General Disclaimer

One or more of the Following Statements may affect this Document

- This document has been reproduced from the best copy furnished by the organizational source. It is being released in the interest of making available as much information as possible.

- This document may contain data, which exceeds the sheet parameters. It was furnished in this condition by the organizational source and is the best copy available.

- This document may contain tone-on-tone or color graphs, charts and/or pictures, which have been reproduced in black and white.

- This document is paginated as submitted by the original source.

- Portions of this document are not fully legible due to the historical nature of some of the material. However, it is the best reproduction available from the original submission.
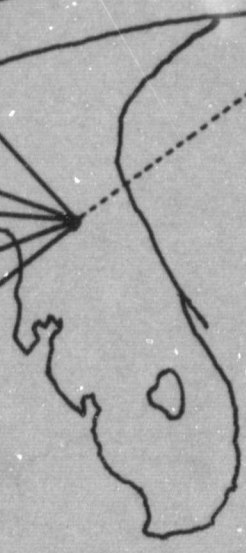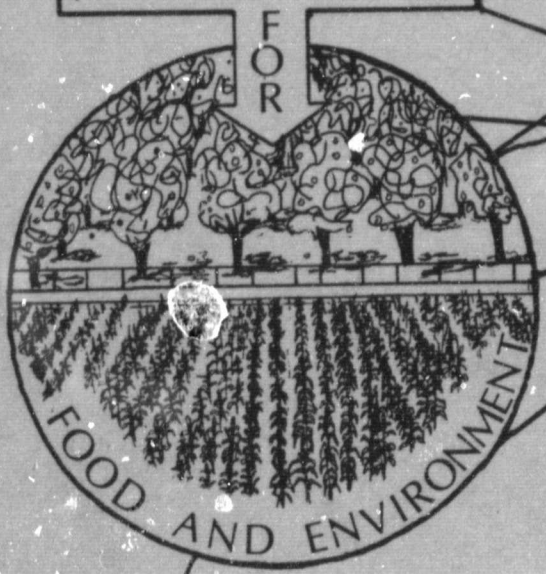
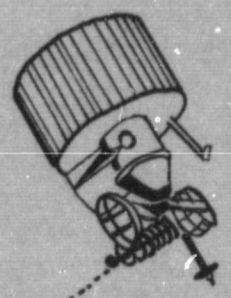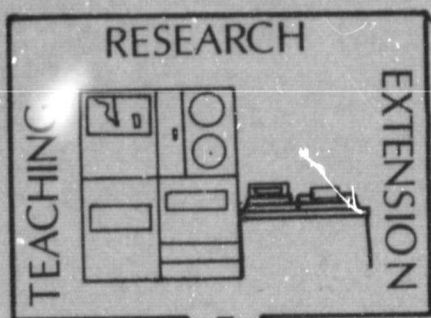Produced by the NASA Center for Aerospace Information (CASI)

CR-166833

E83-10371

IFAS
TEACHING · RESEARCH · EXTENSION

INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
UNIVERSITY OF FLORIDA

RESEARCH

TEACHING

EXTENSION

FOR

FOOD AND ENVIRONMENT
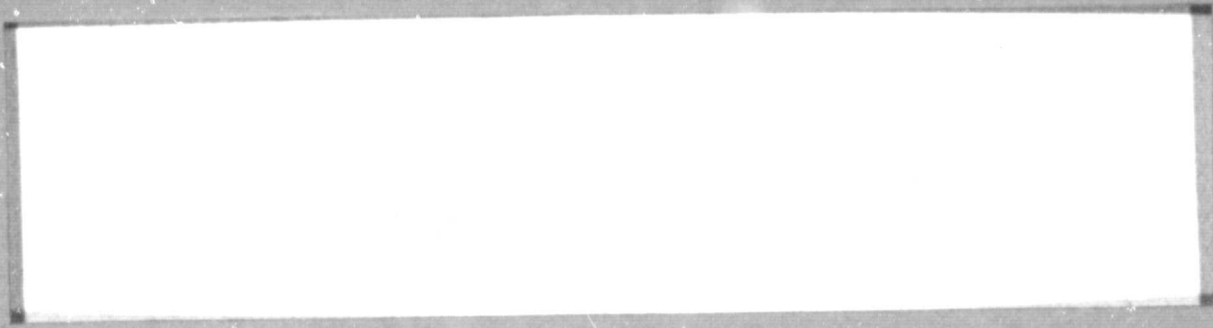
OPERATING/TROUBLESHOOTING MANUAL
FINAL REPORT
SATELLITE FREEZE FORECAST SYSTEM
PHASE VI

SUBMITTED TO

SI-PRO-33/WILLIAM R. HARRIS
CONTRACTING OFFICER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JOHN F. KENNEDY SPACE CENTER   FLORIDA 32899

SUBMITTED BY

CLIMATOLOGY LABORATORY, FRUIT CROPS DEPARTMENT
INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES (IFAS)
2121 HS/PP, UNIVERSITY OF FLORIDA,
GAINESVILLE, FLORIDA 32611

PRINCIPAL INVESTIGATOR   CONTRACT NO. NAS10-9892
J. DAVID MARTSOLF   AMENDMENT NO. 3
PROFESSOR OF CLIMATOLOGY   DATE: APRIL 14, 1983

TABLE OF CONTENTS

LIST OF FIGURES

ACKNOWLEDGEMENTS

INTRODUCTION

This manual is one of three manuals developed for use in operating the Satellite Freeze Forecast System (S.F.F.S.). The other two manuals address the hardware and software in more detail. The three system manuals are:

1. System Configuration Definition
2. System Software Documentation
3. System Operations and Troubleshooting

The goal of the System Operations and Troubleshooting manual is to describe the operation of the system by providing examples of operational procedure. These manuals assume the availability of appropriate hardware or software manuals supplied by the Hewlett-Packard Company.

The Satellite Freeze Forecast System has been under development for nearly 6 years. During that period it has undergone numerous changes in response to experiences gained through experimentation with its use. This manual describes the operational system, i.e. the system that resides in Ruskin, Florida, and the associated automated weather stations that the operational system interrogates. Primarily, the S.F.F.S. is a data acquisition system. It acquires data from three sources, the most important of which is NOAA's GOES-EAST satellite. The second involves the interrogation of the 10 automated weather stations. The third is the listen-only AFOS link for the dew-point temperatures used in the prediction process.

To the user, S.F.F.S. appears as a display system, for its products are primarily color-coded thermal maps of Peninsular Florida. It acquires the data that it uses in producing its products transparently and displays the resulting products automatically. But the user is in control if options are exercised. As the system has developed the options have increased, usually as a result of user request. For example, it is possible to develop a series of forecasted maps, more than can be displayed at one time. The user may wish to manually intervene at various points in the operation during the night to display particular products (both forecasted and historical).

So the system has several functions that may be summarized as follows:

1. Data Acquisition:
   a. Satellite Infrared Data
   b. Surface observations from Automated Weather Stations
   c. Dew-point temperature data from AFOS

2. Data Processing:
   a. Storage and Archival
   b. Predictive models
3. Display:
   a. Color-coded Thermal Maps
   b. Printouts of AWS observed and predicted temperatures

Finally, the operational system is in turn a part of a larger system
that may become apparent to the user from time to time. The operation
system is in very close communication with the development system
which resides in Gainesville, Florida, by means of a 9600 baud

dedicated telephone line. When the operational system acquires
satellite data via the direct downlink in Gainesville it is received
over this line. In addition to providing a direct link to the
satellite, the development system provides the opportunity for users
to communicate with Gainesville by displaying questions and statements
directly on the other systems color monitor. Programs may be modified
and problems troubleshot from Gainesville by this link. The
development system is currently the link of S.F.F.S. products to
the Agricultural Extension Centers through the IFAS Computer Network
and to experiments with the Florida Agricultural Services and
Technology (FAST) products that are intended to be directly disseminated
to user members. In this regard, the S.F.F.S. operational system
is a very important node in a rapidly developing agricultural weather
communications system.

SECTION ONE

1.1   GENERAL

The Satellite Freeze Forecast System was created for use with
a Hewlett-Packard computer and a host operating system called RTE.
The current revision of RTE which is installed in the Ruskin computer
system is RTE-IVB, revision 2140, configured by the Climatology team
on the 30th of November, 1982, and installed into the Ruskin H. P.
computer on the 4th of December, 1982.

There are several ways of communicating with the computer
system. The most common method is through a terminal. Other methods
include devices such as magnetic tape, and even another computer;
however, for our purposes here, we will confine ourselves to a
discussion of using a terminal to "talk" to the computer.

The terminal supplied with the S.F.F.S. is a Hewlett-Packard
model 2645A CRT. For more information on this terminal, please
refer to the Hewlett Packard manual "2645A Terminal Users Manual",
part #02645-90001,and "2645A Display Station Reference Manual", part
#02645-90005. Before using your terminal to communicate with the
system, it is necessary to determine if it is appropriately configured.
Locate the keys marked [REMOTE] and [CAPS LOCK] and be sure they
are in the down or depressed position. These keys must always be
in this position to communicate with the computer system.

It should be noted that in most cases, each input you type on
the computer terminal must end with a [RETURN] key, and that if
errors are made in the process of typing an entry, they may be
corrected by using the [BACKSPACE] key (IF you have not yet typed
[RETURN]). Do NOT confuse the cursor controls (located at the far
right hand side of the terminal) with the [BACKSPACE] key. Cursor
controls are marked with arrows and the [BACKSPACE] key has the
words BACK SPACE printed on the key cap.

1.2   LOGGING ON

Before you can communicate with the system, you must obtain your individual "log-on" identification. This may be obtained from the system manager, usually the Meteorologist In Charge (MIC) at the Ruskin office. This identification consists of a user name and password. For purposes of illustration, we will use the name JOHN.NWS for our user name with a password of DOE. The user name is a combination of the users name and the group to which the user is assigned, and in our example, identifies with National Weather Service. Now for a run-down on "logging-on" to the system. Press any key on the keyboard of your terminal and note the response on the screen. The system should have responded with:

PLEASE LOG-ON:

your response to this is to type your user-group identification:

JOHN.NWS (plus [RETURN])

after which the computer responds with

PASSWORD?

Now type in your password

DOE (plus [RETURN]),

noting that this response is not displayed or echoed on the CRT screen. If you have entered the required responses correctly, the computer will now report that you are "on the system" with a message similiar to:

SESSION 16 ON   8:30 AM MON., 21 FEB., 1983
PREVIOUS TOTAL SESSION TIME: 819 HRS., 25 MIN., 13 SEC.

Immediately following this system acknowledgement, the S.F.F.S. Menu will appear on your CRT screen and your are now ready to operate the Satellite Freeze Forecast System.

More information with regard to logging on to the system may be found in the Hewlett-Packard manual "Getting Acquainted With RTE-IVB", HP part #92068-90001.

SECTION TWO

S.F.F.S. OPERATION

After logging on to the computer, S.F.F.S. will display the
S.F.F.S. menu. The user controls S.F.F.S. by executing the programs
listed in the menu.

To select a function, simply press the [space bar] repeatedly
until the arrow is pointing at the function and then press [RETURN].
Figure 2-1 shows a menu with the arrow pointing at the HELP function.
If the user were to press [RETURN] then S.F.F.S. would display
instructions for using the menu program. If he/she were to press
the [space bar] three times, the arrow would move to the TVMAP
function and by pressing [RETURN], the map display program (TVMAP)
would begin.

Before executing a function, S.F.F.S. clears the terminal
screen. After execution, S.F.F.S. displays a message and waits for
the user to press [RETURN] before returning to the menu.

The following sub-sections (2.1 - 2.11) describe each of the
menu functions and their operation. Sub-section 2.12 shows examples.

2.1 MENU INSTRUCTIONS

Each time a user signs onto the computer and each time S.F.F.S.
returns to the menu after executing a function, the menu arrow is
positioned at the HELP function. When the arrow is positioned at
the HELP entry and [RETURN] is pressed, S.F.F.S. displays instructions
for operating the menu program. After reading the instructions,
the user should press [RETURN] to re-display the menu and select
the next desired function.

2.2 LOGGING OFF THE COMPUTER

By positioning the menu arrow to the EXIT function, and pressing
[RETURN], the user may log off the computer. A message will be
displayed indicating how long the user has been signed on, followed
by the words "END OF SESSION." For administrative reasons, the user
should always EXIT the menu before leaving the computer.

2.3 SETTING UP THE AUTOMATIC SYSTEM

This function is used to set up the operating characteristics
of the automatic S.F.F.S. system. With it the user defines which
programs should run, in what order, and at what times. In addition,
certain system variables (like the TVMAP default temperature range
and the log file) may be set.

The following sub-sections describe each of the commands used
to set up the automatic system.

```
---------------------------------------------------------------------
|                Satellite Freeze Forecast System                  .|
---------------------------------------------------------------------
|                                    |                              |
|->HELP : How to use this menu.      | TABLE: Print A.W.S. temperatures. |
|                                    |                              |
|  EXIT : Sign off the computer.     | TEXM : Communicate with G'ville. |
|                                    |                              |
|  SFFS : Set up automatic system.   | CLEAR: Erase TV monitor screen.  |
|                                    |                              |
|  TVMAP: Display a map on monitor.  | LOGO : Display S.F.F.S. logo.    |
|                                    |                              |
|  GETMP: Acquire map from G'ville.  | INDEW: Input dew points for PMODL. |
|                                    |                              |
|  MAPS : List all maps of disc.     |                              |
|                                    |                              |
---------------------------------------------------------------------
```

Press the [SPACE BAR] to move the flashing arrow,

then press [RETURN] to execute the function.

Figure 2-1 – S.F.F.S. Menu. The arrow shown is selecting the HELP option. By pressing the [SPACE BAR] the arrow will move to the next option. Pressing [RETURN] will execute the option.

2.3.1 EXITING FROM THE SETUP PROGRAM

There are two commands used to exit from the setup program. By pressing the [ESC] key and then [RETURN] the user may abort; that is, all changes made will be ignored and the setup will remain unchanged. Typing "EXIT" will put into effect all changes made. Technically speaking, if you screw up or were "just looking" and did not change anything then press [ESC] [RETURN]. Otherwise, if you made correct changes enter "EXIT".

2.3.2 TURNING THE AUTOMATIC SYSTEM ON AND OFF

S.F.F.S. has a master on/off switch that overrides the program list. To turn the system on, enter the command, "ON". In response, SFFS will redisplay the program list with the message "The system will be on" at the top of the screen. No programs will run unless the system is turned on.

To turn the system off, enter "OFF". In response SFFS will use the message "The system will be suspended". When the system is OFF, no programs will run. Remember to use the EXIT command to exit the setup program.

2.3.3 ADDING ENTRIES TO THE PROGRAM LIST

To add a new program to the program list enter the command, "ADD". The following series of inputs will be requested, one at a time:

1. The name of the program to be run. Enter the 1 to 5 character name of the program. Examples: GETMP, AWS, etc.

2. The start time. Enter the hour (CUT) at which you wish the program to begin running. This must be between 0 (midnight CUT) and 23. The program will run once each hour beginning with the hour supplied here until the stop hour is reached (see number 3 below). If the start and stop hours are the same then the program will run every hour, 24 hours per day. Example: Enter 23 to begin execution at 2300 CUT (6PM EST).

3. The stop time. Enter the hour (CUT) at which you wish the program to stop running. This must be between 0 (midnight CUT) and 23. The program will run once each hour beginning with the start hour (see number 2 above) and ending at the stop hour supplied here. If the start and stop hours are the same then the program will run every hour, 24 hours per day. Note the the last time a program will run is the hour BEFORE the stop hour. Example: Enter 13 to stop execution at 1300 CUT (8AM EST). In this case the last run will occur during the 1200 CUT (7AM EST) hour.

4. The start minute. Enter the minute (between 0 and 59) when the program should begin running each hour. If the program is to start "on cue" from another program (see number 6 below) then enter no value and just press [RETURN]. Example: Enter 10 to run the program each hour at 10 minutes past the hour.

5. The time limit. Enter the maximum number of minutes that the system should allow the program to run. This is a safety feature. In the event of a program or communications failure, this parameter tells the system to abort the program after a set time and thus not hamper the operation of the rest of the S.F.F.S. programs. This value depends on the program. Examples: 10 for GETMP, 30 for AWS, 10 for TVQIK, 5 for PMODL, 5 for SMODL.

6. The cuing programs. Enter the number(s) of the program(s) that should cue this program to run. The program numbers are displayed in the first column of the program list. Normally, if you specify a cuing program here then the start minute (number 4 above) will be blank. This input will be requested repeatedly so many program numbers can be supplied. A null input (just pressing [RETURN]) will end the sequence. Example: In figure 2-3 the values 2 and 3 were entered for program TVQIK. This sets up TVQIK to run immediately after either GETMP execution.

2.3.4 DELETING ENTRIES FROM THE PROGRAM LIST

To delete a program from the program list, enter the command, "DELETE". SFFS will then ask you for the number of the program (see the program list for that number) to be deleted. Note that you may not delete a program that has been set up to cue another program -- the program being cued must be deleted or altered (see the ALTER command below) first.

2.3.5 ALTERING ENTRIES IN THE PROGRAM LIST

To alter an entry in the program list, enter the command, "ALTER". SFFS will ask for the number of the program to be altered then it will request the start time, stop time, start minute, time limit, and cuing programs just as with the ADD command. The ALTER command allow you to change an entry without deleting it and re-ADDing it.

2.3.6 SAVING DEFAULT VALUES

To save the current setup on disc, enter the command, "SAVE". This feature allows the user to save the current setup, reset the setup for a special operation, and then load the old setup without having to retype it. Generally, the saved setup should be the "standard setup" used for normal operations.

2.3.7 LOADING DEFAULT VALUES

To load the saved setup from disc, enter the command, "LOAD". This is the opposite of the SAVE command shown above. LOADing a setup brings in the values that were previously saved. To put the setup into effect the EXIT command must be used to end the program.

2.3.8 PROGRAM STATUS LISTING

To display the program status listing, enter the command "STATUS". This command was used for debugging and serves no purpose in an operational system.

2.3.9 THE SYSTEM VARIABLES

Figure 2-2 is an example of the system variable listing. This listing is displayed and may be edited by entering the SV command (see next section). Many of the variables are significant to operation of the Gainesville system only and are not explained here. The system variables are:

1. Insignificant.

2. Insignificant.

3. Insignificant.

4. Insignificant.

```
------------------------------------------------------------------
                    * * * * System Variables * * * *
------------------------------------------------------------------
 1.  Primary sector definition    365, 100,1590, 180
 2.  Sub-sector A                    0,   0,   0,   0
 3.  Sub-sector B                    0,   0,   0,   0
 4.  Satellite data type          GOES East Infrared
 5.  Temperature range              20,  60
 6.  Forecast hours                1, 3, 5
 7.  Keystation file              K83046
 8.  Map file                     EMCGOB
 9.  Coefficient file             ANNY1
10.  Number of DARCM runs           0
11.  Log file or LU               "LOG28:UF:M2
12.  AWS cartridge (neg. LU)      -33
------------------------------------------------------------------
```

You may enter ? for help at any time.

Enter 1-12 (? for help): _

```
------------------------------------------------------------------
```

Figure 2-2 - Sample listing of system variables as displayed by SFFS.

5.   Temperature range used by TVMAP and TVQIK in the automatic
      mode. During normal S.F.F.S. operation this value must be
      between -166 and 134 (degrees Fahrenheit).

6.   Forecast hours for SMODL. Up to four values may be specified.
      For example, if it is now 0100 CUT and the SMODL forecast
      hours are 1, 3, and 5 then SMODL will make forecasts for 0200,
      0400, and 0600 CUT.

7.   Name of the most recently collected AWS file. This value is
      set by AWS after each hour of data is collected and is used
      by PMODL for making its forecast. Normally, this variable is
      maintained by the system and the user need not adjust it.

8.   Name of the most recently collected map file. This value is
      set by GETMP after each map is collected and is used by TVMAP
      and TVQIK to display the most recent map and by SMODL to make
      its forecasts. Normally, this variable is maintained by the
      system and need not be adjusted by the user.

9.   Name of the coefficient file used by some versions of SMODL
      to make its forecast. This value should be "ANNY1".

10.   Insignificant.

11.   This is where the S.F.F.S. log is printed. It must be set to
      1 (the system printer).

12.   Destination cartridge for A.W.S. files. This should be set
      to -20 to put all A.W.S. files on cartridge 5 (LU 20).

2.4 DISPLAYING SATELLITE MAPS

Selecting the TVMAP option allows you to manually display maps
on the monitor. TVMAP has its own help facility that allows you to
enter a question mark (?) in response to any question causing TVMAP
to display a set of instructions for that input request. Exit the
TVMAP program by entering a colon (:).

2.5 ACQUIRING SATELLITE MAPS

The GETMP option is used to acquire the current map from the
Gainesville system. No input is required. After the map is
successfully acquired, a message will be printed to direct you back
to the menu.

2.6 LISTING MAPS ON DISC

Selecting the MAPS option will cause S.F.F.S. to list to the
terminal all maps currently on disc.

2.7 PRINTING OBSERVED AND PREDICTED A.W.S. TEMPERATURES

This option prints out the latest observed and predicted
temperatures for A.W.S.'s. The user will be asked to supply the
name of the latest A.W.S. file.

2.8 COMMUNICATING WITH GAINESVILLE PERSONNEL

Selecting the TEXM option allows the user to communicate with
Gainesville personnel via terminal and monitor displays. When
invoked, TEXM asks for your name and the name of the person you are
calling. After supplying this information TEXM will display a prompt
(>) and you may begin typing on the terminal keyboard. Everything
you type will appear on the monitor screen in Gainesville. You must
press [RETURN] at the end of each line and the lines must be shorter
than the width of the terminal screen. After pressing [RETURN],
you must wait for the prompt before continuing. When someone answers
your call, everything he/she types will be displayed on your monitor
screen. You and the person with whom you are communicating may type
at the same time without interfering with each other. To exit the
TEXM program press [RETURN] [ESC] [RETURN].

2.9 CLEARING THE TV MONITOR SCREEN

Selecting the CLEAR option will erase the monitor screen to
black.

2.10 DISPLAYING THE S.F.F.S. LOGO   ORIGINAL PAGE IS OF POOR QUALITY

Selecting the LOGO option will display the S.F.F.S. logo on the monitor screen (erasing any maps that may be there). This is the same logo that is displayed during the boot-up process.

2.11 ENTERING DEW POINT DATA

Selecting the INDEW option allows the user to enter dew point data (minimum expected) for use in PMODL. The program will prompt the user for each automatic weather station's dew point and will return to the menu after the tenth station's value is input.

2.12 S.F.F.S. SETUP EXAMPLES

Figure 2-3 shows a program list indicating that two programs, GETMP and TVQIK, will run twice each hour beginning at 2300 CUT and ending at 1300 CUT (assuming, of course, that the system is first turned on). During those hours GETMP will run at 15 and 45 minutes past the hour while TVQIK will run after each successful execution of GETMP. If we were to change the "start hour" and "stop hour" columns to zeros then maps would be collected and displayed 24 hours per day.

SFFS system will be suspended.

Program	Start Hour	Stop Hour	Start Minute	Time Limit	After
1. GETMP	23	13	15	20	
2. GETMP	23	13	45	20	
3. TVQIK	23	13		10	(1)GETMP (2)GETMP

You may enter ? at any time for help.

Command: _

Figure 2-3 - Sample program list as displayed by program SFFS used to collect and display maps every half hour from the Gainesville system.

Figure 2-4 is a program list that could be used for normal (frost condition) S.F.F.S. operation. As many as five different programs are set up to run each hour. AWS will collect ground station data each hour from 2200 to 1100 CUT at 55 minutes past the hour. GETMP will collect satellite data twice each hour, 24 hours per day, at 15 and 45 minutes past the hour. Running AWS and GETMP concurrently should be avoided. PMODL will run once each hour from 0100 to 1200 hours upon completion of AWS (note that PMODL does not

run at a specific minute but instead runs as soon as the necessary data is collected by AWS). SMODL will run once each hour from 0100 to 1200 hours upon successful completion of PMODL.

SFFS system will be running.

Program	Start Hour	Stop Hour	Start Minute	Time Limit	After
1. AWS	22	11	55	30	
2. GETMP	0	0	15	15	
3. GETMP	0	0	45	15	
4. TVQIK	0	0		10	(1)GETMP (2)GETMP
5. PMODL	1	12		7	(4)AWS
6. SMODL	1	12		7	(5)PMODL

You may enter ? at any time for help.

Command: _

Figure 2-4 – Sample program list as displayed by program SFFS that could be used for the standard S.F.F.S. set-up.

Note the column labeled "time limit" (figs. 2-3 and 2-4). This is the number of minutes that the program is allowed to run. If the program overruns its time limit, SCHED will abort it. The time limit is a safety feature that helps eliminate the possibility of one program "hanging-up" and hampering the operation of the entire system.

Note also that GETMP appears twice in the list. S.F.F.S. is an hourly oriented system: for a program to execute more than once during a given hour it must be put in the list more than once (with different start minutes for each entry).

SECTION THREE

WHAT TO DO WHEN S.F.F.S. DOESN'T WORK!!

When S.F.F.S. fails to operate properly or things seem to be hopelessly messed up, follow this simple 2 step procedure:

1. IF a HELP feature is supplied with the program, use it. If it does not have any help facilities, read the instructions **AGAIN!**

2. Re-boot the computer.

    A. Press the **HALT** switch.

    B. Turn the front panel switch past the **STANDBY** position to the R or RESET position.

    C. Turn the switch back to the **OPERATE** position.

    D. Select the **S-register** (upper 16 indicator lights), by pressing the horizontal switch in the lower center of the computer.

    E. Press the Clear Display switch.

    F. Set the **S-register** switches (illuminate) 1, 6, 7, 9, 12, and 15. This represents octal number 111301.

    G. Press the following switches **IN THIS ORDER:** STORE, PRESET, IBL, PRESET, and then RUN. The computer will now boot the operating system from the disc and begin the dialog with the operator on the system console. Answer the date and time questions (remembering to input the year -- four digits), the month as a three letter abbreviation, and enter the time as accurately as possible, using **C.U.T.** (Coordinated Universal Time -- formerly Greenwich Mean Time).

The above two solutions to problems are general in nature, and should solve most problems that could occur. For more specific troubleshooting, continue through this section for details of individual problem areas.

WHEN THERE IS NO DISPLAY ON THE CONRAC VIDEO MONITOR

There are 4 programs that use the CONRAC monitor. The program **LOGO** which places the S.F.F.S. logo on the screen, programs **TVQIK** and **TVMAP** which draw the satellite maps, and program **TEXM** which is used to converse with users of the Gainesville computer system. When any of these programs fail to write on the CONRAC, any of the other programs can be used to verify that the CONRAC is not working properly. For example, if **TVMAP** or **TVQIK** fail to display a map, try running program **LOGO**. If both programs fail to put up some kind of display then the following possiblities should be considered.

1. Check the CONRAC

    A. Ensure power is on and the unit is plugged in.

    B. Check the BRIGHTNESS control.

    C. When power is on make sure that the filament of the
       CRT is lit. If it does not light up there may be a
       problem with the CONRAC. **WARNING** !! the voltage
       inside of the chassis of the CONRAC can reach in excess
       of 20,000 volts. If the CONRAC is suspected, a trained
       technician should inspect it!

2. Check the cables.

    A. Check the cables that connect the computer to the
       CONRAC. Make sure that they are plugged in and not
       damaged. (Note:before reconnecting any cables to the
       computer turn the computer front panel switch to
       STANDBY and then reconnect. Return the switch to
       OPERATE after the installation is complete.) If this
       fails to correct the problem, try Re-booting the
       computer. If the above methods fail to correct the
       problem, the HP-91200B color interface cards may be
       defective. Contact you local Hewlett Packard service
       representive for repair.

WHEN AWS DOES NOT WORK

When AWS program fails to collect data from the automated weather stations, the following reasons for failure should be considered (not necessarily in order).

1. The phone number file has incorrect phone numbers.

   A. Check the file =PHONE to ensure that the first 10 numbers are the correct phone numbers of the Automated Weather Stations. (Note: the automated weather station must be a DARCOM)

2. The cable connecting the HP-12966A interface with the Vadic 305 modem is not connected properly. This cable is located in "select code 21 octal".

   A. Locate the cable connecting the Vadic modem to the computer. Follow it to both sources and ensure that it is connected securely. If it is loose at the modem end, secure it by tightening both set screws that hold it in place. If it is loose at the computer end, do the following: place the front key switch on the computer to the STANDBY position. Slide the connector onto the interface card located in "select code 21 octal" of the computer. Return the front panel switch to the OPERATE position after the installation is complete.

3. The cable connecting the HP-12589 interface with the Vadic 801 dialer is not connected properly. This cable is located in "select code 25 octal".

   A. Check the cable connecting the Vadic 801 dialer to the computer, following the procedure outlined above. If the cable is disconnected from the computer be sure to reconnect it to the interface located in "select code 25 octal".

4. The cable connecting the (telephone company supplied) DAA is not connected properly with the Vadic 801 and 305.

5. The DAA is not operating properly.

6. The Vadic 305 is not operating properly.

   A. Modem self-test.

      1. Use the thumbwheel channel select switch to select channel "2".

    2.   Turn the LOCAL TEST switch ON. Check that CTS
        and CXR lamps turn on and the Modem status indicator
        flashes.

    3.   Press the XMT REV switch to ON. Check that TXD
        and RXD flash at a 2 Hz rate.

    4.   Press LOCAL TEST and XMT REV switches OFF. All
        lamps except PWR should go out.

    5.   Press the DLB switch ON. The DTR indicator will
        light. (Note: this depends on a strap option)

    6.   Call the modem from a remote phone. Check that
        the local RI indicator lights then goes out (2 to
        3 seconds later) when the DSR indicator lights.
        After DSR is lit an answer tone will be heard in
        the remote phone and the local CHANNEL STATUS
        indicator will flash.

    7.   Hang up the remote phone. All indicators except
        PWR should go out within 12 seconds after disconnect.

7. The Vadic 801 is not operating properly.

    A.   Perform the operational checks on the modem before
        checking the dialer. If this does not clear the fault,
        run the following tests: set the thumbwheel channel
        selector switch to dialer slot "1" and run program **AWS**.
        Check that the diagnostics lamps on the Vadic follow
        the sequence below.

        1.   Lamps RTS and CXR come on. Then RXD and TXD come
            on.

        2.   After the dial tone is detected, lamp CTS comes
            on.

        3.   Lamp DSR comes on.

        4.   Lamps CTS and DSR flash during dialing.

        5.   After the answer tone is detected, lamp DTR comes
            on.

8. The Vadic chassis or power supply is not operating correctly.

    A.   Turn the Vadic off for about 60 seconds then switch it back on and listen for a faint high pitched whistling sound. If you hear nothing, examine the power light indicator and see if it is lit. If it is not, turn the unit off and check the fuse. If the power supply is defective return the unit to Vadic for repair.
In the event none of the above actions clear the fault, the problem is likely in the chassis.

9. The out-going phone line is out of order.

10. The Automated Weather station is not in working order.

    A.   Turn the thumbwheel channel selector switch, located on the front panel of the Vadic chassis, to channel "1". Watch the front panel of the Vadic chassis as program AWS is run. You should be able to see lamps CTS and DSR flashing as the program dials the phone number (Note: if it does not flash after a minute check some of the other possibilities listed in this section).

    B.   If it does dial the phone and data is still not acquired from the station, try picking up a standard phone and dialing the station. Shortly after making a connection the station should respond with a tone for a few seconds then go quiet. If this occurs then check some of the other possibilities listed.

    C.   If the station did not answer or did not produce the required tone, then the station is defective and should be repaired. If this is not immediately possible then change the phone number of the defective station, located in the file =PHONE, to a different automated weather station phone number. (Note: sometimes the phone line can produce symptoms similar to that of a defective station. If the station is suspected of malfunctioning call more than once using a different phone.)

11. The subchannel specification is not set properly.

    A.   The subchannel used for "logical unit 13" should be set to 8. This can be checked by entering the query SYLU,13. The last character will indicate the subchannel number. If it is not 8 then it can be changed by the interactive command SYLU,13,8 or by rebooting the computer.

WHEN GETMP DOES NOT WORK

The following problems could occur with program GETMP.

1. The disk is full and you need to follow backup procedures.

   A.   Copy, then purge all files on cartridges 5,6 and 7.

2. Communications failure.

   A.   DS/1000-IV is not working properly, try rebooting the computer.

3. Remote computer problems.

   A.   If the HP computer system in Gainesville is not running or
        not functioning properly, it can only be corrected by contacting
        someone at the Gainesville computer site.

   B.   Program TEXS running on the Gainesville computer system may
        not be operating properly. This is best corrected by contacting
        someone at the Gainesville computer site.

4. Modem problems.

   A.   If you suspect that the Paradyne modem is not operating
        properly, run the following tests.

        1.   Local test.

             Set the Loopback Switches to the LOCAL and ANALOG
             positions. After a few seconds the data lamp should
             light up and the marginal circuit light should go out.
             If this fails the modem might have a problem.

        2.   Remote test.

             Set the Loopback Switches to the REMOTE and DIGITAL
             positions. Move the DATA switch from the DATA position
             to the MARK or SPACE position then press the Force Train
             button. As above, the marginal circuit light should go
             out and the data lamp should light up.

        3.   Modem configuration.

             The Bit Rate switch should be set to 96. The Mux Switch
             should select Mux 1. The Interface Monitor Port Selector
             switch should indicate "Port 1". The DATA toggle switch
             should be set to the DATA position. The Loop Back
             Switches should be set in the ANALOG and OFF positions.
             If it fails the local test, contact a Paradyne representative

               such as COL-INS-CO., Inc. If it fails the remote test,
first contact someone at the Gainesville computer site
to determine if the trouble might not be due to a problem
in Gainesville.

B.   If the phone line is not properly conditioned, the Marginal
Circuit Light on the front panel of the Paradyne modem will
be lit or flashing. If this condition exists call the phone
company and notify them of a line conditioning problem.

ORIGINAL PAGE IS
OF POOR QUALITY

WHEN TEXM DOES NOT WORK

1. Communications failure

    A.   DS/1000-IV is not working properly, try rebooting the computer.

2. Remote computer problems

    A.   If the HP computer system in Gainesville is not running or
         not functioning properly it can only be corrected by contacting
         someone at the Gainesville computer site.

    B.   Program TEXS running on the Gainesville computer system may
         not be operating properly. This is best corrected by contacting
         someone at the Gainesville computer site.

3. Modem problems

    A.   If you suspect that the Paradyne modem is not operating
         properly first run the following tests.

        1.   Local test.

             Set the Loopback Switches to the LOCAL and ANALOG
             positions. After a few seconds the data lamp should
             light up and the Marginal Circuit Light should go out.
             If this fails, the modem might have a problem.

        2.   Remote test.

             Set the Loopback Switches to the REMOTE and DIGITAL
             positions. Move the DATA switch from the DATA position
             to the MARK or SPACE position then press the Force Train
             button. The the Marginal Circuit Light should go out
             and the DATA lamp light up.

        3.   Modem configuration.

             The Bit Rate Switch should be set to 96. The mux switch
             should select "Mux 1". The Interface monitor Port Selector
             Switch should indicate "Port 1". The DATA toggle switch
             should be set to the DATA position. The Loop Back
             Switches should be set in the ANALOG and OFF positions.
             If it fails the local test contact a Paradyne representative
             such as COL-INS-CO., Inc. If it fails the remote test,
             first contact someone at the Gainesville computer site
             to determine if the trouble might not be due to a problem
             in Gainesville.

    B.   If the phone line is not properly conditioned the Marginal
         Circuit Light on the front panel of the Paradyne modem will
         be lit or flashing. If this condition exists call the phone
         company and notify them of a line conditioning problem.

ORIGINAL PAGE IS
OF POOR QUALITY

WHEN SMODL DOES NOT WORK

1. Disk is full.

    A.   Copy, then purge all files on cartridges 5,6 and 7

WHEN GAPY DOES NOT WORK

1. The phone number is not correct in the =PHONE file

    A.   Check the last phone number in the =PHONE file to ensure
         that it is correct. If it is incorrect use the RTE
         interactive editor to change it.

2. The system in Maryland is not presently capable of transmitting
    maps.

3. The cable connecting the HP-12966A interface with the Vadic
    305 modem, is not connected properly. This cable is located
    in "select code 20 octal."

    A.   Locate the cable connecting the Vadic modem to the
         computer. Follow it to both sources and ensure that it
         is connected securely. If it is loose at the modem end,
         secure it by tightening both set screws that hold it in
         place. If it is loose at the computer end do the
         following: place the front key switch on the computer
         to the STANDBY position then slide the connector onto
         the interface card located in "select code 20 octal" of
         the computer. Return the front panel switch to the
         OPERATE position after the installation is complete.

4. The cable connecting the HP-12589 interface with the Vadic
    801 dialer is not connected properly. This cable is located
    in "select code 24 octal".

    A.   Check the cable connecting the Vadic 801 to the computer,
         following the procedure outlined above. If the cable
         is disconnected from the computer be sure to reconnect
         it to the interface located in "select code 24 octal".

5. The cable connecting the (telephone company supplied) DAA is
    not connected properly with the Vadic 801 and 305.

6. The DAA is not operating properly.

7. The Vadic 305 is not operating properly.

    A.   Modem self-test.

         1.   Use the thumbwheel Channel Select switch to select
              channel "6".

2.   Turn the LOCAL TEST switch ON. Check that CTS and
     CXR lamps turn on and the Modem Status Indicator
     flashes.

3.   Press the XMT REV switch to ON. Check that TXD
     and RXD flash at a 2 Hz rate.

4.   Press LOCAL TEST and XMT REV switches off. All
     lamps except PWR should go out.

5.   Press the DLB switch ON. The DTR indicator will
     light. (note: this depends on a strap option)

6.   Call the modem from a remote phone. Check that
     the local RI indicator lights then goes out (2 to
     3 seconds later) when the DSR indicator lights.
     After DSR is lit an answer tone will be heard in
     the remote phone and the local CHANNEL STATUS
     indicator will flash.

7.   Hang up the remote phone. All indicators except
     PWR should go out within 12 seconds after disconnect.

8.   The Vadic 801 is not operating properly.

   A.   Perform the operational checks on the modem before
        checking the dialer. If this does not clear the fault,
        run the following tests: set the thumbwheel channel
        selector switch to dialer slot "5". Run program **AWS**.
        Check that the diagnostics lamps on the Vadic follow
        the sequence below.

      1.   Lamps RTS and CXR come on. Then RXD and TXD come
           on.

      2.   After the dial tone is detected, lamp CTS comes on.

      3.   Lamp DSR comes on.

      4.   Lamps CTS and DSR flash during dialing.

      5.   After the answer tone is detected, lamp DTR comes
           on.

9.   The Vadic chassis or power supply is not operating correctly.

   A.   Turn the Vadic off for about 60 seconds then switch it
        back on and listen for a faint high pitched whistling
        sound. If you hear nothing examine the power light
        indicator and see if it is lit. If it is not, turn the
        unit off and check the fuse. If the power supply is
        defective, return the unit to Vadic for repair.

In the event none of the above actions clear the fault, the problem is likely in the chassis.

10.   The out-going phone line is out of order.

11.   The subchannel specification is not set properly.

   A.   The subchannel used for "logical unit 12" should be set to 8. This can be checked by entering the query SYLU,12. The last character will indicate the subchannel number. If it is not 8 then it can be changed by the interactive command SYLU,12,8 or by rebooting the computer.

SECTION FOUR

ADMINISTRATIVE PROCEDURES

The Hewlett-Packard computer and operating system located at
the Ruskin office of the National Weather Service is generally a
very reliable collection of hardware and software, but occasional
maintenance or adjustment of the system operating parameters may be
required. The responsible person at the NWS is assigned as the RTE
System Manager, and through the RTE Session Monitor **MANAGER.SYS**
account, should be the only person to maintain, or modify the RTE
operating system.

There may be occasion to modify the Session Monitor Accounts
system. This may be accomplished by signing on as **MANAGER.SYS**,
running program **ACCTS**, and following the procedures found in the
System Managers manual, Hewlett-Packard part #92068-90006, chapter
7. Modifications that may be required would be addition or deletion
of user accounts, adding or subtracting logical units to a user or
group, resetting the accounts clocks, or perhaps changing the command
capability level of a user.

A requirement of the System Manager is the ability to ensure
that a backup copy of the operating system is available in the event
of a software or hardware failure which might destroy the current
system. This might be due to a disc hardware crash, damage by
lightning, or some other external cause. It might also become
necessary at some phase of a servicing problem by H.P. personnel.
A procedure has been developed to accomplish a backup of the operating
system from disc to magnetic tape. This procedure is a program run
by the person acting as System Manager, which invokes the H.P.
supplied off-line backup utility program !DSKUP.. Following are
instructions on the operation of this utility.

Before running this program, you should make sure that you have
a 2400´ reel of magnetic tape (with a ´write ring´ installed) mounted
on the tape drive with the drive "on-line".

This program is started by signing onto the CRT terminal as
MANAGER.SYS. When the prompt is received, type the following:

BACKUP

The program will warn you that you are about to abort the RTE system
and ask you if this is **REALLY** what you want to do. Answer YES and
the program will run --- KILL the RTE system and print the questions
you will need to answer on the system console (Texas Instruments
733). If you change your mind, simply enter NO and the program
aborts.

When the utility program starts running, it prints a heading (DISC BACKUP UTILITY) and asks which task you want performed. Type **SAVE** to save the discs to tape, or **RESTORE** to restore a tape to disc.

The program will ask for magnetic tape channel number at this point. The correct answer is:

16

If you want to save your discs to tape type **SAVE** in response to the TASK? question. The system will then ask:

SOURCE DISC CHANNEL#?

the correct answer is:

13

The next question is:

SOURCE DISC TYPE?

and the correct answer is:

7905

the next question is:

SOURCE DISC DRIVE#?

and the appropriate answer would be:

0

The question:

TYPE OF SAVE?

should be answered with:

UNIT

The next question:

RTE OR DOS DISC?

should be answered:

RTE

the next question:

WANT TRACK SPARING?

should be answered:

NO

The next question asks:

TRACK SIZE BUFFER DESIRED?

and the answer will be:

YES

To the question:

VERIFY

one should **ALWAYS** answer:

YES

The next question regards the identification or title which is to be written to the tape. Always give as much information as is possible, remembering that you only have one line in which to say it. A suggested answer to the question:

FILE ID?

would be the following (all typed in upper case):

7905 UNIT SAVE (DSKUP) OF RUSKIN RTE-IVB (MARCH 15, 1983) CROSBY

(NOTE: This information should also be written to a paper label and affixed to the magnetic tape.)

The next and last question refers to the Magnetic Tape file number, and my suggestion is that these saves be only done to a full and complete tape. In which case the dialog would be:

MT FILE#?

and you answer would be:

1

At this point in time, the utility program starts saving all data on the disc to the magnetic tape. You will see the switch register lights on the computer counting the disc tracks that are being copied to tape as an indication of proper operation. You should also see the tape being written.

When the SAVE is completed and successfully verified, the program will ask the question again:

TASK?

and the appropriate response will be to press the [HALT] switch on the computer front panel, remove the tape, and begin BOOTUP procedures, since the RTE operating system was disabled during the copy from disc to tape. Remember to label the magnetic tape properly and store it safely, as this tape is a complete image of the operating system, as of the date it was saved. To restore this tape to the system, the initial question TASK? should be answered **RESTORE.** Additional information regarding this backup procedure may be found in the System Managers' manual previously referenced.

Finally, the person acting as **MANAGER.SYS** should familiarize himself with the above-referenced manual, as this manual contains all information necessary for the complete software maintenance of the RTE-IVB system.

ORIGINAL PAGE IS
OF POOR QUALITY