

10. Forecasting Antenna Contention with FORECAST

FORECAST accepts input of user requests and DSN antenna downtimes and calculates metrics to indicate what percentage of these requests cannot be satisfied.

FORECAST uses MS-EXCEL for both data input and chart generation. It also requires viewperiods contained in a viewperiod database. FORECAST inputs and graphs are stored in an EXCEL workbook¹. Each workbook stores one year of forecast information for one forecast name.

Workbooks have the following nomenclature:

NNNNYYYY.XLW

where

NNNN	=	forecast name ²
YYYY	=	a four-digit year value
XLW	=	an MS-EXCEL-specific file extension indicating a workbook file.

10.1 Starting FORECAST

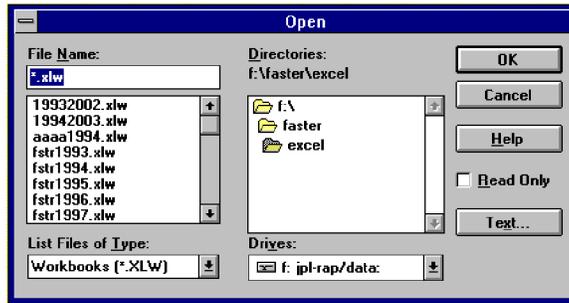
- (1) From the Microsoft Windows Program Manager, double click on the FASTER Program Group.
- (2) From the FASTER Program group, double click on the FORECAST icon.



¹ A workbook is an EXCEL document in which you can store other documents or information about other documents.

² Naming each forecast allows for multiple version of the same year.

Windows loads MS-EXCEL, which in turn loads FORECAST. FORECAST's "Open" dialog box appears.



- (2) Select the forecast workbook with which you wish to work by either clicking on the filename, then clicking **OK**, or by just double-clicking on the filename.

FORECAST loads the selected workbook.

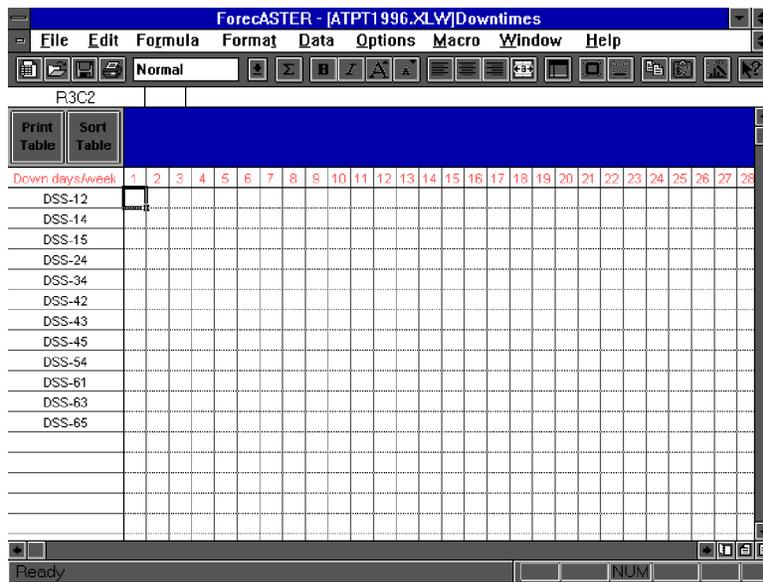
10.2 What's in a FORECAST Workbook?

Each FORECAST workbook consists of, at minimum:

- User Requirements worksheet

ForecASTER - [ATPT1996.XLW]User Requirements																				
File Edit Formula Format Data Options Macro Window Help																				
Normal																				
R36C38 9																				
Generate Forecast Print Table Sort Table Copy Year Major Events																				
VP			Durations		Calibration		June			July			August							
Object	User	Resource	Ave	Min	Pre	Post	23	24	25	26	27	28	29	30	31	32	33	34	35	36
ICE	ICE	70M	4.0	4.0	0.75	0.25	2	2	2	2	2	2	2	2	2	2	2	2	2	2
DSS	Maintenance	70M	8.0	8.0			6	6	6	6	6	6	6	6	6	6	6	6	6	6
NEAR	NEAR	70M	8.0	8.0	0.75	0.25														
PN10	Pioneer 10	70M	8.0	8.0	0.75	0.25	14	14	14	14	14	14	14	14	14	14	14	14	14	14
NONE	Pioneer 6/7/9	70M	4.0	4.0	0.75	0.25			3											
NONE	Radio Astronomy	70M	8.0	8.0	1.50	0.50	3	3	2	3	3	4	3	5	4	3	4	6	3	3
NONE	Radio Astronomy	DSS-43/42	8.0	8.0	1.50	0.50							1				1			
AGLL	Space VLEI	70M	6.5	6.5	1.00	0.50	14	14	14	14	14	14	14	14	14	14	14	14	14	14
NONE	VLEI Clock Sync	1463,14/43	3.0	3.0	1.50	0.50	2	2	2	2	2	2	2	2	2	2	2	2	2	2
VGR1	Voyager 1	70M	4.0	4.0	0.75	0.25	2	2	2	2	2	2	2	2	2	3	2	2	2	2
VGR2	Voyager 2	70M	4.0	4.0	0.75	0.25	2	3	2	2	2	2	2	2	2	2	2	2	2	3
SUN	ISTP-WIND	DSS-61/42	2.0	2.0	0.75	0.25	7	7	7	7	7	7	7	7	7	7	7	7	7	7
DSS	Maintenance	34S	6.0	6.0			2	2	2	2	2	2	2	2	2	2	2	2	2	2
ULYS	Ulysses	DSS-61	10.0	10.0	1.50	0.25	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VGR1	Voyager 1	DSS-61	8.0	7.5	0.75	0.25	7	7	7	7	7	7	7	7	7	7	7	7	7	7
DSS	Maintenance	34H	6.0	6.0			3	3	3	3	3	3	3	3	3	3	3	3	3	3

- Downtimes worksheet



In order for a forecast to be generated, these two worksheets must be filled in!

In addition, the Events database must have entries for the relevant requirements. If requests in the User Requirements worksheet do not have corresponding events in the Events database FORECAST will display an error indicating no events then terminate the run. See Sec. 16 for information in EVENTS and the Events database.

Additional items added to the workbook after a forecasting run include:

- Subnet results
- Lost time totals (available only if you selected the Lost Time by Project option)
- Monthly and Weekly User Lost Time and Percents (available only if you selected the "Want Lost Time results by Project" option).
- Monthly and Weekly Requested Survival (available only if you selected the ""Want Lost Time results by Project" and "Want monthly and survival results?" options).

These Monthly & Weekly charts use the MS-EXCEL "outline" feature in organizing the information. The user is referred to the MS-EXCEL User's Guide pgs. 276-280 for detailed information on the outline feature. They also

contain three (3) buttons **SORT BY USER**, **SORT BY SUBNET**, and **PLOT USER SUPPORT**. The first two (2) resort the data table by either User or Subnet. The third button plots the numbers into a graphical format.

10.3 Navigating the Workbook

You move through a workbook's contents via three small “page turning” buttons found in the lower right-hand side of the workbook’s window.



- The **left** button gives you a workbook table of contents from which you can select a worksheet by double clicking on the desired page.
- The **middle** button displays the previous workbook page.
- The **right** button displays the next or following workbook page.

To move through an individual workbook worksheet, use the standard EXCEL commands. (See the EXCEL User's Guide).

10.4 Generating a Forecast

- (1) Fill out the User Requirements and Downtimes worksheets by hand prior to the run. The information sources for the user requirements worksheet information are the flight projects themselves.
- (2) Make sure the file RULES.INI³ is present in the \FASTER\DATA subdirectory. The current viewperiods database is also required for a forecasting run.
- (3) Press the **Generate Forecast** button found on the user requirements worksheet.
- (4) FORECAST will then ask "*Want Lost Time results by Project?*". If you do click on the **YES** button.

³ RULES.INI contains the “Lacey’s Laws” or Lost Time/Project algorithms.

If you selected **YES** FORECAST will then ask "*Want monthly and survival results?*" If you do click on the **YES** button.

FORECAST begins processing. The run can take from five to fifteen minutes, depending on the User Requirements Worksheet complexity and the system / workstation loads.

When the run is completed, either a Subnet Results worksheet and a series of Lost time worksheets will be added to the workbook or an Infeasible Requests worksheet will be displayed. The Infeasible Requests worksheet lists the user requirements that have to be modified because what they're asking for cannot be satisfied either due to viewperiod or events constraints.

- (4) To generate Lost Time by Project charts, click the button on the Results worksheet. If Lost Time By Project was selected the subnet results will be displayed while the Lost Time by Project worksheets are being generated, requiring between 1 and 5 minutes to complete.

10.5 Adding Requirements

To add new requirement :

- (1) Go to the first blank line in the User Requirements Worksheet and enter all required information (user, VP object, resource, durations, pre/post, and weekly requirements).

Note: In FORECAST 2.0, the User name field has changed: the first four characters must equal those in the USER.INI file⁴. The remaining characters can be unique.

- (2) Press the **Sort Table** button.

The line now appears in proper order in the requirements sheet.

⁴ To allow for linking to the Events database.

- (3) If you use all the lines in the User Requirements worksheet and need to add more click on the **ADD LINES** button at the top of the worksheet. FORECAST will ask how many lines to add. The default is ten (10). After entering the number of lines desired click on the OK button. FORECAST will then add the blank lines to the bottom of the worksheet.

10.6 Removing Requirement Lines

- (1) Highlight all cells on the line (from VP Object to Week 53) using either the mouse or **SHIFT-ARROW** keys.
- (2) Press the **DEL** key.

A dialog box appears.
- (3) Select the **Formulas** radio button and click **OK**.
- (4) Press the **Sort Table** button. The blank line is sorted past the last line with valid information.

10.7 Displaying or Not Displaying Major Events

To toggle on or off the display of major events, press the button labeled **Major Events** on the User Requirements worksheet

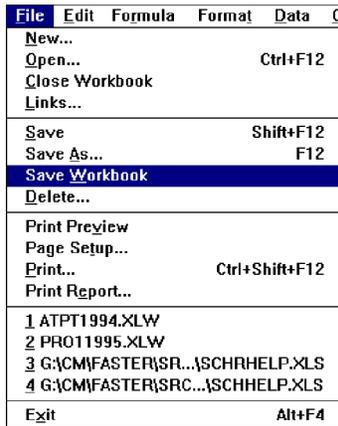
To modify or edit major events manually use the standard EXCEL navigation and editing keys (see EXCEL User's Guide). To modify or edit major events as contained in the selected Events database see Sec. 16 of this User's Guide.

To link a selected Events file to a User Requirements worksheet, click the **Update Events** button on the FORECAST button bar.

To delete a link between the selected Events file and a User Requirements worksheet, click the **Delete Events** button on the FORECAST button bar.

10.8 Saving a Workbook

- (1) From the **File** pull-down menu, select *Save Workbook*



- (2) An alternate method is to select the Workbook Contents icon then the "Save" icon.

10.9 Printing a Forecast Workbook's Contents

- (1) First, make sure that major events are either hidden or displayed, as desired.
- (2) Press the **Print Table** button on the User Requirements worksheet.

The worksheet is printed on the default printer.

10.10 Making Copies of a Year

All information for one version of a year of forecasting is contained in a single workbook.

- (1) To save a year as either a new version and/or new year, click on the **Copy Year** button.

FORECAST asks whether you wish to first save the current workbook before copying it.

- (2) Click **OK** (Yes) or **Cancel** (No), as appropriate.

A file "Save As" dialog box is now displayed.

- (3) Enter the appropriate filename for the new workbook. (You may also select a new directory in which to store the file; use the directory list box to traverse directories.) For example, if you were working on year 1995 for forecast name "BASE" and now wish to make a year 1996 for the same forecast, enter BASE1996.

WARNING: Forecasting workbooks should not be loaded into EXCEL if EXCEL was not started using the **forecast.xla** command line. (See the workstation installation section for information on how to properly set up the forecasting icon.) None of the spreadsheet buttons (e.g., generate forecast, sort) will work unless this procedure is followed.

10.11 Printing Workbook Charts

To print one or more of the charts generated by FORECAST use the basic EXCEL printing procedures. See the EXCEL User's Guide.

10.12 Sorting the Downtimes Sheet

To sort the downtimes worksheet, press the **Sort Table** button on the Downtimes worksheet.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
DSS-12																													
DSS-14																													
DSS-15																													
DSS-24																													
DSS-34																													
DSS-42																													
DSS-43																													
DSS-45																													
DSS-54																													
DSS-61																													
DSS-63							7	7	7																	7	7	7	7
DSS-65																													