompt the user by displaying the current As-of-Date and the correct format for the new As-of-Date:

```
D
AS OF DATE
 12 AUG 77
/--*---*--/
```

After the new date has been entered:

```
D
AS OF DATE
 12 AUG 77
/ 1*JUN*78/
```

the program will recycle and display the change menu. At this point, the user can either type "N", in which case, the system will indicate when the change has been entered and prompt the user for a new record code:

```
ENTER HEADING ITEM TO BE CHANGED
   M - AIRCRAFT SYSTEM
   T - SYSTEM TITLE
   D - AS OF DATE
   E - START YEAR FOR REPORT
   R - NUMBER OF YEARS IN REPORT
   A - APPLICATION CODE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or select a new change option.

4.3.5.3.4 START YEAR FOR REPORT

After responding with "E" to indicate the starting year for the report is to be changed, the system will prompt the user by displaying the current start year in the record and the format for the new starting year:

```
E
ENTER START YEAR FOR REPORT
   11
/-----/
```

After the last two figures of the new starting year have been entered:

```
E
ENTER START YEAR FOR REPORT
   11
/78---/
```

or select a new change option.

4.3.5.3.5 NUMBER OF YEARS IN REPORT

After responding with "R" to indicate there is a need to change the number of years in report value in the heading information, the system will prompt the user by displaying the current number of years in the report and the correct format for the new value:

```
R
ENTER NUMBER OF YEARS IN REPORT
   6
/-----/
```

Remember that this number may not be larger than 15.

After entering the new value:

```
R
ENTER NUMBER OF YEARS IN REPORT
   6
/8----/
```

the system will recycle and display the change menu. At this point, the user can either type "N", whereupon the system will indicate when the change has been entered and prompt the user for a new record code:

```
ENTER HEADING ITEM TO BE CHANGED
   M - AIRCRAFT SYSTEM
   T - SYSTEM TITLE
   D - AS OF DATE
   E - START YEAR FOR REPORT
   R - NUMBER OF YEARS IN REPORT
   A - APPLICATION CODE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or select a new change option.

4.3.5.3.6 APPLICATION CODE

After entering "A" to indicate there is to be a change to the application code of the header card data, the system will prompt the user by displaying the current application code and the correct format for the new code:

```
A
          E
/-----------/
```

After entering a new application code:

```
A
          E
/T----------/
```

the program will recycle and display the change menu. At this time, the user may either type "N", whereupon the system will indicate when the change has been entered and prompt the user for a new record code:

```
ENTER HEADING ITEM TO BE CHANGED
   M - AIRCRAFT SYSTEM
   T - SYSTEM TITLE
   D - AS OF DATE
   E - START YEAR FOR REPORT
   R - NUMBER OF YEARS IN REPORT
   A - APPLICATION CODE
   N - NONE
N
 CHANGE COMPLETE.  READY FOR NEXT CHANGE.
ENTER RECORD CODE
```

or select a new change option.

4.3.5.4 RETURN

After all changes have been made, rather than responding to the record query with the record number of the next record to be changed, enter "N". This will return control to the edit menu.

```
ENTER RECORD CODE
N
ENTER EDIT DATA
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
```

From this point, the user may request another edit mode or move on to another task. The READY mode may be obtained by completing these steps:

```
ENTER RECORD CODE
N
ENTER EDIT CODE
   A - AD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
N
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
N
DO YOU WISH TO CONTINUE?
N


READY
```

4.3.6 Slip

After responding with an "S" to the edit code query to indicate that some or even all of the SCHEDULE data for a system is to be slipped (i.e., moved back in time) the program will ask for the system code of the system SCHEDULE on which this action is to be performed:

```
S
ENTER SYSTEM CODE
```

The response need only be the three digit system code, which is the first three digits of the record code for each record in the system. Using the example system code 001:

```
ENTER SYSTEM CODE
001
```

The system will next prompt the user to determine how many records are to be slipped:

```
HOW MANY RECORDS DO YOU WANT TO SLIP?
   A - ALL DATES (START&STOP) THAT OCCUR AFTER DATE X
   S - ONLY STOP DATES THAT OCCUR AFTER DATA X
   N - NONE
```

A response of "A" will cause all dates, that is, start, stop, and event dates, after date x (which will be entered in a moment) to be slipped. "S" will cause only the stop and event dates after date x, to be slipped. Assuming the example system in Figure 4.10 has a requirement to slip all the dates the response is:

```
HOW MANY RECORDS DO YOU WANT TO SLIP?
   A - ALL DATES (START&STOP) THAT OCCUR AFTER DATE X
   S - ONLY STOP DATES THAT OCCUR AFTER DATA X
   N - NONE
A
```

The program will then prompt for the reference date x after which all the slips will take place:

```
ENTER SLIP REFERENCE DATE X
/--*---*--/
```

After entering the reference date x:

```
ENTER SLIP REFERENCE DATE X
/ 1*JAN*82/
```

The system will inquire:

```
SHOULD THE SLIP DEPEND ON APLI CODE?
ENTER
   Y - YES
   N - NO
```

This gives the user a certain degree of selectivity over which record are to be slipped rather than being forced to change all the records of a system. If a yes response is given, the user will be asked for the application code of the records to be slipped:

```
Y
ENTER APLICODE FOR STEPS TO BE SLIPPED
/----------/
```

A no response will simply bypass this question. In either case, SCHEDULE will next ask for:

```
ENTER NUMBER OF MONTHS OF SLIPPAGE
/----/
```

The reponse to this question must be the slippage in months in a decimal format. For example, a two year slip is 24. months, while a two week slip is .5 months. If the example system slip was six months, the response would be:

```
ENTER NUMBER OF MONTHS OF SLIPPAGE
/6.--/
```

To avoid any mistakes (Slip cannot be reversed short of manually changing all the dates inadvertantly moved back) SCHEDULE will display the number it has read in decimal format and ask if it is correct:

```
ENTER NUMBER OF MONTHS OF SLIPPAGE
/6.--/
 6.00
 DO WE AGREE ON THE NUMBER OF MONTHS?
```

If the original response had not been six months the no response ("N") will cause the system to recycle and allow the user to re-enter the number of months to be slipped:

```
DO WE AGREE ON THE NUMBER OF MONTHS?
N
ENTER NUMBER OF MONTHS OF SLIPPAGE
/----/
```

six is correct, so a positive response (i.e., yes) is appropriate.

```
DO WE AGREE ON THE NUMBER OF MONTHS?
Y
```

Once this yes response is received, SCHEDULE will go ahead and make the slips in the system SCHEDULE as instructed. Figure 4.10 is the original SCHEDULE and Figure 4.11 is the slipped SCHEDULE. When completed, the edit menu is displayed:

```
DO WE AGREE ON THE NUMBER OF MONTHS?
Y
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
```

allowing the user to leave the edit mode (enter "N") or to select a new edit mode. To obtain the "READY" mode from this point, complete the following steps:

```
ENTER EDIT CODE
   A - ADD
   D - DELETE
   C - CHANGE
   S - SLIP
   L - LIST
   N - NONE
N
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
N
DO YOU WISH TO CONTINUE?
N


READY
```

4.4 WRITE REPORTS

4.4.1 Graphic Report

From the READY mode, call up SCHEDULE as shown:

```
READY
EXEC SCHEDULE
```

The screen will clear and the system will inquire:

```
DO YOU NEED FULL PROMPTING?
```

to which a yes/no reply is required. A yes response will cause acceptable responses to be displayed after multiple choice questions and a no response will suppress this. An example of both cases is shown in Figure 4.1. Full prompting will be used for this example, so the reply to this question is yes (Y):

```
DO YOU NEED FULL PROMPTING?
Y
```

SCHEDULE will then inquire as to the system type:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A SYSTEM CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
```

which must be responded to with old since report writing must be performed on old (i.e., previously entered) data sets, thus:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A SYSTEM CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
O
```

Having identified the system type, the task to be performed with the data set must be stated:

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
```

Obviously, to write reports, the response is "R":

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
R
```

Once the system knows that reports are to be written, it must be told which systems are to be reported on:

```
HOW MANY SYSTEMS DO YOU WANT TO SEE?
   ENTER
   A - ALL
   N - NONE
   S - SUBSET OF ALL
```

Answering "A" would result in a report for all the systems contained in the accessed dataset. For this example, the response will be "S", which will permit selective choosing of the system(s) to be reported on in a later step, (If "A" was the response in this case there would be no query at a later step to identify the systems to be reported on.) hence;

```
HOW MANY SYSTEMS DO YOU WANT TO SEE?
   ENTER
   A - ALL
   N - NONE
   S - SUBSET OF ALL
S
```

The system will then prompt the user for a name up to 20 characters long of the office preparing the reports:

```
 ENTER OFFICE PREPARING REPORTS
```

Per the example report this is entered as:

```
 ENTER OFFICE PREPARING REPORTS
SECO
```

Recall that earlier it was requested to report on a selected subset of systems, these systems must now be identified individually by file code:

```
ENTER SYSTEM CODE
   XXX0000 - SYSTEM CODE
      N - NONE / NO MORE SYSTEMS
```

For this example, only one file will be requested for viewing as:

```
ENTER SYSTEM CODE
   XXX0000 - SYSTEM CODE
      N - NONE / NO MORE SYSTEMS
0010000
```

It is not required to enter all digits because the program is only looking for the first three digits to which it automatically adds the remaining four zeros. It is possible to narrow done the scope of the report further by specifying that only records with a particular application code (APLICODE) be displayed. (These codes are assigned at the time the system is entered into the master storage file). Care must be taken that the APLICODE requested here match in both letters and sequence the APLICODE of the record as it appears in the data file.

```
ENTER (OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
   A - ALL
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
   N - NONE
```

The response in this example will be "A", which will cause all the records contained in the system data file to be included in the report rather than a particular subset.

```
ENTER (OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
   A - ALL
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
   N - NONE
A
```

The screen will again blank and the system will ask that a report title, up to 40 characters long, be entered:

```
ENTER REPORT TITLE
```

Figure 4.12 is a copy of an example report that will be recreated here, whose title is entered as shown:

```
 ENTER REPORT TITLE
SAMPLE REPORT (GRAPHICS)
```

The system will indicate that the requested file is prepared and prompt for another file code to which the reply "N" will be given to indicate that no more systems are to be included in the report:

```
ENTER SYSTEM CODE
   XXX0000 - SYSTEM CODE
      N - NONE / NO MORE SYSTEMS
   0010000
   FILE 001 IS READY.
   ENTER SYSTEM CODE
      XXX0000 - SYSTEM CODE
         N - NONE / NO MORE SYSTEMS
   N
```

If the reply to the inquiry covering the number of systems had been "ALL", instead of asking for the file codes, the system would search on its own indicating what files had been processed for reporting until an end-of-file condition is reached. For this example, this would appear as;

```
ENTER OFFICE PREPARING REPORTS
SECO
FILE 001 IS READY.
0020000RECORD NOT FOUND
```

Regardless of the number of files requested in each case, the next prompt is:

```
ENTER TERMINAL TYPE
ENTER
   G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)
   P - TEXAS INSTRUMENTS (PRINTER OUTPUT)
   N - NONE
```

The response must indicate the type of terminal on which the report will be displayed, here a Textronix 4014, thus:

```
ENTER TERMINAL TYPE
ENTER
   G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)
   P - TEXAS INSTRUMENTS (PRINTER OUTPUT)
   N - NONE
G
```

The system next displays a menu which offers three plotting options and a return:

```
TYPE C FOR CONTINUOUS PLOTS
TYPE R TO RERUN PLOTS
TYPE S TO RETURN TO MAIN PROGRAM
HIT SPACE BAR FOR INDIVIDUAL PLOTTING
```

"C" will continuously plot all the reports and automatically make a copy of each page. "R" permits a replotting of all the reports without having to return to the main program and re-entering the required information. "S" returns control to the main program. The space bar (i.e., blank character) allows the user to go through the requested reports and manually make a copy if desired. The response for this example will be the space bar.

SCHEDULE must now prompt for two final pieces of information, first:

```
ENTER FORM START DATE FOR:EXAMPLE OF A REPORT
?
```

This request is for the last digits of the calandar year which will appear at the left-hand margin of the time-frame portion of the report. Presently, this number must be larger than 76 and need not reflect the current date or fiscal year. The current date is displayed as a vertical dotted line on the report form automatically (see Figure 4.12). For this example, the form will be started with CY77:

```
ENTER FORM START DATE FOR:EXAMPLE OF A REPORT
?
77
```

The next and last prompt prior to the actual plotting of the graph(s) is:

```
ENTER NUMBER OF YEARS IN FORM (1-15)
?
```

The reply must fall within the limits shown, and for this example, will be nine years:

```
ENTER NUMBER OF YEARS IN FORM (1-15)
?
9
```

At this point, the system will begin producing the reports in the requested format. When all the requested systems have been plotted, the plotting format menu will again be displayed, offering the same options To complete the example, "S" would be entered to return control to the main program and by responding "NONE" to the remaining prompts, the READY mode will be obtaining.

4.4.2 Typewriter Report

From the READY mode, call up SCHEDULE as shown:

```
READY
EXEC SCHEDULE
```

The screen will clear and the system will inquire:

```
DO YOU NEED FULL PROMPTING?
```

to which a yes/no reply is required. A yes response will cause acceptable responses to be displayed after multiple choice questions and a no response will suppress this. An example of both cases is shown in Figure 4.1. Full prompting will be used for this example, so the reply to this question is yes (Y):

```
DO YOU NEED FULL PROMPTING?
Y
```

Answering "A" would result in a report for all the systems contained in the accessed dataset. For this example, the response will be "S", which will permit selective choosing of SCHEDULE will then inquire as to the system type:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A SYSTEM CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
```

which must be responded to with old since report writing must be performed on old (i.e., previously entered) data sets, thus:

```
ENTER SYSTEM TYPE
   N - NEW (THE SYSTEM DOES NOT HAVE A SYSTEM CODE)
   O - OLD (THE SYSTEM IS IN THE MAIN FILE)
O
```

Having identified the system type, the task to be performed with the data set must be stated:

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
```

Obviously, to write reports, the response is "R":

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
R
```

Once the system knows that reports are to be written, it must be told which systems are to be reported on:

```
HOW MANY SYSTEMS DO YOU WANT TO SEE?
   ENTER
   A - ALL
   N - NONE
   S - SUBSET OF ALL
```

Answering "A" would result in a report for all the systems contained in the accessed dataset. For this example, the response will be "S", which will permit selective choosing of the system(s) to be reported on in a later step, hence:

```
HOW MANY SYSTEMS DO YOU WANT TO SEE?
   ENTER
   A - ALL
   N - NONE
   S - SUBSET OF ALL
S
```

The system will then prompt the user for a name up to 20 characters long of the office preparing the reports:

```
 ENTER OFFICE PREPARING REPORTS
```

Per the example report this is entered as:

```
 ENTER OFFICE PREPARING REPORTS
SECO
```

Recall that earlier it was requested to report on a selected subset of systems, these systems must now be identified individually by file code:

```
ENTER SYSTEM CODE
   XXX0000 - SYSTEM CODE
      N - NONE / NO MORE SYSTEMS
```

For this example, only one file will be requested for viewing as:

```
ENTER SYSTEM CODE
   XXX0000 - SYSTEM CODE
      N - NONE / NO MORE SYSTEMS
0010000
```

It is not required to enter all digits because the program is only looking for the first three digits to which it will automatically add the remaining four zeros. It is possible to narrow done the scope of the report further by specifying that only records with a particular application code (APLICODE) be displayed. (These codes are assigned at the time the system is entered into the master storage file.) Care must be taken that the APLICODE requested here match in both letters and sequence the APLICODE of the record as it appears in the data file.

```
ENTER (OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
   A - ALL
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
   N - NONE
```

The response in this example will be "A", which will cause all the records contained in the system data file to be included in the report rather than a particular subset.

```
ENTER (OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
   A - ALL
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
   N - NONE
A
```

The screen will again blank and the system will ask that a report title, up to 40 characters long, be entered:

```
ENTER REPORT TITLE
```

Figure 4.13 is a copy of an example report that will be recreated here, whose title is entered as shown:

```
ENTER REPORT TITLE
SAMPLE REPORT (PRINTER)
```

The system will indicate that the requested file is prepared and prompt for another file code; to indicate that no more systems are to be included in the report the reply "N" will be given:

```
ENTER SYSTEM CODE
   XXX0000 - SYSTEM CODE
      N - NONE / NO MORE SYSTEMS
   0010000
   FILE IS READY.
   ENTER SYSTEM CODE
      XXX0000 - SYSTEM CODE
         N - NONE / NO MORE SYSTEMS
   N
```

If the reply to the inquiry covering the number of systems had been "ALL", instead of asking for the file codes, the system would search on its own indicating what files had been processed for reporting until an end-of-file condition is reached. For this example, this would appear as;

```
ENTER OFFICE PREPARING REPORTS
SECO
FILE 001 IS READY.
0020000RECORD NOT FOUND
```

Regardless of the number of files requested in each case, the next prompt is:

```
ENTER TERMINAL TYPE
ENTER
   G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)
   P - TEXAS INSTRUMENTS (PRINTER OUTPUT)
   N - NONE
```

The response must indicate the type of terminal on which the report will be displayed, here a Textronix 4014, thus:

```
ENTER TERMINAL TYPE
ENTER
   G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)
   P - TEXAS INSTRUMENTS (PRINTER OUTPUT)
   N - NONE
P
```

At this point SCHEDULE will promptly begin to print out the report in the format shown in Figure 4.13.

4.5 SPECIAL OPTIONS

4.5.1 General

This section discusses options which are beyond the scope of the purpose of the first three sections which is to teach the user the basic operation of the system. This is not to say that these options are in anyway more difficult to use, but rather that they are not required to successfully utilize the system in a meaningful manner. The basic purpose for all of these system options is to improve the ability of the user to tailor the report writing capability to his specific needs. These options are part of the SCHEDULE program but unless specifically enable by the SCHEDULE programmer will not appear as options during a SCHEDULE session. There are currently four options available the details of which are discussed herein.

4.5.2 Window

The window option allows the user to display in a report only the tasks which either occur or begin during a specific period of time. The time period which is of interest is entered into the program in reply to prompts which are displayed after the window option has been requested. This request is made early in the report writing procedure as shown here:

```
DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?
ENTER
   E - EDIT DATA
   R - WRITE REPORTS
   N - NONE
R
YOU DO WANT A WINDOW OF DATA?
```

To enable the window option, the response should be yes:

```
DO YOU WANT A WINDOW OF DATA?
Y
```

The system will then prompt:

```
ENTER LOWER TIME LIMIT
/--*---*--/
```

which is a request for the earliest date to be included in the window. For this example, the response will be:

```
ENTER LOWER TIME LIMIT
/ 1*JAN*78/
```

The next prompt:

```
ENTER LOWER TIME LIMIT
/ 1*JAN*78/
ENTER UPPER TIME LIMIT
/--*---*--/
```

will ask for the latest date to be included in the window. For this example, the response is:

```
ENTER UPPER TIME LIMIT
/ 1*JAN*79/
```

At this point, the system wil return to the normal report writing procedure:

```
ENTER UPPER TIME LIMIT

/ 1*JAN*79/
HOW MANY SYSTEMS DO YOU WANT TO SEE?
  ENTER
    A - ALL
    S - SUBSET OF ALL
    N - NONE
```

as covered in Section 3.0. At this point, the system has the required information to adjust the form as necessary and display the graph. The system will compute the number of years to be included in the report, based on the data specifying the window, hence, this question will not be asked. This will be the only deviation from the normal report writing steps. Figures 4.14 and 4.15 are a before and after example illustrating the affect of the window command based on the values entered within this example.

4.5.3 Lines Per Page

SCHEDULE has a default of 30 lines per page which means that when writing a report, a second page will not be required by the program until more than 30 items are entered. At some time, it may be necessary to change the default value to a lesser value; this may be accomplished through the lines per page option. If this option is enabled a prompt will appear during the normal report writing procedure as:

```
ENTER OFFICE PREPARING REPORTS
SECO
DO YOU WANT THE MAXIMUM LINES PER PAGE TO BE 30
```

A yes to this question will cause normal processing to continue as shown:

```
DO YOU WANT THE MAXIMUM LINES PER PAGE TO BE 30
Y
ENTER FILE CODE FOR SYSTEM
   XXX0000 - FILE CODE
      N - NONE / NO MORE SYSTEMS
```

However, a no response will cause the following prompt to be displayed:

```
ENTER OFFICE PREPARING REPORTS
SECO
DO YOU WANT THE MAXIMUM LINES PER PAGE TO BE 30
N
ENTER NEW MAXIMUM NUMBER OF LINES PER PAGES
```

The response to this query may not be greater than 30 nor less than nine. Figure 4.16 shows a report that was processed normally and Figure 4.17 shows the same report processed with the line per page option. Notice that the second report has spaced the items and is generally in a better format. Realizing from the first report that there were 35 items, it was logical to change the maximum number of lines per page to eighteen, hence:

```
ENTER NEW MAXIMUM NUMBER OF LINES PER PAGES
18
```

This is all the information required by the lines per page option and from this point, processing continues normally:

```
ENTER NEW MAXIMUM NUMBER OF LINES PER PAGES
18
ENTER FILE CODE FOR SYSTEM
   XXX0000 - FILE CODE
      N - NONE  /  NO MORE SYSTEMS
```

4.5.4 Application Code Prompting List

Different offices may use different definitions for various application code letters, thus requiring different prompting menus displayed to the user when writing a report. This option allows the user (or using office) to display a particular suggested list of application code definitions or to have no list displayed at all. The no-list option will appear in the normal processing stream as:

```
ENTER FILE CODE FOR SYSTEM
   XXX0000 - FILE CODE
      N - NONE  /  NO MORE SYSTEMS
001
 ENTER(OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
```

The Project Manager's Office suggested list will appear as:

```
ENTER(OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
   A - ALL
   B - BUDGET
   E - PROJECT ENGINEER
   H - PROJECT MANAGER
   O - 104 REPORT
   P - PROCUREMENT
   Q - PRODUCT ASSURANCE
   R - RECAP
   S - PROGRAM SUMMARY
   T - TEST
   N - NONE
```

and the Research and Development Office suggested list will appear as:

```
ENTER(OFFICE/SUBJECT/REPORT/APLICODE) OF INTEREST
   A - ALL
   C - COMPTROLLER
   B - PLANS & ANALYSIS
   P - PROCUREMENT
   E - DEVELOPMENT & ENGINEERING
   F - ASTIO
   T - TRADOC
   S - TECOM
   Q - PRODUCT ASSURANCE
   N - NONE
```

which option appears depends on how the option is enabled. After the required application code has been entered, the processing will continue normally. It should be pointed out again that these are suggested lists and that the application codes eventually employed are up to the user.

4.5.5 Cross System

When enabled this option permits the user to write a single report covering all the systems in the master data file at one time. This should not be confused with the ALL option available when writing reports:

```
HOW MANY SYSTEMS DO YOU WANT TO SEE?
  ENTER
   A - ALL
   S - SUBSET
   N - NONE
```

which allows the user to write a separate report for all of the systems at the same time. The cross system reporting option allows the user to prepare one report which may contain all or part of the information from all the systems. Even when enabled this option only becomes available when the user requests to see all systems:

```
HOW MANY SYSTEMS DO YOU WANT TO SEE?
  ENTER
   A - ALL
   S - SUBSET OF ALL
   N - NONE

A
```

which will be followed by:

```
DO YOU WANT ALL SYSTEMS ON ONE REPORT?
```

A no response will cause the system to process the ALL request normally (i.e., one report for each system) and a yes answer will provide the cross system report.

The report output under this option may be quite lengthy in some cases and heading information for systems other than the first (system code 001) will not be part of the report. Because of this, it is wise to include in each system a dummy task or event as the first record (Record 0001) which identifies the system in the title task portion of the record. This may be given an application code such that it will only appear on the cross system report and not on the individual system report.

Appendix A

SCHEDULE Subroutine Listings

```
ADDD: PROC(NLABEL,LINE);
DCL PROMPT CHAR(1) EXTERNAL;
DCL PROMPT1 CHAR(1);
DECLARE LINE CHAR(114);
DECLARE 1 CARD BASED(P),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 MAJOR_SYSTEM1 CHAR(12),
  2 MAJOR_SYSTEM2 CHAR(20),
  2 TITLE1 CHAR(20),
  2 TITLE2 CHAR(24),
  2 AS_OF_DATE CHAR(10),
  2 NO_DVL_STPS FIXED DEC(5,0),
  2 NO_REMARKS FIXED DEC(5,0),
  2 FILE_END FIXED DEC(5,0);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
   3 ASE_CODE CHAR(7),
   3 APLI_CODE CHAR(11),
   3 TYPE_NUMBER FIXED DEC(2),
   3 TITLE CHAR(28),
   3 STEP_DATES(9) FIXED DEC(5,2),
   3 COST(4) FIXED DEC(5,2),
   3 REST CHAR(26);
DECLARE 1 REMARKS BASED(R),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 REMARK CHAR(80),
  2 REST CHAR(15);
DCL NLABEL FIXED BIN;
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL INITT ENTRY(FIXED BIN(31));
DCL IX0X FIXED DEC(5,0);
DECLARE ANS CHAR(80) VAR;
DECLARE NUMBER CHAR(10) INIT('0123456789');
DECLARE TYPE CHAR(5) INIT('EVENT');
DCL START_DATE_CODE(5) FIXED DEC(5,2);
DCL STOP_DATE_CODE(5) FIXED DEC(5,2);
DCL EVENT_DATE_CODE(5) FIXED DEC(5,2);
DCL CAL_DATE FIXED DEC(5,2);
DECLARE (NTYPE,NUMB,STOPI) FIXED;
DCL RDATE ENTRY(CHAR(9),FIXED DEC(5,2));
DCL FDATE ENTRY(CHAR(9),FIXED DEC(5,2),FIXED BIN(15));
DCL STP_TITLE CHAR(28) VAR, ID_NO FIXED;
```

```
DCL COMPLET(10) FIXED DEC(5,2);
DCL (EVENT_DATE(10),START_DATE(10),STOP_DATE(10)) CHAR(9);
DCL READ#(11) LABEL;
DCL LABEL#(12) LABEL;
DCL (NREAD,I,II,III,NNN,MMM) FIXED BIN(5,0);
/* *****                    ***** */
P = ADDR(LINE);
Q = P;
R = P;
/* *****                    ***** */
ON CONVERSION BEGIN;
PUT EDIT('YOUR INPUT WAS IN ERROR') (COL(1), A);
PUT EDIT(ONSOURCE) (COL(1),A);
PUT EDIT('RE-ENTER') (COL(2), A);
PUT SKIP(2);
REVERT CONVERSION;
GO TO READ#(NREAD);
END;
GO TO LABEL#(NLABEL);
LABEL#(1):;
NREAD = 1;
READ#(1): PUT EDIT('ENTER MAJOR SYSTEMS') (COL(1),A);
PUT EDIT('/__________/__________________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(MAJOR_SYSTEM1,MAJOR_SYSTEM2) (COL(2),A(12),X(1),A(20));
READ#(2): PUT EDIT('ENTER TITLE') (COL(1), A);
PUT EDIT('/_____________________/____________________________/')
(COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(TITLE1,TITLE2) (COL(2), A(20), X(1), A(24)) ;
NREAD = 3;
READ#(3): PUT EDIT('AS OF DATE') (COL(1), A);
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(AS_OF_DATE) (COL(2), A(10)) ;
NREAD = 4;
READ#(4): PUT EDIT('ENTER START YEAR FOR REPORT') (COL(1),A);
PUT EDIT('/____/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(NO_DVL_STPS) (COL(2), F(5,0)) ;
NREAD = 5;
READ#(5): PUT EDIT('ENTER NUMBER OF YEARS IN REPORT') (COL(1), A);
PUT EDIT('/____/') (COL(1),A);
```

```
PUT SKIP(2);
CALL REVERSE;
GET EDIT(NO_REMARKS) (COL(2), F(5,0)) ;
LABX0:PUT EDIT('APPLICATION CODE') (COL(2),A);
PUT EDIT('/__________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(CARD.APLI_CODE) (COL(2),A(11));
/*      *****       ******       */
CALL NEWPAG;
CALL TSEND;
RETURN;
/*      *****      *****      */
LABEL#(2):;
DO IX0X = 1 TO 9;
STEP_DATES(IX0X) = 0.0;
END;
DO IX0X =1 TO 4;
COST(IX0X) = 0.0;
END;
SUBSTR(LINE,113,1) = 'S';
NREAD = 6;
READ#(6): PUT EDIT ('ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS')
(COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT(' TASK OR EVENT ', ' FOLLOWED BY NUMBER')
(COL(2),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1), A(80)) ;
IF SUBSTR(ANS,1,1) = 'E' THEN NTYPE = 1;
ELSE NTYPE = 0;
NUMB = INDEX(ANS,' ') + 1;
NNN = 1;
NUMB = INDEX(NUMBER,SUBSTR(ANS,NUMB,1)) - 1;
IF NUMB > 0 THEN DO;
STOPI = NUMB;
TYPE_NUMBER = -STOPI ;
END;
ELSE DO;
STOPI = 1;
TYPE_NUMBER = -1;
END;
IF NTYPE ¬= 0 THEN GO TO LAB_EV;
NREAD = 7;
READ#(7): PUT EDIT('          TITLE                    / STR.DT. '
,'/ STP.DT / COMPLT   /') (COL(1), A, A);
PUT EDIT('/_____________________________/__*___*__/',
```

```
'__*___*__/***___***/') (COL(1),A,A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(STP_TITLE,START_DATE(NNN),STOP_DATE(NNN),
COMPLET(NNN)) (COL(2),A(28),X(1),A(9),X(1),A(9),
X(4),F(5,2));
CALL FDATE(START_DATE(NNN),START_DATE_CODE(NNN),2);
STEP_DATES(NNN) =START_DATE_CODE(NNN)-1;
CALL FDATE(STOP_DATE(NNN),STOP_DATE_CODE(NNN),3);
STEP_DATES(NNN+1) = STOP_DATE_CODE(NNN) -1;
STEP_DATES(NNN+2) = COMPLET(NNN);
/* ************************************** */
/* ENTER MULT ELEMENTS */
/* ***** START OF INPUT OF A TASK ***** */
DO I = 2 TO STOPI;
NNN = NNN + 1;
MMM = 3*(NNN-1) + 1;
NREAD = 8;
READ#(8): PUT EDIT('/ STR.DT. / STP.DT. / COMPLT /')
(COL(1), A);
PUT EDIT('/__*___*__/__*___*__/***___***/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(START_DATE(NNN),STOP_DATE(NNN),COMPLET(NNN)) (COL(2),
A(9),X(1),A(9),X(4),F(5,2)) ;
CALL FDATE(START_DATE(NNN),START_DATE_CODE(NNN),2);
STEP_DATES(MMM) =START_DATE_CODE(NNN)-1;
CALL FDATE(STOP_DATE(NNN),STOP_DATE_CODE(NNN),3);
STEP_DATES(MMM+1) = STOP_DATE_CODE(NNN) -1;
STEP_DATES(MMM+2) = COMPLET(NNN);
END;
GO TO LAB_TE;
/* *****                          ***** */
/* *****                        ***** */
LAB_EV: TYPE_NUMBER = -TYPE_NUMBER;
NNN = 1;
PUT EDIT('/              TITLE            /   DATE  / ')
(COL(1), A);
PUT EDIT('/__________________________/__*___*__/')
(COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(STP_TITLE,EVENT_DATE(NNN))
(COL(2),A(28),X(1),A(9));
CALL FDATE(EVENT_DATE(NNN),START_DATE_CODE(NNN),1);
STEP_DATES(NNN) =START_DATE_CODE(NNN)-1;
DO I = 2 TO STOPI;
```

```
NNN = NNN + 1;
NREAD = 9;
READ#(9): PUT EDIT('/ EVENT DATE /') (COL(1), A);
PUT EDIT('/__*___*__/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(EVENT_DATE(NNN)) (COL(2),A(9)) ;
CALL FDATE(EVENT_DATE(NNN),START_DATE_CODE(NNN),1);
STEP_DATES(NNN) =START_DATE_CODE(NNN) - 1;
END;
/* ***** END INPUT OF AN EVENT ***** */
LAB_TE:;
/* *****      ***** */
TITLE = STP_TITLE;
GO TO LABX0;
/* *****      ***** */
LABEL#(3):;
NREAD = 11;
READ#(11): PUT EDIT('ENTER REMARKS')
(COL(1),A);
PUT EDIT('/*_____',
'_____',
'_____*/')(COL(1),A,A,A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(REMARK) (COL(3), A(80));
SUBSTR(LINE,113,1) = 'R';
/* *****      ***** */
GO TO LABX0;
/* *****      ***** */
END ADDD;
```

```
CHANGE: PROC(NLABEL,LINE,FIN);
DCL PROMPT CHAR(1) EXTERNAL;
DCL PROMPT1 CHAR(1);
DCL FIN CHAR(1) ;
DECLARE LINE CHAR(114);
DECLARE 1 CARD BASED(P),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 MAJOR_SYSTEM1 CHAR(12),
  2 MAJOR_SYSTEM2 CHAR(20),
  2 TITLE1 CHAR(20),
  2 TITLE2 CHAR(24),
  2 AS_OF_DATE CHAR(10),
  2 NO_DVL_STPS FIXED DEC(5,0),
  2 NO_REMARKS FIXED DEC(5,0),
  2 FILE_END FIXED DEC(5,0);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
   3 ASE_CODE CHAR(7),
   3 APLI_CODE CHAR(11),
   3 TYPE_NUMBER FIXED DEC(2),
   3 TITLE CHAR(28),
   3 STEP_DATES(9) FIXED DEC(5,2),
   3 COST(4) FIXED DEC(5,2),
   3 REST CHAR(26);
DECLARE 1 REMARKS BASED(R),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 REMARK CHAR(80),
  2 REST CHAR(15);
DCL NLABEL FIXED BIN;
DCL DUMMY FIXED DEC(5,2);
DECLARE ANS CHAR(80) VAR;
DCL ANS1 CHAR(80) INIT(' ');
DECLARE LETTER CHAR(27) INIT(' ABCDEFGHIJKLMNOPQRSTUVWXYZ');
DCL LETTER1 CHAR(26);
DCL START_DATE_CODE(5) FIXED DEC(5,2);
DCL STOP_DATE_CODE(5) FIXED DEC(5,2);
DCL INITT ENTRY(FIXED BIN(31));
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL FDATE ENTRY(CHAR(9),FIXED DEC(5,2),FIXED BIN(15));
DCL RDATE ENTRY(CHAR(9),FIXED DEC(5,2));
DCL STP_TITLE CHAR(28) VAR;
DCL COMPLET(10) FIXED DEC(5,2);
```

```
DCL (EVENT_DATE(10),START_DATE(10),STOP_DATE(10)) CHAR(9);
DCL READ#(13) LABEL;
DCL LABEL#(13) LABEL;
DCL (NREAD,I,NNN,STOPI,STOPII) FIXED BIN;
DCL NODVLSTPS FIXED DEC(5,0);
DCL NOREMARKS FIXED DEC(5,0);
LETTER1 = SUBSTR(LETTER,2,26);
/* *****                    ***** */
P = ADDR(LINE);
Q = P;
R = P;
/* *****                    ***** */
ON CONVERSION BEGIN;
PUT EDIT('YOUR INPUT WAS IN ERROR') (COL(1), A);
PUT EDIT(ONSOURCE) (COL(1),A);
PUT EDIT('RE-ENTER') (COL(2), A);
PUT SKIP(2);
REVERT CONVERSION;
GO TO READ#(NREAD);
END;
GO TO LABEL#(NLABEL);
LABEL#(1):;
NREAD = 1;
READ#(1): PUT EDIT('ENTER MAJOR SYSTEMS') (COL(1),A);
PUT EDIT(MAJOR_SYSTEM1,MAJOR_SYSTEM2) (COL(2),A,X(1),A);
PUT EDIT('/__________/__________________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,2,12) ¬= SUBSTR(ANS1,1,12) THEN
MAJOR_SYSTEM1 = SUBSTR(ANS,2,12);
IF SUBSTR(ANS,15,20) ¬= SUBSTR(ANS1,1,20) THEN
MAJOR_SYSTEM2 = SUBSTR(ANS,15,20);
/* *****      ***** */
GO TO LABEL#(13);
/* *****      ***** */
LABEL#(2):;
NREAD = 2;
READ#(2): PUT EDIT('ENTER TITLE') (COL(1), A);
PUT EDIT(TITLE1,TITLE2) (COL(2),A,X(1),A);
PUT EDIT('/__________________/____________________/')
(COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
```

```
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,2,20) ¬= SUBSTR(ANS1,1,20) THEN
TITLE1 = SUBSTR(ANS,2,20);
IF SUBSTR(ANS,23,24) ¬= SUBSTR(ANS1,1,24) THEN
TITLE2 = SUBSTR(ANS,23,24);
/* *****       ***** */
GO TO LABEL#(13);
/* *****       ***** */
LABEL#(3):;
NREAD = 3;
READ#(3): PUT EDIT('AS OF DATE') (COL(1), A);
PUT EDIT(AS_OF_DATE) (COL(2),A);
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,2,10) ¬= SUBSTR(ANS1,1,10) THEN
AS_OF_DATE = SUBSTR(ANS,2,10);
/* *****       ***** */
GO TO LABEL#(13);
/* *****       ***** */
LABEL#(4):;
NREAD = 4;
READ#(4): PUT EDIT('ENTER START YEAR FOR REPORT') (COL(1),A);
PUT EDIT(NO_DVL_STPS) (COL(2),F(5,0));
PUT EDIT('/____/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
GET STRING(ANS) EDIT(NODVLSTPS) (X(1), F(5,0)) ;
IF NODVLSTPS ¬=0 THEN NO_DVL_STPS = NODVLSTPS;
/* *****       ***** */
GO TO LABEL#(13);
/* *****       ***** */
LABEL#(5):;
NREAD = 5;
READ#(5): PUT EDIT('ENTER NUMBER OF YEARS IN REPORT') (COL(1), A);
PUT EDIT(NO_REMARKS) (COL(2) ,F(5,0));
PUT EDIT('/____/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
```

```
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
GET STRING(ANS) EDIT(NOREMARKS) (X(1), F(5,0)) ;
IF NOREMARKS ¬=0 THEN NO_REMARKS = NOREMARKS ;
/* *****      ***** */
GO TO LABEL#(13);
/* *****      ***** */
LABEL#(6):;
NREAD = 6;
PUT EDIT(CARD.APLI_CODE) (COL(2),A);
PUT EDIT('/__________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,2,11) ¬= SUBSTR(ANS1,1,11) THEN
CARD.APLI_CODE = SUBSTR(ANS,2,11);
/*      *****       ******       */
GO TO LABEL#(13);
/*      *****      *****      */
LABEL#(7):;
NREAD = 7;
READ#(7): PUT EDIT('/         TASK                    / ')
(COL(1),A);
PUT EDIT(DEVEL_STEP.TITLE) (COL(2),A);
PUT SKIP(2);
PUT EDIT('/_____________________________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,2,28) ¬= SUBSTR(ANS1,1,28) THEN
DEVEL_STEP.TITLE = SUBSTR(ANS,2,28);
/* *****      ***** */
GO TO LABEL#(13);
/* *****      ***** */
LABEL#(8):;
READ#(8): NREAD = 8;
STOPII = Q->TYPE_NUMBER;
STOPII = ABS(STOPII);
NNN = 0;
MMM = -2;
DO I = 1 TO STOPII;
MMM = MMM + 3;
NNN = NNN + 1;
```

```
PUT EDIT('/ STR.DT. / STP.DT. / COMPLT /')
(COL(1), A);
DUMMY = STEP_DATES(MMM) + 1;
CALL RDATE(START_DATE(NNN),DUMMY);
DUMMY = STEP_DATES(MMM+1) + 1;
CALL RDATE(STOP_DATE(NNN),DUMMY);
COMPLET(NNN) = STEP_DATES(MMM+2);
PUT EDIT(START_DATE(NNN),STOP_DATE(NNN),COMPLET(NNN))
(COL(2),A,X(1),A,X(2),F(5,2));
PUT EDIT('/__*___*__/__*___*__/***___***/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
GET STRING(ANS) EDIT(START_DATE(NNN),STOP_DATE(NNN),COMPLET(NNN))
(X(1),A(9),X(1),A(9),X(4),F(5,2)) ;
IF COMPLET(NNN) ¬= 0 THEN STEP_DATES(MMM+2) = COMPLET(NNN);
IF VERIFY(START_DATE(NNN),LETTER) ¬= 0 THEN DO;
CALL FDATE(START_DATE(NNN),DUMMY,2);
STEP_DATES(MMM) = DUMMY - 1;
END;
IF VERIFY(STOP_DATE(NNN),LETTER) ¬= 0 THEN DO;
CALL FDATE(STOP_DATE(NNN),DUMMY,3);
STEP_DATES(MMM+1) = DUMMY - 1;
END;
END;
/* *****                          ***** */
GO TO LABEL#(13);
/* *****                           ***** */
LABEL#(9):;
READ#(9): PUT EDIT('/                EVENT                /')
(COL(1), A);
PUT EDIT(DEVEL_STEP.TITLE)
(COL(2),A);
PUT EDIT('/_____________________________/')
(COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,2,28) ¬= SUBSTR(ANS1,1,28) THEN
DEVEL_STEP.TITLE = SUBSTR(ANS,2,28);
/* *****      ***** */
GO TO LABEL#(13);
/* *****      ***** */
```

```
LABEL#(10):;
READ#(10): NREAD = 10;
STOPII = Q->TYPE_NUMBER;
STOPII = ABS(STOPII);
NNN = 0;
DO I = 1 TO STOPII;
MMM = NNN + 1;
NNN = NNN + 1;
PUT EDIT('/ EVENT DATE /') (COL(1), A);
DUMMY = STEP_DATES(NNN) + 1;
CALL RDATE(EVENT_DATE(NNN),DUMMY);
PUT EDIT(EVENT_DATE(NNN)) (COL(2),A);
PUT EDIT('/__*___*__/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
GET STRING(ANS) EDIT(EVENT_DATE(NNN)) (X(1),A(9)) ;
IF VERIFY(EVENT_DATE(NNN),LETTER) ¬= 0 THEN DO;
CALL FDATE(EVENT_DATE(NNN),DUMMY,1);
STEP_DATES(MMM) = DUMMY - 1;
END;
END;
/* *****      ***** */
GO TO LABEL#(13);
/* *****      ***** */
LABEL#(11):;
NREAD = 11;
READ#(11): PUT EDIT('ENTER REMARKS')
(COL(1),A);
PUT EDIT(REMARK) (COL(2),A);
PUT EDIT('/*_____','
'_____','
'_____*/')(COL(1),A,A,A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'S'
THEN GO TO LABEL#(13);
IF SUBSTR(ANS,3,77) ¬= SUBSTR(ANS1,1,80) THEN
REMARK = SUBSTR(ANS,3,77);
/* *****      ***** */
GO TO LABEL#(13);
/* *****      ***** */
LABEL#(12):;
PUT EDIT('THE ELEMENT TITLE IS ... ',DEVEL_STEP.TITLE)
```

```
(COL(2),A,A);
PUT EDIT('ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS')
(COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN DO;
PUT EDIT(' TASK OR EVENT ',' FOLLOWED BY NUMBER')
(COL(2),A);
PROMPT1 = 'N';
END;
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO LABEL#(13);
NUMB = VERIFY(ANS,LETTER);
IF NUMB > 0 THEN GET STRING(ANS) EDIT(STOPI) (X(NUMB-1),F(1));
ELSE STOPI = 1;
NNN = 0;
IF SUBSTR(ANS,1,1) = 'E' THEN GO TO LAB_EV;
IF STOPI > 3 THEN DO;
PUT EDIT('MAX NUMBER OF SUB TASKS IS 3')
(COL(2),A);
PUT SKIP(2);
PROMPT1 = 'Y';
GO TO LABEL#(12);
END;
DO I = 1 TO STOPI;
NNN = NNN + 1;
MMM = 3*(NNN-1) + 1;
NREAD = 12;
READ#(12): PUT EDIT('/ STR.DT. / STP.DT. / COMPLT /')
(COL(1), A);
PUT EDIT('/__*___*__/__*___*__/***___***/!) (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO LABEL#(13);
GET STRING(ANS) EDIT(START_DATE(NNN),STOP_DATE(NNN),COMPLET(NNN))
(X(1),A(9),X(1),A(9),X(4),F(5,2)) ;
CALL FDATE(START_DATE(NNN),START_DATE_CODE(NNN),2);
STEP_DATES(MMM) =START_DATE_CODE(NNN)-1;
CALL FDATE(STOP_DATE(NNN),STOP_DATE_CODE(NNN),3);
STEP_DATES(MMM+1) = STOP_DATE_CODE(NNN) -1;
STEP_DATES(MMM+2) = COMPLET(NNN);
STOPII = NNN;
END;
TYPE_NUMBER = -STOPII;
/* *****                          ***** */
GO TO LABEL#(13);
/* *****                        ***** */
```

```
LAB_EV:;
DO I = 1 TO STOPI;
NNN = NNN + 1;
NREAD = 13;
READ#(13): PUT EDIT('/ EVENT DATE /') (COL(1), A);
PUT EDIT('/__*___*__/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO LABEL#(13);
GET STRING(ANS) EDIT(EVENT_DATE(NNN)) (X(1),A(9)) ;
CALL FDATE(EVENT_DATE(NNN),START_DATE_CODE(NNN),1);
STEP_DATES(NNN) =START_DATE_CODE(NNN) - 1;
STOPII = NNN;
END;
TYPE_NUMBER =  STOPII;
LABEL#(13):; /* NO CHANGES */
FIN = SUBSTR(ANS,1,1) ;
IF FIN = 'S' THEN DO;
IF NLABEL = 8 | NLABEL = 10 THEN GO TO LABZZX;
FIN = 'N';
END;
LABZZX:;
CALL NEWPAG;
CALL TSEND;
/* *****      ***** */
RETURN;
/* *****      ***** */
END CHANGE;
```

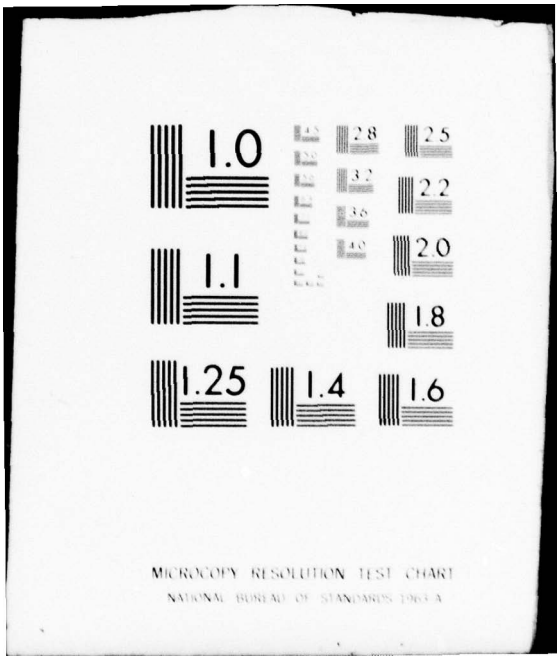
```
FDATE: PROC(DAY_MONTH_YEAR,FDATE_CODE,NDTYPE);
DCL DTYPE(0:4) CHAR(6) INIT('      ','EVENT','START',' STOP');
DCL NDTYPE FIXED BIN(15);
DCL DMC PIC'99AAAAA99';
DCL A1 CHAR(1);
DCL INITT ENTRY(FIXED BIN(31));
DCL TOUTPT ENTRY(FIXED BIN(31));
DECLARE (L,I,J,K) FIXED;
DECLARE DAY_MONTH_YEAR CHAR(10);
DECLARE (MONTH) CHARACTER(3);
DCL (YEAR,MONTH_CODE) PIC'999V99';
DECLARE DAY_FACTOR(3,4) FIXED DEC(5,2)
INIT(31.0,30.0,31.0,31.0,
28.0,31.0,31.0,30.0,
31.0,30.0,30.0,31.0);
DECLARE FDATE(3,4) CHARACTER(3)
INIT('JAN','APR','JUL','OCT',
'FEB','MAY','AUG','NOV',
'MAR','JUN','SEP','DEC');
DECLARE START_YEAR FIXED DEC(5,2) INIT(76.0),
FDATE_CODE FIXED DEC(5,2),DAY PIC'999V99';
ON CONVERSION BEGIN;
PUT EDIT('     YOUR DATE CONTAINED AN ERROR ',
'IT MUST BE CHANGED TO ',
'ALLOW PROCESSING TO CONTINUE     ')
(COL(5),A,A,A);
PUT EDIT(ONSOURCE) (COL(1),A);
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(A1,DMC) (COL(1),A(1),P'99AAAAA99');
DAY_MONTH_YEAR =  DMC;
GO TO JBA;
END;
BEGIN;
IF SUBSTR(DAY_MONTH_YEAR,3,1) ¬= ' ' |
SUBSTR(DAY_MONTH_YEAR,7,1) ¬= ' ' THEN DO;
PUT EDIT(DTYPE(NDTYPE),' DATE IN ERROR YOU MUST RE-ENTER  ')
(COL(1),(2)A);
PUT EDIT(DAY_MONTH_YEAR) (COL(2),A);
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(DAY_MONTH_YEAR) (COL(2),P'99AAAAA99');
END;
END;
JBA: DAY = SUBSTR(DAY_MONTH_YEAR,1,2);
```

```
MONTH = SUBSTR(DAY_MONTH_YEAR,4,3);
YEAR = SUBSTR(DAY_MONTH_YEAR,8,2);
/* ***** START FINDING MONTH CODE ***** */
FIX_MON: K=0; L=0; MONTH_CODE=0;
DO I=1 TO 3 ;
L= SUM(FDATE(I,*)=MONTH);
IF L=1 THEN DO J=1 TO 4 ;
K=SUM(FDATE(*,J)=MONTH);
IF K=1 THEN DO;
MONTH_CODE= 3*(J-1) + I;
GO TO S600;
END;
END;
/* ***** END FINDING MONTH CODE ***** */
END;
PUT EDIT(' I CANNOT FIND YOUR MONTH    ',
' PLEASE RE-ENTER.')
(COL(5),A);
PUT EDIT('/___/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(MONTH) (COL(2),A(3));
GO TO FIX_MON;
/* ***** CALCULATE FDATE CODE ***** */
S600: FDATE_CODE = DAY / DAY_FACTOR(I,J)
+ MONTH_CODE
+(YEAR-START_YEAR)*12 + .01;
/* *****                          ***** */
S700: RETURN;
END FDATE;
```

AD-A072 140 ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND ST LO--ETC F/G 9/2
SCHEDULE. MANAGERIAL TOOL FOR PROJECT/PRODUCT MANAGERS.(U)
MAY 79 V ALLEN, L ANTWILER, M GARSIK

UNCLASSIFIED USAAVRADCOM-TR-79-17 NL

2 OF 3
AD
A072140


1.0
1.1
1.25
1.4
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2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

```
GRAP: PROC(TYPE);
DCL ANS CHAR(80) VAR;
DCL (LLIMIT,ULIMIT,STYR,NOYR) FIXED DEC(5,2) EXTERNAL;
DCL PROMPT CHAR(1) EXTERNAL;
DCL (TYPE,RTYPE) CHAR(1);
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL INITT ENTRY(FIXED BIN(31));
DCL SCRATCH FILE ENV(F(80,80));
DCL DIREC FILE RECORD KEYED ENV(INDEXED F(1140,114));
IF TYPE = 'N' THEN CALL NEW1;
IF TYPE = 'L' THEN CALL WINDOW;
IF TYPE = 'E' THEN CALL UPDATE;
IF TYPE = 'R' THEN DO;
PUT EDIT('ENTER TERMINAL TYPE') (COL(1),A);
IF PROMPT = 'Y' THEN
PUT EDIT('ENTER',
'G - TEXTRONIX 4014 (GRAPHICAL OUTPUT)',
'P - TEXAS INSTRUMENTS (PRINTER OUTPUT)'
'N - NONE')
(COL(1),A,(3)(COL(5),A));
PUT SKIP(2);
GET EDIT(RTYPE) (COL(1),A(1));
IF RTYPE = 'G' THEN CALL FORM;
IF RTYPE = 'P' THEN CALL TYREPT;
END;
RETURN;
END GRAP;
```

```
LLIST: PROC(LINE);
DECLARE LINE CHAR(114);
DECLARE 1 CARD BASED(P),
  2 DELETE_FLAG BIT(8),
  2 ASEC CHAR(7),
  2 APLI_CODE CHAR(11),
  2 MAJOR_SYSTEM1 CHAR(12),
  2 MAJOR_SYSTEM2 CHAR(20),
  2 TITLE1 CHAR(24),
  2 TITLE2 CHAR(20),
  2 AS_OF_DATE CHAR(10),
  2 NO_DVL_STPS FIXED DEC(5,0),
  2 NO_REMARKS FIXED DEC(5,0),
  2 FILE_END FIXED DEC(5,0);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
    3 ASE_CODE CHAR(7),
    3 APLI_CODE CHAR(11),
    3 TYPE_NUMBER FIXED DEC(2),
    3 TITLE CHAR(28),
    3 STEP_DATES(9) FIXED DEC(5,2),
    3 COST(4) FIXED DEC(5,2),
    3 REST CHAR(26);
DECLARE 1 REMARKS BASED(R),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 REMARK CHAR(80),
  2 REST CHAR(15);
DCL ALDATE(9) CHAR(9);
DCL APLI CHAR(11) VAR;
DCL DUMMY FIXED DEC(5,2);
/* *****      ***** */
P = ADDR(LINE);
Q = P;
R = P;
/* *****      ***** */
IF SUBSTR(LINE,5,4) = '0000' THEN DO;
PUT EDIT('SYSTEM NUMBER: ',SUBSTR(ASEC,1,3))
(COL(1),A,A);
PUT EDIT('MAJOR SYSTEM: ',MAJOR_SYSTEM1,MAJOR_SYSTEM2) (COL(1),A,A,
PUT EDIT('PROJECT TITLE: ',TITLE1,TITLE2) (COL(1),A,A,A);
PUT EDIT('AS OF DATE: ',AS_OF_DATE) (COL(1),A,A);
PUT SKIP(2);
RETURN;
END;
```

```
APLI = CARD.APLI_CODE;
LSTR1 = VERIFY(APLI,' ');
IF LSTR1 = 0 | LSTR1 = 11 THEN DO;
NSP = 0;
GO TO XX;
END;
LSTR2 = INDEX(APLI,' ');
DO I = 11 TO 1 BY -1;
IF INDEX(SUBSTR(APLI,I,1),' ') = 0 THEN DO;
NSP = -LSTR1 + I;
GO TO XX;
END;
END;
XX:APLI = SUBSTR(APLI,LSTR1,NSP+1);
NSP = 10-NSP;
IF SUBSTR(LINE,113,1) = 'S' THEN DO;
IF TYPE_NUMBER > 0 THEN DO;
LE: DO K = 1 TO TYPE_NUMBER;
DUMMY = STEP_DATES(K) + 1;
CALL RDATE(ALDATE(K),DUMMY);
END LE;
PUT EDIT(SUBSTR(ASEC,4,4),'('||APLI||')',TITLE,
(ALDATE(K) DO K = 1 TO TYPE_NUMBER))
(COL(1),A,X(1),X(NSP),A,A,A,COL(20),A,X(1),
(TYPE_NUMBER)(COL(49),A,X(1),A));
END;
NUMBER = -TYPE_NUMBER;
IF TYPE_NUMBER < 0 THEN DO;
LS: DO KK = 1,2,4,5,7,8 WHILE(TYPE_NUMBER*3<-KK);
DUMMY = STEP_DATES(KK) + 1;
CALL RDATE(ALDATE(KK),DUMMY);
END LS;
PUT EDIT(SUBSTR(ASEC,4,4),'('||APLI||')',TITLE,
(ALDATE(K),ALDATE(K+1),STEP_DATES(K+2)
DO K = 1 TO NUMBER*3 BY 3))
(COL(1),A,X(1),X(NSP),A,A,A,X(1),A,X(1),
(NUMBER)(COL(49),A,X(1),A,X(3),P'9V99'));
END;
PUT SKIP(2);
RETURN;
END;
IF SUBSTR(LINE,113,1) = 'R' THEN DO;
LSTR1 = INDEX(SUBSTR(REMARK,32,8),' ') + 31;
LSTR2 = VERIFY(SUBSTR(REMARK,LSTR1,80-LSTR1),' ');
PUT EDIT(SUBSTR(ASEC,4,4),'('||APLI||')',SUBSTR(REMARK,1,LSTR1))
(COL(1),A,X(1),X(NSP),A,A,A,COL(20),A);
IF LSTR2 ¬= 0 THEN
```

```
PUT EDIT(SUBSTR(REMARK,LSTR1+1,79-LSTR1))
(COL(20),A);
PUT SKIP(2);
RETURN;
END;
RETURN;
END LLIST;
```

```
MASTER: PROCEDURE(JBACBA) OPTIONS(MAIN);
DCL (NSARY,NRARY) FIXED DEC(5) EXTERNAL;
DCL (LLIMIT,ULIMIT,STYR,NOYR) FIXED DEC(5,2) EXTERNAL;
DCL NSANS CHAR(1);
DCL JBACBA CHAR(100) VAR;
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL INITT ENTRY(FIXED BIN(31));
DCL CHER FIXED DEC(5,2);
DECLARE LINE CHAR(114);
DCL (JENNY1,JENNY2,JENNY3,JENNY4,JENNY5) CHAR(1) EXTERNAL;
DCL ANS CHAR(80) VAR;
DCL PROMPT CHAR(1) EXTERNAL;
DCL TYPE CHAR(1);
DCL IX FIXED DEC(5,0);
DCL SCRATCH FILE ENV(F(80,80));
DCL DIREC FILE RECORD KEYED ENV(INDEXED F(1140,114));
CALL INITT(120);
CALL TSEND;
ULIMIT = 999.99;
IX = 0;
/*
JENNY1 = P => PROJECT MANAGER
JENNY1 = R => R & D COMMAND
JENNY1 = N => OTHER
JENNY2 = C => WRITE ACROSS SYSTEMS
JENNY2 = N => NOT AVAILABLE
JENNY3 = P => APLICATION CODE POSITION DEPENDENT
JENNY3 = NOT AVAILABLE
JENNY4 = M => MAX LINES CONTROL
JENNY4 = N => NOT AVAILABLE
JENNY5 = W => WINDOW
JENNY5 = N => NOT AVAILABLE
*/
IF LENGTH(JBACBA) = 0 THEN DO;
JENNY1 = 'P';
JENNY2 = 'N';
JENNY3 = 'N';
JENNY4 = 'N';
JENNY5 = 'N';
NSARY = 1000;
NRARY = 100;
END;
ELSE DO;
JENNY1 = SUBSTR(JBACBA,1,1);
JENNY2 = SUBSTR(JBACBA,2,1);
JENNY3 = SUBSTR(JBACBA,3,1);
JENNY4 = SUBSTR(JBACBA,4,1);
```

```
JENNY5 = SUBSTR(JBACBA,5,1);
IF LENGTH(JBACBA) >= 10 THEN
GET STRING(JBACBA) EDIT(NSARY) (X(5),F(5));
ELSE NSARY = 1000;
IF LENGTH(JBACBA) >= 15 THEN
GET STRING(JBACBA) EDIT(NRARY) (X(10),F(5));
ELSE NRARY = 100;
END;
PUT EDIT('DO YOU NEED FULL PROMPTING ?') (COL(1),A);
PUT SKIP(2);
GET EDIT(PROMPT) (COL(1),A(5));
LABZ: PUT EDIT('ENTER SYSTEM TYPE') (COL(1),A);
IF PROMPT = 'Y' THEN
PUT EDIT('N - NEW (THE SYSTEM DOES NOT HAVE A CODE)',
'O - OLD (THE SYSTEM IS IN THE MAIN FILE)!)
(COL(5),A);
PUT SKIP(2);
GET EDIT(TYPE) (COL(1),A(5));
IF TYPE = 'N' THEN CALL GRAP(TYPE);
IF TYPE = 'O' THEN DO;
LABZZ: PUT EDIT('DO YOU WISH TO WRITE REPORTS OR TO EDIT DATA?')
(COL(1),A);
IF PROMPT = 'Y' THEN
PUT EDIT('ENTER',
'E - EDIT DATA',
'R - WRITE REPORTS',
'N - NONE')
(COL(1),A,COL(5),A,COL(5),A,COL(5),A);
PUT SKIP(2);
GET EDIT(TYPE) (COL(1),A(1));
IF TYPE = 'N' THEN GO TO LABZZZ;
IF TYPE = 'E' THEN CALL GRAP(TYPE);
IF TYPE = 'R' THEN DO;
IF JENNY5 = 'W' THEN DO;
PUT EDIT('DO YOU WANT A WINDOW OF DATA ?') (COL(1),A);
PUT SKIP(2);
GET EDIT(NSANS) (COL(1),A(1));
IF NSANS = 'Y' THEN DO;
TYPE = 'L';
CALL GRAP(TYPE);
END;
ELSE DO;
LLIMIT = 0.0;
ULIMIT = 999.99;
END;
END;
CALL REPORTS(IX,TYPE);
```

```
TYPE = 'R';
IF IX = 1 THEN DO;
OPEN FILE(SCRATCH) INPUT;
CALL GRAP(TYPE);
CLOSE FILE(SCRATCH);
END;
ELSE;
END;
GO TO LABZZ;
END;
LABZZZ: PUT EDIT('DO YOU WISH TO CONTINUE ?') (COL(1),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF ANS = 'Y' | ANS = 'YES' THEN GO TO LABZ;
END MASTER;
```

```
NEW: PROC(NO_SYS);
DCL PROMPT1 CHAR(1);
DCL PROMPT CHAR(1) EXTERNAL;
DCL RE_START CHAR(2) VAR;
DECLARE MAJOR_SYSTEM1 CHAR(12), MAJOR_SYSTEM2 CHAR(20);
DECLARE T_SEND CHAR(40)
INIT('          SCHEDULES                              ');
DECLARE ANS CHAR(80) VAR;
DCL STOP1 FIXED DEC(1);
DCL REMARK CHAR(72) VAR;
DECLARE LETTER CHAR(27) INIT('ABCDEFGHIJKLMNOPQRSTUVWXYZ ');
DCL START_DATE_CODE(5) FIXED DEC(5,2);
DCL STOP_DATE_CODE(5) FIXED DEC(5,2);
DCL EVENT_DATE_CODE(5) FIXED DEC(5,2);
DCL CAL_DATE FIXED DEC(5,2);
DECLARE (NTYPE,NUMB) FIXED;
DCL INITT ENTRY(FIXED BIN(31));
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL IOWAIT ENTRY(FIXED BIN(31));
DCL FDATE ENTRY(CHAR(9),FIXED DEC(5,2),FIXED BIN(15));
DCL TITLE1 CHAR(20) VAR, TITLE2 CHAR(24) VAR,
STP_TITLE CHAR(28) VAR, ID_NO FIXED,
AS_OF_DATE CHAR(9);
DCL (NO_DVP_STPS,NO_REMARKS,COMPLET(10))  FIXED DEC(5,2);
DCL (EVENT_DATE(10),START_DATE(10),STOP_DATE(10)) CHAR(9);
DCL NO_SYS FIXED DEC(5,0);
DCL NOSYS FIXED DEC(5,0);
DCL JBA CHAR(3) VAR;
DCL READ#(10) LABEL;
DCL (NREAD,I,II,III,NNN) FIXED DEC(5,0);
DCL STD FILE ENV(F(80,80));
DCL SCRATCH FILE ENV(F(80,80));
DCL MAXNO FIXED DEC(5,0);
OPEN FILE(STD) INPUT;
DCL STDTLE CHAR(28) BASED(TP);
DCL TIP(500) POINTER;
ON CONVERSION BEGIN;
PUT EDIT('YOUR INPUT WAS IN ERROR') (COL(1), A);
PUT SKIP(2);
PUT EDIT(ONSOURCE) (COL(1),A);
PUT SKIP(2);
PUT EDIT('RE-ENTER') (COL(2), A);
PUT SKIP(2);
REVERT CONVERSION;
GO TO READ#(NREAD);
END;
ON ENDFILE (STD) GO TO XX;
```

```
STLOOP: DO ID_NO = 1 TO 500;
ALLOCATE STDTLE;
GET FILE(STD) EDIT(STDTLE) (COL(1),A(28));
TIP(ID_NO) =TP;
END STLOOP;
XX: MAXNO = ID_NO - 1;
CLOSE FILE(STD);
PUT EDIT(' IS THIS A RE-START OF AN OLD JOB ?')
(COL(5),A);
PUT SKIP(2);
GET EDIT(RE_START) (COL(1),A(2));
IF SUBSTR(RE_START,1,1) = 'Y' THEN RESTART: DO;
BEGIN;
DCL HCARD CHAR(80) BASED(PC);
DCL PCARD(500) POINTER;
DCL HOLD CHAR(80) VAR;
DCL (I,J) FIXED DEC(5,0);
ON ENDFILE(SCRATCH) BEGIN;
IF I< 7 THEN DO;
PUT EDIT('RESTART FAILED       YOU MUST ENTER ALL DATA AGAIN')
(COL(5),A);   PUT SKIP(2);
CLOSE FILE(SCRATCH);
GO TO XX4;
END;
GO TO XX1;
END;
OPEN FILE(SCRATCH) INPUT;
L1: DO I = 1 TO 500;
ALLOCATE HCARD;
GET FILE(SCRATCH) EDIT(HCARD) (COL(1),A(80));
PCARD(I) = PC;
END L1;
XX1: CLOSE FILE(SCRATCH);
OPEN FILE (SCRATCH) OUTPUT;
L2: DO J = 1 TO I-2;
PC = PCARD(J);
PUT FILE(SCRATCH) EDIT(HCARD) (COL(1),A);
IF J ¬= 4 THEN FREE HCARD;
END L2;
PC = PCARD(4);
GET STRING(HCARD) EDIT(NO_DVP_STPS,NO_REMARKS) ((2)F(5,0));
FREE HCARD;
PC = PCARD(I-1);
NO_DVP_STPS = NO_DVP_STPS - I + 5;
IF NO_DVP_STPS > 0 THEN DO;
CALL BELL;
CALL TSEND;
```

```
PUT EDIT('THE LAST DEVELOPMENT STEP WAS') (COL(5),A);
PUT EDIT(HCARD) (COL(1),A);
PUT EDIT(' START WITH NEXT DEVELOPMENT STEP')
(COL(5),A);
PUT SKIP(2);
CALL IOWAIT(30);
GO TO XX2;
END;
IF NO_REMARKS + NO_DVP_STPS > 0 THEN DO;
CALL BELL;
CALL TSEND;
PUT EDIT('THE LAST REMARK WAS') (COL(5),A);
PUT EDIT(HCARD) (COL(1),A);
PUT EDIT('START WITH NEXT REMARK')
(COL(6),A);
PUT SKIP(2);
CALL IOWAIT(30);
GO TO NULLDVL;
END;
GO TO XX3;
END RESTART;
XX4: OPEN FILE(SCRATCH) OUTPUT;
/*          */
/* ***** START SET UP OF REPORT HEADING ***** */
NREAD = 1;
NREAD = 2;
CALL NEWPAG;
CALL TSEND;
PUT EDIT('ENTER MAJOR SYSTEMS') (COL(1),A);
PUT EDIT('/__________/__________________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(MAJOR_SYSTEM1,MAJOR_SYSTEM2) (COL(2),A(12),X(1),A(20));
READ#(2): PUT EDIT('ENTER PROJECT TITLE') (COL(1), A);
PUT EDIT('/__________________/________________________/')
(COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(TITLE1,TITLE2) (COL(2), A(20), X(1), A(24)) ;
NREAD = 3;
READ#(3): PUT EDIT('AS OF DATE') (COL(1), A);
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(AS_OF_DATE) (X(1), P'99AAAAA99') ;
NREAD = 4;
```

```
CALL FDATE(AS_OF_DATE,CAL_DATE,0);
CAL_DATE = CAL_DATE-1;
READ#(4): PUT EDIT('ENTER THE NUMBER OF TASKS PLUS EVENTS')
(COL(1),A);
PUT EDIT('/____/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(NO_DVP_STPS) (COL(2),F(5,0));
NREAD = 5;
READ#(5): PUT EDIT('ENTER THE NUMBER OF REMARKS') (COL(1),A);
PUT EDIT('/____/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(NO_REMARKS) (COL(2),F(5,0));
/* ***** END SET OF REPORT HEADING ***** */
/* ***** PUT HEADING IN FILE ***** */
PUT FILE(SCRATCH) EDIT(T_SEND,CAL_DATE )
(COL(1),A,F(5,2));
PUT FILE(SCRATCH) EDIT(MAJOR_SYSTEM1,MAJOR_SYSTEM2)
(COL(1),A,A);
PUT FILE(SCRATCH) EDIT(TITLE1,TITLE2,AS_OF_DATE)
(COL(1),A,A,A);
PUT FILE(SCRATCH) EDIT(NO_DVP_STPS,NO_REMARKS)
(COL(1),(2)F(5,0));
/* ***** END HEADING INPUT TO FILE ***** */
/* ***** START ENTERING STEP DATA ***** */
XX2:NULLD = 0;
LOOP1:   DO II = 1 TO NO_DVP_STPS;
NNN = 1;
CALL NEWPAG;
CALL TSEND;
NREAD = 6;
READ#(6): PUT EDIT ('ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS')
(COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT(' TASK OR EVENT ', ' FOLLOWED BY NUMBER')
(COL(2),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1), A(80)) ;
IF SUBSTR(ANS,1,1) = 'N' THEN DO;
NULLD = NULLD + 1;
GO TO NULLDVL;
END;
IF SUBSTR(ANS,1,1) ='E' THEN NTYPE = 1;
ELSE NTYPE = 0;
NUMB = VERIFY(ANS,LETTER);
IF NUMB > 0 THEN GET STRING(ANS) EDIT(STOP1) (X(NUMB-1),F(1));
```

```
ELSE STOPI = 1;
IF NTYPE = 0 THEN DO;
IF STOPI > 3 THEN DO;
STOPI = 3;
PUT EDIT('MAX NUMBER OF SUB TASKS IS 3    ')
(COL(5),A);
END;
NREAD = 7;
READ#(7): PUT EDIT('/ ID#  /          TASK                    / STR.DT.
,'/ STP.DT / COMPLT   /') (COL(1), A, A);
PUT SKIP(2);
PUT EDIT('/*____*/_____________________/__*___*__/',
'__*___*__/***___***/') (COL(1),A,A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(ID_NO,STP_TITLE,START_DATE(NNN),STOP_DATE(NNN)
COMPLET(NNN)) (X(2), F(5,0),X(1),A(28),X(1),A(9),X(1),A(9),
X(4),F(5,2));
CALL FDATE(START_DATE(NNN),START_DATE_CODE(NNN),2);
START_DATE_CODE(NNN) = START_DATE_CODE(NNN)-1;
CALL FDATE(STOP_DATE(NNN),STOP_DATE_CODE(NNN),3);
STOP_DATE_CODE(NNN) = STOP_DATE_CODE(NNN) -1;
/* ****************************************** */
/* ENTER MULT ELEMENTS */
/* ***** START OF INPUT OF A TASK ***** */
DO I = 2 TO STOPI;
NNN = NNN + 1;
NREAD = 8;
READ#(8): PUT EDIT('/ STR.DT. / STP.DT. / COMPLT /')
(COL(1), A);
PUT EDIT('/__*___*__/__*___*__/***___***/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(START_DATE(NNN),STOP_DATE(NNN),COMPLET(NNN))
(X(1),A(9),X(1),A(9),X(4),F(5,2)) ;
CALL FDATE(START_DATE(NNN),START_DATE_CODE(NNN),2);
START_DATE_CODE(NNN) = START_DATE_CODE(NNN)-1;
CALL FDATE(STOP_DATE(NNN),STOP_DATE_CODE(NNN),3);
STOP_DATE_CODE(NNN) = STOP_DATE_CODE(NNN) -1;
/* *****                    ***** */
END;
IF ID_NO > 0 & ID_NO < MAXNO * 10 THEN DO;
ID_NO = ID_NO/10;
TP = TIP(ID_NO);
STP_TITLE = STDTLE;
```

```
END;
/* ***** END INPUT OF A TASK ***** */
/* ***** PUT TASK IN FILE ***** */
PUT FILE(SCRATCH) EDIT(-NNN,STP_TITLE,(START_DATE_CODE(III),
STOP_DATE_CODE(III),COMPLET(III) DO III=1 TO NNN))
(COL(1),F(2,0),A,(NNN*3)P'999V99');
END;
/* *****                          ***** */
IF NTYPE¬=0 THEN DO;
IF STOPI > 9 THEN DO;
STOPI = 9;
PUT EDIT('MAX NUMBER OF SUB EVENTS IS 9     ')
(COL(5),A);
END;
PUT EDIT('/ ID#  /              EVENT              /   DATE  / ')
(COL(1), A);
PUT EDIT('/*____*/_____________________________/__*___*__/')
(COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(ID_NO,STP_TITLE,EVENT_DATE(NNN))
(X(2),F(5,0),X(1),A(28),X(1),A(9));
CALL FDATE(EVENT_DATE(NNN),START_DATE_CODE(NNN),1);
START_DATE_CODE(NNN) = START_DATE_CODE(NNN)-1;
IF ID_NO > 0 & ID_NO < MAXNO * 10 THEN DO;
ID_NO = ID_NO/10;
TP = TIP(ID_NO);
STP_TITLE = STDTLE;
END;
ELSE;
DO I = 2 TO STOPI;
NNN = NNN + 1;
NREAD = 9;
READ#(9): PUT EDIT('/ EVENT DATE /') (COL(1), A);
PUT EDIT('/__*___*__/') (COL(1), A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(EVENT_DATE(NNN)) (X(1),P'99AAAAA99') ;
CALL FDATE(EVENT_DATE(NNN),START_DATE_CODE(NNN),1);
START_DATE_CODE(NNN) = START_DATE_CODE(NNN) - 1;
END;
/* ***** END INPUT OF AN EVENT ***** */
/* ***** PUT EVENTS IN FILE ***** */
PUT FILE(SCRATCH) EDIT(NNN,STP_TITLE,(START_DATE_CODE(III)
DO III = 1 TO NNN))
```

```
(COL(1),F(2,0),A,(NNN)P'999V99');
END;
END LOOP1;
NULLDVL:;
/* ***** END ENTERING ELEMENT DATA ***** */
/* ***** START ENTERING REMARKS ***** */
CALL NEWPAG;
CALL TSEND;
LOOP2: DO II = 1 TO NO_REMARKS;
PUT EDIT('ENTER REMARKS',II)
(COL(1),A,F(5,0));
PUT EDIT('/*_____',
'_____',
'_____*/')(COL(1),A,A,A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO XXA;
GET STRING(ANS) EDIT(REMARK) (X(2), A(78));
/* ***** PUT REMARKS IN FILE ***** */
PUT FILE(SCRATCH) EDIT(REMARK) (COL(1),A(78));
/* *****                          ***** */
END LOOP2;
XXA:;
/* ***** END ENTERING REMARKS ***** */
/*     */
CLOSE FILE(SCRATCH) ;
XX3:;
/*      *****      ***** */
DO I = 1 TO MAXNO;
TP = TIP(I);
FREE STDTLE;
END;
RETURN;
/*      *****      ***** */
END NEW;
```

```
NEW1: PROC;
DCL INITT ENTRY(FIXED BIN(31));
DCL NUMBER CHAR(9) INIT('123456789');
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL NO_SYS FIXED DEC(5,0);
DCL PROMPT CHAR(1) EXTERNAL;
DCL PROMPT1 CHAR(1);
DCL NLABEL FIXED DEC(5,0), CTYPE CHAR(1);
DCL NCODE CHAR(1);
DCL LAB0(0:4) LABEL;
DCL SCRATCH FILE ENV(F(80,80));
NO_SYS = 1;
LABX:PUT EDIT('WILL YOU ENTER THE DATA FROM THE ',
'KEYBOARD OR IS IT PRESENTLY ON A FILE ?')
(COL(2),A,A);
PROMPT1 = 'N';
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN DO;
PUT EDIT('ENTER','K - KEYBOARD','F - FILE','N - NONE')
(COL(3),COL(5),A,COL(5),A,COL(5),A);
END;
PUT SKIP(2);
GET EDIT(CTYPE) (COL(1),A(1));
I = INDEX('NKF',CTYPE);
GO TO LAB0(I);
LAB0(0):; /* CODE NOT FOUND */
PUT EDIT(' RE-ENTER CODE     ')
(COL(3),A);
PUT SKIP(2);
PROMPT1 = 'Y';
GO TO LABX;
LAB0(1): /* NONE */
PUT EDIT(' NO DATA TO INPUT') (COL(1),A);
PUT SKIP(2);
/* *****      ***** */
RETURN;
/* *****      ***** */
LAB0(2):; /* ENTER FROM KEYBOARD */
CLOSE FILE(SCRATCH);
NO_SYS = 1;
CALL NEW(NO_SYS);
NPRT = 0;
LAB0(3):; /* ENTER FROM FILE */;
IF CTYPE = 'F' THEN DO;
PUT EDIT('IS YOUR DATA IN A REPORT FORM ?')
(COL(1),A); PUT SKIP(2);
GET EDIT(CTYPE) (COL(1),A(1));
IF CTYPE = 'Y' THEN NPRT = 20;
```

```
ELSE NPRT = 0;
END;
BEGIN;
DECLARE LINE CHAR(114);
DECLARE 1 CARD BASED(P),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 MAJOR_SYSTEM1 CHAR(12),
  2 MAJOR_SYSTEM2 CHAR(20),
  2 TITLE1 CHAR(20),
  2 TITLE2 CHAR(24),
  2 AS_OF_DATE CHAR(10),
  2 NO_DVL_STPS FIXED DEC(5,0),
  2 NO_REMARKS FIXED DEC(5,0),
  2 FILE_END FIXED DEC(5,0);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
    3 ASE_CODE CHAR(7),
    3 APLI_CODE CHAR(11),
    3 TYPE_NUMBER FIXED DEC(2),
    3 TITLE CHAR(28),
    3 STEP_DATES(9) FIXED DEC(5,2),
    3 COST(4) FIXED DEC(5,2),
    3 REST CHAR(26);
DECLARE 1 REMARKS BASED(R),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 REMARK CHAR(80),
  2 REST CHAR(15);
DCL ANS CHAR(80) VAR;
DCL PP POINTER;
DCL (I0,I01)  FIXED DEC(5,0);
DCL(X2,X3,X4) PIC'9999';
DCL X1 PIC'999';
DCL DUMMY CHAR(80) VAR;
DECLARE DIREC FILE RECORD  KEYED ENV(INDEXED F(1140,114));
P = ADDR(LINE);
Q = P;
R = P;
/* ********************************************** */
/*      OCFILE(1) => SEQUENTIAL UPDATE     */
/*      OCFILE(2) => DIRECT UPDATE         */
/*       OCFILE(3) => SEQUENTIAL OUTPUT     */
/* ********************************************** */
```

```
ON ENDFILE(SCRATCH) BEGIN;
REVERT ENDFILE(SCRATCH);
GO TO FINISH;
END;
ON CONVERSION BEGIN;
REMARKS.REST = 'RRRRRRRRRRRRRRR';
NOREMARKS = NOREMARKS - 1;
GET STRING(ANS) EDIT(REMARK) (A(80));
NODVLSTPS = 11;
REMARKS.ASE_CODE = ASECODE;
WRITE FILE(DIREC) FROM(REMARKS) KEYFROM(ASECODE);
GO TO L3;
END;
ON ERROR BEGIN;
PUT EDIT('YOU HAVE SOMETHING WRONG WITH YOUR MAIN FILE.',
'DO NOT WRITE REPORTS OR ENTER A NEW SYSTEM ',
'UNTIL YOU HAVE CONSULTED THE "SCHEDULE" ',
'PROGRAMMER.',
'YOU MAY CONTINUE TO EDIT DATA IF YOU WISH.')
(COL(5),A,COL(5),A,A,A);
PUT SKIP(2);
GO TO FINISH;
END;
CLOSE FILE(SCRATCH);
IO = 3;
OPEN FILE(SCRATCH) INPUT;
FILE_END = 6;
TYPE_NUMBER = 1;
CARD.DELETE_FLAG = (8)'0'B;
DCL APLICODE CHAR(11), ASECODE CHAR(7) VAR;
LABX1: PUT EDIT(' DO YOU WANT THIS DATA ADDED TO THE MAIN FILE?')
(COL(1),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF ANS = 'Y' | ANS ='YES' THEN DO;
ON KEY(DIREC) BEGIN;
PUT EDIT(' FILE CODE FOR THE SYSTEM IS ',ASECODE)
(COL(3),A,A);
PUT SKIP(2);
GO TO LABX2;
END;
/*      *****      *****      */
IO = 1;
X1 = 0;
CALL OCFILE(IO);
DO WHILE('1'B);
X1 = X1 + 1;
```

```
ASECODE = CHAR(X1)||'0000';
READ FILE(DIREC) KEY(ASECODE) SET(PP);
END;
LABX2: PUT EDIT('ENTER APLI CODE') (COL(1),A);
PUT SKIP(2);
NCODE = SUBSTR(ASECODE,1,1);
GET EDIT(APLICODE) (COL(1),A(11));
IO = 3;
CALL OCFILE(IO);
CARD.APLI_CODE = APLICODE;
GET FILE(SCRATCH) EDIT(DUMMY) (COL(1),A(80));
GET FILE(SCRATCH) EDIT(CARD.MAJOR_SYSTEM1,CARD.MAJOR_SYSTEM2)
(COL(1),(NPRT)X(1),A(12),A(20));
GET FILE(SCRATCH) EDIT(CARD.TITLE1,CARD.TITLE2,CARD.AS_OF_DATE)
(COL(1),A(20),A(24),A(10));
X4 = 0;
RPT:GET FILE(SCRATCH) EDIT(CARD.NO_DVL_STPS,CARD.NO_REMARKS)
(COL(1),(2)F(5,0));
NOREMARKS = CARD.NO_REMARKS;
NODVLSTPS = CARD.NO_DVL_STPS;
IF CTYPE = 'Y' & X4 ¬= 0 THEN GO TO L2;
CARD.NO_DVL_STPS=0.0;
CARD.NO_REMARKS=0.0;
X2 = 0;
ASECODE = SUBSTR(ASECODE,1,3)||CHAR(X2);
CARD.ASE_CODE = ASECODE;
WRITE FILE(DIREC) FROM(CARD) KEYFROM(ASECODE);
L2: DO I1 = 1 TO NODVLSTPS;
X3 = I1*10 + X4;
ASECODE = SUBSTR(ASECODE,1,3)||CHAR(X3);
DEVEL_STEP.ASE_CODE = ASECODE;
GET FILE(SCRATCH) EDIT(ANS) (COL(1),A(80));
DO III = 1 TO 4;
COST(III) = 0.0;
END;
GET STRING(ANS) EDIT(NNN)(F(2,0));
TYPE_NUMBER = NNN;
MMM = ABS(NNN);
DO III = MMM TO 9;
STEP_DATES(III) = 0.0;
END;
GET STRING(ANS) EDIT(TITLE) (X(2),A(28));
IF NNN < 1 THEN MMM = 3*MMM;
GET STRING(ANS) EDIT((STEP_DATES(III) DO III = 1 TO MMM))
(X(30),(MMM)(F(5,2)));
DEVEL_STEP.REST = 'SSSSSSSSSSSSSSSSSSSSSSSSS';
WRITE FILE(DIREC) FROM(DEVEL_STEP) KEYFROM(ASECODE);
```

```
END L2;
REMARKS.REST = 'RRRRRRRRRRRRRRR';
X4 = X3;
L3: DO I2 = 1 TO NOREMARKS;
X4 = (I2 + NODVLSTPS)*10;
ASECODE = SUBSTR(ASECODE,1,3)||CHAR(X4);
REMARKS.ASE_CODE = ASECODE;
GET FILE(SCRATCH) EDIT(REMARK) (COL(1),A(80));
WRITE FILE(DIREC) FROM(REMARKS) KEYFROM(ASECODE);
END L3;
IF CTYPE = 'Y' THEN GO TO RPT;
END;
FINISH: CLOSE FILE(SCRATCH);
CLOSE FILE(DIREC);
END;
/*      *****      *****      */
RETURN;
/*      *****      *****      */
END NEW1;
```

```
RDATE: PROC(DAY_MONTH_YEAR,DATE_CODE);
DECLARE DAY_MONTH_YEAR CHARACTER(9);
DECLARE (MONTH) CHARACTER(3);
DCL (YEAR,MONTH_CODE) FIXED DEC(5,2);
DECLARE DAY_FACTOR(12) FIXED DEC(5,2)
INIT(31.0,28.0,31.0,30.0,
31.0,30.0,31.0,31.0,
30.0,31.0,30.0,31.0);
DECLARE DATE(12) CHARACTER(3)
INIT('JAN','FEB','MAR','APR',
'MAY','JUN','JUL','AUG',
'SEP','OCT','NOV','DEC');
DECLARE START_YEAR FIXED DEC(5,2) INIT(76.0),
DATE_CODE FIXED DEC(5,2),IDAY FIXED DEC(5,2);
DECLARE (C1,C3) CHAR(2);
DECLARE C2 CHAR(3);
DECLARE (IDAY1,IYR) PIC'99';
DECLARE IDATE FIXED DEC(3);
DECLARE OFFSET FIXED DEC(2) INIT(0);
/* ***** START FINDING MONTH ***** */
IDATE = TRUNC(DATE_CODE);
IMON = MOD(IDATE,12);
IF IMON = 0 THEN DO;
IMON = 12;
OFFSET = 1;
END;
C2 = DATE(IMON);
/* ***** END FINDING MONTH CODE ***** */
IYR =  TRUNC(DATE_CODE/12) + START_YEAR - OFFSET;
IDAY = DATE_CODE -  TRUNC(DATE_CODE);
IDAY1 = IDAY*DAY_FACTOR(IMON);
IF IDAY1 = 0 THEN DO;
IF IMON = 1 THEN DO;
IMON = 13;
IYR = IYR - 1;
END;
C2 = DATE(IMON-1);
IDAY1 = DAY_FACTOR(IMON-1);
END;
C1 = CHAR(IDAY1);
C3 = CHAR(IYR);
/* ***** CALCULATE DATE  ***** */
DAY_MONTH_YEAR = C1||'*'||C2||'*'||C3;
/* *****                        ***** */
END RDATE;
```

```
REPORTS: PROC(IX,LTYPE);
DCL (NSARY,NRARY) FIXED DEC(5) EXTERNAL;
DCL PROMPT CHAR(1) EXTERNAL;
DCL PQ CHAR(1);
DCL (JENNY1,JENNY2,JENNY3,JENNY4,JENNY5) CHAR(1) EXTERNAL;
DCL (LLIMIT,ULIMIT,STYR,NOYR) FIXED DEC(5,2) EXTERNAL;
DCL SCRATCH FILE ENV(F(80,80));
DCL LAB0(0:1) LABEL;
DCL PROMPT1 CHAR(1);
DCL LINE CHAR(114);
DCL PH POINTER;
DCL PS(*) POINTER CTL;
DCL PR(*) POINTER CTL;
DCL LLINE CHAR(114) BASED(PP);
DCL INITT ENTRY(FIXED BIN(31));
DCL TOUTPT ENTRY(FIXED BIN(31));
DECLARE 1 CARD BASED(P),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 MAJOR_SYSTEM1 CHAR(12),
  2 MAJOR_SYSTEM2 CHAR(20),
  2 TITLE1 CHAR(24),
  2 TITLE2 CHAR(20),
  2 AS_OF_DATE CHAR(10),
  2 ST_YR FIXED DEC(5,0),
  2 NO_YR FIXED DEC(5,0),
  2 FILE_END FIXED DEC(5,0);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
    3 ASE_CODE CHAR(7),
    3 APLI_CODE CHAR(11),
    3 TYPE_NUMBER FIXED DEC(2),
    3 TITLE CHAR(26),
    3 STEP_DATES(9) FIXED DEC(5,2),
    3 COST(4) FIXED DEC(5,2),
    3 REST CHAR(26);
DECLARE 1 REMARKS BASED(R),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 REMARK CHAR(60),
  2 REST CHAR(15);
DCL AGENCY CHAR(20);
DCL REF_DT DEC(5,0) INIT(76);
DCL T_SEND CHAR(40);
```

```
DCL (IO,I01) FIXED DEC(5,0);
DCL CAL_DATE FIXED DEC(5,2);
/* *****      ***** */
DCL DIREC FILE RECORD KEYED ENV(INDEXED F(1140,114));
DCL ASECODE CHAR(7) VAR;
DCL ANS CHAR(80) VAR;
DCL (UDTYPE,CTYPE,LTYPE,NCROSS) CHAR(1);
DCL CTYPE4 CHAR(2);
DCL L1 PIC'999',L2 PIC'9999';
DCL FILL CHAR(5);
DCL (NLABEL,II,IX,IY) FIXED DEC(5,0);
DCL START_DATE_CODE(5) FIXED DEC(5,2);
DCL STOP_DATE_CODE(5) FIXED DEC(5,2);
DCL COMPLET(5) FIXED DEC(5,2);
DCL ASECODE1 CHAR(7);
DCL APLICODE CHAR(11) VAR;
DCL APLICODE2 CHAR(12) VAR;
DCL STITLE CHAR(1);
DCL NSANS CHAR(1);
DCL TARRAY(11) CHAR(40)
INIT('              BUDGET                          ',
IX = 0;
NJFN = 30;
ASECODE1 = 'XXXXXXX';
ALLOCATE PS(NSARY),PR(NRARY);
BEGIN;
DCL DSTR CHAR(6);
DCL NDYPM(12) FIXED DEC(5,2) INIT(31.,28.,31.,30.,31.,30.,
31.,31.,30.,31.,30.,31);
DSTR = DATE;
CAL_DATE = (DEC(SUBSTR(DSTR,1,2))-76)*12
+ DEC(SUBSTR(DSTR,3,2))-.99
+ DEC(SUBSTR(DSTR,5,2),5,2)/NDYPM(DEC(SUBSTR(DSTR,3,2)));
END;
NS = 0;
/*      UPDATING FILE      */
/*      *****      *****      */
/* OCFILE(1) = SEQUENTIAL */
/* OCFILE(2) = DIRECT     */
/*      *****      *****      */
IO = 1;
OPEN FILE(SCRATCH) OUTPUT;
OPEN FILE(DIREC) SEQUENTIAL UPDATE;
L1 = 0;
PUT EDIT('HOW MANY SYSTEMS DO YOU WANT TO SEE?')
(COL(1),A);
PUT EDIT('ENTER') (COL(3),A);
```

```
IF PROMPT = 'Y' THEN PUT EDIT('A - ALL',
'S - SUBSET OF ALL',
'N - NONE')
(COL(5),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
CALL ER_PAGE;
IF ANS = 'A' & JENNY2 = 'C' THEN DO;
PUT EDIT('DO YOU WANT ALL SYSTEMS ON ONE REPORT ?')
(COL(1),A); PUT SKIP(2);
GET EDIT(NCROSS) (COL(1),A(1));
END;
IF ANS = 'N' | ANS = 'NONE' THEN GO TO LAB2;
PUT EDIT('ENTER OFFICE PREPARING REPORTS')
(COL(1),A);
PUT SKIP(2);
GET EDIT(AGENCY) (COL(1),A(20));
IF JENNY4 = 'M' THEN DO;
PUT EDIT('DO YOU WANT THE MAXIMUM LINES PER PAGE TO BE 30')
(COL(1),A); PUT SKIP(2);
GET EDIT(NSANS) (COL(1),A(1));
IF NSANS ¬= 'Y' THEN CALL CHG_MAX;
END;
CHG_MAX:PROC;
ON CONVERSION BEGIN;
PUT EDIT('ENTER AGAIN PLEASE.',
' BE SURE IT IS A NUMBER.')
(COL(1),A); PUT SKIP(2);
REVERT CONVERSION;
GO TO JBA34;
END;
JBA34:PUT EDIT('ENTER NEW MAXIMUM NUMBER OF LINES PER PAGES'
(COL(1),A); PUT SKIP(2);
GET EDIT(NJEN) (COL(1),F(2,0));
IF NJEN > 30 THEN DO; PUT EDIT(' MAXIMUM LINES PER PAGE IS 30')
(COL(1),A); PUT SKIP(2);
NJEN = 30;
END;
RETURN;
END CHG_MAX;
IF ANS = 'A' THEN CALL JA;
IF APLICODE = 'N' THEN GO TO LAB2;
JA:PROC;
PUT EDIT(' ENTER APPLICATION OF INTEREST')
(COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN DO;
IF JENNY1 = 'P' THEN
```

```
PUT EDIT('A - ALL','B - BUDGET','E - PROJECT ENGINEER',
'H - PROJECT MANAGER','O - 104 REPORT',
'P - PROCUREMENT','Q - PRODUCT ASSURANCE',
'R - RECAP','S - PROGRAM SUMMARY','T - TEST','N - NONE')
(COL(5),A);
IF JENNY1 = 'R' THEN
PUT EDIT('A - ALL','C - COMPTROLLER','B - PLANS & ANALYSIS',
'P - PROCUREMENT','E - DEVELOPMENT & ENGINEERING',
'F - ASTIO','T - TRADOC','S - TECOM',
'Q - PRODUCT ASSURANCE','N - NONE')
(COL(5),A);
END;
PUT SKIP(2);
GET EDIT(APLICODE2) (COL(1),A(12));
LSTR = INDEX(APLICODE2,' ') - 1;
APLICODE = SUBSTR(APLICODE2,1,LSTR);
IF APLICODE = 'N' THEN GO TO LABJBA;
IF INDEX(APLICODE,'A') ¬= 0 THEN DO;
APLICODE = 'A';
GO TO LAB3;
END;
IF LENGTH(APLICODE) = 1 & JENNY1 ¬= 'P' THEN DO;;
PUT EDIT(' DO YOU WANT A STANDARD TITLE?')
(COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('Y - YES','N - NO')
(COL(5),A);
PUT SKIP(2);
GET EDIT(STITLE) (COL(1),A(1));
IF STITLE = 'Y' THEN DO;
ITIT = INDEX('BEHOPQRST',APLICODE);
IF ITIT = 0 THEN GO TO LAB3;
T_SEND = TARRAY(ITIT);
GO TO LABJBA;
END;
END;
LAB3: PUT EDIT(' ENTER REPORT TITLE') (COL(1),A);
PUT SKIP(2);
GET EDIT(T_SEND) (COL(1),A(40));
LABJBA:;
CALL ER_PAGE;
END JA;
ON ENDFILE (DIREC) BEGIN;
REVERT ENDFILE(SCRATCH);
IF NS > 0 THEN GO TO XX;
ELSE;
IF IX = 1 THEN GO TO LAB2;
```

```
ELSE PUT EDIT('NO DATA PREPARED FOR REPORTS') (COL(2),A);
PUT SKIP(2);
GO TO LAB2;
END;
ON KEY(DIREC) BEGIN;
IF ONCODE = 51 THEN DO;
PUT EDIT(ASECODE,'RECORD NOT FOUND')
(COL(1),A,A);
IF ANS = 'A' | ANS = 'ALL' THEN GO TO LAB2;
PUT SKIP(2);
GO TO LAB0(0);
END;
END;
LAB0(0): IF ANS = 'A' | ANS = 'ALL' THEN DO;
L1 = L1 + 1;
ASECODE = CHAR(L1) || '0000';
GO TO LAB4;
END;
PUT EDIT('ENTER SYSTEM CODE ') (COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('XXX - SYSTEM CODE',
(COL(5),A);
ELSE PUT SKIP(2);
PUT SKIP(2);
GET EDIT(ASECODE) (COL(1),A(7));
IF ASECODE1 = ASECODE | ASECODE1 = 'XXXXXXX' THEN CALL JA;
IF ASECODE = 'N' | APLICODE = 'N'  THEN GO TO LAB2;
LAB4: ASECODE1 = ASECODE;
ASECODE = SUBSTR(ASECODE,1,3)||'0000';
ALLOCATE CARD SET(P);
READ FILE(DIREC) INTO(CARD) KEY(ASECODE);
NS = 0;
NR = 0;
DO WHILE('1'B);
NCRS:ALLOCATE LLINE SET(PP);
READ FILE(DIREC) INTO(LLINE) KEYTO(ASECODE);
IF SUBSTR(ASECODE,4,4) = '0000' THEN DO;
IF NCROSS ¬= 'Y' THEN GO TO XX;
ELSE DO;
FREE LLINE;
GO TO NCRS;
END;
END;
ELSE;
IF APLICODE = 'A' |
(INDEX(SUBSTR(LLINE,9,11),APLICODE) ¬= 0 & JENNY3 = 'N') |
(INDEX(SUBSTR(LLINE,9,LSTR),APLICODE) ¬= 0 & JENNY3 = 'P')
```

```
THEN LOOPAPL: DO;
IF SUBSTR(LLINE,113,1) = 'S' THEN DO;
IF LTYPE = 'L' THEN DO;
Q = PP;
IF TYPE_NUMBER > 0 THEN DO JBA3 = 1 TO TYPE_NUMBER;
IF STEP_DATES(JBA3) >= LLIMIT &
STEP_DATES(JBA3) <= ULIMIT THEN GO TO NOX;
END;
ELSE DO;
NTYNU = - TYPE_NUMBER;
DO JBA3 = 1 TO 7 BY 3 WHILE(NTYNU*3 > JBA3);
IF (STEP_DATES(JBA3)<=LLIMIT &
STEP_DATES(JBA3+1)>=ULIMIT)|
(STEP_DATES(JBA3)>=LLIMIT &
STEP_DATES(JBA3)<=ULIMIT)|
(STEP_DATES(JBA3+1)>=LLIMIT &
STEP_DATES(JBA3+1)<=ULIMIT)
THEN GO TO NOX;
END;
END;
DO;
FREE LLINE;
GO TO NOX1;
END;
END;
NOX:;
NS = NS + 1;
IF NS > NSARY THEN
CALL TBIG;
PS(NS) = PP;
END;
ELSE DO;
NR = NR + 1;
IF NR > NSARY THEN
CALL TBIG;
PR(NR) = PP;
END;
END LOOPAPL;
ELSE FREE LLINE;
NOX1:;
END;
XX: IF MOD(NS,NJEN) ¬= 0 THEN NSPAGES = NS/NJEN +1;
ELSE NSPAGES = NS/NJEN;
IF MOD(NR,6) ¬= 0 THEN NRPAGES = NR/6 + 1;
ELSE NRPAGES = NR/6;
IF NRPAGES > NSPAGES THEN NNPAGES = NRPAGES;
ELSE NNPAGES = NSPAGES;
```

```
FREE LLINE;
/* PUT SCRATCH EVERY THING EXCEPT DVL STP NO */
/* *****      ***** */
IF ULIMIT > 999.00 THEN DO;
STYR = ST_YR;
NOYR = NO_YR;
END;
PUT FILE(SCRATCH) EDIT(T_SEND,CAL_DATE,REF_DT,STYR,NOYR)
(COL(1),A,P'999V99',(3)F(5,0));
PUT FILE(SCRATCH) EDIT(AGENCY,MAJOR_SYSTEM1,MAJOR_SYSTEM2)
(COL(1),A,A,A);
PUT FILE(SCRATCH) EDIT(TITLE1,TITLE2,AS_OF_DATE)
(COL(1),A,A,A);
IX = 1;
LS2 = 0;
LR2 = 0;
IF NNPAGES = 0 THEN PUT FILE(SCRATCH)
EDIT(LS2,LS2,LS2+1,NNPAGES+1)
(COL(1),(4)F(5,0));
LOOPA: DO LA = 1 TO NNPAGES;
LS3 = LS2;
LR3 = LR2;
LS1 = (LA-1) * NJEN + 1;
LS2 = LS1 + NJEN - 1;
IF LS2 > NS THEN LS2 = NS;
ELSE;
LR1 = (LA-1) * 6 + 1;
LR2 = LR1 + 5;
IF LR2 > NR THEN LR2 = NR;
ELSE;
IF LA = 1 THEN DO;
LS3 = LS2;
LR3 = LR2;
GO TO SS;
END;
LS3 = LS2 - LS3;
LR3 = LR2 - LR3;
SS:;
PUT FILE(SCRATCH) EDIT(LS3,LR3,LA,NNPAGES)
(COL(1),(4)F(5,0));
LOOPS: DO LS = LS1 TO LS2;
Q = PS(LS);
/* PUT DVL STP IN FILE */
LAB0(1): /* DEVEL STEP */
NNNN = TYPE_NUMBER;
NNN = ABS(NNNN);
IF NNNN < 0 THEN NN = NNN*3;
```

```
ELSE NN = NNN;
PUT FILE(SCRATCH) EDIT(NNNN,TITLE,
(STEP_DATES(III) DO III=1 TO NN))
(COL(1),F(2,0),A,(NN)P'999V99');
FREE DEVEL_STEP;
END LOOPS;
LOOPR: DO LR = LR1 TO LR2;
R = PR(LR);
/* PUT REMARK IN FILE */
PUT FILE(SCRATCH) EDIT(REMARK) (COL(1),A(72));
FREE REMARKS;
END LOOPR;
END LOOPA;
PUT EDIT('SYSTEM ',SUBSTR(ASECODE1,1,3),' IS READY.')
(COL(1),A,A,A);
PUT SKIP(2);
IX = 1;
FREE CARD;
IF NCROSS ¬= 'Y' THEN GO TO LAB0(0);
ELSE;
LAB2:;
CLOSE FILE(SCRATCH);
CLOSE FILE(DIREC);
/*      *****      *****      */
RETURN;
/*      *****      *****      */
ER_PAGE:PROC;
CALL NEWPAG;
CALL TSEND;
RETURN;
END ER_PAGE;
TBIG:PROC;
PUT EDIT('THE REPORT IS LIMITED TO ',NSARY,
' DEVELOPMENT STEPS AND ',NARY,
' REMASKS.',' YOU HAVE WRITTEN',NS,
' DEVELOPMENT STEPS AND ',NR,
' REMARKS AND ARE NOT FINISHED.')
(COL(1),(2)(A,F(5,0)));
PUT EDIT('DO YOU WANT TO SEE THE REPORTS ',
'AS WRITTEN OR TRY AGAIN?') (COL(1),A,A);
PUT SKIP(2);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('ENTER','P - PARTIAL REPORT',
'Q - QUIT')
(COL(1),A,COL(5),A);
GET EDIT(PQ) (COL(1),A(1));
FREE LLINE;
```

```
IF PQ = 'P' THEN GO TO XX;
IX = 0;
GO TO LAB2;
END TBIG;
END REPORTS;
```

```
SSLIP: PROC(ASECODE);
DCL LETTER1 CHAR(26) INIT('ABCDEFGHIJKLMNOPQRSTUVWXYZ');
DCL SDATE FIXED DEC(5,2);
DCL FDATE ENTRY(CHAR(9),FIXED DEC(5,2),FIXED BIN(15));
DCL XDATE CHAR(9);
DCL PROMPT CHAR(1) EXTERNAL;
DCL PROMPT1 CHAR(1);
DCL (JENNY1,JENNY2,JENNY3,JENNY4,JENNY5) CHAR(1) EXTERNAL;
DCL LLINE CHAR(114);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
   3 ASE_CODE CHAR(7),
   3 APLI_CODE CHAR(11),
   3 TYPE_NUMBER FIXED DEC(2),
   3 TITLE CHAR(28),
   3 STEP_DATES(9) FIXED DEC(5,2),
   3 COST(4) FIXED DEC(5,2),
   3 REST CHAR(26);
DCL (I0,I01) FIXED DEC(5,0);
/* *****      ***** */
DECLARE DIREC FILE RECORD KEYED ENV(INDEXED F(1140,114));
DCL ASECODE CHAR(7);
DCL ANS CHAR(80) VAR;
DCL APLICODE CHAR(11) VAR;
DCL MONTHS FIXED DEC(6,2),(ANS1,ANS2,ANS3) CHAR(1);
DCL FILL CHAR(5);
DCL (NLABEL,II,IX,IY) FIXED BIN;
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL INITT ENTRY(FIXED BIN(31));
ON ENDFILE(DIREC) BEGIN;
PUT EDIT('END OF MAIN FILE') (COL(1),A);
GO TO XX0;
END;
PUT EDIT('HOW MANY RECORDS DO YOU WANT TO SLIP ?') (COL(1),A);
IF PROMPT='Y' | PROMPT1 ='Y' THEN
PUT EDIT('A - ALL DATES(START&STOP) THAT OCCUR AFTER DATE X',
'S - ONLY STOP DATES THAT OCCUR AFTER DATE X',
'N - NONE')
(COL(5),A);
PUT SKIP(2);
GET EDIT(ANS1) (COL(1),A(1));
IF ANS1 = 'S' THEN DO;
K1=2;K2=5;K4=8;K5,K7,K8=10;
END;
ELSE DO;
K1=1;K2=2;K4=4;K5=5;K7=7;K8=8;
```

```
END;
IF ANS1= 'N' THEN GO TO XX2;
PUT EDIT('ENTER SLIP REFERENCE DATE X') (COL(1),A);
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(XDATE) (X(1),P'99AAAAA99');
CALL FDATE(XDATE,SDATE,0);
SDATE = SDATE - 1;
PUT EDIT('SHOULD THE SLIP DEPEND ON APPLICATION CODE ?') (COL(1),A)
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('ENTER','Y - YES','N - NO') (COL(1),A,(2)(COL(5),A));
PUT SKIP(2);
GET EDIT(ANS2) (COL(1),A(1));
IF ANS2 = 'N' THEN GO TO XX1;
PUT EDIT('ENTER APPLICATION CODE FOR STEPS TO BE SLIPPED') (COL(2),
PUT EDIT('/__________/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO XX2;
LSTR = INDEX(SUBSTR(ANS,2,12),' ') - 1;
APLICODE = SUBSTR(ANS,2,LSTR);
XX1: PUT EDIT('ENTER NUMBER OF MONTHS OF SLIPPAGE','/___/')
(COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
GET STRING(ANS) EDIT(MONTHS) (X(1),F(6,2));
PUT EDIT(MONTHS) (COL(1),F(6,2));
PUT EDIT('DO WE AGREE ON THE NUMBER OF MONTHS ?') (COL(1),A);
PUT SKIP(2);
GET EDIT(ANS3) (COL(1),A(1));
IF ANS3 = 'N' THEN GO TO XX1;
IF ANS1 = 'A' THEN N = -1;
ELSE N = 0;
L1: DO I= 1 TO 10000;
II = 1;
READ FILE(DIREC) INTO(LLINE) KEYTO(ASECODE);
IF SUBSTR(ASECODE,4,4) = '0000' THEN GO TO XX0;
Q = ADDR(LLINE);
IF SUBSTR(LLINE,113,1) = 'S' THEN L2:DO;
IF (ANS2 ¬= 'N') &
((INDEX(SUBSTR(LLINE,9,11),APLICODE) ¬= 0 & JENNY3 = 'N') |
(INDEX(SUBSTR(LLINE,9,LSTR),APLICODE) ¬= 0 & JENNY3 = 'P'))
THEN NAPLI = 1;
```

```
ELSE NAPLI = 0;
IF ANS2 = 'N' | NAPLI ¬= 0 THEN L3:DO;
IF TYPE_NUMBER > 0 THEN DO K= 1 TO TYPE_NUMBER;
IF STEP_DATES(K) >SDATE THEN
STEP_DATES(K) = STEP_DATES(K) + MONTHS;
END;
IF TYPE_NUMBER < 0
THEN DO K = K1,K2,K4,K5,K7,K8 WHILE(TYPE_NUMBER * 3<-K);
IF STEP_DATES(K) > SDATE & STEP_DATES(K) ¬= 0 THEN
STEP_DATES(K) = STEP_DATES(K) + MONTHS;
END;
END L3;
END L2;
REWRITE FILE(DIREC) FROM(LLINE);
END L1;
XX0: PUT EDIT(' SLIP COMPLETED.') (COL(1),A);
PUT SKIP(2);
XX2:RETURN;
END SSLIP;
```

```
TYREPT: PROC ;
DCL PR_BY CHAR(20);
DCL CAL_DATE CHAR(9);
DCL DUMCH CHAR(80) VAR;
DCL ALDATE(10) CHAR(9);
DCL ANS CHAR(80) VAR;
DCL MAJOR_SYSTEM CHAR(32),RPTIT CHAR(40),
TITLE1 CHAR(44), AS_OF_DATE CHAR(10),
CH CHAR(1);
DCL (STEP_DATE,CUR_DT,DUMMY) FIXED DEC(5,2),
TYPE_NUMBER FIXED DEC(2,0);
DCL (NO_DVLS,NO_RMKS,NPG,NPG_OF_NPGS,I,II,J,KKA) FIXED BIN;
DCL SCRATCH FILE ENV(F(80,80));
OPEN FILE(SCRATCH) INPUT;
ALDATE(10) = (9)' ';
/* *****      ***** */
ON ENDFILE(SCRATCH) GO TO FINISH;
DUMRD: PROC;
NPG = J;
GET FILE(SCRATCH) EDIT(NO_DVLS,NO_RMKS) (COL(1),(2)F(5,0));
RETURN;
END DUMRD;
NEXT: GET FILE(SCRATCH) EDIT(RPTIT,CUR_DT) (COL(1),A(40),F(5,2));
GET FILE(SCRATCH) EDIT(PR_BY,MAJOR_SYSTEM) (COL(1),A(20),A(32));
GET FILE(SCRATCH) EDIT(TITLE1,AS_OF_DATE) (COL(1),A(44),A(10));
GET FILE(SCRATCH) EDIT(NO_DVLS,NO_RMKS,NPG,NPG_OF_NPGS)
(COL(1),(4)F(5,0));
PUT SKIP(2);
PUTHEAD: PROC;
DUMMY = CUR_DT + 1.0;
CALL RDATE(CAL_DATE,DUMMY);
PUT EDIT(('_' DO II = 2 TO 72)) (COL(2),72 A(1));
PUT EDIT('|',RPTIT,'|') (COL(1),A(1),X(20),A,COL(73),A);
PUT EDIT('|',('_' DO II = 1 TO 71),'|') (SKIP(0),COL(1),A(1),
71 A(1),A(1));
PUT EDIT('|','CURRENT DATE:',CAL_DATE,'PAGE',NPG,'OF',NPG_OF_NPGS,'
(COL(1),A(1),A,X(2),A,COL(57),A,X(1),P'Z9',X(1),A,X(1),P'Z9',COL(73
,A(1));
PUT EDIT('|',('_' DO II = 1 TO 71),'|') (SKIP(0),COL(1),A(1),71 A(1)
A(1));
PUT EDIT('|','PREPARED BY:',PR_BY,'|') (COL(1),A,A,A,COL(73),A);
PUT EDIT('|','MAJOR SYSTEM:',MAJOR_SYSTEM,'|') (COL(1),A(1),A,X(1),
,COL(73),A(1));
PUT EDIT('|','PROJECT TITLE:',TITLE1,'|') (COL(1),A(1),A,X(1),A,
COL(73),A);
PUT EDIT('|','AS OF DATE:',AS_OF_DATE,'|') (COL(1),A(1),A,X(1),A,
COL(73),A);
```

```
PUT EDIT('|',('_' DO II = 1 TO 71),'|') (SKIP(0),COL(1),A(1),71 A(1
A(1));
PUT EDIT('|','TASK/EVENT','START/EVENT','STOP/EVENT','STATUS','|')
(COL(1),A(1),COL(10),A,X(19),A,X(2),A,X(4),A,COL(73),A);
PUT EDIT('|',('DATE' DO II = 1 TO 2),'|')
(COL(1),A(1),X(40),A,X(9),A,COL(73),A);
PUT EDIT('|',
('_' DO II = 1 TO 71),'|') (COL(1),A(1)
,71 A(1), A(1));
END PUTHEAD;
RPT: DO J = 1 TO NPG_OF_NPGS;
IF J > 1 THEN CALL DUMRD;
CALL PUTHEAD;
DVLS: DO I = 1 TO NO_DVLS;
GET FILE(SCRATCH) EDIT(ANS) (COL(1),A(80));
PUT EDIT('|',I,'.',SUBSTR(ANS,3,28))
(COL(1),A(1),X(2),F(2),A,X(1),A);
GET STRING(ANS) EDIT(TYPE_NUMBER) (F(2,0));
IF TYPE_NUMBER > 0 THEN DO;
LE: DO K = 1 TO TYPE_NUMBER;
GET STRING(ANS) EDIT(STEP_DATE) (X(30+(K-1)*5),F(5,2));
IF STEP_DATE < 12.015 THEN DO;
ALDATE(K) = ' ';
GO TO YY1;
END;
DUMMY = STEP_DATE + 1;
IF DUMMY > 0 THEN CALL RDATE(ALDATE(K),DUMMY);
YY1:;
END LE;
IF TYPE_NUMBER >= 2 THEN KKA = 2;
ELSE KKA = 1;
PUT EDIT((ALDATE(K) DO K = 1 TO KKA),'|')
(COL(36),(KKA)(X(4),A),COL(73), A(1));
DO KKK = 3 TO TYPE_NUMBER BY 2;
IF KKK  >= TYPE_NUMBER THEN KKA = 1;
ELSE KKA = 2;
PUT EDIT('|',(ALDATE(KK+KKK-1)DO KK = 1 TO KKA),'|')
(COL(1),A,COL(40),(KKA)(A,X(4)),COL(73),A(1));
END;
END;
ELSE IC = 1;
NUMBER = -2*TYPE_NUMBER + 1;
IF TYPE_NUMBER < 0 THEN DO;
LS: DO KK = 1,2,4,5,7,8;
GET STRING(ANS) EDIT(STEP_DATE) (X(30+(KK-1)*5),F(5,2));
IC = IC + 1;
IF STEP_DATE < 12.015 THEN DO;
```

```
ALDATE(KK) = ' ';
GO TO YY2;
END;
DUMMY = STEP_DATE + 1;
IF DUMMY > 0 THEN  CALL RDATE(ALDATE(KK),DUMMY);
ELSE GO TO YY;
IF NUMBER <= IC THEN GO TO YY;
YY2:;
END LS;
YY:;
PUT EDIT(ALDATE(1),ALDATE(2),SUBSTR(ANS,43,3),'|')
(COL(40),A,X(4),A,X(6),A(3),COL(73),A(1));
PUT EDIT(('|',ALDATE(K),ALDATE(K+1),SUBSTR(ANS,33+(K+1)*5,3),'|'
DO K = 4 TO IC BY 3))
(COL(1),A,COL(40),A,X(4),A,X(6),A(3),COL(73),A(1));
END;
PUT SKIP(2);
END DVLS;
PUT EDIT('|',('_' DO II = 1 TO 71),'|') (COL(1), A(1),71 A(1),A(1))
CH = 'S';
RMKS: DO I = 1 TO NO_RMKS;
GET FILE(SCRATCH) EDIT(ANS) (COL(1),A(80));
PUT EDIT(ANS) (COL(2),A(80));
END RMKS;
PUT SKIP(4);
END RPT;
GO TO NEXT;
FINISH:;
RETURN;
END TYREPT;
```

```
UPDATE: PROC;
DCL ASECODE1 CHAR(7);
DCL (JENNY1,JENNY2,JENNY3,JENNY4,JENNY5) CHAR(1) EXTERNAL;
DCL FIN CHAR(1);
DCL PROMPT CHAR(1) EXTERNAL;
DCL (LAB2(0:8),LAB3(0:4),LAB6(0:4)) LABEL;
DCL PROMPT1 CHAR(1);
DCL LINE CHAR(114);
DCL 1 HCARD BASED(S),
  2 DFLAG BIT(8),
  2 REST CHAR(113);
DECLARE 1 CARD BASED(P),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 MAJOR_SYSTEM1 CHAR(12),
  2 MAJOR_SYSTEM2 CHAR(20),
  2 TITLE1 CHAR(20),
  2 TITLE2 CHAR(24),
  2 AS_OF_DATE CHAR(10),
  2 NO_OVL_STPS FIXED DEC(5,0),
  2 NO_REMARKS FIXED DEC(5,0),
  2 FILE_END FIXED DEC(5,0);
DECLARE 1 DEVEL_STEP BASED(Q),
  2 DELETE_FLAG BIT(8),
  2 INFO,
    3 ASE_CODE CHAR(7),
    3 APLI_CODE CHAR(11),
    3 TYPE_NUMBER FIXED DEC(2),
    3 TITLE CHAR(28),
    3 STEP_DATES(9) FIXED DEC(5,2),
    3 COST(4) FIXED DEC(5,2),
    3 REST CHAR(26);
DECLARE 1 REMARKS BASED(R),
  2 DELETE_FLAG BIT(8),
  2 ASE_CODE CHAR(7),
  2 APLI_CODE CHAR(11),
  2 REMARK CHAR(80),
  2 REST CHAR(15);
DCL (I0,I01) FIXED DEC(5,0);
/* *****     ***** */
DECLARE DIREC FILE RECORD KEYED ENV(INDEXED F(1140,114));
DCL CHG FILE ENV(F(380,38));
DCL ACHG FILE STREAM ENV(F(1140,114));
DCL ASECODE CHAR(7);
DCL ANS CHAR(80) VAR;
DCL APLICODE CHAR(11) VAR;
```

```
DCL APLICODE2 CHAR(12) VAR;
DCL (UDTYPE,CTYPE,LTYPE) CHAR(1);
DCL CTYPE4 CHAR(2);
DCL L1 PIC'999',L2 PIC'9999';
DCL FILL CHAR(5);
DCL (NLABEL,II,IX,IY) FIXED BIN;
DCL TOUTPT ENTRY(FIXED BIN(31));
DCL INITT ENTRY(FIXED BIN(31));
DCL TEMP_FLAG BIT(8);
DCL CUR_DATE CHAR(6);
DCL 1 CHGN_RECORD,
  2 ACODE CHAR(3),
  2 CTIT1 CHAR(28),
  2 DT CHAR(6),
  2 TC CHAR(1);
IDUP = 0;
/*      *****      *****      */
P = ADDR(LINE);
Q = P;
R = P;
S = P;
/*      *****      *****      */
CUR_DATE = DATE;
/*      UPDATING FILE      */
/*      *****      *****      */
/* OCFILE(1) => SEQUENTIAL */
/* OCFILE(2) => DIRECT     */
/*      *****      *****      */
IO = 2;
CALL OCFILE(IO);
ON ENDFILE(DIREC) BEGIN;
PUT EDIT(' END OF MAIN FILE') (COL(1),A);
PUT SKIP(2);
GO TO LAB2(I);
END;
ON KEY(DIREC) BEGIN;
IF ONCODE = 51 THEN DO;
PUT EDIT(ASECODE,'RECORD NOT FOUND')
(COL(1),A,A);
PUT SKIP(2);
GO TO LAB2(I);
END;
IF ONCODE = 52 THEN DO;
PUT EDIT('DUPLICATE RECORD',ASECODE)
(COL(1),A,A);
PUT SKIP(2);
GO TO LAB2(I);
```

```
END;
END;
CALL ER_PAGE;
LAB100: PUT EDIT ('ENTER EDIT CODE') (COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('A - ADD','D - DELETE','C - CHANGE',
'S - SLIP','L - LIST',
'N - NONE')
(COL(5),A);
PUT SKIP(2);
CTYPE = 'Q';
GET EDIT(UDTYPE,FILL) (COL(1),A(1),A(5));
CALL ER_PAGE;
FIN = '0';
PROMPT1 = 'N';
ICOUNT = 1;
I = INDEX('ADCSRLFN',UDTYPE);
/* SET FILE */
IF (I>3) & (I<7) THEN IO1 = 1;
ELSE IO1 = 2;
IF I = 4 THEN IO1 = 4;
ELSE;
IF IO ¬= IO1 THEN CALL OCFILE(IO1);
IO = IO1;
/*          */
GO TO LAB2(I);
LAB2(0): /* ILLEGAL EDIT CODE */
PUT EDIT('EDIT CODE NOT FOUND') (COL(1),A);
PUT SKIP(2);
PROMPT1 = 'Y';
GO TO LAB100;
LAB2(1): /* ADD A RECORD */
TC = 'A';
CARD.DELETE_FLAG = (8)'0'B;
FASE:PUT EDIT('ENTER RECORD CODE') (COL(1),A);
PUT SKIP(2);
BEGIN;
ON CONVERSION BEGIN;
PUT EDIT(' RECORD CODE WAS IN ERROR',
' IT MUST BE 7 DIGITS.')
(COL(2),A);
PUT SKIP(2);
GO TO FASE;
END;
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) ='S' & CTYPE = 'S'
THEN CALL SIGCHGN;
```

```
ELSE;
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'Y'
THEN GO TO LAB100;
GET STRING(ANS) EDIT(ASECODE) (P'9999999');
IF ASECODE < '0010000' THEN DO;
PUT EDIT('YOUR RECORD CODE MUST BE GREATER THAN',
' 0010000 ') (COL(1),A,A);
PUT SKIP(2);
GO TO LAB2(1);
END;
END;
CARD.ASE_CODE = ASECODE;
IF IDUP = 1 THEN GO TO NDUP;
IF SUBSTR(ASECODE,4,4) = '0000' THEN DO;
II = 1;
CTYPE = 'H';
END;
ELSE DO;
LAB11: PUT EDIT('ENTER ADDITION TYPE') (COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT(
'D - SYSTEM DEVELOPMENT STEP',
'R - SYSTEM REMARK',
'N - NONE')
(COL(5),A);
PUT SKIP(2);
PROMPT1 = 'N';
GET EDIT(CTYPE,FILL) (COL(1),A(1),A(5));
ICOUNT = 0;
IF CTYPE = 'N' THEN GO TO LAB100;
II = INDEX('HDRN',CTYPE);
IF II = 0 THEN DO;
PROMPT1 = 'Y';
GO TO LAB11;
END;
END;
NLABEL = II;
CALL ER_PAGE;
CALL ADDD(NLABEL,LINE);
IDUP = 1;
NDUP:WRITE FILE(DIREC) FROM(LINE) KEYFROM(ASECODE);
IDUP = 0;
CTYPE = SUBSTR(LINE,113,1);
IF CTYPE = 'S' & SUBSTR(ASECODE,4,4) ¬= '0000' THEN
PUT FILE(ACHG) EDIT(HCARD) (B(8),A);
IF PROMPT = 'Y' THEN
PUT EDIT(' ADDITION COMPLETE. READY FOR NEXT ADDITION.')
```

```
(COL(1),A);
PUT SKIP(2);
TC = 'A';
GO TO LAB2(1);
LAB2(2): /* DELETE A RECORD */
TC = 'D';
PUT EDIT('ENTER RECORD CODE') (COL(1),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'S' & CTYPE = 'S' THEN CALL SIGCHGN;
IF SUBSTR(ANS,1,1) = 'N' | SUBSTR(ANS,1,1) = 'Y'
THEN GO TO LAB100;
ASECODE = SUBSTR(ANS,1,7);
IF ASECODE = '0010000' THEN DO;
PUT EDIT('YOU CANNOT DELETE RECORD 0010000',
'YOU CAN CHANGE RECORD 0010000 WITH ',
'THE CHANGE COMMAND.',
'I WILL ASSUME YOU WANT TO DELETE ',
'SOME OTHER RECORD.')
(COL(1),A,(2)(COL(1),A,A));
GO TO LAB2(2);
END;
LABDX: READ FILE(DIREC) INTO(LINE) KEY(ASECODE);
DELETE FILE(DIREC) KEY(ASECODE);
IF PROMPT = 'Y' THEN
PUT EDIT(' DELETION COMPLETE. READY FOR NEXT DELETION.')
(COL(1),A);
IF SUBSTR(ASECODE,4,4) = '0000' THEN GO TO LAB2(2);
CTYPE = SUBSTR(LINE,113,1);
GO TO LAB2(2);
LAB2(3): /* CHANGE A RECORD */
TC ='C';
PUT EDIT('ENTER RECORD CODE') (COL(1),A);
PUT SKIP(2);
GET EDIT(ASECODE) (COL(1),A(7));
IF ASECODE = 'N' | ASECODE = 'S' THEN GO TO LAB100;
READ FILE(DIREC) INTO(LINE) KEY(ASECODE);
II = 0;
IF SUBSTR(ASECODE,4,4) = '0000' THEN II = 1;
ELSE IF SUBSTR(LINE,113,1) = 'S' THEN II = 2;
IF SUBSTR(LINE,113,1) = 'R' THEN II = 3;
GO TO LAB3(II);
LAB3(0):  PROMPT1 = 'Y';
GO TO LAB100;
LAB3(1): /* CHANGE HEADING INFORMATION */
PUT EDIT('ENTER HEADING ITEM TO BE CHANGED')
(COL(1),A);
```

```
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('M - AIRCRAFT SYSTEM',
'T - SYSTEM TITLE',
'D - AS OF DATE',
'E - START YEAR FOR REPORT',
'R - NUMBER OF YEARS IN REPORT',
'A - APPLICATION CODE',
'N - NONE')
(COL(5),A);
PUT SKIP(2);
GET EDIT(CTYPE,FILL) (COL(1),A(1),A(5));
PROMPT1 = 'N';
IF CTYPE = 'N' THEN GO TO LAB3(4);
NLABEL = INDEX('MTDERAN',CTYPE);
IF NLABEL = 0 THEN DO;
PROMPT1 = 'Y';
GO TO LAB3(1);
END;
CALL CHANGE(NLABEL,LINE,FIN);
IF FIN = 'N' | FIN = 'S' THEN GO TO LAB3(4);
GO TO LAB3(1);
LAB3(2): /* CHANGE STEP INFORMATION */
CH_TY:PUT EDIT('ENTER INFORMATION TYPE TO BE CHANGED') (COL(1),A)
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN DO;
PROMPT1 = 'N';
PUT EDIT(
(COL(5),A);
END;
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO LAB3(4);
IF INDEX('TDAE',SUBSTR(ANS,1,1)) = 0 THEN DO;
PROMPT1 = 'Y';
GO TO CH_TY;
END;
IF SUBSTR(ANS,1,1) = 'A' THEN DO;
NLABEL = 6;
CHG_EL:CALL CHANGE(NLABEL,LINE,FIN);
IF FIN = 'N' | FIN = 'S' THEN GO TO LAB3(4);
GO TO LAB3(2);
END;
IF SUBSTR(ANS,1,1) = 'E' THEN DO;
NLABEL = 12;
GO TO CHG_EL;
END;
IF SUBSTR(ANS,1,1) = 'T' THEN IY = 1;
ELSE IY = 2;
```

```
IF TYPE_NUMBER < 0 THEN IX = 1;
ELSE IX = 3;
NLABEL = 5 + IX + IY;
CALL CHANGE(NLABEL,LINE,FIN);
IF FIN = 'N' | FIN = 'S' THEN GO TO LAB3(4);
GO TO LAB3(2);
LAB3(3):/* CHANGE A REMARK */
PUT EDIT('ENTER ITEM TO BE CHANGED')
(COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('R - REMARK',
'A - APPLICATION CODE',
'N - NONE')
(COL(5),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'N' THEN GO TO LAB3(4);
ELSE;
IF SUBSTR(ANS,1,1) = 'A' THEN NLABEL = 6;
ELSE NLABEL = 11;
CALL CHANGE(NLABEL,LINE,FIN);
IF FIN = 'N' | FIN = 'S' THEN GO TO LAB3(4);
GO TO LAB3(3);
LAB3(4): /* CHANGE COMPLETE */
TEMP_FLAG = CARD.DELETE_FLAG;
SIGCHGN: PROC;
DCL CHG FILE ENV(F(380,38));
PUT EDIT('WAS THIS A SIGNIFICANT CHANGE ?!')
(COL(1),A);
PUT SKIP(2);
GET EDIT(ANS) (COL(1),A(80));
IF SUBSTR(ANS,1,1) = 'Y' THEN DO;
ACODE = SUBSTR(ASECODE,1,3);
CTIT1 = DEVEL_STEP.TITLE;
IF TC = 'S' THEN CTIT1 = (28)' ';
DT = CUR_DATE;
PUT FILE(CHG) EDIT(CHGN_RECORD) (COL(1),(4)A);
END;
END SIGCHGN;
REWRITE FILE(DIREC) FROM(LINE) KEY(ASECODE);
PUT FILE(ACHG) EDIT(HCARD) (B(8),A);
IF PROMPT = 'Y' THEN
PUT EDIT(' CHANGE COMPLETE. READY FOR NEXT CHANGE.')
(COL(1),A);
PUT SKIP(2);
IF FIN = 'S' THEN CALL SIGCHGN;
ELSE;
```

```
GO TO LAB2(3);
LAB2(4):; /* SLIP A SCHEDULE */
PUT EDIT('ENTER SYSTEM CODE ') (COL(1),A);
PUT SKIP(2);
TC = 'S';
GET EDIT(ASECODE) (COL(1),A(7));
IF SUBSTR(ASECODE,1,1) = 'N' THEN GO TO LAB100;
ASECODE = SUBSTR(ASECODE,1,3) || '0000';
READ FILE(DIREC) INTO(LINE) KEY(ASECODE);
ASECODE1 = ASECODE;
CALL SSLIP(ASECODE);
ASECODE = ASECODE1;
GO TO LAB100;
LAB2(5):; /* COPY A RECORD FROM ONE FILE TO ANOTHER */
PUT EDIT(' COPY DOES NOT WORK IN THIS VERSION OF SCHEDULE')
(COL(5),A);
PUT SKIP(2);
PROMPT1 = 'Y';
GO TO LAB100;
LAB2(6):/* LIST A RECORD OR A NUMBER OF RECORDS */
PUT EDIT('ENTER LIST TYPE') (COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN
PUT EDIT('A - SYSTEM HEADING RECORDS',
'S - ALL RECORDS OF SYSTEM X',
'P - SUBSET OF ALL RECORDS OF SYSTEM X',
'N - NONE') (COL(5),A);
PUT SKIP(2);
GET EDIT(LTYPE,FILL) (COL(1),A(1),A(5));
PROMPT1 = 'N';
IL = INDEX('ASPN',LTYPE);
CALL ER_PAGE;
GO TO LAB6(IL);
LAB6(0):/* CODE NOT FOUND */
PUT EDIT('INVALID LIST CODE') (COL(1),A);
PUT SKIP(2);
PROMPT1 = 'Y';
GO TO LAB2(6);
LAB6(1):/* LIST ALL SYSTEM HEADING RECORDS */
L1 = 0; L2 = 0;
DO WHILE('1'B);
L1 = L1 + 1;
ASECODE = CHAR(L1)||CHAR(L2);
PUT SKIP(2);
READ FILE(DIREC) INTO(LINE) KEY(ASECODE);
CALL LLIST(LINE);
END;
GO TO LAB2(6);
```

```
LAB6(2):/* LIST ALL RECORDS FOR SYSTEM X */
PUT EDIT('ENTER SYSTEM CODE') (COL(1),A);
PUT SKIP(2);
GET EDIT(ASECODE) (COL(1),A(7));
ASECODE = SUBSTR(ASECODE,1,3)||'0000';
LAB81: READ FILE(DIREC) INTO(LINE) KEY(ASECODE);
CALL LLIST(LINE);
DO WHILE('1'B);
READ FILE(DIREC) INTO(LINE) KEYTO(ASECODE);
IF SUBSTR(ASECODE,4,4) = '0000' THEN GO TO LAB100;
CALL LLIST(LINE);
END;
GO TO LAB2(0);
LAB6(3):/* LIST SUBSET OF ALL RECORDS FOR SYSTEM X */
PUT EDIT('ENTER SYSTEM CODE') (COL(1),A);
PUT SKIP(2);
GET EDIT(ASECODE) (COL(1),A(7));
ASECODE = SUBSTR(ASECODE,1,3)||'0000';
LAB631: PUT EDIT('ENTER APPLICATION CODE') (COL(1),A);
IF PROMPT = 'Y' | PROMPT1 = 'Y' THEN DO;
IF JENNY1 = 'P' THEN
PUT EDIT('B - BUDGET','E - PROJECT ENGINEER',
'H - PROJECT MANAGER','O - 104 REPORT',
'P - PROCUREMENT','Q - PRODUCT ASSURANCE',
'R - RECAP','S - PROGRAM SUMMARY',
'T - TEST ')
(COL(5),A);
IF JENNY1 = 'R' THEN
PUT EDIT('C -COMPTROLLER','B - PLANS & ANALYSIS',
'P - PROCUREMENT','E - DEVELOPMENT & ENGINEERING',
'F - ASTIO','T - TRADOC','S - TECOM',
'Q - PRODUCT ASSURANCE')
(COL(5),A);
END;
PUT SKIP(2);
GET EDIT(APLICODE2) (COL(1),A(12));
CALL ER_PAGE;
IF APLICODE2 = '            ' THEN GO TO LAB631;
LSTR = INDEX(APLICODE2,' ') -1;
APLICODE = SUBSTR(APLICODE2,1,LSTR);
READ FILE(DIREC) INTO(LINE) KEY(ASECODE);
CALL LLIST(LINE);
DO WHILE('1'B);
READ FILE(DIREC) INTO(LINE) KEYTO(ASECODE);
IF SUBSTR(ASECODE,4,4) = '0000' THEN GO TO LAB2(6);
IF(INDEX(SUBSTR(LINE,9,11),APLICODE) ¬= 0 & JENNY3 = 'N') |
(INDEX(SUBSTR(LINE,9,LSTR),APLICODE) ¬= 0 & JENNY3 = 'P')
```

```
THEN CALL LLIST(LINE);
END;
GO TO LAB2(0);
LAB6(4):/* NO LISTS REQUIRED */
GO TO LAB100;
LAB2(7): /* FIND A RECORD */
PUT EDIT(' FIND DOES NOT WORK IN THIS VERSION OF SCHEDULE.')
(COL(5),A);
PUT SKIP(2);
GO TO LAB100;
LAB2(8): /* NO MORE CHANGES REQUIRED */
CLOSE FILE(DIREC);
RETURN;
ER_PAGE:PROC;
CALL NEWPAG;
CALL TSEND;
RETURN;
END ER_PAGE;
END UPDATE;
```

```
WINDOW:PROC;
DCL ANS CHAR(80) VAR;
DCL (LLIMIT,ULIMIT,STYR,NOYR) FIXED DEC(5,2) EXTERNAL;
DCL DUMMY FIXED DEC(5,2);
DCL (LOWER,UPPER) CHAR(9);
DCL LAB(0:4) LABEL;
I = 0;
ON CONVERSION BEGIN;
PUT EDIT('YOUR INPUT WAS IN ERROR')
(COL(1),A);
PUT EDIT(ONSOURCE)(COL(1),A);
PUT EDIT('PLEASE RE-ENTER')
(COL(1),A);
PUT SKIP(2);
REVERT CONVERSION;
GO TO LAB(I);
END;
LAB(0):PUT EDIT('ENTER LOWER TIME LIMIT')
(COL(1),A);
CALL FORMD;
FORMD:PROC;
PUT EDIT('/__*___*__/') (COL(1),A);
PUT SKIP(2);
CALL REVERSE;
GET EDIT(ANS) (COL(1),A(80));
RETURN;
END FORMD;
GET STRING(ANS) EDIT(LOWER) (X(1),P'99AAAAA99');
CALL FDATE(LOWER,DUMMY,0);
STYR = DEC(SUBSTR(LOWER,8,2));
LLIMIT = DUMMY - 1;
I = 1;
LAB(1):PUT EDIT('ENTER UPPER TIME LIMIT')
(COL(1),A); PUT SKIP(2);
CALL FORMD;
GET STRING(ANS) EDIT(UPPER) (X(1),P'99AAAAA99');
CALL FDATE(UPPER,DUMMY,0);
NOYR = DEC(SUBSTR(UPPER,8,2)) - STYR + 1;
IF NOYR < 1 THEN NOYR = 1;
ULIMIT = DUMMY - 1;
LAB(2):;
RETURN;
END WINDOW;
```

Appendix B

Overlay Listing

```
//LSECOB JOB (210<,LOAD,5,50,,,11,'MIKE.GARSIK',CLASS=K                    JOB 9042
***ROUTE PRINT REMOTE2                    ZM    E  8    4      Z    6    0      0
***ROUTE PUNCH REMOTE<                    ZM    E  8    4      Z    8    0      0
***ROUTE PRINT REMOTE2                                                   00000020
//STEP1 EXEC PGM=IEBGENER,REGION=40K                                     00000030
//SYSPRINT DD SYSOUT=A                                                   00000040
//SYSIN    DD DUMMY                                                      00000050
//SYSUT1   DD DSN=LPMASMG.X.MASTER.LINKLIST,UNIT=DISK,DISP=SHR           00000060
//SYSUT<   DD SYSOUT=A,DCB=(RECFM=FM,LRECL=121,BLKSIZE=1211             00000070
//
IEF<30I ALLOC. FOR LSECOB   STEP1                    .
IEF<37I 1A0   ALLOCATED TO SYSPRINT
IEF<37I 121   ALLOCATED TO SYSUT1
IEF<37I 1A4   ALLOCATED TO SYSUT2
IEF142I - STEP WAS EXECUTED - COND CODE 0000
IEF<85I   LPMASMG.X.MASTER.LINKLIST                    KEPT
IEF<85I   VOL SER NOS= IFSETS.
IEF373I STEP /STEP1   / START 78198.1254
IEF374I STEP /STEP1   / STOP  78198.1254 CPU    0MIN 01.29SEC MAIN  24K CC=   0

*STEP STEP1   **JOB LSECOB ***********************************************************************
*RESOURCE- CORE(K)  DISK(IO)  TAPE(IO)--UNITS(U)     IN-HASP(IO)-OUT OTHER(IO)   CPU TIME(C) STEP TIME(T)  *
*USAGE-         40       398         0         0          0        400         0  00:00:01.29 00:00:09.39  *
***********************************************************************************************

IEF375I  JOB /LSECOB  / START 78198.1254
IEF376I  JOB /LSECOB  / STOP  78198.1256 CPU    0MIN 01.29SEC

*JOB LSECOB  **<IO2**LOAD**MIKE.GARSIK*************************************************************
*UNITS- CORE(K*T)   DISK(IO)   TAPE(IO)   TAPE(U*T)   HASPI(IO)   HASPO(IO)   OTHER(IO)      CPU(C)      TOTAL  *
*LOADS-     $0.00      $0.1<      $0.00      $0.00       $0.00       $0.00       $0.00       $0.08       $0.20  *
***********************************************************************************************
```

DATA SET UTILITY - GENERATE PAGE 0001

PROCESSING ENDED AT EOD

```
F8u-LEVEL LINKAGE EDITOR OPTIONS SPECIFIED SIZE=(200K,50K),MAP,ONLY,TERM
          VARIABLE OPTIONS USED -  SIZE=(204800,51200)
IEWU461  IMEVWBA
IEWU461  IMEVCAA
IEWU461  IMEVSAA
IEWU461  IMEDNBA
IEWU461  IMEVSEA
IEWU461  IMEDUDU
IEWU461  IMEVPCA
IEWU461  IMEVKCA
IEWU461  IMEVAGA
IEWU461  IMEDBNA
IEWU461  IMEVWCA
IEWU461  IMEKCBA
IEWU461  IMEVCSA
IEWU461  IMEM91A
IEWU461  IMEM91B
IEWU461  IMEM91C
IEWU461  IMETERA
```

MODULE MAP

CONTROL SECTION NAME		ORIGIN	LENGTH	SEG. NO.	ENTRY NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
$SEGTAB		00	48	1								
MASTER		48	974	1								
*MASTERA		9C0	3B8	1								
IMEMAIN		078	4	1								
IMENTRY		080	C	1								
PROMPT		090	9	1								
JENNY5		0A0	9	1								
JENNY4		0B0	9	1								
JENNY3		0C0	9	1								
JENNY2		0D0	9	1								
JENNY1		0E0	9	1								
SYSIN		0F0	38	1								
IMESPRT		128	38	1								
DIREC		160	38	1								
SCRATCH		198	38	1								
DCFILE		1D0	138	1								
*DCFILEA		1008	F3	1								
IMEDIA	*	1100	358	1								
					IMEDIAA	1100	IMEDIAB	1102				
IMEDIB	*	1458	114	1								
					IMEDIBA	1458	IMEDIBB	145A				
IMEDOB	*	1570	144	1								
					IMEDOBA	1570	IMEDOBB	1572	IMEDOBC	1574		
IMEIOX	*	16B8	14C	1								
					IMEIOXA	16B8	IMEIOXB	16BA	IMEIOXC	16BE		
IMEUCL	*	1808	580	1								
					IMEUCLA	1808	IMEUCLB	180A	IMEUCLC	180C	IMEUCLD	180E

NAME	ORIGIN	LENGTH	SEG. NO.	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IHESAP	*	1U8o	o1C	1							
				IHESADA	1U8o	IHESAPC	1DA2	IHESAPD	1DAA	IHESAPA	1DB2
				IHESAPB	1UBA	IHESADF	1DC2	IHESADB	1DCA	IHESADE	1DD2
				IHESAFC	1DDA	IHESAFA	1DE2	IHESAFB	1DEA	IHESAFD	1DF2
				IHESAKA	1DFA	IHESAFQ	1EO2	IHESARC	25F4	IHESADO	2708
				IHESAFF	2742						
IHECSC	*	2oAo	C6	1							
				IHECSCO	28A8						
IHEIDA	*	297U	16A	1							
				IHEIDAA	297U	IHEIDAB	2972	IHEIDAC	2974	IHEIDAD	2976
				IHEIDAT	2A6O						
IHEIOb	*	2AEU	1EO	1							
				IHEIOBA	2AEO	IHEIOBB	2AE8	IHEIOBC	2AFO	IHEIOBD	2AF8
				IHEIOBE	2BOO	IHEIOBT	2BE8				
IHEIOC	*	2CCU	12A	1							
				IHEIOCA	2CCO	IHEIOCB	2CC2	IHEIOCC	2CC6	IHEIOCT	2D7A
INIIT	*	2UFO	194	1							
TSEND	*	2F8o	110	1							
IHEUCN	*	3U9o	256	1							
				IHEUCNA	3098	IHEUCNB	309A				
IHEUMA	*	32FU	F8	1							
				IHEUMAA	32FO						
IHEJXS	*	3sE8	66	1							
				IHEJXSI	33E8	IHEJXSY	3404				
IHESRC	*	345U	1A2	1							
				IHESRCA	3450	IHESRCB	3452	IHESRCC	3454	IHESRCD	3456
				IHESRCE	3458	IHESRCF	345A				
IHESSF	*	35Fo	B4	1							
				IHESSFO	35Fo						
IHEVPU	*	3o8O	105	1							
				IHEVPOA	3680						
IHEVPE	*	37B8	c78	1							
				IHEVPEA	37B8						
IHEVSC	*	3A30	AC	1							
				IHEVSCA	3A30						
TOUTPT	*	3AEU	13A	1							
IHEKCU	*	3C2O	110	1							
				IHEKCDA	3C2O	IHEKCDB	3C22				
IHEUPB	*	3U3O	E6	1							
				IHEUPBA	3D3O	IHEUPBB	3D98				
IHEVFA	*	3E1o	16C	1							
				IHEVFAA	3E18						
IHEVFL	*	3F8o	26	1							
				IHEVFCA	3F8o						
IHEVFE	*	3FBU	2O	1							
				IHEVFEA	3FBU						
IHEVKF	*	3FDO	67C	1							
				IHEVKFA	3FDO						
IHEVPA	*	4o5U	1EO	1							
				IHEVPAA	4650						
IHEVPF	*	4838	5O	1							
				IHEVPFA	4830						

NAME		ORIGIN	LENGTH	SEG. NO.	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IHEVPG	*	4080	029	1								
					IHEVPGA	4080						
IHEVSE	*	4AB0	150	1								
					IHEVSEA	4AB0	IHEVSEB	4AB2				
IHECSM	*	4C10	114	1								
					IHECSMH	4C10	IHECSML	4C1C	IHECSMF	4C3A	IHECSMV	4C4E
					IHECSMB	4CAE						
IHECSV	*	4D28	B4	1								
					IHECSVA	4D2H						
IHEDDA	*	4DE0	23A	1								
					IHEDDAA	4DE0	IHEDDAB	4DE2				
IHEDDE	*	5020	DA	1								
					IHEDDEA	5020						
IHEION	*	5100	108	1								
					IHEIONA	5100						
IHELSP	*	5208	434	1								
					IHELSPA	5208	IHELSPB	5374	IHELSPC	54DA	IHELSPD	55BC
					IHELSPE	55F4						
IHEUPA	*	5640	E8	1								
					IHEUPAA	5640	IHEUPAB	56AA				
IHEVFD	*	5728	66	1								
					IHEVFDA	5728						
BELL	*	5790	120	1								
IHEBSK	*	5880	1D4	1								
					IHEBSKB	5880	IHEBSKK	58DC	IHEBSKA	58E8		
IHEDIE	*	5A88	1C4	1								
					IHEDIEA	5A88						
IHEDNC	*	5C50	2B2	1								
					IHEDNCA	5C50						
IHEDDD	*	5F08	128	1								
					IHEDDDA	5F08	IHEDDDB	5F0A				
IHEVPB	*	6030	1A2	1								
					IHEVPBA	6030						
IDWAIT	*	61D8	18E	1								
NEWPAG	*	6368	186	1								
IHECFB	*	6520	246	1								
					IHECFBA	6520						
IHECSI	*	6768	A2	1								
					IHECSIO	6768						
IHEKCA	*	6810	614	1								
					IHEKCAA	6810						
IHEDSD	*	6E28	D8	1								
					IHEDSDA	6E28						
IHEVFB	*	6F00	F0	1								
					IHEVFBA	6F00						
IHEVKB	*	6FF0	30A	1								
					IHEVKBA	6FF0						
IHEVSB	*	7300	CE	1								
					IHEVSBA	730J						
IHELDI	*	73D0	878	1								
					IHELDIA	73D0	IHELDIB	73D2	IHELDIC	73D4	IHELDID	73D6
MOVABS	*	7C48	15E	1								

NAME		ORIGIN	LENGTH	SEG. NO.
BINIT	*	7DA0	6A0	1
CHRSIZ	*	8250	1F8	1
HOME	*	8460	122	1
IMEERR	*	8570	745	1
IMEIOW	*	8CB0	29A	1
IMEIOR	*	8F50	1E7	1
IMESTR	*	9150	66C	1
IMEXPR	*	97C0	B6	1
TINPUT	*	9070	13A	1
BUFFPR	*	99B0	986	1
IMEBEG	*	A340	80	1
IMEIOF	*	A3C0	2DC	1
IMEPRT	*	A0A0	308	1
IMESIZ	*	A9A8	C	1
IMETAB	*	A9B0	C	1
RESET	*	A9C0	2CA	1
ALFMOV	*	AC98	136	1
IMNSLOG	*	AD00	1D4	1
CRSENB	*	AFA8	13C	1
IMEVSU	*	B0E8	1A0	1
IMNFMAX1	*	B288	E5	1
SASA	*	B370	100	1
TOUTST	*	B470	49A	1
VECMOV	*	B910	1A0	1
XYCNVT	*	BAB0	3DA	1
AUEOUT	*	BE90	1A8	1
IMNFMAXR	*	C036	E5	1
IMNSATN2	*	C120	1E8	1
IMNSSCN	*	C308	208	1
ERREC	*	C510	272	1
IMNERXPR	*	C780	183	1
IMEABN	*	C910	C	1

NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IMEERRD	8570	IMEERRC	857A	IMEERRB	8584	IMEERRA	8586
IMEERRE	8C1E						
IMEIODG	8CB8	IMEIODP	8CBA	IMEIODT	8DB2		
IMEIOPA	8F50	IMEIOPB	8F5A	IMEIOPC	8F5E		
IMESTRA	9150	IMESTRB	9152	IMESTRC	9156		
IMEVPHA	97C0						
IMEBEGN	A340	IMEBEGA	A380				
IMEIOFB	A3C0	IMEIOFA	A3C2	IMEITAZ	A65E	IMEITAX	A66A
IMEITAA	A67E						
IMEPRTA	A6A0	IMEPRTB	A6A2				
IMESIZE	A9A8						
IMETABS	A9B8						
ALOG10	ADD0	ALOG	ADE8				
IMEVSDA	B0E8	IMEVSDB	B0EA				
MAX0	B288	MIN0	B29E	AMAX0	B2B4	AMIN0	B2CA
MAX1	C03A	MIN1	C04E	AMAX1	C064	AMIN1	C07A
ATAN2	C120	ATAN	C136				
COS	C308	SIN	C32A				
FRXPRM	C78B						
IMEABND	C910						

NAME	ORIGIN	LENGTH	SEG. NO.	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
IMNSSWRT*	C42A	16A	1								
				SQRT	C920						
IMN.EXP *	CA9A	1B0	1								
				EXP	CA88						
IMNECWMM*	CL3A	F8L	1								
				IBCOM#	CC64	FDIOCS#	CD20	INTSWTCH	DB9E		
IMNCONM2*	D0CA	715	1								
				SEQDASD	DFF6						
IMNERRM *	E2EA	5EC	1								
				ERRMON	E2E0	IMNERKE	E2F8				
PLTCHK *	E0EA	2D4	1								
RASA *	EB88	100	1								
IMNFCXTM*	FCBA	6AE	1								
				ADCON#	EC88	FCVADUTP	ED62	FCVLOUTP	EDF2	FCVZOUTP	EF4E
				FCVIOUTP	F2F6	FCVEOUTP	F3E8	FCVCOUTP	F532	INT&SWCH	F7A8
IMNEFNTH*	F820	546	1								
				ARITH#	F828	ADJSWICH	F8C4				
IMNEFIOS*	FD70	FF8	1								
				FIOCS#	FD70	FIOCSWER	FD76				
IMNFIOS2*	10D68	588	1								
IMNUOPT *	11320	318	1								
IMNFCUN1*	11638	2E5	1								
				FQCUN1#	11638						
IMNFCUNU*	11920	4A2	1								
				FQCUNU#	11920						
IMNETRCH*	11DC8	2A6	1								
				IMNIRCH	11DCA	ERRTRA	11DD0				
IMNUATBL*	12070	638	1								
IMNFTEN *	126A8	198	1								
				FTEN#	126A8						
NUYK	12840	3	1								
STYK	12848	3	1								
ULIMIT	12850	3	1								
LLIMIT	12858	3	1								
NKAKY	12860	3	1								
NSAKY	12868	3	1								
TATKNX	12870	F0	1								
BPPCOM	12960	140	1								
$ENTAB	12AA0	60	1								
GRAP	12800	2F0	2								
***GRAPA	12AF0	194	2								
RDATE	12F88	5B4	2								
**RDATEA	13540	8H	2								
REVERSE	13600	84	2								
REVERSEA	13688	4F	2								
FDATE	13AD8	E34	2								
**FDATEA	14510	392	2								
$ENTAB	14BA8	48	2								

NAME	ORIGIN	LENGTH	SEG. NO.	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
MINUS	14AFA	0E4	3								
*MINDOWA	14FD8	228	3								
NEW	14AFA	34DC	4								
****NEWA	17DD0	C57	4								
STD	18A28	38	4								
NEW1	18A60	16FC	4								
***NEW1A	1A160	273	4								
UPDATE	14AF0	34E0	5								
*UPDATEA	17DD0	104E	5								
CHG	18E20	38	5								
ACHG	18E58	38	5								
$ENTAB	18E90	3C	5								
ADDA	18ED0	1884	6								
***ADDA	1AA58	855	6								
CHANGE	18ED0	34B8	7								
*CHANGEA	1C388	ADD	7								
SSLIP	18ED0	F6C	8								
**SSLIPA	19E40	644	8								
LLIST	18ED0	0EC	9								
**LLISTA	19CC0	3B1	9								
FORM	14AF0	6C8A	10								
***FORMA	18B78	532	10								
ALLIST *	19DB0	36C	10								
ANCHO *	19420	1A4	10								
MOVREL *	195CA	166	10								
DSHMOD *	19730	1D4	10								
FILROA *	199DA	922	10								
ROTATE *	1A230	314	10								
CAXIS *	1A56A	16C	10								
DRWABS *	1A698	1D4	10								
DRWREL *	1A87D	166	10								
DSHABS *	1A9D8	17C	10								
LINEF *	1AB5A	1CA	10								
LINWDT *	1AD28	14C	10								
LWICHT *	1AE78	15A	10								
PNTMOD *	1AFD0	190	10								
SCURSA *	1B160	2BE	10								
SETMRG *	1B420	142	10								

NAME		ORIGIN	LENGTH	SEG. NO.	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION	NAME	LOCATION
CARIN	•	1B50	1B6	10								
DMAMA	•	1B720	21A	10								
DMINDC	•	1B960	18C	10								
LINTRN	•	1BAD0	118	10								
MOVEA	•	1BBE0	1AC	10								
RESCAL	•	1BD90	402	10								
SETTRM	•	1C1A0	1BE	10								
SVSTAT	•	1C360	1AE	10								
TERM	•	1C4E0	176	10								
TWINDO	•	1C650	18C	10								
ASSTR	•	1C7E0	2C0	10								
CSIZF	•	1CAA0	172	10								
MOCOPY	•	1CC20	132	10								
RAM2AS	•	1CD50	97	10								
NEWLIN	•	1CDE0	112	10								
PARCLT	•	1CF00	250	10								
RECOVR	•	1D150	20E	10								
RESTAT	•	1D360	20C	10								
TIMSTR	•	1D570	696	10								
VCST	•	1DA10	31E	10								
AUFIN	•	1DD30	136	10								
CLIPT	•	1DE60	60C	10								
DSMKEL	•	1E470	182	10								
PCLIPT	•	1E600	1A2	10								
PSCAL	•	1E7A0	2C6	10								
REVCOT	•	1EE70	64E	10								
TRDASH	•	1F4C0	858	10								
WINCOT	•	1FD10	440	10								
TYREPT		16AF0	1EF4	11								
•TYREPTA		167D0	3FA	11								
RCPORTS		12A00	3C4	12								
RCPORTSA		150C0	0D0	12								

PSEUDO REGISTERS

NAME	ORIGIN	LENGTH	NAME	ORIGIN	LENGTH	NAME	ORIGIN	LENGTH	NAME	ORIGIN	LENGTH
IMEMINV	00	4	IMEMERR	4	4	IMEMTIC	8	4	•MASTERB	C	4
SYSIN	10	4	IMEMSPR	14	4	DIREC	18	4	SCRATCH	1C	4
•UCFILEB	20	4	•••GRAPB	24	4	••RUATEB	28	4	REVERSEB	2C	4
••FUATEB	30	4	••FUATEC	34	4	••FUATED	38	4	•WINDOWB	3C	4
•WINDOWC	40	4	•WINDOWD	44	4	••••NEWB	48	4	••••NEWC	4C	4
••••NEWD	50	4	••••NEWE	54	4	••••NEWF	58	4	STD	5C	4
•••NEW1B	60	4	•••NEW1C	64	4	•••NEW1D	68	4	•••NEW1E	6C	4
•••NEW1F	70	4	•••NEW1G	74	4	•UPDATEB	78	4	•UPDATEC	7C	4
•UPDATED	80	4	•UPDATEE	84	4	•UPDATEF	88	4	•UPDATEG	8C	4

NAME	ORIGIN	LENGTH	NAME	ORIGIN	LENGTH	NAME	ORIGIN	LENGTH	NAME	ORIGIN	LENGTH
•uPLATEM	90	4	CMG	94	4	ACMG	98	4	•••ADDDB	9C	4
•••aDuDL	A0	4	aCHANGEB	A4	4	aCHANGEC	A8	4	aCHANGED	AC	4
••SSLIPB	B0	4	••SSLIPC	B4	4	••LLISTB	B8	4	•••FORMB	BC	4
•••FORMC	C0	4	•••FORMD	C4	4	•IYREPTB	C8	4	•IYREPTC	CC	4
•IYREPTD	D0	4	•IYREPTE	D4	4	REPORTSB	D8	4	REPORTSC	DC	4
REPORTSD	E0	4	REPORTSE	E4	4	REPORTSF	E8	4	REPORTSG	EC	4
REPORTSH	F0	4	REPORTSI	F4	4	REPORTSJ	F8	4	REPORTSK	FC	4
REPORTSL	100	4	IMEULSA	104	4	IMEQLMO	108	4	IMEQLM1	10C	4
IMEULM2	110	4	IMEULM3	114	4	IMEQLM4	118	4	IMEQLME	11C	4
IMEULLA	120	4	IMEUVDA	124	4	IMEQFMD	128	4	IMEQFOP	12C	4
IMEUCFL	130	8	IMEQADC	138	4	IMEQXLV	13C	8	IMEQEVT	144	8
IMEULMR	14C	4	IMEUSLA	150	4	IMEQSAR	154	4	IMEQLMF	158	4
IMEURTC	15C	4	IMEQSFC	160	4						

TOTAL LENGTH OF PSEUDO REGISTERS 164
ENTRY ADDRESS 060
TOTAL LENGTH 20158

••••RUN DOES NOT EXIST BUT HAS BEEN ADDED TO DATA SET

DIAGNOSTIC MESSAGE DIRECTORY

IEW0461 WARNING - SYMBOL PRINTED IS AN UNRESOLVED EXTERNAL REFERENCE; NCAL WAS SPECIFIED, OR THE REFERENCE WAS MARKED FOR RESTRICTED NO-CALL OR NEVERCALL.

Appendix C

Maintenance Subroutine Listings

```
 'LAUGEVA.COMPRS.CNTL'
00010 //LAUGE1B  JOB (3E02,L060,5,4),'INDEX SEQ JOB',CLASS=K,
00020 //    NOTIFY=LAUGEVA,REGION=100K
00021 /*ROUTE  PRINT REMOTE8
00030 //STEP1    EXEC PGM=IEBISAM,PARM=COPY
00040 //SYSPRINT  DD SYSOUT=A
00050 //SYSUT1   DD DSN=L.WILL.INDEX,DISP=(OLD,KEEP),UNIT=DISK,
00060 //    DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,LRECL=114,BLKSIZE=1140)
00070 //SYSUT2   DD DSN=TEMP2.DATA.SET(INDEX),DISP=(NEW,CATLG,DELETE),
00080 //   DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,BLKSIZE=1140,LRECL=114),
00090 //   SPACE=(CYL,SPACER),VOL=SER=XXXX,UNIT=DISK
00100 //    DD   DSN=TEMP2.DATA.SET(PRIME),DISP=(NEW,KEEP,DELETE),
00110 //    DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,LRECL=114,BLKSIZE=1140),
00120 //    SPACE=(CYL,SPACER),VOL=SER=XXXX,UNIT=DISK
00130 //    DD   DSN=TEMP2.DATA.SET(OVFLOW),DISP=(NEW,KEEP,DELETE),
00140 //    DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,LRECL=114,BLKSIZE=1140),
00150 //    SPACE=(CYL,SPACER),VOL=SER=XXXX,UNIT=DISK
00160 //STEP2    EXEC  PGM=IEBISAM,PARM=COPY
00170 //SYSPRINT  DD SYSOUT=A
00180 //SYSUT2   DD DSN=L.WILL.INDEX,DISP=(OLD,KEEP),UNIT=DISK,
00190 //    DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,LRECL=114,BLKSIZE=1140)
00200 //SYSUT1   DD DSN=TEMP2.DATA.SET(INDEX),DISP=(OLD,DELETE,DELETE),
00210 //   DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,BLKSIZE=1140,LRECL=114),
00220 //   SPACE=(CYL,SPACER),UNIT=DISK
00230 //         DD DSN=TEMP2.DATA.SET(OVFLOW),DISP=(OLD,DELETE,DELETE),
00240 //   DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,BLKSIZE=1140,LRECL=114),
00250 //   SPACE=(CYL,SPACER),VOL=SER=XXXX,UNIT=DISK
00260 //    DD   DSN=TEMP2.DATA.SET(PRIME),DISP=(OLD,DELETE,DELETE),
00270 //    DCB=(OPTCD=LIY,DSORG=IS,RECFM=FB,LRECL=114,BLKSIZE=1140),
00280 //    SPACE=(CYL,SPACER),VOL=SER=XXXX,UNIT=DISK

00290 //
READY
```

```
 'LAUGEVA.SCH.CLIST(COMPRS)'
00010   PROC 1 NAME DISK(DFSE01) REMOTE(REMOTE2) SPACE(1)
00020   CD WEL.CNTL
00030    E 'LAUGEVA.COMPRS.CNTL' CNTL
00040   C 10 290 /L.WILL/&NAME./ALL
00050   C 10 290 /XXXX/&DISK./ALL
00051   C 10 290 /SPACER/&SPACE./ ALL
00053    C 21 /REMOTE8/&REMOTE /
00060   S WEL.CNTL
00070   END
00080   SUBMIT WEL.CNTL
00090   END
READY
```

```
 'LAUQEVA.SCH.CLIST(DUMP)'
00010  PROC 1 NAME     DISP(OLD) CATLG(KEEP)     REMOTE(REMOTE8) LABEL( )
00020   CF DA('LAUQEVA.COMPRS.CNTL')
00030  CD WEL2.CNTL
00040  E 'LAUQEVA.COMPRS.CNTL' CNTL
00041  00022 /*SETUP          TS0168
00050  D 70 290
00070  C 50 /L.WILL/&NAME./
00090  C 21 /REMOTE8/&REMOTE./
00100  C 30 /COPY/UNLOAD/
00110  00070 //SYSUT2 DD DSN=&NAME..BACK.INDEX,UNIT=TAPE9,
00111  000080 //          DCB=(LRECL=80,BLKSIZE=640,RECFM=FB),
00112  00090 //  DISP=(&DISP.,&CATLG.),LABEL=(&LABEL.,SL)
00113  00100 /*
00114  00110 //
00140  S WEL2.CNTL
00150  END
00170  CF DA('LAUQEVA.COMPRS.CNTL')
00180  END
READY
```

```
 'LAUQEVA.SCH.CLIST(LIST)'
00010   PROC 1 NAME INDEX( ) REMOTE(REMOTE2)
00011   CF DA('LAUQEVA.COMPRS.CNTL')
00020   CO WEL1.CNTL
00030   E 'LAUQEVA.COMPRS.CNTL' CNTL OLD
00040   D 70 290
00051   C 50 /L.WILL.INDEX/&NAME..INDEX&INDEX./
00060   C 21 /REMOTE8/&REMOTE./
00070   C 30 /COPY/'PRINTL,N'/
00080 00070 //SYSUT2 DD SYSOUT=A
00090 00080 /*
00100 00090 //
00101   S WEL1.CNTL
00110   END
00111   SUBMIT WEL1.CNTL
00112   CF DA('LAUQEVA.COMPRS.CNTL')
00120   END
READY
```

```
 'LAUGEVA.SCH.CLIST(RESTORE)'
00010   PROC 1 NAME SPACE(1) DISK(DFSE01)
00020   CF DAX 'LAUGEVA.COMPRS.CNTL')
00030   CD WEL3.CNTL
00040   E 'LAUGEVA.COMPRS.CNTL' CNTL
00050   00022 /*SETUP          TS0168
00060   D 160 280
00071   C 30 /COPY/LOAD/
00080   C 50 /L.WILL.INDEX/&NAME..BACK.INDEX/
00090   C 50 /DISK,/TAPE9/
00100   D 60
00110   C 70 150 /SPACER/&SPACE./ ALL
00120   C 70 150 /TEMP2.DATA.SET/&NAME..INDEX/ ALL
00121   C 70 150 /XXXX/&DISK./ ALL
00130   S WEL3.CNTL
00140   END
00150   CF DAX 'LAUGEVA.CMPRS.CNTL')
00160   END
READY
```

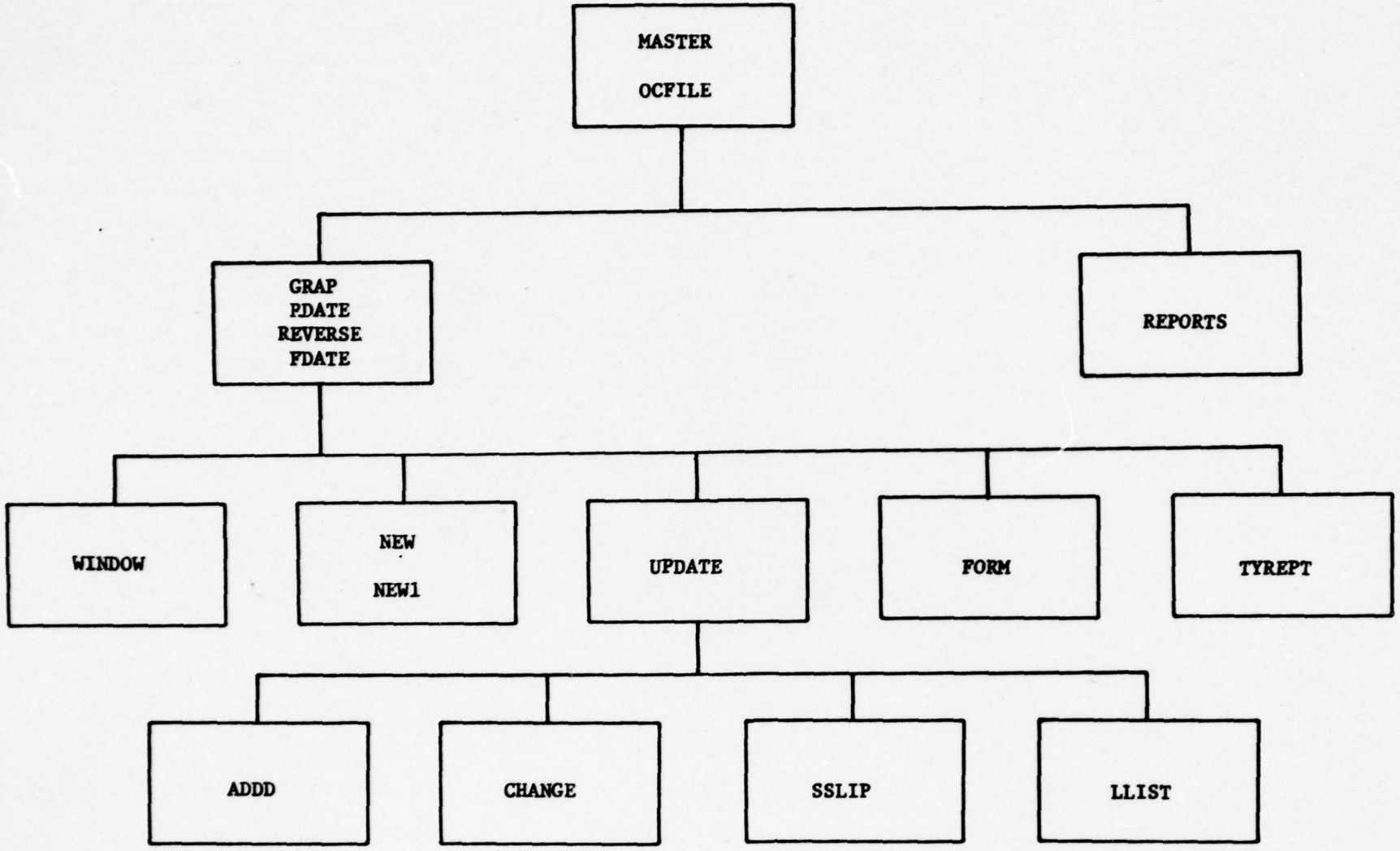


Figure 1.1 Single Region Overlay Tree Structure

ADDD.PLI

FORM.FORT

GRAP.PLI

LLIST.PLI

MASTER.PLI

NEW.PLI

NEW1.PLI

REPORTS.PLI

S.CHANGE.PLI

SSLIP.PLI

TYREPT.PLI

UPDATE.PLI

WINDOW.PLI

A.OCFILE.PLI

FDATE.PLI

RDATE.PLI

REVERSE.PLI

Figure 3.1 SCHEDULE Subroutines

```
 SCHEDULE.CLIST
00010  PROC 0 LN(33) LSZ(133) VERS(X) JEN1(P) JEN2(N) JEN3(N) JEN4(N) JEN5

(N)
00020  TERM LINES(&LN.) LINESIZE(&LSZ.)
00030  CF DA('LPMASMG.INDEX')
00040  CF DA('LPMASMG.DATA.DATA')
00050  CF F(FT04F001,FT05F001,FT06F001)
00060  CF F(STD)
00070  CF F(SYSIN)
00080  CF F(DIREC)
00090  CF DA('LPMASMG.&VERS..MASTER.LOAD(RUN)')
00100  ALLOC F(STD) DA('LPMASMG.STDTIT.DATA') SHR
00110  ALLOC F(ACHG) DA('LPMASMG.ACHGN') SHR
00120  ALLOC F(SYSPRINT) DA(*)
00130  ALLOC F(SCRATCH) DA('LPMASMG.DATA.DATA') SHR
00140  ALLOC F(FT04F001) DA('LPMASMG.DATA.DATA') SHR
00150  ALLOC F(DIREC) DA('LPMASMG.INDEX') MOD
00160  ALLOC DA(*) F(SYSIN)
00170  ALLOC DA(*) F(FT05F001)
00180  ALLOC DA(*) F(FT06F001)
00190  CALL 'LPMASMG.&VERS..MASTER.LOAD(RUN)' '&JEN1.&JEN2.&JEN3.JEN4.&JEN

5.'
00200 END
```

Figure 3.2 SCHEDULE.CLIST Listing

ARGUMENT NAME	ARGUMENT VALUE	RESULT
Jenny 1	P	Prints Project Manager Application Code Compting List
Jenny 1	R	Prints R&D Command Application Code Prompting List
Jenny 1	N	Disable Application Code Prompting List Printing; Default Value
Jenny 2	C	Enable Cross System Reporting
Jenny 2	N	Disable Cross System Reporting Default Value
Jenny 3	P	Enable Position Dependent Application Code (not available)
Jenny 3	N	Disable Position Dependent Application Code Default Value
Jenny 4	M	Enable Lines Per Page
Jenny 4	N	Disable Lines Per Page; Default Value
Jenny 5	W	Enable Windowing
Jenny 5	N	Disable Windowing; Default Value

Figure 3.3 SCHEDULE Passed Argument Values

```
 STDTIT.DATA
00010   ** CONCEPT ************************
00020    ROC
00030    BOI
00040    PQQPRI
00050    DP
00060    BCE
00070    FREQ ALOC (PRLM)
00080     REPTABLISH TIWG
00090    CRITICAL ISSUE/TEST MATRIX
00100    DT/OT TEST CRITERIA
00110    DT/OT INDPT EVAL PLAN
00120    INIT TDP (DT I)
00130    INIT OTP (DT I)
00140    INIT TDP (OT I)
00150    INIT OTP (OT I)
00160    CTP-I (DRAFT)
00170    CFP(IPR)
00180    CFP(IPR) APPROVAL
00190   ** ADVANCED DEV **********
00200    REVISE CTP-I
00210    DETMN AND FINDING (AD)
00230    SPECS (AD)
00240    STATEMENT OF WORK (AD)
00250    DATA CALL(AD)
00260    DATA REQMTS REVIEW BD (AD)
00270    CONTR DATA REQMTS LIST (AD)
00280    CONTR TEST REQMTS (AD)
00290    PRODTY ENGRG & PLANNING (AD)
00300    PREP EVAL CRITERIA (AD)
```

Figure 3.4 Sample Standard Title Dataset Listing

```
00310   PREP SECURTIY CLSFN GUIDE (AD)
00320   INDPT GOVT COST EST (AD)
00330   SOLE SOURCE DECISION (AD)
00340   RFP (AD)
00350   EVAL CONTR PROPOSALS (AD)
00360   KO TEAM REVIEW (AD)
00370   CONTRACT AWARDS BD (AD)
00380   CONTRACT AWARD (AD)
00390   APPR CONTR TEST PLANS (AD)
00400   FINAL TDP (DT I)
00410   FINAL OTP (DT I)
00420   FINAL TDP (OT I)
00430   FINAL OTP (OT I)
00440   CTP-I (FINAL)
00450   INIT PLAN FOR LOG SUPT
00460   AIRCRAFT BAILED (AD)
00470   SAFETY OF FLT RELEASE (AD)
00480   DT I (EDT-C)
00490   DT I (EDT-C) REPT(PRLM)
00500   DT I (EDT-C) REPT(REVIEW)
00510   DT I (EDT-C) REPT(FINAL)
00520   DT I (ADVT-C)
00530   DT I (ADVT-C) REPT (PRLM)
00540   DT I (ADVT-C) REPT (REVIEW)
00550   DT I (ADVT-C) REPT (FINAL)
00560   DT I (EDT-G)
00570   DT I (EDT-G) REPT (PRLM)
00580   DT I (EDT-G) REPT (REVIEW)
00590   DT I (EDT-G) REPT (FINAL)
00600   DT I (ADVT-G)
```

Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
00610    DT I (ADVT-G) REPT (PRLM)
00620    DT I (ADVT-G) REPT (REVIEW)
00630    DT I (ADVT-G) REPT (FINAL)
00640    OT I
00650    OT I REPT (PRLM)
00660    OT I REPT (REVIEW)
00670    OT I REPT (FINAL)
00680    DT I INDPT EVAL
00690    OT I INDPT EVAL
00700    DT I INDPT EVAL REPT
00710    OT I INDPT EVAL REPT
00720    INIT TDP (DT II)
00730    INIT ODP (DT II)
00740    INIT TDP (OT II)
00750    INIT ODP (OT II)
00760    CTP-II (DRAFT)
00770    FREQ ALOC (DEV)
00780    VALIDATION (IPR)
00790    VALIDATION (IPR) APPROVAL
00800   ** ENGR DEV **************
00810    REVISE CTP II
00820    DETMN AND FINDING (ED)
00830    PIP
00850    STATEMENT OF WORK (ED)
00860    DATA CALL(ED)
00870    DATA REQMTS REVIEW BD (ED)
00880    CONTR DATA REQMTS LIST (ED)
00890    CONTR TEST REQMTS (ED)
00900    PRODTY ENGRG & PLANNING (ED)
00910    PREP EVAL CRITERIA (ED)
```

Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
00920   PREP SEC CLSFN GUIDE (ED)
00930   INDPT GOVT COST EST (ED)
00940   SOLE SOURCE DECISION (ED)
00950   RFP (ED)
00960   RFQ (ED)
00970   EVAL CONTR PROPOSALS (ED)
00980   KO TEAM REVIEW (ED)
00990   CONTRACT AWARDS BD (ED)
01000   CONTRACT AWARD (ED)
01010   INIT DESIGN REVIEW (ED)
01020   APPR CONTR TEST PLANS (ED)
01030   FINAL TDP (DT II)
01040   FINAL ODP (DT II)
01050   FINAL TDP (OT II)
01060   FINAL ODP (OT II)
01070   CTP-II (FINAL)
01080   PROTO FABRICATION (ED)
01090   REVIEW PROD PLAN (ED)
01100   AIRCRAFT BAILED (ED)
01110   PROTO TRIAL INSTL (ED)
01120   DT II (EDT-C)
01130   DT II (EDT-C) REPT (PRLM)
01140   DT II (EDT-C) REPT (REVIEW)
01150   DT II (EDT-C) REPT (FINAL)
01160   DT II (PQT-C)
01170   DT II (PQT-C) REPT (PRLM)
01180   DT II (PQT-C) REPT (REVIEW)
01190   DT II (PQT-C) REPT (FINAL)
01200   TECH DRAWING PKG REVIEW (ED)
01210   FINAL DESIGN REVIEW (ED)
```


Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
01220    TECH DATA PKG REVIEW (EO)
01230    INIT PLAN FOR LOG SUPT
01240    NET TEST PERSONNEL
01250    PROV ACCPT OF SYS FOR TEST
01260    SAFETY OF FLT RELEASE (EO)
01270    OT II (EDT-G)
01280    OT II (EDT-G) REPT(PRLM)
01290    OT II (EDT-G) REPT(FINAL)
01300    OT II (PQT-G)
01310    OT II (PQT-G) REPT(PRLMN)
01320    OT II (PQT-G) REPT(REVIEW)
01330    OT II (PQT-G) REPT (FINAL)
01340    OT II TEST
01350    OT II REPT (PRLM)
01360    OT II REPT (REVIEW)
01370    OT II REPT (FINAL)
01380    OT II INDPT EVAL
01390    OT II INDPT EVAL
01400    OT II INDPT EVAL (REPT)
01410    OT II INDPT EVAL (REPT)
01420    UPDATE BOI&TOE
01430    UPDATE PLAN FOR LOG SUPT
01440    FINAL REVIEW PROD PROCESS
01450    PROVISIONING CONFERENCE
01460    DRAFT TNG PROGRAM
01470    UPDATE QQPRI
01480    UPDATE TECH DATA PKG
01490    INIT TDP (OT III)
01500    INIT ODP (OT III)
01510    INIT TDP (OT III)
```


Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
01520    INIT ODP (OT III)
01530    REVISE CTP-III (DRAFT)
01540    FREQ ASSIGNMENT
01550    DEVA (IPR)
01560    DEVA (IPR) APPROVAL
01570    TYPE CLSFN (ED)
01580    PREP ECP (A KIT)
01590    APPR ECP (A KIT)
01600    PREP ECP (B KIT)
01610    APPR ECP (B KIT)
01620    PREP MWO (A KIT)
01630    APPR MWO (A KIT)
01640    PREP MWO (B KIT)
01650    APPR MWO (B KIT)
01660   ** LRIP ****************************
01670    REVISE CTP-III
01680    DETMN AND FINDING (LRIP)
01700    SPECS (LRIP)
01710    STATEMENT OF WORK (LRIP)
01720    DATA CALL(LRIP)
01730    DATA REQMTS REVIEW BD (LRIP)
01740    CONTR DATA REQMTS LIST (LRIP)
01750    CONTR TEST REQMTS (LRIP)
01760    PRODTY ENGRG & PLANNING (LRIP)
01770    PREP EVAL CRITERIA (LRIP)
01780    PREP SEC CLSFN GUIDE (LRIP)
01790    INDPT GOVT COST EST (LRIP)
01800    SOLE SOURCE DECISION (LRIP)
01810    RFP (LRIP)
01820    RFQ (LRIP)
```

Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
01830    EVAL CONTR PROPOSALS (LRIP)
01840    KO TEAM REVIEW (LRIP)
01850    CONTRACT AWARDS BD (LRIP)
01860    CONTRACT AWARD (LRIP)
01870    FINAL TDP (DT III)
01880    FINAL ODP (DT III)
01890    FINAL TDP (OT III)
01900    FINAL ODP (OT III)
01910    CTP-III (FINAL)
01920    MWO
01930    NET FOR INSTR KEY DEPOT PERS
01940    AIRCRAFT BAILED (LRIP)
01950    DT III (PVT-C)
01960    DT III (PVT-C) REPT(PRLM)
01970    DT III (PVT-C) REPT(REVIEW)
01980    DT III (PVT-C) REPT(FINAL)
01990    SAFETY OF FLT RELEASE (LRIP)
02000    DT III (PVT-G)
02010    DT III (PVT-G) REPT(PRLM)
02020    DT III (PVT-G) REPT(REVIEW)
02030    DT III (PVT-G) REPT(FINAL)
02040    OT III (DTP)
02050    OT III (DTP) REPT(PRLM)
02060    OT III (DTP) REPT(REVIEW)
02070    OT III (DTP) REPT(FINAL)
02080    DT III INOPT EVAL
02090    OT III INOPT EVAL
02100    DT III INOPT EVAL (REPT)
02110    OT III INOPT EVAL (REPT)
02120    UPDATE TECH DATA PKG
```


Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
02130    UPDATE PLAN FOR LOG SUPT
02140    PREP BOIP II
02150    APPR BOIP II
02160    FINAL QQPRI AND MOS DECISION
02170    PHYS CONF AUDIT(PCA)
02180    UPDATE TDP
02190    PV (IPR)
02200    PV (IPR) APPROVAL
02210   ** FULL PROD ****************
02220    TYPE CLSFN (P)
02230    FIRST EDITION TM
02240    NET FOR TNG INSTRUCTORS
02250    INSTL OF TNG DEVICES & EQPT
02260    DEPOT PARTS(KITS) FILL
02270    NEW EQPT INTRO TEAM:
02280    NET TNG OF USERS
02290    INSTL OF MODS
02300    DETMN AND FINDING (P)
02320    STATEMENT OF WORK (P)
02330    DATA CALL(P)
02340    DATA REQMTS REVIEW BD (P)
02350    CONTR DATA REQMTS LIST (P)
02360    CONTR TEST REQMTS (P)
02370    PRODTY ENGRG & PLANNING (P)
02380    PREP EVAL CRITERIA (P)
02390    PREP SEC CLSFN GUIDE (P)
02400    INDPT GOVT COST EST (P)
02410    SOLE SOURCE DECISION (P)
02420    RFP (P)
02430    RFQ (P)
```


Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
02440    EVAL CONTR PROPOSALS (P)
02450    KO TEAM REVIEW (P)
02460    CONTRACT AWARDS BD (P)
02470    CONTRACT AWARD (P)
02480    PREPARATION FIELD INTRO
02490    EXECUTION FIELD INTRO
02500    INIT OPER CAPABILITY (IOC)
READY
```


Figure 3.4 Sample Standard Title Dataset Listing (cont'd)

```
DO YOU NEED FULL PROMPTING ?
Y
ENTER SYSTEM TYPE
     N - NEW (THE SYSTEM DOES NOT HAVE A CODE)
     O - OLD (THE SYSTEM IS IN THE MAIN FILE)
N
 WILL YOU ENTER THE DATA FROM THE KEYBOARD OR IS IT PRESENTLY ON A FILE ?
     ENTER
     K - KEYBOARD
     F - FILE
     N - NONE
K
```

Full Prompting

```
DO YOU NEED FULL PROMPTING ?
N
ENTER SYSTEM TYPE
N
 WILL YOU ENTER THE DATA FROM THE KEYBOARD OR IS IT PRESENTLY ON A FILE ?
K
```

No Prompting

Figure 4.1 Full/No Prompting Examples

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
  TASK OR EVENT
  FOLLOWED BY NUMBER
E
/ ID#  /                EVENT                /   DATE  /
/*____*/THIS_IS_A_SINGLE_EVENT_____/_1*JAN*79/
```

SINGLE EVENT


```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
  TASK OR EVENT
  FOLLOWED BY NUMBER
E2
/ ID#  /                EVENT                /   DATE  /
/*____*/THIS_IS_A_MULTIPLE_EVENT____/_1*JAN*80/
/ EVENT DATE /
/_1*DEC*81/
```

MULTIPLE EVENT

Figure 4.2 Sample Single and Multiple Event Input

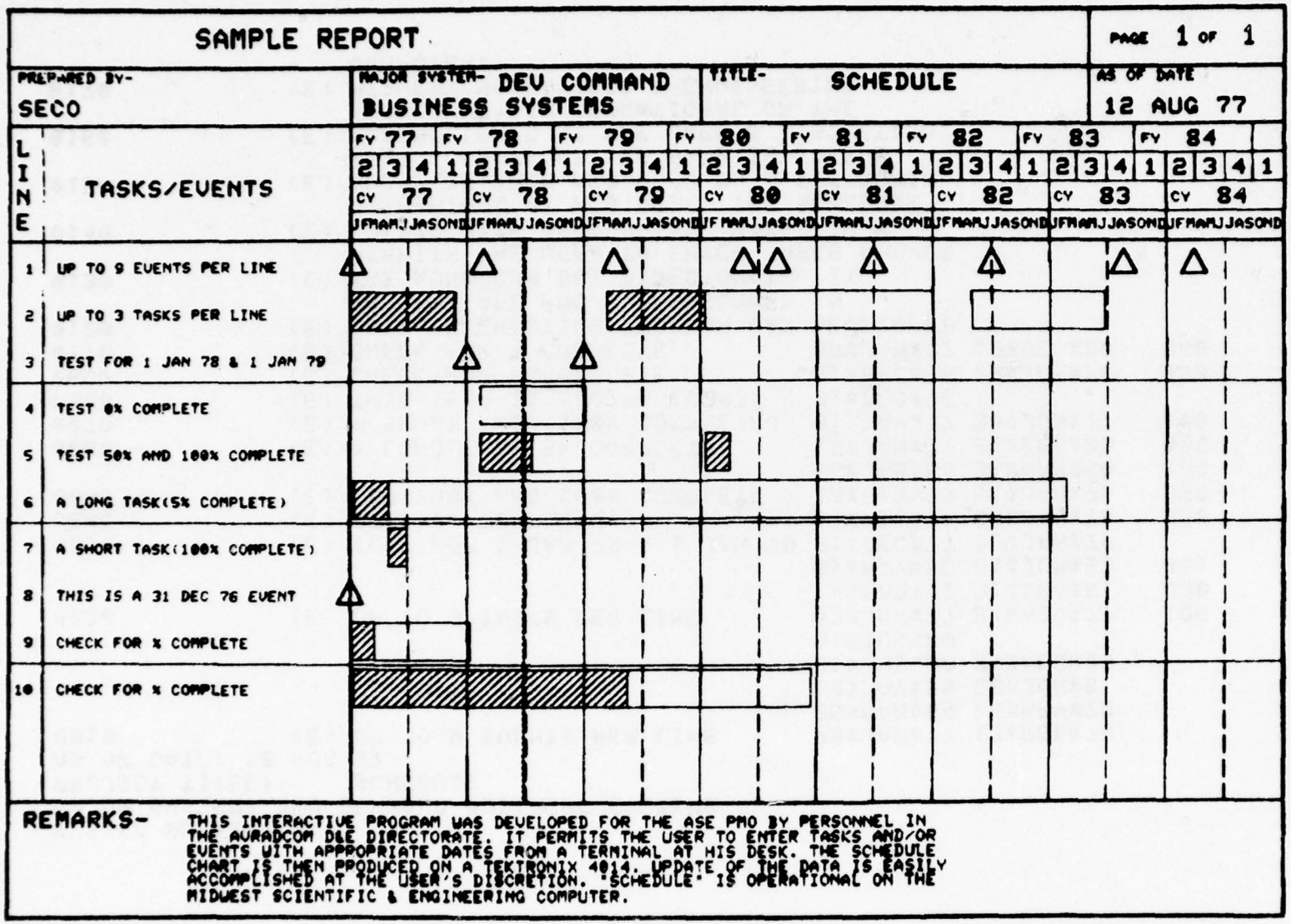


Figure 4.3 Sample Graphic Report

```
SYSTEM NUMBER: 001
MAJOR SYSTEM: DEV COMMAND BUSINESS SYSTEMS
PROJECT TITLE:      SCHEDULE
AS OF DATE: 12 AUG 77
0010            (E) UP TO 9 EVENTS PER LINE       08*JAN*77 17*FEB*78
                                                  25*MAR*84 04*APR*79
                                                  14*MAY*80 28*JUN*81
                                                  01*JUL*82 21*AUG*83
                                                  31*AUG*80
0020            (E) UP TO 3 TASKS PER LINE        03*JAN*77 24*NOV*77   100
                                                  14*MAR*79 31*DEC*81   030
                                                  01*MAY*82 21*JUN*83   001
0030            (E) TEST FOR 1 JAN 78 & 1 JAN 79  31*DEC*77 01*JAN*79
0040            (E) TEST 0% COMPLETE              11*FEB*78 04*JAN*79   060
0050            (E) TEST 50% AND 100% COMPLETE    12*FEB*78 01*JAN*79   050
                                                  16*JAN*80 31*MAR*80   100
0060            (E) A LONG TASK(5% COMPLETE)      13*JAN*77 21*FEB*83   005
0070            (E) A SHORT TASK(100% COMPLETE)   01*MAY*77 30*JUN*77   100
0080            (E) THIS IS A 31 DEC 76 EVENT     31*DEC*76
0090            (E) CHECK FOR % COMPLETE          31*DEC*75 09*JAN*78   060
0110            (E) CHECK FOR % COMPLETE          09*JAN*77 13*DEC*80   060
0120            (E) THIS INTERACTIVE PROGRAM WAS DEVELOPED
                    FOR THE ASE PMO BY PERSONNEL IN
0130            (E) THE AVRADCOM D&E DIRECTORATE. IT
                    PERMITS THE USER TO ENTER TASKS AND/OR
0140            (E) EVENTS WITH APPROPRIATE DATES FROM
                    A TERMINAL AT HIS DESK. THE SCHEDULE
0150            (E) CHART IS THEN PRODUCED ON A TEKTRONIX
                    4014. UPDATE OF THE DATA IS EASILY
0160            (E) ACCOMPLISHED AT THE USER'S DISCRETION.
                    'SCHEDULE' IS OPERATIONAL ON THE
0170            (E) MIDWEST SCIENTIFIC & ENGINEERING
                    COMPUTER.
```

Figure 4.4 Sample Graphic Report Record Listing

```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
  TASK OR EVENT
  FOLLOWED BY NUMBER
T
        TITLE                      / STR.DT. / STP.DT / COMPLT   /
/SINGLE_TASK_ADDITION_____/_1*JAN*80/_1*DEC*80/***_0_***/
 APPLICATION CODE
/SEI_____/
```

SINGLE TASK ADDITION


```
ENTER ELEMENT TYPE AND NUMBER OF ELEMENTS
  TASK OR EVENT
  FOLLOWED BY NUMBER
T 2
        TITLE                      / STR.DT. / STP.DT / COMPLT   /
/MULTIPLE_TASK_ADDITION_____/_1*DEC*80/15*JAN*81/***_0_***/
/ STR.DT. / STP.DT. / COMPLT /
/15*MAR*81/_1*JUL*81/***_0_***/
 APPLICATION CODE
/SEI_____/
```

MULTIPLE TASK ADDITION

Figure 4.5 Sample Single and Multiple Task Input

```
SYSTEM NUMBER: 001
MAJOR SYSTEM: DEV COMMAND BUSINESS SYSTEMS
PROJECT TITLE:      SCHEDULE
AS OF DATE: 12 AUG 77
0010          (E) UP TO 9 EVENTS PER LINE       08*JAN*77 17*FEB*78
                                                25*MAR*84 04*APR*79
                                                14*MAY*80 28*JUN*81
                                                01*JUL*82 21*AUG*83
                                                31*AUG*80
0020          (E) UP TO 3 TASKS PER LINE        03*JAN*77 24*NOV*77   100
                                                14*MAR*79 31*DEC*81   030
                                                01*MAY*82 21*JUN*83   001
0030          (E) TEST FOR 1 JAN 78 & 1 JAN 79  31*DEC*77 01*JAN*79
0035        (SET) ADD EXAMPLE                   01*JAN*80
0040          (E) TEST 0% COMPLETE              11*FEB*78 04*JAN*79   000
0050          (E) TEST 50% AND 100% COMPLETE    12*FEB*78 01*JAN*79   050
                                                16*JAN*80 31*MAR*80   100
0060          (E) A LONG TASK(5% COMPLETE)      13*JAN*77 21*FEB*83   005
0070          (E) A SHORT TASK(100% COMPLETE)   01*MAY*77 30*JUN*77   100
0080          (E) THIS IS A 31 DEC 76 EVENT     31*DEC*76
0090          (E) CHECK FOR % COMPLETE          31*DEC*75 09*JAN*78   060
0110          (E) CHECK FOR % COMPLETE          09*JAN*77 13*DEC*80   060
0120          (E) THIS INTERACTIVE PROGRAM WAS DEVELOPED
                  FOR THE ASE PMO BY PERSONNEL IN
0130          (E) THE AVRADCOM D&E DIRECTORATE. IT
                  PERMITS THE USER TO ENTER TASKS AND/OR
0140          (E) EVENTS WITH APPROPRIATE DATES FROM
                  A TERMINAL AT HIS DESK. THE SCHEDULE
0150          (E) CHART IS THEN PRODUCED ON A TEKTRONIX
                  4014. UPDATE OF THE DATA IS EASILY
0160          (E) ACCOMPLISHED AT THE USER'S DISCRETION.
                  'SCHEDULE' IS OPERATIONAL ON THE
0170          (E) MIDWEST SCIENTIFIC & ENGINEERING
```


Figure 4.6 System Listing With New Record Added

```
SYSTEM NUMBER: 004
MAJOR SYSTEM: DEV COMMAND BUSINESS SYSTEMS
PROJECT TITLE:      SCHEDULE
AS OF DATE: 12 AUG 77
0010            (E) UP TO 9 EVENTS PER LINE       08*JAN*77 17*FEB*78
                                                  25*MAR*84 04*APR*79
                                                  14*MAY*80 28*JUN*81
                                                  01*JUL*82 21*AUG*83
                                                  31*AUG*80
0020            (E) UP TO 3 TASKS PER LINE        03*JAN*77 24*NOV*77   100
                                                  14*MAR*79 31*DEC*81   030
                                                  21*MAY*82 31*MAY*83   001
0021          (SET) LIST TEST EVENT 1             01*JAN*80
0022          (SET) LIST TEST EVENT 2             01*FEB*80
0030            (E) TEST FOR 1 JAN 78 & 1 JAN 79  31*DEC*77 01*JAN*79
0040            (E) TEST 0% COMPLETE              11*FEB*78 04*JAN*79   000
0050            (E) TEST 50% AND 100% COMPLETE    12*FEB*78 01*JAN*79   050
                                                  16*JAN*80 31*MAR*80   100
0060            (E) A LONG TASK(5% COMPLETE)      13*JAN*77 01*MAR*83   005
0070            (E) A SHORT TASK(100% COMPLETE)   01*MAY*77 30*JUN*77   100
0080            (E) THIS IS A 31 DEC 76 EVENT     31*DEC*76
0090            (E) CHECK FOR % COMPLETE          31*DEC*75 09*JAN*78   060
0100            (E) CHECK FOR % COMPLETE          09*JAN*77 13*DEC*80   060
0110            (E) THIS INTERACTIVE PROGRAM WAS DEVELOPED
                    FOR THE ASE PMO BY PERSONNEL IN
0120            (E) THE AVRADCOM D&E DIRECTORATE. IT
                    PERMITS THE USER TO ENTER TASKS AND/OR
0130            (E) EVENTS WITH APPROPRIATE DATES FROM
                    A TERMINAL AT HIS DESK. THE SCHEDULE
0140            (E) CHART IS THEN PRODUCED ON A TEKTRONIX
                    4014. UPDATE OF THE DATA IS EASILY
0150            (E) ACCOMPLISHED AT THE USER'S DISCRETION.
                    'SCHEDULE' IS OPERATIONAL ON THE

0160            (E) MIDWEST SCIENTIFIC & ENGINEERING
                    COMPUTER.
ENTER EDIT
```

Figure 4.7 Sample System Listing

```
SYSTEM NUMBER: 004
MAJOR SYSTEM: DEV COMMAND BUSINESS SYSTEMS
PROJECT TITLE:      SCHEDULE
AS OF DATE: 12 AUG 77
0021          (SET) LIST TEST EVENT 1              01*JAN*80
0022          (SET) LIST TEST EVENT 2              01*FEB*80
 END OF MAIN FILE
```

Figure 4.8 Sample Output Listing

```
SYSTEM NUMBER: 004
MAJOR SYSTEM: DEV COMMAND BUSINESS SYSTEMS
PROJECT TITLE:      SCHEDULE
AS OF DATE: 12 AUG 77
0010            (E) UP TO 9 EVENTS PER LINE       08*JAN*77 17*FEB*78
                                                  25*MAR*84 04*APR*79
                                                  14*MAY*80 28*JUN*81
                                                  01*JUL*82 21*AUG*83
                                                  31*AUG*80
0020            (E) UP TO 3 TASKS PER LINE        03*JAN*77 24*NOV*77   100
                                                  14*MAR*79 31*DEC*81   030
                                                  21*MAY*82 31*MAY*83   001
0021          (SET) LIST TEST EVENT 1             01*JAN*80
0022          (SET) LIST TEST EVENT 2             01*FEB*80
0030            (E) TEST FOR 1 JAN 78 & 1 JAN 79  31*DEC*77 01*JAN*79
0040            (E) TEST 0% COMPLETE              11*FEB*78 04*JAN*79   000
0050            (E) TEST 50% AND 100% COMPLETE    12*FEB*78 01*JAN*79   050
                                                  16*JAN*80 31*MAR*80   100
0060            (E) A LONG TASK(5% COMPLETE)      13*JAN*77 01*MAR*83   005
0070            (E) A SHORT TASK(100% COMPLETE)   01*MAY*77 30*JUN*77   100
0080            (E) THIS IS A 31 DEC 76 EVENT     31*DEC*76
0090            (E) CHECK FOR % COMPLETE          31*DEC*75 09*JAN*78   060
0100            (E) CHECK FOR % COMPLETE          09*JAN*77 13*DEC*80   060
0110            (E) THIS INTERACTIVE PROGRAM WAS DEVELOPED
                    FOR THE ASE PMO BY PERSONNEL IN
0120            (E) THE AVRADCOM D&E DIRECTORATE. IT
                    PERMITS THE USER TO ENTER TASKS AND/OR
0130            (E) EVENTS WITH APPROPRIATE DATES FROM
                    A TERMINAL AT HIS DESK. THE SCHEDULE
0140            (E) CHART IS THEN PRODUCED ON A TEKTRONIX
                    4014. UPDATE OF THE DATA IS EASILY
0150            (E) ACCOMPLISHED AT THE USER'S DISCRETION.
                    'SCHEDULE' IS OPERATIONAL ON THE

0160            (E) MIDWEST SCIENTIFIC & ENGINEERING
                    COMPUTER.
```

Figure 4.9 Sample Output Listing

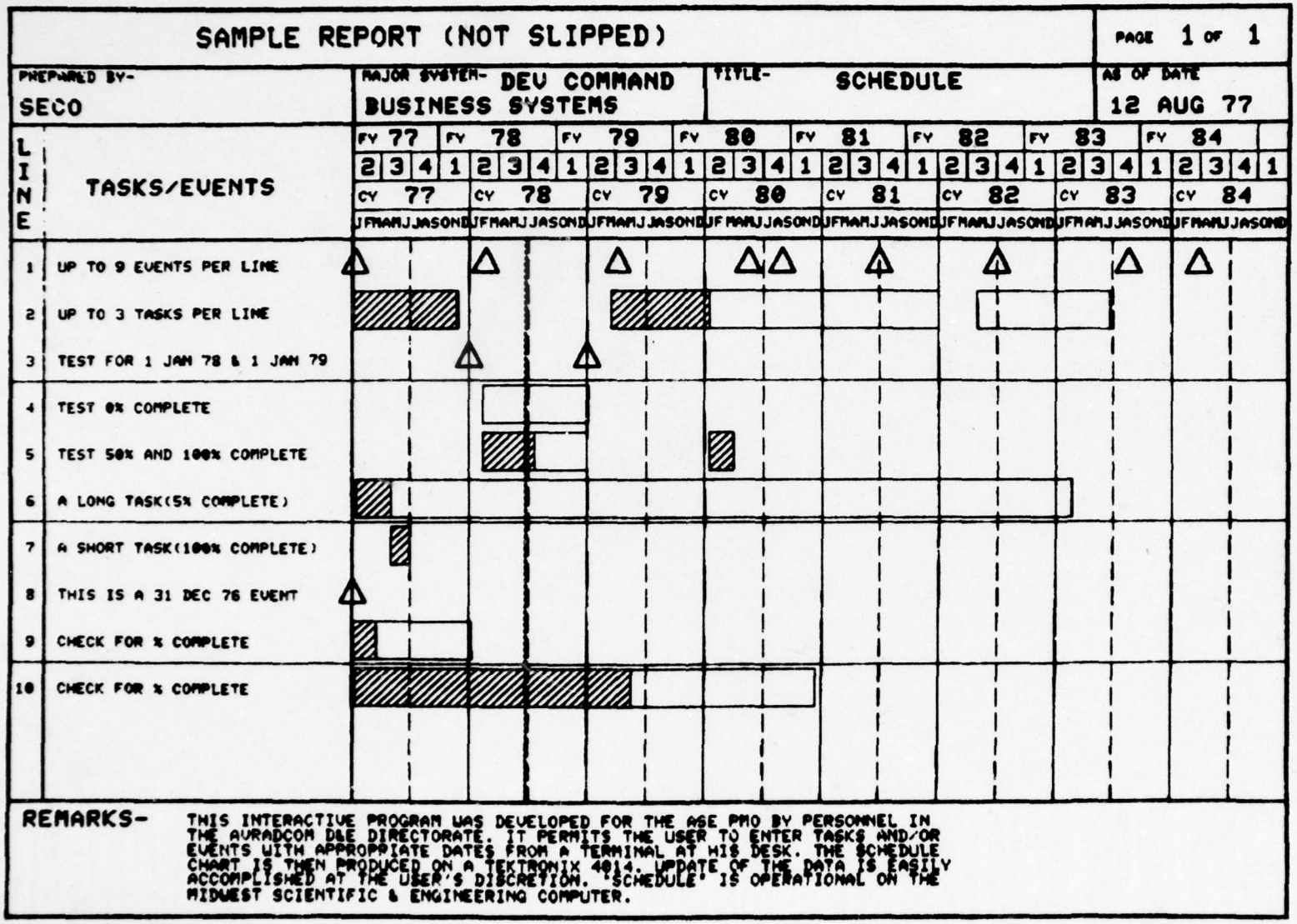


Figure 4.10 Sample Report (Not Slipped)

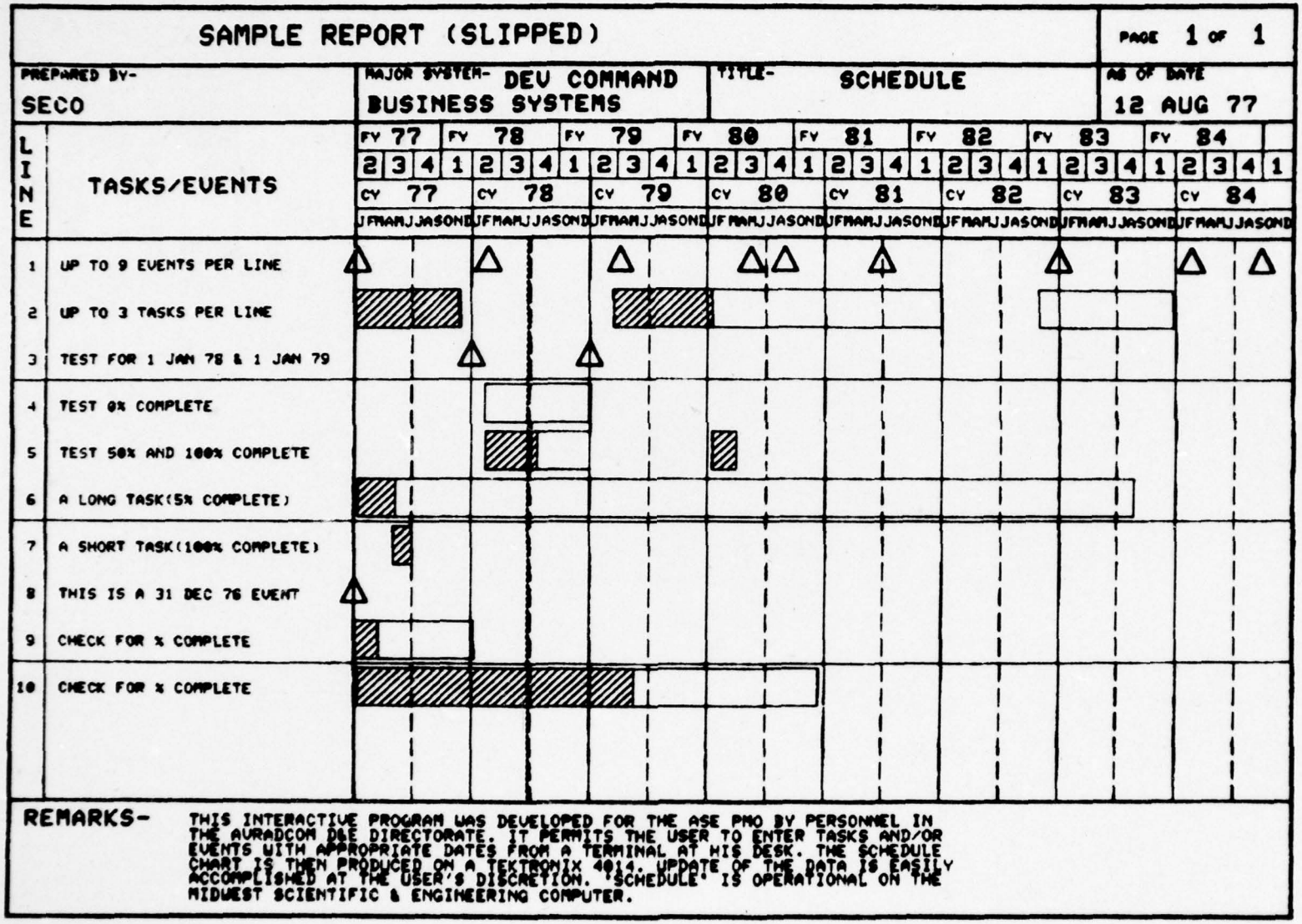


Figure 4.11 Sample Report (Slipped)

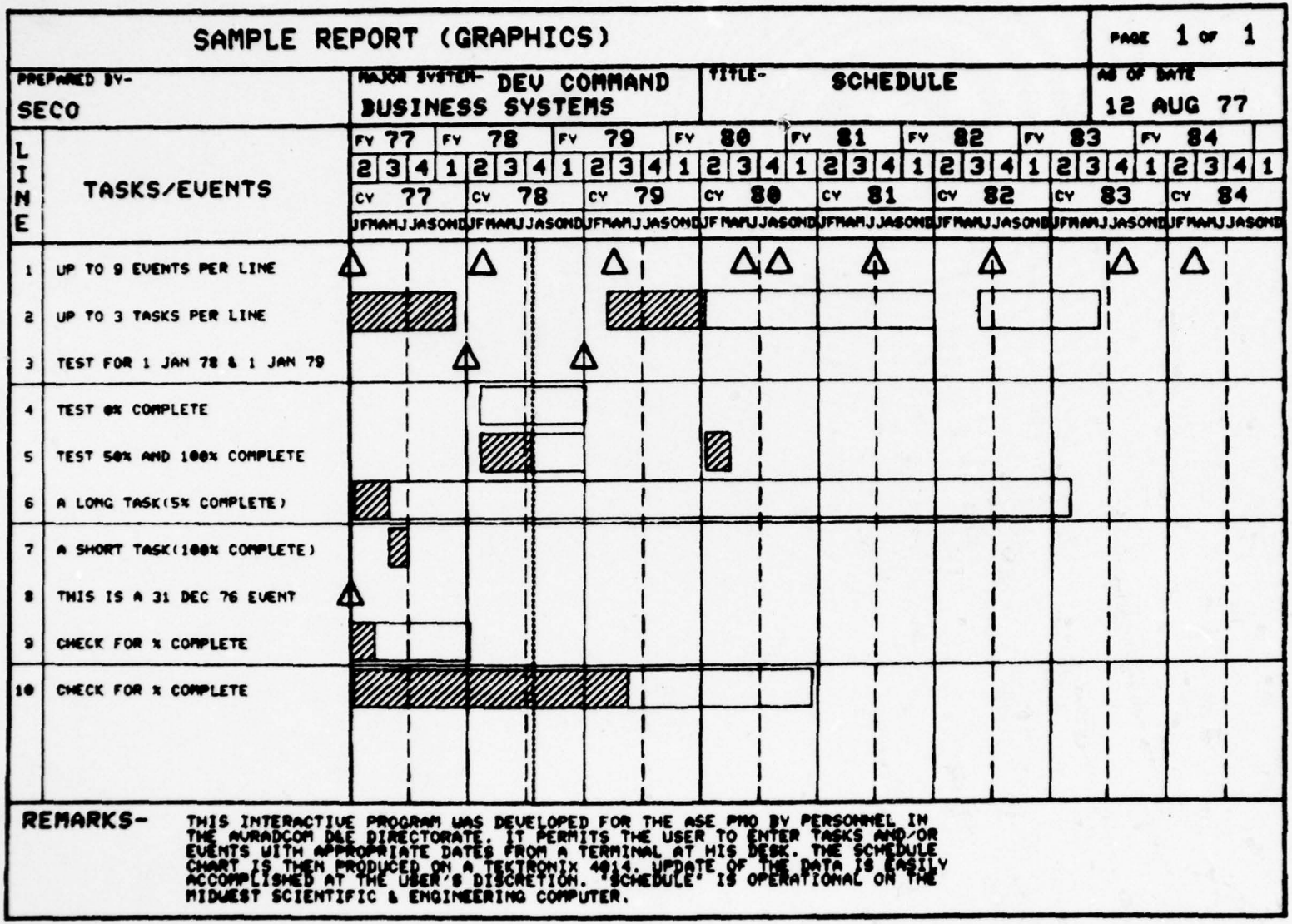


Figure 4.12 Sample Graphic Report

SAMPLE REPORT (PRINTER)

CURRENT DATE: 06*JUL*78 PAGE 1 OF 1

PREPARED BY:SECO
MAJOR SYSTEM: DEV COMMAND BUSINESS SYSTEMS
PROJECT TITLE: SCHEDULE
AS OF DATE: 12 AUG 77

TASK/EVENT	START/EVENT DATE	STOP/EVENT DATE	STATUS
1. UP TO 9 EVENTS PER LINE	08*JAN*77	17*FEB*78	
	25*MAR*84	04*APR*79	
	14*MAY*80	28*JUN*81	
	01*JUL*82	21*AUG*83	
	31*AUG*80		
2. UP TO 3 TASKS PER LINE	03*JAN*77	24*NOV*77	100
	14*MAR*79	31*DEC*81	030
	01*MAY*82	21*JUN*83	001
3. TEST FOR 1 JAN 78 & 1 JAN 79	31*DEC*77	01*JAN*79	
4. TEST 0% COMPLETE	11*FEB*78	04*JAN*79	000
5. TEST 50% AND 100% COMPLETE	12*FEB*78	01*JAN*79	050
	16*JAN*80	31*MAR*80	100
6. A LONG TASK(5% COMPLETE)	13*JAN*77	21*FEB*83	005
7. A SHORT TASK(100% COMPLETE)	01*MAY*77	30*JUN*77	100
8. THIS IS A 31 DEC 76 EVENT			
9. CHECK FOR % COMPLETE		09*JAN*78	060
10. CHECK FOR % COMPLETE	09*JAN*77	13*DEC*80	060

THIS INTERACTIVE PROGRAM WAS DEVELOPED FOR THE ASE PMO BY PERSONNEL IN THE AVRADCOM D&E DIRECTORATE. IT PERMITS THE USER TO ENTER TASKS AND/OR EVENTS WITH APPROPRIATE DATES FROM A TERMINAL AT HIS DESK. THE SCHEDULE CHART IS THEN PRODUCED ON A TEKTRONIX 4014. UPDATE OF THE DATA IS EASILY ACCOMPLISHED AT THE USER'S DISCRETION. "SCHEDULE" IS OPERATIONAL ON THE MIDWEST SCIENTIFIC & ENGINEERING COMPUTER.

Figure 4.13 Sample Typewriter Report

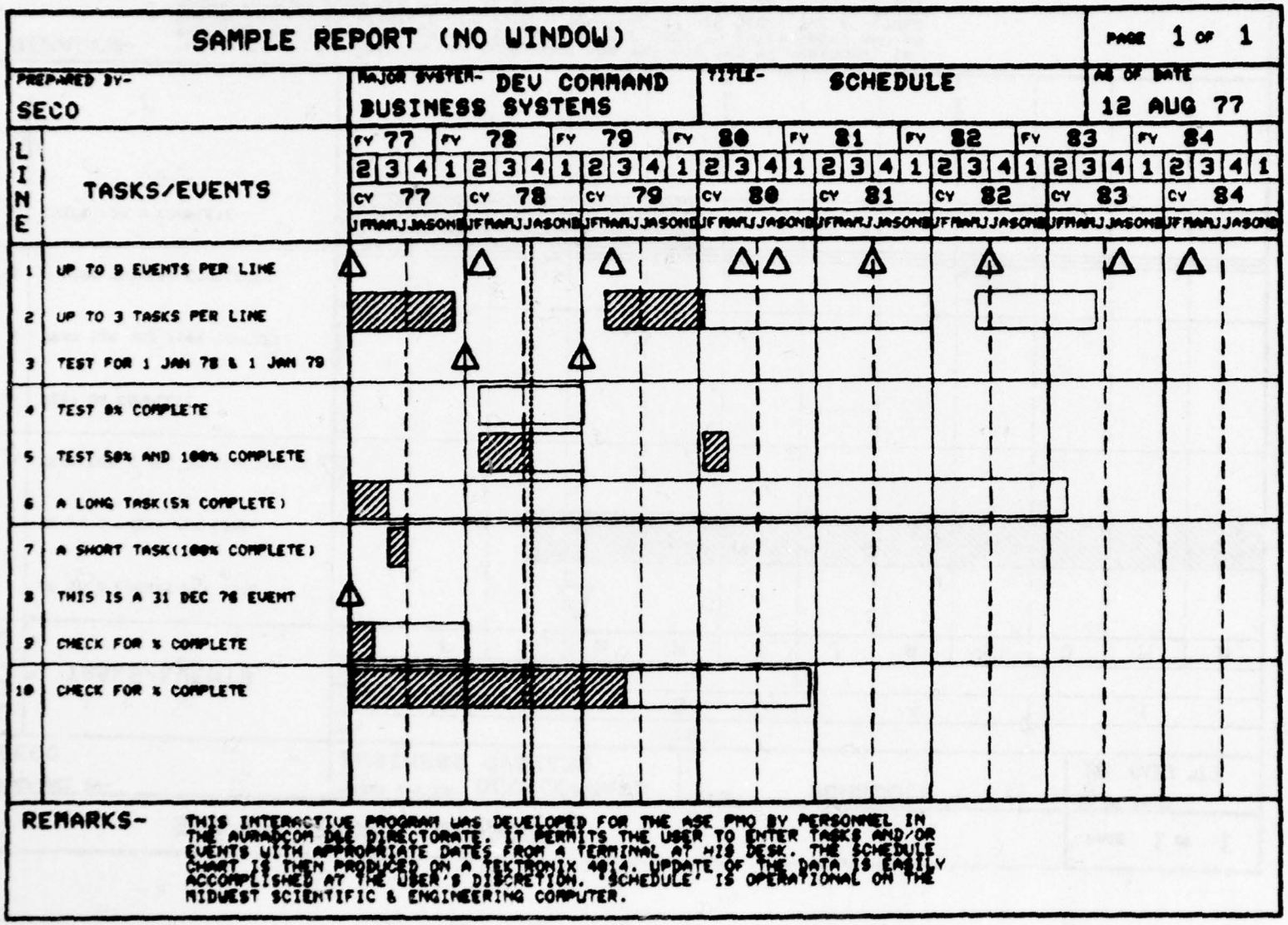


Figure 4.14 Sample Report (No Window)

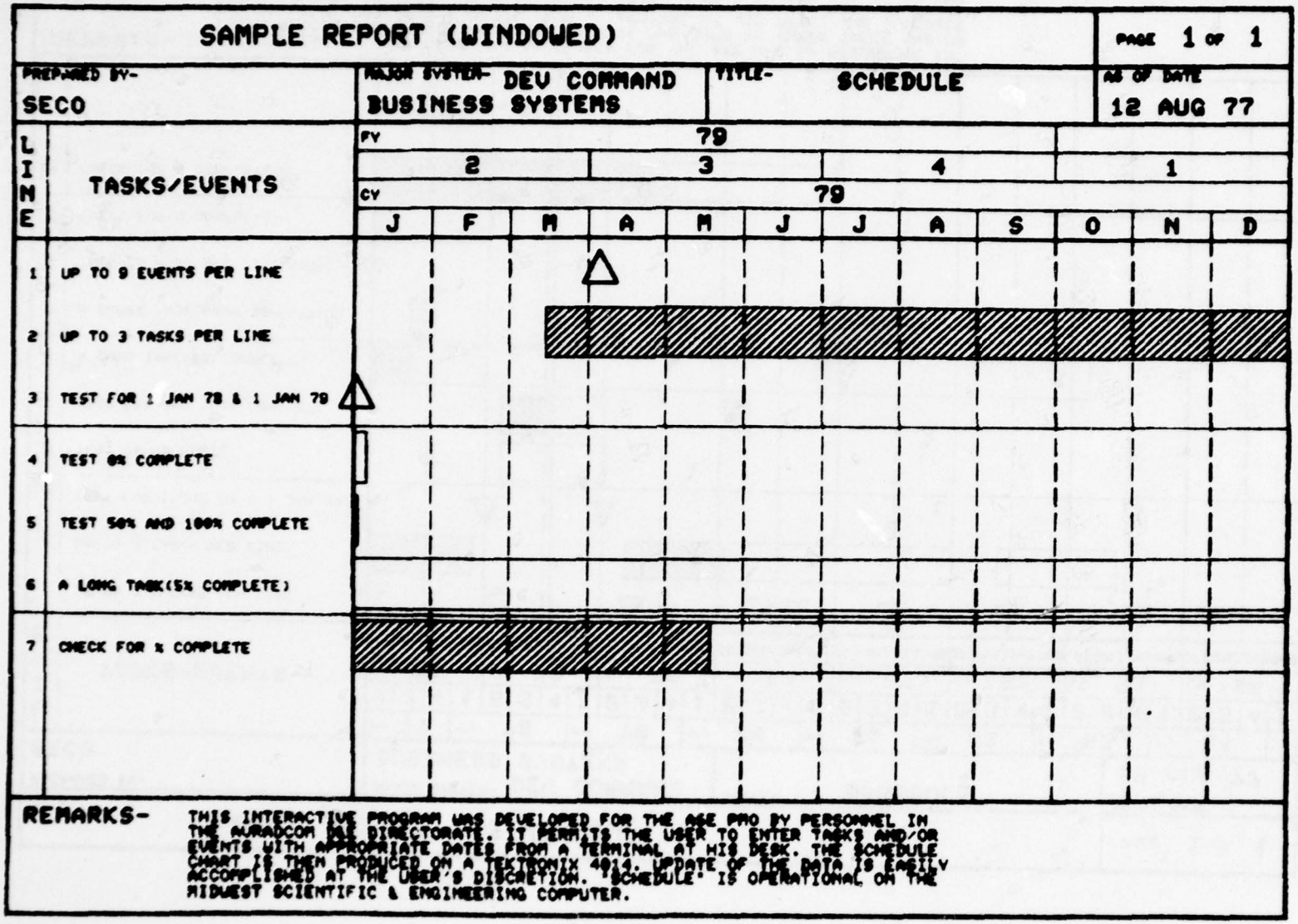


Figure 4.15 Sample Report (Windowed)

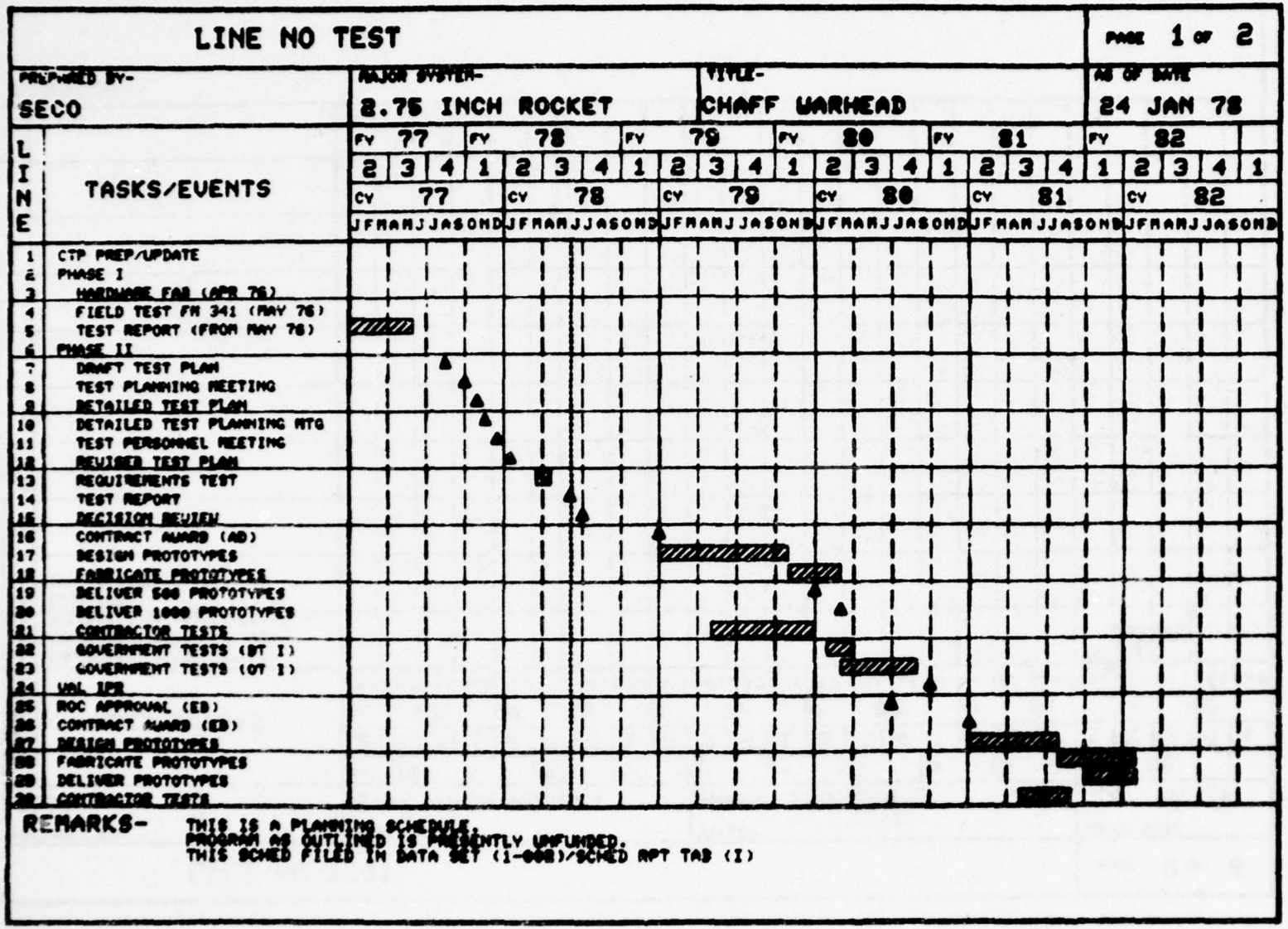


Figure 4.16 Lines Per Page Off

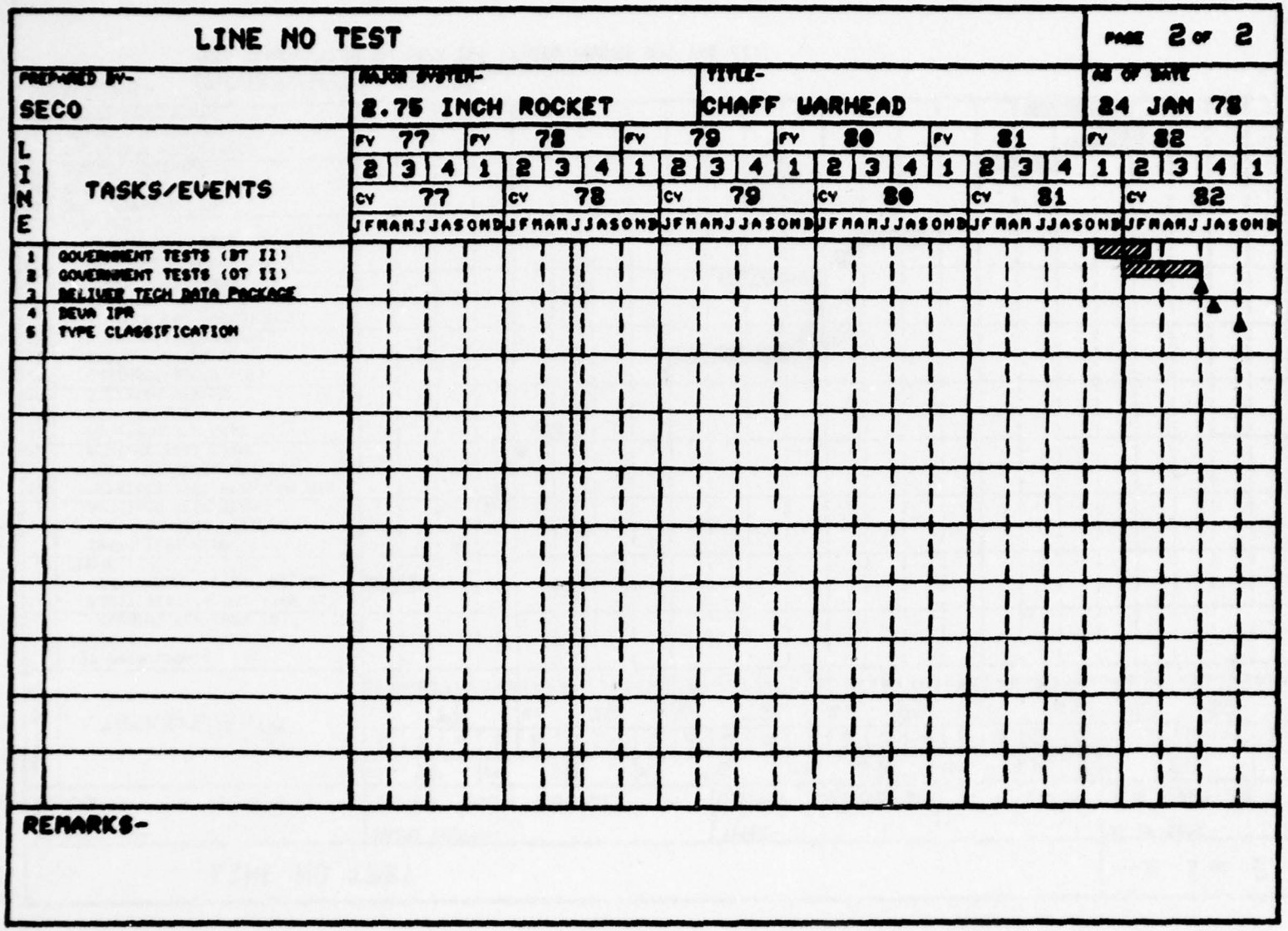


Figure 4.16 Lines Per Page Off (cont'd)

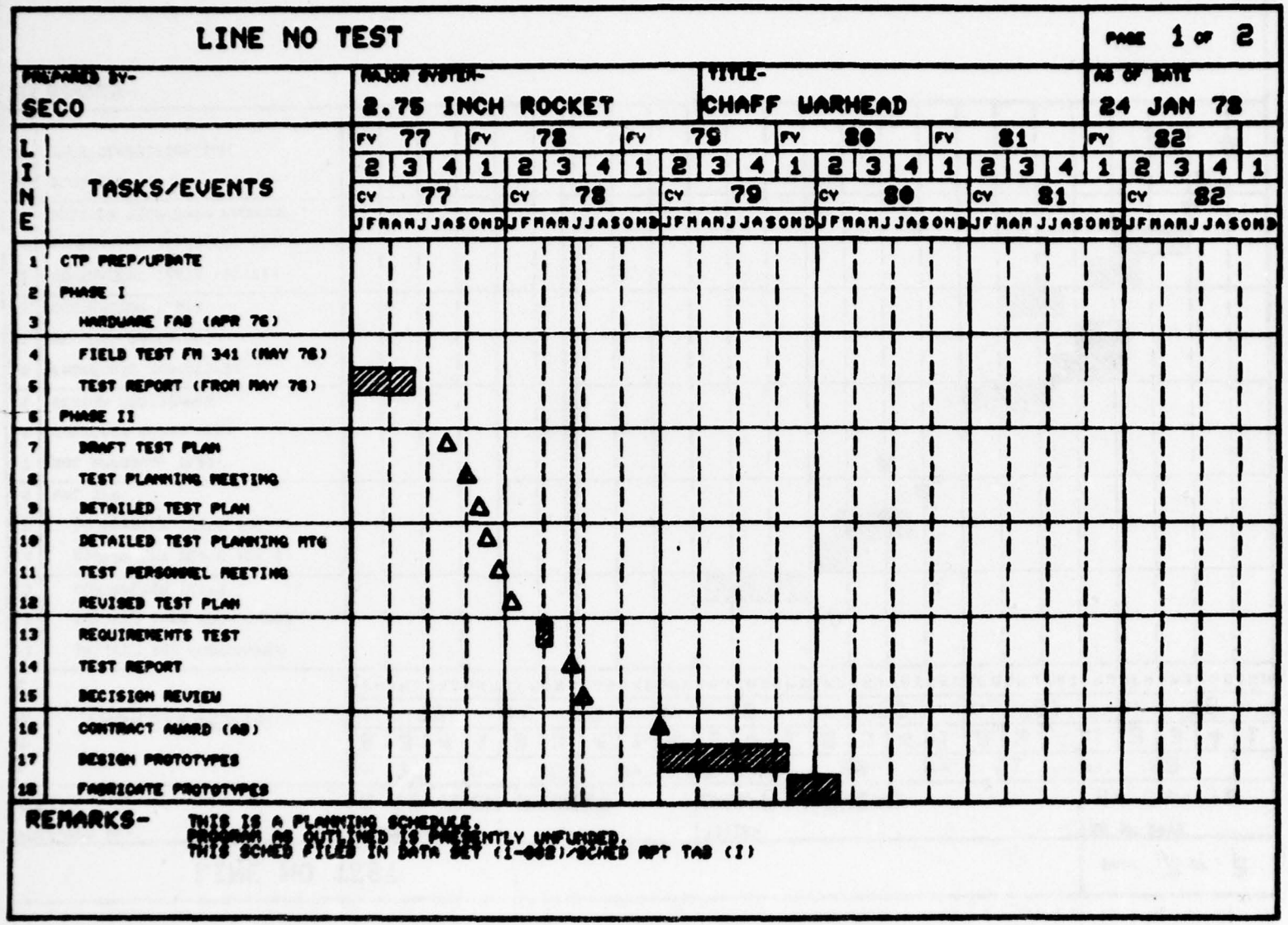
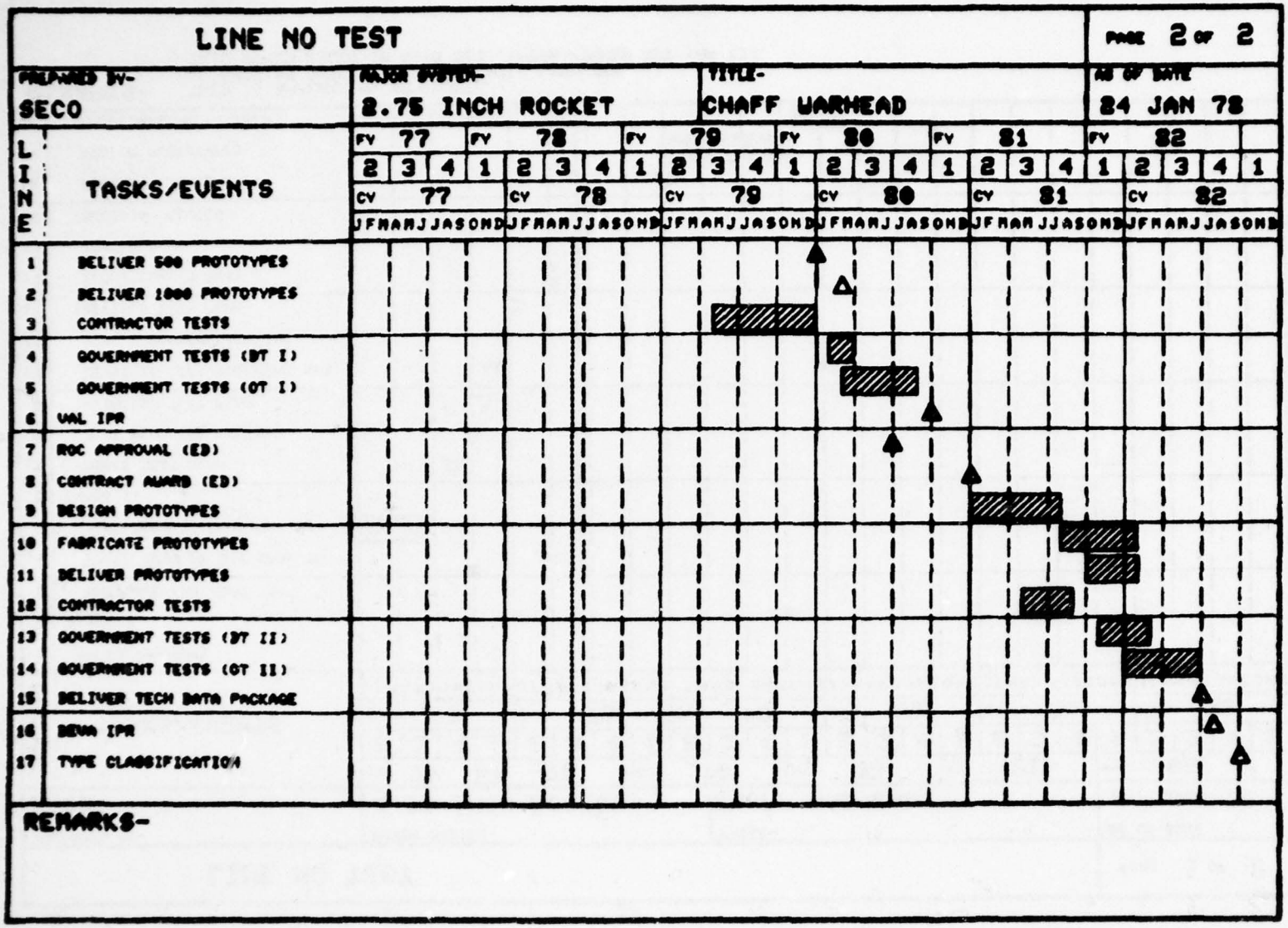


Figure 4.17 Lines Per Page On



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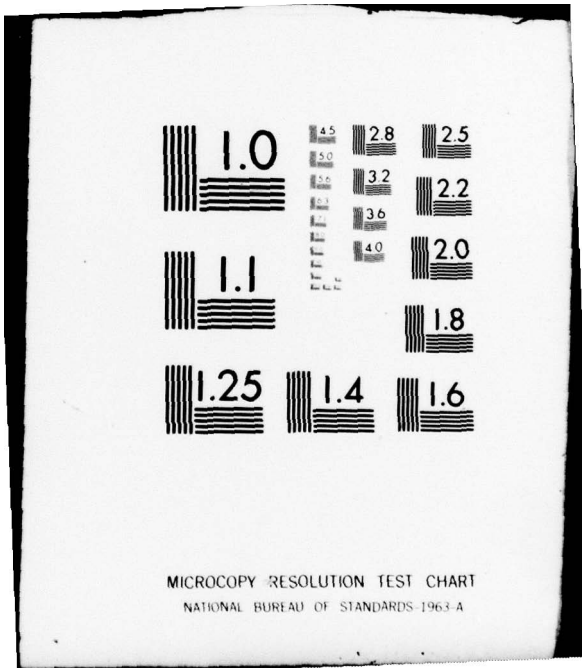
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