Infor XA – Forecasting User's Guide

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To the reader

This book contains the information you need to understand and run this application. The information in this book applies only to XA.

For a complete list of books in the XA library, see the bibliography on the XA documentation CD.

Before you begin

If you are not familiar with the System i, please complete the System i education for the basic operating concepts of the System i.

What this book contains

Chapters 1 and 2 acquaint you with the application. Be sure to read the first two chapters before you use the instructions in the remaining sections. Use these chapters to understand how this application works and what you need to know to manage it.

The next group of chapters describe the options on the main menu. For example, Chapter 3 contains information about option 1 of the main menu. Each chapter includes information about how to use the displays associated with each option.

The last group of chapters describe the reports and forms for this application.

Use the appendixes to find information about using offline files or other functions specific to your application.

Summary of changes

This book has been reformatted to optimize on-line viewing.

Contents

To the reader . . . . . **iii**
Summary of changes . . . . . **iv**
Chapter 1. Introducing the Forecasting application 1-1
What Forecasting does 1-1
How the information flows between Forecasting and other applications 1-1
How the information flows within Forecasting 1-2
Forecasting Main Menu 1-4
Features of Forecasting 1-5
Variable reporting frequency 1-5
Advanced statistical forecasting methodology 1-5
User forecast override 1-5
Monitor forecast model 1-5
Forecast error measurement 1-5
Inventory parameter calculation 1-5
Multiple selling warehouses 1-5
Multiple planning warehouses 1-6
Group seasonality 1-6
Automatic file maintenance 1-6
Mass parameter maintenance 1-6
Flexible reporting 1-6
System internal controls 1-6
Strategic forecasting 1-6
Files 1-7
Major reports 1-8
Inquiry 1-8
Using eWorkPlace with XA documentation 1-9
Chapter 2. Managing Forecasting 2-1
Before you begin Forecasting operations 2-1
Forecast Coordinator responsibilities 2-1
Pre-implementation checklist 2-2
What to do after installing Forecasting 2-3
Summary of features and methodology in Forecasting 2-8
Forecast methodology 2-8
Description of FCST's forecasting technique 2-9
Sensitivity of the forecast model 2-9
Mean Absolute Deviation (MAD) 2-9
Coefficient of variation 2-9
Inventory control theory 2-9
Inventory control methodology 2-10
Tracking signal 2-10
Tracking history 2-10
Demand filter 2-10
Trend 2-10
Monitor forecast model 2-11
Lumpy demand 2-11
Intelligence history 2-11
Item seasonality 2-11
Group seasonality 2-11
Managing the period update 2-12
Revision of effective date 2-12

Period demand data capture 2-12
Forecast Master reconciliation 2-13
Item substitution (or item number change) 2-14
Period update calculations 2-15
Reviewing forecast exceptions 2-15
Forecast reporting 2-18
Calculation of inventory parameters 2-19
Reviewing projections 2-19
Projection reporting 2-19
Loading the forecast to the master schedule 2-20
Managing the seasonal update 2-22
Defining seasonal groups and volume subgroups 2-22
Revision of effective date 2-23
Demand history extract and update 2-23
Seasonal parameter maintenance 2-23
Item demand history maintenance 2-24
Seasonal profile calculation 2-24
Seasonal profile report 2-25
Conclusion of managing the seasonal update 2-26
Warehouse seasonality 2-26
Special considerations 2-27
Chapter 3. Inquiry and File Maintenance 3-1
Option 1. Forecast Master Inquiry (AM2M10) 3-3
AM2011—Forecast Master Inquiry 3-4
AM2041—Projection Inquiry 3-8
Option 2. Forecast Master Update (AM2M10) 3-10
AM2011—Forecast Master Maintenance 3-11
AM2041—Projection Maintenance 3-14
AM2013—Period Forecast Inquiry/Maintenance 3-16
Option 3. Seasonal Group Profile (AM2M10) 3-18
AM2171—Seasonal Group Profile Inquiry/Maintenance 3-19
Option 4. Life Cycle Profile (AM2M10) 3-22
AM2201—Life Cycle Profile Inquiry/Maintenance 3-23
Option 5. Forecast Control (AM2M10) 3-25
AM2001—Forecast Control Inquiry/Maintenance 3-26
Option 6. Mass Maintenance (AM2M10) 3-29
AM2021—Forecast Master Mass Maintenance 3-30
Option 7. Item Summary Maintenance (AM2M10) 3-33
AM2801—Demand History Extract and Update 3-34
AM2340—Item Summary Maintenance (Select) 3-36
AM2341—Item Summary Maintenance 3-38
Option 8. Forecast Activity Maintenance (AM2M10) 3-40
AM2351—Forecast Activity Maintenance 3-41
Chapter 4. Period Update 4-1
Option 1. Period Demand Data Capture (AM2M20) 4-4
Option 2. Forecast Master Reconciliation (AM2M20) 4-5
Option 3. Forecast Calculation (AM2M20) 4-6
Option 4. Inventory Parameter Calculation (AM2M20) 4-7
Option 5. Forecast Load to Master Schedule (AM2M20) 4-8
AMV3HP—Forecast Load to Master Schedule 4-9
Chapter 5. Forecast Reporting 5-1
Option 1. Summaries by Value Class (AM2M30) 5-2
Option 2. Summaries by Product Line (AM2M30) 5-3

Option 3. Exceptions by Value Class (AM2M30) 5-4
Option 4. Exceptions by Product Line (AM2M30) 5-5
Option 5. Detail by Value Class (AM2M30) 5-6
Option 6. Detail by Product Line (AM2M30) 5-7
Chapter 6. Projection Reporting 6-1
Option 1. Summaries by Value Class (AM2M40) 6-2
Option 2. Summaries by Product Line (AM2M40) 6-2
Option 3. Summaries by Life Cycle Profile Code (AM2M40) 6-2
Option 4. Detail by Value Class (AM2M40) 6-2
Option 5. Detail by Product Line (AM2M40) 6-3
Option 6. Detail by Life Cycle Profile Code (AM2M40) 6-3
Chapter 7. Seasonal Update 7-1
Option 1. Demand History Extract and Update (AM2M50) 7-3
AM2801—Demand History Extract and Update 7-3
Option 2. Seasonal Parameter Maintenance (AM2M50) 7-5
AM2161—Seasonal Parameter Maintenance 7-5
Option 3. Item Demand History Maintenance (AM2M50) 7-8
AM2131—Item Demand History Maintenance 7-8
Option 4. Seasonal Profile Calculation (AM2M50) 7-10
Option 5. Seasonal Profile Report (AM2M50) 7-10
Option 6. Save Seasonal Update Data (AM2M50) 7-10
Chapter 8. Report descriptions 8-1
Forecast Detail Report (AM243) 8-2
Forecast Exception Report (AM243) 8-5
Forecast Summary Report (AM241) 8-6
Forecast Summary Report (control totals) (AM245) 8-8
Inventory Detail Report (AM206) 8-10
Life Cycle Profile Report (AM2203) 8-12
Projection Detail Report (AM252) 8-14
Projection Summary Report (AM251) 8-16
Seasonal Profile Report (AM214) 8-18
Seasonal Profile Report (graph presentation of group seasonal coefficients) (AM214) 8-21
Seasonal Profile Report (graph presentation of group reliability coefficients) (AM214) 8-24
Chapter 9. Forms 9-1
Seasonal Group Profile Maintenance (PF-01) 9-2
Life Cycle Profile Maintenance (PF-02) 9-3
Item Summary Maintenance (PF-03) 9-4
Forecast Activity Maintenance (PF-04) 9-5
Chapter 10. Accounting controls and audits 10-1
Demand Data Edit Diagnostics (AM203) 10-2
Demand History Construction (AM208) 10-4
Demand History Extract and Update (AM207) 10-6
Forecast Activity Data Print (AM236) 10-7
Forecast Load Diagnostics (AM218) 10-8
Forecast Master Initialization (AM212) 10-10
Forecast Master Maintenance Edit List (AM201) 10-11
Forecast Master Mass Maintenance Transactions (AM205) 10-13
Forecast Master Reconciliation Maintenance (AM211) 10-15
Inventory Load Control Totals (AM215) 10-17
Item Summary Data Print (AM237) 10-18
Life Cycle Profile Maintenance Edit List (AM220) 10-19

Period Demand Extract (AM210) 10-20
Projection Edit Diagnostics (AM221) 10-22
Projection Maintenance Edit List (AM204) 10-24
Seasonal Group Profile Maintenance Edit List (AM217) 10-25
Seasonal Profile Construction (AM209) 10-26
Appendix A. Statistical forecasting methodology A-1
Forecast methodology A-1
Description of FCST's experiential roughing technique A-2
Sensitivity of the forecast model A-6
Mean Absolute Deviation A-6
Case 1 . . . . . A-6
Case 2 . . . . . A-6
Coefficient of variation A-8
Inventory control theory A-8
Inventory control methodology A-10
Tracking signal A-11
Tracking history A-12
Demand filter A-12
Trend A-13
Monitor forecast model A-14
Lumpy demand A-14
Intelligence history A-14
Item seasonality A-15
Group seasonality A-15
Appendix B. Extended horizon projection methodology B-1
Using Forecasting's extended horizon projection technique B-1
Product life cycles B-2
Stages of product life B-3
Introduction B-3
Growth B-4
Maturity B-4
Decline B-4
Changes in a product life cycle B-4
Steady state B-5
Growth B-5
Decline B-6
Calculating the extended horizon projection B-10
Life cycle position B-11
Appendix C. Group seasonality methodology C-1
Seasonality C-1
Item seasonality C-2
Group seasonality C-2
Appendix D. Coordinating the planning calendar D-1
Load day of the scheduling week D-1
Type of manufacturing periods D-1
FCST, MRP, and MPSP planning horizons D-3
Special planning codes D-5
Appendix E. Security areas E-1
Glossary **GL-1**
Index **IN-1**

Chapter 1. Introducing the Forecasting application

This chapter contains general information about the Forecasting and how it works. This information is structured as follows:

What Forecasting does 1-1
How the information flows between Forecasting and other applications 1-1
How the information flows within Forecasting 1-2
Forecasting Main Menu 1-4
Features of Forecasting 1-5
Major reports 1-8
Inquiry 1-8
Using eWorkPlace with XA documentation 1-9

Some concepts and features that are common to most of the XA applications are discussed in two other books: *Getting Started with* XA and *Planning and Installing* XA.

- Menus and displays
- Group Job support
- Master file searches
- Audits and controls
- Security

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What Forecasting does

Forecasting (FCST) is the XA application for statistical forecasting. It is unique in its ability to meet the forecasting needs of manufacturing and distribution. FCST monitors customer demand and provides forecasts of future demand. These forecasts are made both for the total company and for each selling warehouse. These forecasts are for items which have been identified by specific item numbers designated as master level items.

FCST can also develop projections for customer demand for up to three years into the future based upon life cycles which you define. This information can be used in capacity and market planning.

How the information flows between Forecasting and other applications

FCST interfaces with five of the XA applications:

- Inventory Management (IM)
- Master Production Schedule Planning (MPSP)
- Material Requirements Planning (MRP)
- Customer Order Management (COM)
- Sales Analysis (SA).

FCST cannot be installed until IM is installed. FCST uses IM's item inventory data, such as forecasting code, description, value class, item class, unit cost default, and calendar records.

If you request the interface to MRP when you answer the FCSTquestionnaire, FCST loads item forecasts and requirements to the master schedule in the Requirements (REQMTS) file.

If you request to pass forecasted requirements to the Demand Interface file when you answer the questionnaire, MPSP will use this data.

Planning dates conventions used in FCST, MRP, and MPSP are discussed in Appendix D “Coordinating the planning calendar”.

If COM is installed, FCST uses COM’s customer order data. If COM is not installed, you will have to create the customer order data, using Forecast Activity file maintenance.

If SA is installed, it provides the initial history to build the Demand History file. If SA is not installed, you will have to create the demand history data, using Item Summary file maintenance.

FCST sends information to …

IM Order point and safety stock quantities.

MPSP Forecast requirements to the DMDIFF.

MRP Forecast requirements for master level items to the Requirements file.

FCST receives information from …

COM Saves customer order demand information for each period that allows recomputation of forecast.

IM Warehouse information.

MPSP Forecast data and, if COM not installed, receives backlog information from DMDIFF.

MRP Forecast data in the form of manual and information requirements.

SA Item summary information for Forecasting implementation.

How the information flows within Forecasting

The Forecasting application can be divided into two processing areas. The first area is concerned with the annual seasonal update process, which results in seasonal parameters for use in forecasting. The second area periodically calculates forecasts (year 1) and projections (years 2 and 3) based on the customer demand and life cycles, respectively. Inventory parameters are also calculated.

Figure 1-1 shows how data flows within the Forecasting application. The calculation of forecasts, projections, and inventory parameters begins by extracting and summarizing **[1]** order data (product demand). To maintain consistency and to eliminate the need for duplicate maintenance, FCST’s Forecast Master file is compared with the Item Master file **[2]** and automatically updated before new forecasts are calculated.

The user reviews the results of the forecast, projection, and inventory parameter calculation **[3]** before the results are loaded to the master schedule **[4].**

At the end of each year, an additional year of history data is added to the Demand History file. New seasonal parameters are calculated and reviewed based on this new data **[5]**.

All FCST functions are initiated from a work station based on simple menu selections. The results of inquiries into all major files are displayed on a work station and all file maintenance is performed interactively **[6]**.

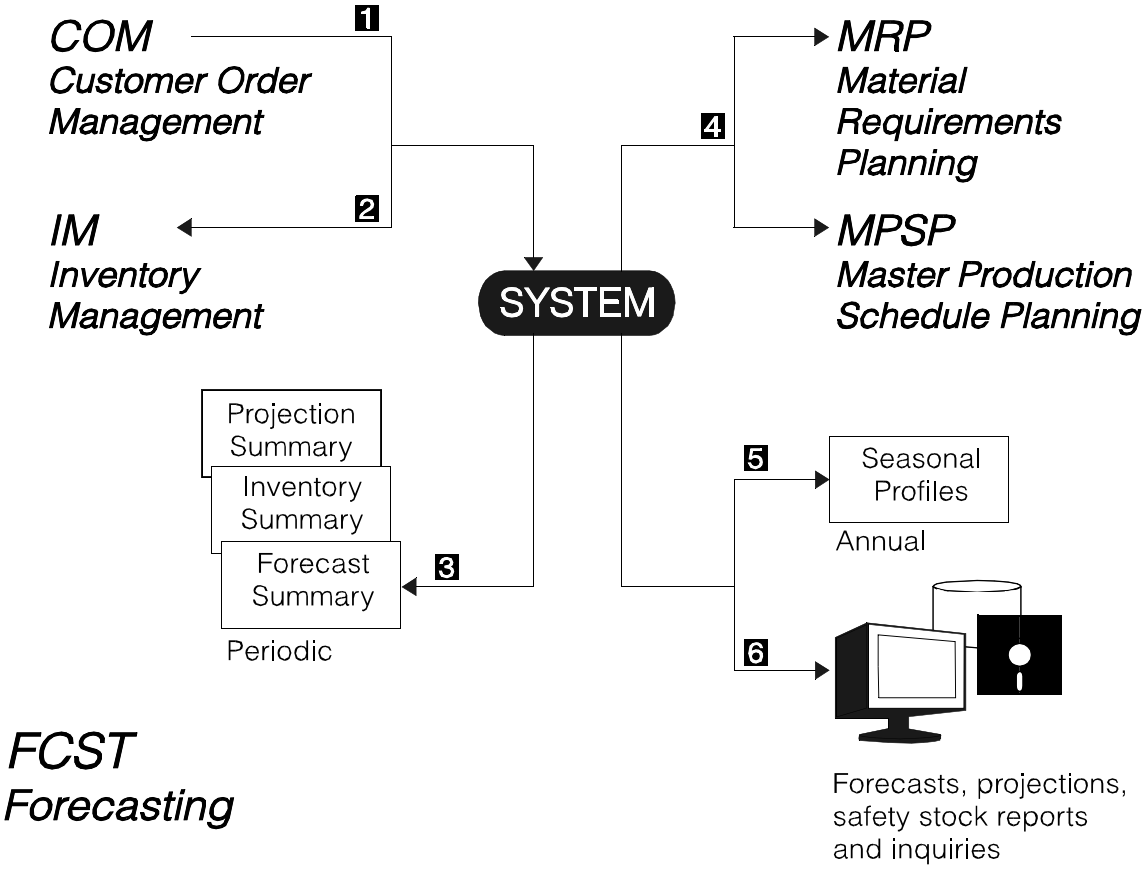
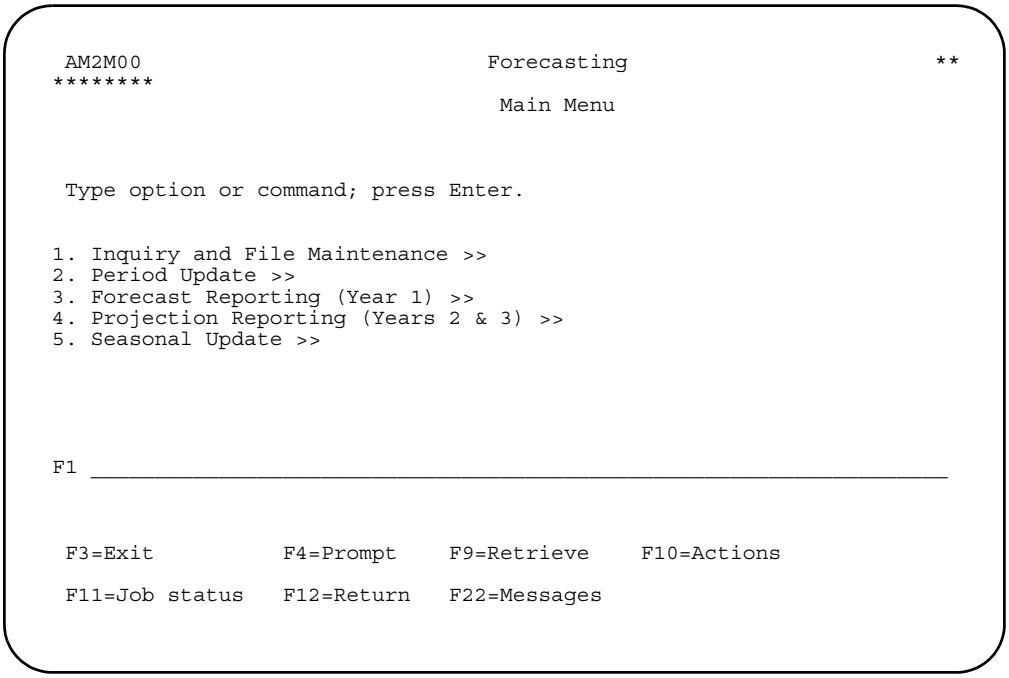


Figure 1-1. Flow of information within the Forecasting application

Forecasting Main Menu



Option 1. Inquiry and File Maintenance. Use this option to show and maintain master files.

Option 2. Period Update. Use this option to run the forecast/projection programs.

Option 3. Forecast Reporting (Year 1). Use this option print forecasts in various sequences and levels of detail.

Option 4. Projection Reporting (Years 2 & 3). Use this option to print projections in various sequences and levels of detail.

Option 5. Seasonal Update. Use this option to update the seasonal parameters on an annual basis.

Features of Forecasting

Variable reporting frequency

FCST allows for three reporting frequencies:

- 12 monthly periods per year
- 13 four-week periods per year
- 12 four- or five-week periods per year.

These choices correspond to the basic options of other XA applications.

Advanced statistical forecasting methodology

The statistical forecasting technique used within the FCST application is known as experiential roughing. This technique is among the class of adaptive forecasting models. Experiential roughing has been shown to be one of the most accurate forecasting methods.

User forecast override

FCST provides the user complete forecast override capabilities. The annual rate of demand may be adjusted or a specific period forecast (month, four- or five-week interval) may be controlled. An historical record of forecast overrides is maintained for reference purposes.

Monitor forecast model

To monitor the effectiveness of user overrides, a monitor forecast model is maintained. The monitor model is not subject to user control. Each period performance of the user controlled model is compared to the monitor model. Exceptions are highlighted for user review.

Forecast error measurement

FCST carefully tracks forecast performance by measuring the forecast error. This measurement is used to adjust the sensitivity of the experiential roughing model, to report exceptions to the user, and to calculate safety stock requirements.

Inventory parameter calculation

The FCST application can compute two basic inventory parameters: safety stock and reorder point. The safety stock calculation is based upon historical forecast error and the level of customer service specified. The reorder point is the sum of the demand over the lead time plus safety stock. These parameters are necessary to use the “time phased order point” master scheduling technique.

Multiple selling warehouses

FCST maintains a demand forecast for each selling warehouse and an overall “system” forecast. These individual selling warehouse forecasts are very useful in finished goods planning because these forecasts are based on demand reported

against a particular selling warehouse. These warehouses will be used to load forecasts into MRP and MPSP files.

Multiple planning warehouses

The forecast in a planning warehouse and its demand warehouses can be used in preparing the master schedule for the planning warehouse. You can load an item's forecast for a single planning warehouse or for a range of planning warehouses.

Group seasonality

FCST analyzes seasonal patterns of individual items and seasonal groups. The group seasonality approach has been very successful in identifying seasonal parameters that are accurate and useful for forecasting. Moreover, group seasonality permits seasonal forecasts for items with little or no history.

Automatic file maintenance

At the start of each forecast cycle, the Forecast Master file is reconciled with the Item Master file so that the basic item maintenance need not be entered twice. FCST provides a list of all items added and deleted during the reconciliation.

Mass parameter maintenance

To assist you in maintaining forecast parameters, a powerful mass maintenance capability exists in the FCST application. The function applies maintenance of several different fields to items that meet your selected criteria. The selection criteria specified is based on any combination of five key identification fields.

Flexible reporting

The Key Forecast Report can be printed in two different sequences and the appropriate level of detail may be specified by you. The amount of detail presented on the seasonal parameter reports is controlled by you. Seasonal parameters are also presented in graphic format to aid in pattern analysis.

System internal controls

FCST monitors processing results and the sequence of processing through the System Control file that is common to XA. This feature allows FCST to alert you to improper processing procedures and to prevent loss of key data. Effective dating of all major reports is accomplished through the System Control file.

Strategic forecasting

The FCST application provides the option to calculate a projection up to three years into the future based upon a life cycle. You define and specify the life cycle. Life cycle curves can be specified for each item or for a group of items.

Files

The Forecasting application uses three types of files:

- System Control
- Master
- Work.

System Control file

The System Control file is the major system file for XA. It shows relatively unchanging information that is used by more than one application or operation. When you install an application and enter responses to the Questionnaire, the information is stored in SYSCTL. It contains the functional options you chose, the report options you chose, and any constant information you entered (such as company name). To change information in the System Control file, answer the Questionnaire again or use Cross Application Support file maintenance.

Master files

The master files are created during installation. Master files contain two types of information:

- *Dynamic* information, or information that the computer updates or changes frequently, such as the status of an order
- *Static* information, or information that is relatively permanent and is used repeatedly in inquiries and reports.

Even the static information can be changed with the file maintenance options to keep this data current in the master files.

The master files used by FCST are:

- Calendar (CALNDR)
- Demand Interface (DMDIFF)
- Forecast Future Years Master (FCSTFY)
- Forecast Master (FORMAS)
- Item Master Inventory (ITEMASA)
- Item Balance (ITEMBL)
- Item Planning (ITMPLN)
- Item Summary (ITMSM)
- Life Cycle Profile (PLCPRF)
- Planner Sequencing information (PLNSEQ)
- Planning information (PLNINF)
- Requirements (REQMTS)
- Sales Analysis item Sales History (ITEMHI)
- Seasonal Group Profile (GRPPRF).
- Warehouse Master (WHSMST)

Work files

Work (or temporary) files are created, used, or updated by FCST to hold data as you perform a specific task. These files include:

- Demand History (DEMHIS)
- Forecast Activity (FORACT)
- Forecast Percentages (FORTMP)

- Forecast Reconciliation (FCSTRC)
- Future Demand (FUTDEM)
- Item Profile (ITMPRF)
- Mass Maintenance Transactions (MMTRED)
- Monthly Activity—Booking Detail (MTHACTV)
- Monthly Demand (MTHDEM)
- Requirements Work File (REQMTW)
- Temporary Item Summary (ITSMXX)
- Work Seasonal Group Profile (GRPTMP).

Major reports

The FCST application provides extensive report options you can use to produce reports containing only selected data. See Chapter 8 “Report descriptions” for more detail.

The following major reports can be printed on request:

- Forecast Detail Report. Forecast in units for individual items and forecast performance data
- Forecast Exception Report
- Forecast Summary Report. Aggregate forecasts in units and standard cost for each product line or value class
- Inventory Detail Report
- Inventory Summary Report. Summary of the units and costs associated with the calculated inventory parameters.
- Projection Detail Report. Detailed listing of years two and three projections; as well as a summary by value class, product line, or life cycle profile code
- Projection Summary Report
- Projection Warehouse Summary
- Seasonal profiles. Graphic presentation of group seasonal coefficients
- Seasonal profiles. Graphic presentation of group reliability coefficients
- Seasonal Profile Report. Detailed listing of the group and item seasonal parameters as well as graphical reporting for visual evaluation of seasonal patterns.

Inquiry

In addition to reports, you can display certain information. An action that causes information to be displayed is called an inquiry. In FCST, you can inquire about:

- Forecast control data
- Forecast master
- Life cycle parameters
- Seasonal parameters.

Using eWorkPlace with XA documentation

eWorkPlace (eWP) is the Microsoft®, Windows'™-based graphical user interface for XA. The eWP windows co-exist with the XA character-based displays, called Host screens. If you are using eWP, you can view the corresponding Host screen for any eWP window, if necessary.

Note: If you have modified a Host screen, the GUI default is used. The default GUI feature can be enabled or disabled.

The user's guides and help text contain instructions that reference the host XA screens (called panels and displays) rather than the eWP windows.

To understand how a Host screen instruction relates to an action on a eWP window, it is helpful to look for text on a window control that corresponds to the instruction. For example, **Cancel** on a button and on a File pull-down corresponds to the user guide instruction "use **F12=Cancel** to return to the previous display".

Note: For the instruction "press **Enter**", the corresponding control on an eWP window is an **OK** button.

The following table shows other examples of instructions from the documentation and the corresponding actions you take on the eWorkPlace window.

Documentation instructions	**eWorkPlace actions**
To change the details of a vendor, type **2** next to the vendor and press **Enter**.	Select a vendor, then select Change or type C from the List menu or select Change using the right mouse. Click the OK button.
To create a vendor, use **F6**.	Select Create on the Functions menu or click the Create button.
Position to command. If you want to skip to a particular command, type the full or partial command.	Type the full or partial command in the position to entry field and click the Position button.
Type the information requested and press **Enter**.	Type values in or select values for the entry fields and click the OK button.
Type the information requested and use a function key.	Type values in or select values for the entry fields and click a button or select an action on the Functions pull-down.
Use the Item Master maintenance display to.....	Use the Item Master maintenance window to.....

For more information about eWP, see *Getting Started with eWorkPlace*.

Chapter 2. Managing Forecasting

Before you begin Forecasting operations 2-1
Summary of features and methodology in Forecasting 2-8
Managing the period update 2-12
Managing the seasonal update 2-22

Before you begin Forecasting operations

- Read and understand the terms FCST uses.
- Understand how FCST works and what the features and limitations of the application are.
- Analyze the tasks involved in managing this application.
- Set the sequence for performing your operations.
- Establish the accounting and audit controls to be used and determine who is responsible for them.

In this chapter are descriptions of the general steps that should be followed during:

- The period update and review of FCST forecasts and projections, including the transfer of FCST information to the master schedule
- The annual update of FCST seasonal data.

The following subsections describe the review and update steps of FCST in detail. The subsections describe management practices that should be observed and provide guidelines for using various features and parameters for the FCST application.

Forecast Coordinator responsibilities

The following discusses responsibilities and not necessarily specific people. There may be one person in your company who will do several tasks discussed below.

The forecast coordinator is the person responsible for:

- Providing meaningful and realistic system and warehouse forecast information to the materials management function
- Providing continuing communication between the sales, marketing, purchasing, and production planning functions regarding information that relates to system and warehouse forecasts (system forecasts provide purchasing and production planning information, warehouse forecasts determine how the inventory is distributed)
- Managing Forecasting.

It is possible that a forecast coordinator has already been selected—you, the reader. In that case, you are responsible for helping make many of the decisions called for here.

If not, select and train the forecast coordinator as soon as the decision to install the FCST application has been made. This person should be thoroughly familiar with the

existing policies and practices of your company and be familiar with your computer. Typically, the forecast coordinator coordinates all installation and data collection activities, and manages Forecasting after it has been installed. The forecast coordinator is usually in the marketing function. The forecast coordinator should verify the installation of the following XA applications:

Application	Required	Data File
SA	No*	ITEMSM (implementation time only for multiple years renamed ITMSxx, where xx is the last two digits of the year)
COM	No*	MTHACTV (renamed to FORACT)
IM	Yes	ITEMAS, ITEMBL, CALTAB, CALNDR
MRP	No	REQMTS
MPSP	No	DMDIFF **

Notes:

* If you do not have this application, you must create the data using the file maintenance supplied by FCST

** This interface file may be used even if MPSP is not installed and interfacing.

Pre-implementation checklist

The following list assists in a smooth implementation of the FCST application:

- Tailor the FCST application.
- Code the warehouses where customer orders are entered as selling warehouses.
- Tailor the COM application for booking records.
- Code all items you want to forecast with a Forecasting code of 1, 2, or 3.
- Make sure the GRPTMP file in AMFLIBy contains a record for seasonal group 000.
- Make sure the PLCPRF file in AMFLIBy contains a record for life cycle code 000.
- Make sure the ITSMXX file in AMFLIBy contains a member for each year being loaded. The member names are ITSMaabb, where aa is the year (in descending order) and bb is 21, 22, 23, and so forth. For example: ITSMG9621, ITSM9522, ITSM9423.

What to do after installing Forecasting

After you complete the install/tailor questionnaire, the following steps are needed to finish installing the FCST application. Further explanation of each of these steps can be found on the following pages.

Table 2-1. Steps to following after installing Forecasting

Step	Required/ Optional	Description	Menu/ Option
1	R	Enter the Seasonal Update date (if tailored in the Report Options section of the questionnaire).	AM2M10/5
2	O	Maintain your seasonal parameters.	AM2M50/2
Do Steps 3, 5, and 8 if your business has seasonal aspects. You should build several dummy seasonal groups (Step 3) to allow seasonal group profile code redefinition during the year.			
3	R	Create Item Summary files.	AM2M10/7
4	R	Build the Demand History file.	AM2M50/1
5	O	Maintain your item demand history parameters.	AM2M50/3
6	R	Calculate your seasonal profiles.	AM2M50/4
7	R	Print the Seasonal Profile Report.	AM2M50/5
8	O	Review your seasonal group profiles; repeat Steps 3, 5, 6, and 7 if necessary.	None
9	R	Save seasonal update data.	AM2M50/6
At this point, your annual sales history has been saved. Now you begin processing the past periods of the current year.			
10	O	Override seasonal profile coefficients, if required.	AM2M10/3
11	O	If you are doing projections for years 2 and 3, enter your life cycle profiles.	AM2M10/4
12	O	Complete any mass maintenance required.	AM2M10/6
13	O	Complete any Forecast Master maintenance required.	AM2M10/2
14	O	Activate interface to MRP, if required.	AMZM00/6 (Cross-App)
Steps 15 through 28 need to be repeated for each of the past periods of the current year, with this exception: You need only run Step 18 the first time you are repeating the steps, and need only run step 23 the last time you are repeating the steps. Let's assume you are installing Forecasting in September. In this case, you would repeat Steps 15 through 28 eight (8) times–January through August, with the exception noted above.			
15	R	Enter the Forecast Update date (if tailored in the Report Options section of the questionnaire).	AM2M10/5
16	R	Create Forecast Activity file.	AM2M10/8
17	R	Capture period demand data.	AM2M20/1
18	R	Reconcile Forecast Master file.	AM2M20/2
19	R	Calculate forecasts/projections.	AM2M20/3
20	O	Print forecast reports.	AM2M30/1-6
21	O	Override forecasts as desired using mass maintenance.	AM2M10/6
22	O	Override any forecasts as desired using Forecast Master maintenance.	AM2M10/2
23	O	Calculate inventory parameters.	AM2M20/4
24	O	Review inventory reports; repeat Steps 21, 22, and 23 if required.	None

Table 2-1. (Continued)Steps to following after installing Forecasting

Step	Required/ Optional	Description	Menu/ Option
25	O	Print projection reports.	AM2M40/1-6
26	O	Override any projections as desired using Forecast Master maintenance.	AM2M10/2
27	O	Set/check planning horizon dates.	AM2M10/5
28	O	Load data to master schedule.	AM2M20/5
29	R	If you have additional data for past periods to process, return to Step 15.	None
If you have no more data for past periods to process, you have finished installing Forecasting. You should now refer to “Managing the period update” and “Managing the seasonal update” later in this chapter.			

Following is additional discussion on the previous table.

Step 1. This sets up the date which prints on the seasonal reports generated by Forecasting. If you fail to do this, you may be confused when you try to analyze your reports.

Step 2. This process defines the seasonal groups that you use with the volume subgroups. See Seasonal Parameter Maintenance later in this chapter, and Appendix C “Group seasonality methodology” for further information on this subject. Also, see Chapter 7 “Seasonal Update”. Use the PF-01 form to collect your seasonal parameter data. A blank form is included in Chapter 9 “Forms”.

Note: Defining new seasonal groups can be done only at seasonal update time (for example, year-end). You should build several dummy seasonal groups now to allow seasonal group profile code redefinition during the year.

Step 3. You must do this in order to establish historical data for Forecasting to calculate seasonal patterns.

Assume that the installation of Forecasting is in January 1998 and the years of demand history to be supplied are 1997 and 1996. You would need two files that contain history for 1997 and 1996. The files on the diskette may be named anything you choose. The files that are restored must be named YEARxx, where xx is the last two digits of the year. For example, the naming convention for files generated in the year 1997 are called YEAR97.

You must first create the YEARxx files as follows:

```
CRTDUPOBJ OBJ(ITSMXX) FROMLIB(AMFLIB) OBJTYPE(*FILE)
TOLIB(AMFLIB) NEWOBJ(YEAR97)  )

CRTDUPOBJ OBJ(ITSMXX) FROMLIB(AMFLIB) OBJTYPE(*FILE)
TOLIB(AMFLIB) NEWOBJ(YEAR96)
```

Remove all members from the duplicate file:

```
RMVM FILE(YEAR97) MBR(*ALL)
RMVM FILE(YEAR96) MBR(*ALL)
```

Add new members with the same name as the file:

```
ADDPFM FILE(YEAR97) MBR(YEAR97)
ADDPFM FILE(YEAR96) MBR(YEAR96)
```

The offline files should now get restored to the AS/400, iSeries or System i.

Case 1: System/36 MAPICS SA ITEMSM files

Create a work library for restoring the files:

```
CRTLIB LIB(YRSLIB)
```

Assume you have the ITEMSM file for 1997 on a diskette. You saved it under the file name YR97. The ITEMSM file for 1996 is also on a diskette, and its file name is YR96. In this case, you would do the following:

```
RSTS36F TOFILE(YR97) TOLIB(YRSLIB) DEV(device name)
FROMLABEL(M.YR97)  )

CPYF FROMFILE(YRSLIB/YR97) TOFILE(AMFLIB/YEAR97) MBROPT(*ADD)
FMTOPT(*MAP *DROP)  )

RSTS36F TOFILE(YR96) TOLIB(AMFLIB) DEV(device name)
FROMLABEL(M.YR96)  )

CPYF FROMFILE(YRSLIB/YR96) TOFILE(AMFLIB/YEAR96) MBROPT(*ADD)
FMTOPT(*MAP *DROP)
```

Delete the work library:

```
DLTLIB LIB(YRSLIB)
```

Case 2: System/38 MAPICS SA ITEMSM files.

Create a work library for restoring the files:

```
CRTLIB LIB(YRSLIB)
```

Assume you have the ITEMSM file for 1997 on a diskette. You saved it under the file name YR97. The ITEMSM file for 1996 is also on a diskette, and its file name is YR96. In this case, you would do the following:

```
RSTOBJ OBJ(YR97) SAVLIB(AMFLIB) OBJTYPE(*FILE) DEV(device name) RSTLIB(YRSLIB)

CPYF FROMFILE(YRSLIB/YR97) TOFILE(AMFLIB/YEAR97) MBROPT(*ADD) FMTOPT(*MAP *DROP)

RSTOBJ OBJ(YR96) SAVLIB(AMFLIB) OBJTYPE(*FILE) DEV(device name) RSTLIB(YRSLIB)

CPYF FROMFILE(YRSLIB/YR96) TOFILE(AMFLIB/YEAR96) MBROPT(*ADD) FMTOPT(*MAP *DROP)
```

Delete the work library:

```
DLTLIB LIB(YRSLIB)
```

If you do not have the Item Summary files saved, you will need to provide the demand history data using the Item Summary file maintenance option provided by FCST.

Case 3: MAPICS SA Not Installed

In this case, you would supply item summary data for 1996 and 1997 using the Item Summary file maintenance option provided by FCST. If you have item summary data in printed form, option 7 on menu AM2M10 can be used to create the required data files.

Note: After completing this step, you should print the Item Summary Data Print (AM237) and review the report for negative quantities (identified by asterisks under the year column). When building the Demand History file (AM2M50/1), any item which has a negative quantity for a period, that period demand will be changed to zero. Any item which has a zero annual demand, after negative values are adjusted to zero, will be rejected.

Case 4: User-created History files

In this case, the item summary data for years 1997 and 1996 will be created through a user program. Create the YEAR97 and YEAR96 files as specified earlier in this step. The data in the files must have no negatives in any period. The sum of all thirteen periods must not add up to zero for an

item. If the item's demand is zero for the year, do not include the record in the file. If the thirteenth period is not being used because you are tailored for twelve periods, the thirteenth period still must be initialized to zero.

Step 4. Select Option 1, Demand History Extract and Update, from the Seasonal Update menu (AM2M50). A new display, Item History Selection (AM280) appears. The years of history you selected during installation appears on the display. Type the number of years you want to extract from XA and the number of years you want to extract from user files. Press **Enter**. The item summary files are created and the demand history file is loaded.

After implementation, you may delete the files that were restored.

Step 5. At this point you can alter the Demand History file you built in Step 4. You can assign seasonal group profiles to individual items, or exclude items from seasonality calculations.

Step 6. This calculates new item and group seasonal profiles based on the data you set up in Steps 3 and 5.

Step 7. Self-explanatory.

Step 8. Review the seasonal group profiles printed out in Step 7. For assistance in doing this, refer to Chapter 8 "Report descriptions". If your groups require adjustment, repeat Steps 3, 5, 6, and 7 as necessary.

Step 9. This step copies your Demand History file from disk to offline media. You must have the offline media initialized with Volume ID DEMHIS in order to do this. The Demand History file is deleted from disk at this point, so it is a good idea to make a second copy of your DEMHIS offline media and save one of them off site to insure you don't lose this valuable data. This step also removes the members from ITSMXX since they are no longer needed.

Step 10. This action allows you to modify the seasonal coefficients calculated for your seasonal profiles in Steps 3, 5, and 6.

Note: Modifying seasonal coefficients can be done at any time during the year.

Step 11. Now you can set up the life cycle profiles which control how Forecasting projects the data for years 2 and 3. See Appendix B "Extended horizon projection methodology" for more information on defining life cycles. Use the PF-02 form to collect your life cycle coefficient data. A blank form is included in Chapter 9 "Forms".

Note: Defining new life cycles and modifying life cycle coefficients can be done at any time during the year.

Step 12. Use this step to efficiently maintain large numbers of items in your Forecast Master file.

Step 13. Where selective Forecast Master maintenance is required, use this step.

Step 14. Self-explanatory.

Step 15. This sets up the date which prints on the period reports generated by Forecasting. If you fail to do this, you may be confused when you try to analyze your reports.

Step 16. You must do this in order to establish demand data for the past period of the current year.

Case 1: System/36 MAPICS COM MTHACT file.

Let's assume you have the MTHACT file for January on a diskette. You saved it under the file name MTHJAN. In this case, you would do the following to provide the FORACT file on disk:

```
RSTS36F TOFILE(MTHJAN) TOLIB(AMFLIB) DEV (device name)
FROMLABEL(MTHJAN)

CPYF FROMFILE(AMFLIB/MTHJAN) TOFILE(AMFLIB/FORACT)

DLTF FILE(AMFLIB/MTHJAN)
```

Case 2: System/38 MAPICS COM MTHACT file.

Assume you have the MTHACT file for January on a diskette. You saved it under the file name MTHJAN.

If you do not have the Monthly Activity file saved, you will need to provide the period demand data, using the Forecast Activity maintenance option provided by FCST. Get the record layout information using the *CAS User's Guide*, menu AMZM20, options 4 and 5.

```
RSTOBJ TOFILE(MTHJAN) TOLIB(AMFLIB) DEV (device name)
FROMLABEL(MTHJAN)

CPYF FROMFILE(AMFLIB/MTHJAN) TOFILE(AMFLIB/FORACT)

DLTF FILE(AMFLIB/MTHJAN)
```

Case 3: MAPICS COM Not Installed.

In this case, you would supply period demand data for January, using the Forecast Activity file maintenance option provided by FCST. If you have period demand data in printed form, the menu/option specified can be used to create the required data file.

Case 4: User-created Forecast Activity file

In this case, the period demand data for January is created through a user program. The file must be the FORACT file in AMFLIBy with a member FORACT. The records must have item number, warehouse, order quantity, and promise/request date. All other fields may be blank or zero for numeric fields. If more than one month is involved in the update, a separate file for each month must be provided.

Note: If the Forecasting software has been installed for several months but not used, the FORACT file may contain several months' of data. COM period closes add to the file as soon as the Forecasting software is loaded and COM is tailored for booking records.

Step 17. This step takes the file you provided in the previous step, and prepares the demand data for processing.

Step 18. This step insures that Forecasting is in step with Inventory Management (IM). There must be a Forecast Master record for each Master Level Item (MLI) defined in IM.

Step 19. Self-explanatory.

Step 20. You may want to print and review the Forecast Exception Reports for use in Steps 22 and 23.

Step 21. Use this step if you are dissatisfied with the forecasts produced by Step 19. This step allows you to efficiently override forecasts for large numbers of items in your Forecast Master file.

Step 22. Use this step if you are dissatisfied with the forecasts produced by Step 19. This step allows you to selectively override forecasts for items in your Forecast Master file.

Step 23. Here the reorder points and safety stock levels are calculated and stored in the Forecast Master file.

Step 24. Self-explanatory.

Step 25. If you are doing projections for years 2 and 3, you may want to print and review these projection reports for use in the next step.

Step 26. Use this step if you are dissatisfied with the projections produced by Step 19. This step allows you to selectively override projections for items in your Forecast Master file.

Step 27. If you are interfacing with MRP, this step uses the forecast control maintenance function to set up the time fence factors that affect how Forecasting updates requirements in MRP. See “Loading the forecast to the master schedule” on page 2-20, and Chapter 3 “Inquiry and File Maintenance” for more information on this step.

Step 28. This is where the forecast data is passed to MRP and MPSP, and the reorder points and safety stock levels are passed to IM, if tailored.

Step 29. If you have another past period to process, return to Step 15 and type in the new Forecast Update date for that period as the first step in processing the data for that period. See “Revision of effective date” on page 2-12 for more information on effective dates.

Summary of features and methodology in Forecasting

This subsection describes the basic features and statistical methods in the FCST application. Appendix A “Statistical forecasting methodology” describes in detail the following features and statistical methodologies:

- Forecast methodology
- Description of FCST’s forecasting technique
- Sensitivity of the forecast model
- Mean Absolute Deviation
- Coefficient of variation
- Inventory control theory
- Inventory control methodology
- Tracking signal
- Tracking history
- Demand filter
- Trend
- Monitor forecast model
- Lumpy demand
- Intelligence history
- Item seasonality
- Group seasonality.

Forecast methodology

The FCST application forecast methodology is an adaptive technique called experiential roughing. Adaptive techniques are based upon the premise that the best indication of the short term future is reflected in the most recent past.

Description of FCST's forecasting technique

The methodology used to develop a forecast is based upon two different operational modes: the normal mode and the exception mode. The normal mode is operative as long as forecast error can be attributed to the lack of accuracy in the seasonal coefficient. Once FCST determines that the demand pattern changed significantly, a shift is made to the exception mode of forecasting. Whenever the exception mode is activated, extraordinary action is taken to bring the forecast back into line with the actual demand.

The exception mode is triggered when one of the following tests fails using user-defined constraints (K factors):

- Forecast error is too large
- Cumulative forecast error is too large
- Forecast is wrong in the same direction too many times.

Sensitivity of the forecast model

The frequency of invocation of the exception mode is related to the sensitivity of the forecast model. The sensitivity of the forecast model can be adjusted on an item-by-item basis through changes in any of the model's K factors (namely K1, K2, K3). K1 and K3 are the user-defined constraints, and K2 controls the amount of extraordinary action.

Mean Absolute Deviation (MAD)

The mean absolute deviation (MAD) is a measurement of an item's demand fluctuation. The MAD measures the variation around the mean (average). The larger the MAD for an item the greater the demand fluctuates; conversely, the smaller the MAD the less the demand fluctuates. Within the FCST application, the MAD is used in two calculations. One is in setting control limits on the forecasts. The other is in setting inventory safety stocks.

Coefficient of variation

The FCST application uses the coefficient of variation as a relative performance measure. The coefficient of variation is a measurement of item demand fluctuations and is based on the actual forecast errors. By definition, the coefficient of variation is directly related to an item's MAD.

Inventory control theory

Whenever demand is above average, the safety stock, which is the reserve portion of the inventory, provides insurance against a stockout. The level set for the safety stock greatly affects the frequency of stockouts, since (everything else remaining the same) the higher the safety stock, the less frequent the shortages and the better the quality of customer service, and vice versa. However, the larger the safety stock, the higher the carrying costs associated with the inventory, and the higher the cost incurred in maintaining the quality of service to customers. Thus, in establishing safety stocks, you must achieve a balance between two opposing costs: the cost of lost sales (including the cost of operations caused by stockouts), and the cost of excess inventory needed to meet unexpected demand.

Inventory control methodology

The FCST inventory parameter calculations are based on the latest forecast information. The calculations are based on the assumption that the error in the forecasted demand during a lead time is normally distributed. FCST calculates the reorder point using the forecasted demand over the lead time plus safety stock.

Tracking signal

Forecasted demand seldom, if ever, coincides with actual demand. When FCST finds repeated use of exception mode, it will activate a tracking signal and place the item on the Forecast Exception Report. The tracking signal notifies you when a revision to the forecast may be recommended.

Tracking history

The tracking history is comprised of one-digit elements that correspond to a reporting period in the year. Each element identifies tracking signals, demand filtering, and overriding actions taken by the forecast coordinator.

Demand filter

The FCST application uses a demand filter to detect reported demand values that differ too much from forecasted demand. This condition can occur for a number of reasons, some of which are:

- Clerical errors
- Promotions that were not accounted for in the system
- Unusual “one-time” occurrences
- A sudden, large change in the actual demand pattern.

Trend

Demand history may exhibit a consistent pattern of increasing or decreasing volume, which is commonly referred to as a trend. Because of the difficulty in identifying trends from random fluctuations when making short-term forecasts, the forecast model is designed so that it is not necessary to predict trends. Instead, the forecast model quickly detects when a trend develops and compensates for this condition.

The forecast coordinator can specify conditional recognition of trend by assigning a trend code of 1 to an item. In this instance, FCST determines if there is a statistically significant linear trend, and, if so, takes the trend into account. FCST defaults to a trend code of 0 for new items.

FCST is also designed to monitor trends in historical data. Recognition of trend in the forecasts produced by FCST is provided only when a historical trend is considered statistically significant at a 99% confidence level. When a statistically significant trend is detected, the trend value is applied to the period forecasts generated by FCST. Once trend is detected and applied to the period forecasts, the period forecasts will not crossfoot to the current annual forecast.

Note: The trend code can be changed on an item basis or on a mass basis.

Monitor forecast model

Since the forecast coordinator has complete freedom to override any of the forecasts developed by the FCST application, it is quite possible for the reliability of some forecasts to be adversely affected by the revisions. To guard against this event, FCST uses two forecast models, an operational model and a monitor model. The monitor model cannot be overridden by the forecast coordinator.

Lumpy demand

In lieu of reporting demand for the current period to the forecast model, the forecast coordinator has the option of reporting the total demand for two or more periods. If the volume of demand is low, with extreme variations from one period to the next, the forecast coordinator can specify that multiple periods of demand be reported to the forecast model.

Intelligence history

The intelligence history is comprised of one-digit elements which correspond to a reporting period in the year. Each element identifies the annual forecast override performance of the forecast coordinator for the reporting period.

Item seasonality

FCST uses a very effective technique to calculate item seasonal coefficients. It is the ratio to moving average technique. Up to six years of demand history for each item and item/warehouse is stored and all of the demand history is used to calculate seasonal coefficients for the item. This technique involves creating a series of one-year moving averages for the historical data. These averages are then matched with individual demand history periods. The ratio of the demand in the historical period to the centered moving averages is then calculated. This calculation results in a series of coefficients which are averaged across the years of historical data and adjusted to sum to one.

FCST creates two statistics relating to item seasonality: (1) the mean absolute deviation (MAD) of the demand history and (2) the item ratio. The mean absolute deviation is the comparison of the item seasonal pattern to a nonseasonal (linear trend line) pattern. The item seasonal MAD is divided into the nonseasonal MAD to obtain the item ratio. The size of this ratio relative to the item ratio specified by the forecast coordinator determines whether FCST considers the item seasonal and whether it is used in the group seasonal calculation. The FCST application also identifies peaks in the item seasonal pattern and displays the period where the peak occurs. The identification of peaks can be very helpful in reviewing the results of group seasonal calculations.

Group seasonality

FCST requires the forecast coordinator to specify seasonal groups (999 may be defined). Group seasonality works well because the randomness (noise), which is present in the item demand history and related item seasonal coefficients, tends to be dampened when the item seasonal patterns are grouped. This procedure generally results in a clearer picture of seasonal patterns.

Note: One item only may be assigned to a group which results in the use of the item seasonal coefficient for that item.

FCST allows the forecast coordinator to subdivide a seasonal group by defining volume (annual demand) boundaries. These subgroups are termed volume subgroups, and each subgroup is assigned a volume code beginning with zero. Up to six volume subgroups may be defined.

The group seasonal coefficients calculated by FCST are the result of a simple-weighted-average method. Item seasonal coefficients for selected group items within the volume subgroup are weighted based upon the most recent year of annual demand. Only items whose item ratio is greater than the item ratio specified by the forecast coordinator are used in the group seasonal coefficient calculations. The forecast coordinator may also prevent specific items from being used in the calculations. Once the group seasonal coefficients are developed, the MAD of each item's demand history to the group seasonal pattern is measured. The group seasonal ratio for the item is calculated by dividing the seasonal group MAD into the nonseasonal MAD. The size of this ratio relative to the group ratio specified by the forecast coordinator determines the overall FCST recommendation of the item's seasonality. This recommendation is used for information purposes.

FCST calculates a set of reliability coefficients for each volume subgroup in the seasonal group. These coefficients are important to the sensitivity of the forecast model. The coefficients are generally high for the first volume subgroup (lower volume items) and decrease across subsequent ranges. The reliability coefficients (group reliability coefficients) are the mean absolute deviation between the item seasonal coefficients and the group seasonal coefficients for all items within the seasonal group and volume subgroup.

Managing the period update

This subsection describes the general steps that should be followed during the period update of forecasts and projections; and the transfer of FCST information to the master schedule.

Revision of effective date

The effective date on a printed report helps you keep track of the valid date of the report. The FCST application allows you to print the effective date on all printed reports. If this feature of FCST is used, the first step in the period update process is to revise the effective date field in the forecast control record to reflect the last day in the demand reporting period that just ended.

Note: If your reporting frequency is 13 times per year, it is recommended that you use this option to keep track of the related reporting period. If the forecast effective date is available, FCST uses it to define the period end for the current versus future demand test. If the forecast effective date is not available, FCST uses a 28 day counter starting with 1/1/** (where ** is the current year) to determine the period end.

Period demand data capture

The first major step in the period update process is extracting period demand data from the Forecast Activity (FORACT) file.

Note: If you are using the COM application, the COM Tailoring questionnaire question concerning whether the booking records should be placed in the Monthly Activity (MTHACTV) file must be answered with Y (yes). During the COM monthly close, the MTHACTV file records are copied into the Forecast Activity (FORACT) file. Forecasting then uses the booking records during the Demand Period capture (AM2M20/1). If you are using another order entry system, FCST requires that your booking records be placed in the Forecast Activity file. If you are not using an order entry system, FCST requires that you create item period demand data records and place them into the Forecast Activity file.

Forecast Master reconciliation

Before you run the Forecast Calculation option, the Forecast Master file should be updated to reflect forecasted items that are added to or deleted from the product line. Use the Forecast Master Reconciliation option, which compares the contents of the Forecast Master file to the Item Master file for the purpose of automatically maintaining the Forecast Master file. This option adds records to, updates records in, and deletes records from the Forecast Master file based on the forecasting code, assigning default values for the various forecast parameters. Because the FCST application is installed with a variety of forecast sensitivity and related factors assigned on a value class and/or warehouse level, it is sometimes necessary to perform some additional maintenance on items added to the Forecast Master file. This maintenance can be performed using the Mass Maintenance option on the Inquiry and File Maintenance menu. Item maintenance permits updating the parameters to the specific records that have been added to the Forecast Master file. The mass maintenance function within FCST can involve lengthy computer runs if the Forecast Master file is large. Therefore, it is sometimes desirable to revise the parameters for new items on an individual basis if the number of new items is relatively small.

Notes:

1. A possible modification to the FCST application would be to add the capability to initialize new items with the appropriate forecast parameter values within the Forecast Master Reconciliation option itself. If standardized values can be assigned to new items through this routine, it could eliminate the item or mass maintenance step in the period update process.

2. You might consider varying the value of the forecast parameters across the various value classes. This greatly assists the forecast coordinator in managing the FCST application through controlling the level of exception reporting and, consequently, the amount of review time that must be spent. Varying parameters by value classes also provides an appropriate level of forecast model sensitivity for each general grouping of items. The following table defines suggested parameter settings for the typical “ABC” range of value class.

Value Class	K1	K2	K3	Filter Level	Tracking Level	Trend
A	2.0	1.75	2.00	3.5	5	1
B	3.0*	1.50*	2.50*	4.5*	3*	1
C	4.0	1.25	3.00	6.5	1	0*
D	6.0	1.25	4.00	8.5	1	0*

Note: * Denotes default values that are assigned when new records are added.

Suggested forecast parameters by value class

These forecast parameters are helpful in designing the inventory limits for your own system. The exception testing constants (K1, K2, and K3) help keep the forecast on target. They are used to test for unacceptably large errors or forecasts that remain above or below actual demand for too long. K1 indicates the greatest number of consecutive periods in which the forecast error can have the same sign before causing an exception. The acceptable ranges are 2.0 to 6.9. K3 is used to test the magnitude of the forecast error. It represents the maximum forecast error (Computed as K3 x MAD) allowed before shifting to exception mode processing. The acceptable range is 1.25 to 5.00.

When the forecast fails these tests, FCST changes to exception mode processing. K2 is the exception mode adjustment factor. During exception mode processing, this factor exponentially corrects the forecast error. The acceptable range is 1.25 to 2.00.

For example, the chart shows that an item in value class A might use 2.00 for K3 to calculate and determine whether the exception mode of the FCST starts. If the exception mode is in effect, the FCST application uses K2, in this case, 1.75, to set the size of the adjustment factor in changing the annual forecast. The filter level shows by what multiple of MAD the actual demand must differ from the forecasted demand to cause the demand to be filtered. The filtering feature compares the actual demand against the calculated upper and lower filter level limits. Tracking levels determine whether the item should be flagged on the Forecast Exception Report. Finally, the chart shows a trend code. This code defines an optional feature. In this case, the trend of 1 shows that FCST tracks trend for the item in value class A.

The Mass Maintenance option can be used to great advantage in helping to maintain the inventory parameter data that is required within the FCST application. This data relates to the calculation of safety stocks, and involves the setting of cumulative material lead time, service level and limitation of the maximum amount of safety stock for a given period of time (in weeks). These parameters are often appropriately set by warehouse when using the FCST application to control a distribution network. The service code within FCST may also be maintained using the Mass Maintenance option from the Inquiry and File Maintenance menu. The service code specifies the definition of service level to be used when calculating safety stock. Service code value 1 (where service is defined as the percent of replenishment cycles that are completed without a stockout) is most appropriate for distribution warehouses. Service code value 2 (percent of demand satisfied) is most appropriate for central stocking or manufacturing warehouses.

Item substitution (or item number change)

In many industries, it is common to revise item numbers or to introduce a new item that functionally supersedes an existing item. In such cases, it is highly desirable to retain the forecast and historical data for the old item number and simply revise the item identification number. FCST has the capability to assign a new item number and apply the existing forecast and historical data to it. This option is accomplished by using the Inquiry and File Maintenance option on the Main Menu.

In order to transfer the demand data, the following actions must be done prior to your next forecast reconciliation. Create the item master for the new item with an item balance record in the appropriate warehouses. The new item must be coded with a forecasting code of 1, 2, or 3. Forecast maintenance is used to transfer the demand data from the old item to the new item. During the maintenance, the old item is deleted from the Forecast Master file and the new item added. If forecasting of the old

item is to be stopped, change the forecasting code to 0 (zero). Keeping the forecasting code of 1, 2, or 3 on the old item will recreate the Forecast Master as a new item during the next reconciliation.

Period update calculations

A major function of the FCST application is to maintain item forecasts on a periodic basis. These forecasts are updated each reporting cycle by initiating the Forecast Calculation option on the Period Update menu. This should be done as soon as practical after the following are completed:

- The Period Demand Data Capture option is complete
- The Forecast Master Reconciliation option is done
- Any additional file maintenance is completed.

The Forecast Calculation option retains the period demand data extracted for the most recent period and appropriately updates the forecast for each item.

The Forecast Calculation option generates a Control Totals Report that should be used to reconcile to order entry booking control totals. The control total fields “Unfiltered Demand” (units) and “Unfiltered Cost” provide unit and cost hash totals used in the reconciliation. In addition, any nonzero demand data exceptions that are listed on the Demand Data Edit Diagnostics Report are reconciling items because the exception records are not included in the control totals.

The Forecast Calculation option also generates control totals for several other exception conditions relative to the period update process. Of these conditions, missing records within the FCST application (for example, status code E, extraneous demand reports) is relatively serious and the reason for such exceptions should be investigated immediately. Extraneous records indicate that demand is being submitted to FCST from the COM application, but the corresponding forecast master records have not yet been added. Of course, the addition of such records is the function of the forecast extraction routine. However, improper entry of the item’s forecasting code is one possible reason for items not to be included in the Forecast Master file by the Forecast Master Reconciliation option. Each missing exception should be followed by a review of the status of the item number and the item balance records within the IM application.

Finally, if you answered the questionnaire to calculate the projections for years 2 and 3, it is at this point the period projections are generated.

Reviewing forecast exceptions

Before the forecast is used, the forecast coordinator should review forecast exceptions in detail and provide overrides as appropriate. A review of forecast exceptions is performed by generating the Forecast Exception Report, which shows all items that FCST indicates should be reviewed.

Note: You might consider generating this report by value class so that the most important items, normally “A” items, can be reviewed first. The Forecast Exception Report can be generated using the Forecast Reporting menu. Generally, it is suggested that only exceptions for the company or system level records be reviewed by the forecast coordinator. Therefore, it is necessary to perform forecast control record maintenance before generating the Forecast Exception Report and to specify that forecast data for warehouses should not be shown.

The forecast coordinator is responsible for review of the forecast information on the Forecast Exception Report each reporting period. Based on the evaluation of the information in the report and marketing data, overrides are made to the annual and period forecasts.

In a relatively short time, the forecast model generally corrects itself in response to shifts in volume. The FCST application accomplishes this by activating the exception mode repeatedly at period updates. However, there are some conditions for which the forecast coordinator should consider overriding the current annual forecast. Among these are:

- Discontinuity in the demand pattern
- Tracking signal
- Filtered demand
- Intelligence history
- Promotions.

Discontinuity in the demand pattern

When there is a significant shift in the demand level, and the change is expected to continue, the forecast coordinator should consider an override to the current annual forecast. This accomplishes at once what it would take the forecast model several reporting periods to accomplish.

Tracking level

A tracking signal is a monitoring device to indicate when a forecast may require revision. The automatic monitoring of each item is accomplished by testing against a limit called the tracking-signal-trigger-limit (tracking level). Tracking level tells FCST how many prior periods of tracking history to examine for additional exceptions. The greater the number of periods examined, the greater the chance that another exception has occurred. When the tracking signal is activated, the item is flagged by a code 1, 3, or 4 tracking history exception code on the Forecast Exception Report. In addition, each item for which the tracking signal is active or whose demand is filtered, is identified in the item's tracking history exception code on the Forecast Exception Report.

The various values of the tracking history exception codes are shown below.

Note: Codes 5 through 9 show the same conditions as do codes 0 through 4, and also designate overrides to the annual forecast by the forecast coordinator.

0 Forecast satisfactory per forecast model
1 Demand filtered before being reported to forecast model
2 Uninitialized periods indicating no demand reported
3 Annual forecast may require revision; forecast model not tracking well
4 Code 1 and code 3 conditions exist concurrently
5 Same as code 0; annual forecast revised
6 Same as code 1; annual forecast revised
7 Same as code 2; annual forecast revised
8 Same as code 3; annual forecast revised
9 Same as code 4; annual forecast revised.

FCST automatically updates these 1-digit elements.

Tracking history exception codes. When the tracking signal is active, the forecast model is asking for help to respond to an unusual condition. The forecast coordinator

should identify the reason for the poor forecast performance and consider override action. However, if the condition is transient and is not expected to continue into the next or succeeding period, override action should not be taken. If the condition is transient, but is expected to continue for another period or two, period forecasts should be revised for the affected periods. If the condition is expected to continue indefinitely, the annual forecast should be revised.

A complete record of tracking history exception code over the past year is shown on the Forecast Master Inquiry/Maintenance display (AM2011). Frequent 1, 3, or 4 tracking history exception codes in an item's recent history show a condition that probably will continue for a long time. Also, recent tracking history exception codes for an item comprised almost exclusively of 1s, 3s, or 4s is strong evidence that (1) the seasonal coefficients or (2) the forecast model parameters are inappropriate, or (3) that past history has no predictive value.

Filtered demand

FCST compares the item's actual demand for the current period against both a calculated upper and lower limit called the filter levels. On the Forecast Exception Report, each item that penetrates either of its filter levels is identified by a tracking history exception code 1 or 4 and by five lines of data instead of the usual three.

Whenever the demand for an item is filtered, the forecast coordinator uses the same decision process as already described for dealing with tracking level triggers. If the coordinator decides that an exceptionally large change in the demand is likely to continue, the coordinator overrides the forecast.

Intelligence history

The forecast coordinator has complete freedom to override any forecasts that FCST develops. A method of review is provided to determine whether the forecast coordinator's revisions are adversely affecting the reliability of the forecasts. The FCST application uses two forecast models to make this determination, a primary operational model and a monitor model. The annual forecast the monitor model develops appears on the Forecast Master Inquiry/Maintenance display (AM2011). The forecast coordinator cannot override this annual forecast. At the end of each period, the operational model annual forecast for that period is compared with the monitor model annual forecast. The intelligence history on the Forecast Master Inquiry/Maintenance display (AM2011) shows when the monitor model annual forecast is more accurate than the operational model annual forecast. See Appendix A "Statistical forecasting methodology" for further discussion of intelligence history.

Promotions

Promotions, which tend to cause drastic deviations from normal demand patterns, commonly occur for a number of reasons. A promotion can be national in scope, through magazines, and TV and radio advertisements. A sales contest for the sales personnel can have a promotional effect. Management actions such as circulating a "push-these-items" list or raising commission rates on certain goods can have a promotional effect. Lowering the price of an item may also produce a similar effect.

A promotion usually has three effects on item demand:

- A promotion increases demand for the item during the promotion period (often by three times or more).

- In the period following a promotion, demand for the promoted items may fail, and in some cases, returns can even produce a negative net demand.
- During the promotion, the demand for other items may be affected. For example, a promotion emphasizing a brand name may increase demand for other items the store carries, since more customers shop the store because of the promotion. Also, items that are essentially the same as the product being promoted, but carrying a different brand name, may lose demand during the promotion period.

The difficulty of estimating the impact of a promotion on an item's demand comes from the intensity of many combined factors. The manner in which the sales force supports the promotion has a definite impact on demand. If advertising is part of the promotion, its effectiveness is difficult to measure beforehand. The way in which promoted items are packaged may affect the demand during the promotion. There are many other factors that could be included in a formula to predict the effect of a promotion. However, there is usually not enough detailed promotion history for an analysis to be made, a formula developed, and then, tested.

In view of the above, the FCST application is designed so the period forecasts of promotional items can be controlled. When a promotion is planned, the Sales Department should promptly notify the forecast coordinator. It is essential that the notification specify the duration of the promotion. When he receives the notification, the forecast coordinator manually adjusts the relevant period forecasts.

Period forecasts overridden for promotions are denoted on the Forecast Detail and Forecast Exception Report by an asterisk. Period forecasts overridden for promotions are denoted on the Forecast Master Inquiry/Maintenance display (AM2011) by an underscore.

It is desirable to develop a data base to use for promotion analysis and for evaluation of the reliability of the estimated demand that the sales personnel provide. Therefore, it is recommended that the forecast coordinator maintain a record of the history of each promotion.

Whenever the forecast coordinator overrides a period forecast, FCST increases the promotion history count for the relevant period by 1. Since the promotion history for each item is displayed on the Forecast Master Inquiry/Maintenance display, the forecast coordinator can determine whether a promotion for a particular item reoccurs at approximately the same time each year. If this is so, the impact of the promotion may be reflected in the seasonal coefficients for that item. Accordingly, no adjustment to the period forecast may be necessary. An example of this is when an annual trade show causes a promotional effect on demand.

Following the review of the forecast exceptions, the forecast coordinator uses the Forecast Master Update or Mass Maintenance option on the Inquiry and File Maintenance menu (AM2M10) to incorporate revisions and overrides to forecasts as required. The item update function can also be used to simulate the results of revisions to the annual forecast and its impact on each period in the upcoming year.

Forecast reporting

The FCST forecast reports for period end should be generated once the review of forecast exceptions and the input of forecast overrides is complete. This process involves initiating a number of standard reports that should be generated at each reporting period end.

A suggested list of reports is contained in the following table.

Report Description	Warehouse Data	WH Amt or %	Value Class Selection	Functional Area
Exception by Value Class	No	–	No	Forecast Coordinator to prepare forecast overrides
Summaries by Product Line	No	–	–	Top Management and Marketing
Summaries by Value Class	Yes	Amount	No	Materials and Distribution Management
Detail by Value Class	Yes	Amount	A Items	Forecast Coordinator
Detail by Value Class	Yes	Percent	A Items	Distribution Analyst

Note: A revision to the treatment of warehouse data on the forecast report is performed by updating the forecast control record within the FCST application.

Calculation of inventory parameters

The FCST application maintains safety stock and reorder point inventory control parameters for each item. These parameters should be calculated whenever the forecasts have been updated by choosing the Inventory Parameter Calculation option on the Period Update menu (AM2M20). However, if you choose not to perform the inventory parameter calculation, the previous (the last time the option was performed) inventory control parameters are reported to the master schedule.

The calculation of inventory parameters results in a Control Totals Report that displays the amount of safety stock, in standard cost, by warehouse necessary to maintain the level of service requested. The data contained in this report is useful in planning and monitoring overall inventory levels.

Reviewing projections

The FCST application shows the period projection in either 12 or 13 periods for the second and third year. Each optional second and third year period projection is based upon the previous quarterly projection. An index is used to multiply and calculate the next quarterly projection. In order to use the extended horizon projection methodology of the FCST application, you need to provide life cycle curves for each item or group of items. You can refer to Appendix B of *Planning and Installing XA* and Appendix D “Coordinating the planning calendar” of this manual for more details.

Projection reporting

The FCST projection reports should be reviewed at the same time as the FCST forecast reports. You can generate the following standard reports:

- Summaries by Value Class
- Summaries by Product Line
- Summaries by Life Cycle Profile Code
- Detail by Value Class
- Detail by Product Line
- Detail by Life Cycle Profile Code.

The Value Class reports show the “ABC” order of the items. Product Line reports may be helpful in looking at the overall business plan for a product line. The Life Cycle reports allow you to review the items in a particular Life Cycle Profile.

Loading the forecast to the master schedule

The final step in the period update process is loading the period forecasts and inventory control parameters into the master schedule. This step is important because the interface to the master schedule actually updates and generates the gross requirements. This action updates the MRP Requirements (REQMTS) and the FCST Demand Interface (DMDIFF) files. Changes to forecasted items will not be reflected in these files until the load is run. In addition, the safety stock and reorder point quantities are updated in the Item Balance (ITEMBL) file.

FCST is able to handle forecasts from multiple planning and demand warehouses. The load to master schedule will load forecasts into the planning warehouses from the forecast masters of the planning warehouse and any demand warehouses defined to the planning warehouse. The planning and demand warehouse forecasts are added together to be passed to the planning files. To allow for the proper loading of forecasts, it is essential that warehouses be coded as selling warehouses, if independent demand is entered in the warehouse. MPSP items will load the forecast to the Demand Interface (DMDIFF) file. MRP items will load the forecast to the Requirements (REQMTS) file.

The forecasting code controls the retaining of the forecast masters for an item and the loading of forecasts and requirements to the planning files.

0 FCST will not maintain a forecast master for the item

1 Forecast master is maintained but not loaded to either the Demand Interface file or the Requirements file

2 Forecast master is maintained. FCST loads to MRP and MPSP.

3 Forecast master is maintained. FCST loads to MRP and MPSP. Requirements loads to MRP.

The MRP load interface routine within FCST requires that the forecast coordinator specify the length in working days of three zones, namely, the frozen period, the firm period, and the free period. The FCST load interface treats each of these time zones in a distinct manner in terms of updating and loading forecast and requirements data. Coordination of the planning calendars used in FCST, MRP, and MPSP is discussed in Appendix D, “Coordinating the planning calendar”.

When MRP is installed but not interfaced to Forecasting, the Frozen Date is defined as the MRP Current Date. When MRP is not installed, the Frozen Date is defined as the System Date.

Note: If the CMTLT is defined for an item, the firm date is overridden for that item. The following table defines how the FCST application loads both forecast and requirements data during each of these time intervals.

Planning Interval	Gross Requirements Data	Forecast Data
Frozen Period	No Action	No Action
Firm Period	No Action	Update/Load
Free Period	Update/Load	Update/Load

Because master scheduling is normally a weekly activity, the FCST period (monthly or four-week) forecasts are converted to weekly requirements. Monthly forecasts are converted to weekly forecasts using the number of working days in each month. Therefore, each month is not treated in a precisely equal fashion but in a manner consistent with the normal characteristics of each month.

The FCST application uses a leveling calculation technique to weight the weekly forecasts. This week-to-week weighting smooths the sharp changes from period-to-period. This weighting method eliminates any severe gaps or breaks, providing a level, smooth planning horizon.

If you activate the FCST to MRP interface, the Forecast Load to Master Schedule option updates the MRP Requirements (REQMTS) file. For purposes of minimizing the impact on the data base, there are important limitations in the processing capabilities of this interface routine:

- Interval Boundaries. FCST calculates the ending date of the frozen, firm, and free planning intervals using the Shop Calendar (CALNDR) file and the MRP Current Date based on the length of each interval specified on the Forecast Control Inquiry/Maintenance display (AM2001). In specifying the length of the planning intervals, you must consider days that are designated as nonwork days (e.g., holiday, inventory, shutdown) in the shop calendar. This is the same philosophy used by the MRP application for the MRP dates. In addition, if MPSP is installed, FCST requires a planning horizon free date equal to the MPS cutoff date.
- Day of week. FCST updates requirements and forecast data in the appropriate planning intervals by matching the requirement date and source. Therefore, it is essential that the period forecast load day of week (for example, weekly requirements are generally due on Monday) remain consistent from one forecast load to the next. The day of week associated with the frozen period end (first calculated date on display AM2001) is the day of week used to update and load in the firm and free planning intervals.

  FCST compares its load day of the week with the tailored load day of the week. If the days are not the same, an error occurs that does not permit the forecast load.

  Warning: It is very important that you maintain consistency in the day of week you load the period forecast. An inconsistent day of week causes FCST to duplicate forecast and requirements data that overlaps successive forecast loads.
- Effective interval boundaries. If the calculated day of week date is not consistent with the frozen date period end day of week, FCST uses a date following the calculated firm date period end and free date period end.

  Note: FCST loads the DMDIFF file according to the date on the Forecast Load Diagnostics report (AM218). During system tailoring, you must have selected the option to load the DMDIFF file. You also indicated the number of years of forecast and projection data to be calculated and the number of period forecasts to convert to weekly forecasts.

The FCST application also loads the safety stock and reorder point for each warehouse to the corresponding item balance record. You must have answered the appropriate questions in the questionnaire, indicating that you want to load the Item Balance file.

Managing the seasonal update

This subsection describes the general steps that should be followed during the annual seasonal update and serves as a summary of the seasonal update process.

Defining seasonal groups and volume subgroups

A major effort in the implementation of the FCST application is defining appropriate seasonal groups and establishing workable volume subgroups. The estimated number of seasonal groups is a range from five to twenty. This range should be used as a general guideline for setting the number of seasonal groups. In general, seasonal groups should be large enough so that at least 100 items belong to a particular seasonal group. However, FCST allows as few as one item to comprise a seasonal group. Such an arrangement would be appropriate when an item has a unique seasonal pattern that would not be well represented by including this one item in another seasonal group. This could be particularly true of very important high volume items for which an adequate historical base exists.

Seasonal groups should be defined based upon the logical business and marketing characteristics of your products and product lines. The purpose of establishing seasonal groups is to identify period-to-period variations in the demand for a product that consistently occur on an annual basis. Seasonality in most environments is most closely related to the seasons of the year, which may affect the demand for various types of products. However, seasonality can also be established for business reasons, such as trade shows, promotional programs, and pre-announced changes in product pricing. Any of these factors might serve as a logical reason for a seasonal group within FCST.

FCST provides for dividing each seasonal group into volume subgroups. These volume subgroups result in the calculation of group seasonal coefficients (profiles) for each volume subgroup. In addition, reliability coefficients are calculated for each volume subgroup within a seasonal group. The division of seasonal groups into volume subgroups is important to FCST for two reasons. First, calculating group seasonal coefficients for individual volume subgroups provides a means for evaluating the internal consistency and validity of the seasonal group. This evaluation can be done by reviewing the seasonal patterns that result from the calculations in each volume subgroup. A valid seasonal group provides a pattern that is relatively consistent from one volume subgroup to the next. An inconsistent seasonal group provides inconsistent patterns from one volume subgroup to the next. Secondly, this review technique provides the forecast coordinator with a means of assessing the usefulness of the seasonal groups that have been established. The volume subgroups within seasonal groups are also important because the reliability coefficients that are associated with each volume subgroup are used to control the sensitivity of the forecast model for individual items. In general, the reliability coefficients are significantly larger for the low-volume subgroups within a seasonal group than those associated with the high-volume subgroups. This provides an automatic means for FCST to compensate for the response and stability needs of various items.

Notes:

1. If you use volume subgroups, you should always divide the seasonal group into at least two volume subgroups. The volume subgroup code starts at 0 and ends with 5, providing a total of six subgroup codes. Ideally, the 0 subgroup should contain the very low volume items. The second volume subgroup should contain all other items.

2. FCST allows for up to six volume subgroups within a seasonal group. When defining volume subgroups, it is important to provide for at least a reasonable number of items in each volume subgroup.

Revision of effective date

The effective date on a printed report helps you keep track of the valid date of the report. The FCST application allows you to print the seasonal update effective date on all printed reports. If this feature of FCST is used, the first step in the forecast update process is to revise the effective date field in the forecast control record to reflect the last day in the seasonal update period that just ended.

Note: If your reporting frequency is 13 times per year, it is recommended that you use this option to keep track of the related reporting period of a report.

Demand history extract and update

At the end of each calendar year, demand history data for the year must be extracted from the Forecast Master file and added to the Demand History file. At this time, FCST restored the Demand History file (from offline media) from the prior year for purposes of adding the new year of history that is now available. This process of adding history data also results in the creation of the seasonal parameters that are necessary to calculate new seasonal coefficients. This process is performed by replicating the seasonal parameters that were used in the prior year to develop the new group seasonal coefficients for each seasonal group and volume subgroup.

When implementing FCST, the Demand History Extract and Update option creates the Demand History file from Item Summary files. And, the seasonal parameters required by the FCST application must be manually created and individually entered.

Seasonal parameter maintenance

The seasonal parameter maintenance function of FCST provides a method for the forecast coordinator to define the volume subgroups within a seasonal group and to specify other key processing parameters that are used during the seasonal update process. A key seasonal parameter is the item ratio. The item ratio is the threshold level below which an individual item is not considered seasonal and is not used by FCST in the calculation of the group seasonal coefficients. The setting of this parameter is very important in controlling which items actually contribute to the group seasonal coefficients. The group ratio and the filter level parameters are useful in providing information to the forecast coordinator. The group ratio is used to indicate how well an item's demand history is represented by its group seasonal coefficients. The filter level defines the tolerance criteria for designating when modes (peaks) in the seasonal coefficients of individual items and groups are detected. The following table provides general guidance for the various seasonal parameters that are used in FCST.

Volume Subgroup Code	Item Ratio	Group Ratio	Filter Levels
0	1.0	1.1	.99
1	1.1	1.1	.75
2	1.3	1.1	.50
3	1.5	1.3	.50
4	1.6	1.4	.40
5	1.7	1.5	.30

This chart is a recommended list of the parameters for each volume subgroup. For example, if you use two volume subgroups, which would mean you would use 0 and 1, the following parameters are suggested, respectively: item ratio at 1.0 and 1.1; group ratio at 1.1 and 1.1; and filter level at .99 and .75. These settings mean that the items in volume subgroup 0 are not considered seasonal when the item ratio falls below 1.0. FCST uses the group ratio (1.1), to show how the demand history of an item is represented by its seasonal coefficients. And finally, the filter level of .99 defines the limit for designating when peaks in the seasonal coefficients of individual items and groups exist.

Because FCST provides the prior year seasonal parameters as a starting point when the seasonal update process begins, only minimal maintenance to seasonal parameters is required after the implementation year. The established seasonal parameters should be reviewed for their continued validity; and, as the FCST data base grows, consideration should be given to revising the item ratio.

Note: This revision should be done because the calculated item ratios tend to decrease as the number of years of demand history builds. Therefore, it is appropriate to progressively lower the item ratios in the higher-volume subgroups as the demand history data base increases. As a general guide, the item ratio should be lowered 0.1 for every two years of additional history data that are added to FCST. But, the lowest item ratio that should be used for higher volume subgroups is 1.3.

Item demand history maintenance

FCST allows you to exclude any demand history from being used in the seasonal calculations. A particular item's history can be excluded for a single year or for all years. This maintenance is performed by setting process codes in the Demand History file. This facility is generally used to exclude items whose demand history shows highly unusual or erratic behavior and results in a distortion of the group seasonal or reliability coefficients.

This feature of FCST is generally used heavily at implementation time to modify the demand history data base supplied to FCST. Often the initial data base is limited in its accuracy and must be carefully reviewed for exceptional entries. In subsequent years, the history data base is built and maintained by FCST and less use of this facility is required. However, each year the effects of the new year history should be reviewed and specific items or item/years of history should be appropriately excluded from the seasonal calculations.

Seasonal profile calculation

Once the new demand history is added and the seasonal parameters established, the seasonal coefficients can be calculated. This feature of FCST allows the forecast coordinator to specify that a single year of history or all years are used. It is often helpful to calculate seasonal coefficients using only the historical data from the most recent year. This provides a basis to compare the most recent year's seasonal patterns to those that were obtained using prior history. This type of analysis can aid in detecting changes in the seasonal behavior of demand.

Caution must be used when making this evaluation because use of a single year of history does not allow FCST to remove the effects of trend when calculating the seasonal coefficients. Therefore, in a situation where trend is a significant factor, using a single year of history may distort the seasonal coefficients.

Seasonal profile report

FCST generates seasonal profile listings that display the calculated seasonal coefficients for each volume subgroup in all seasonal groups. In addition, seasonal coefficients relating to individual items are displayed. The option that controls whether item seasonal coefficients are printed is one of the seasonal parameters that is established at the beginning of the seasonal update process. This parameter is termed the item print code. The item print code determines whether the volume subgroup data prints. It is generally recommended that the item print code be set to N (No) for volume subgroup 0 in each seasonal group. This setting limits the size of reports because these items are rarely reviewed in detail.

The starting point for reviewing the Seasonal Profile Report should be the graphical presentation of the group seasonal coefficients. The graphs provide rapid insight into the basic characteristics of the seasonal groups and immediately provide some assessment of the internal consistency of the seasonal coefficients that are generated for each volume subgroup. In general, there should be reasonable consistency among the volume subgroups. If there is not, the validity of the seasonal groups should be challenged and the groups revised. If it is not practical to establish seasonal groups in a manner that results in consistent coefficients, the forecast coordinator should use judgment to manually revise the group seasonal coefficients so that a logically acceptable seasonal pattern is established for the group and internal consistency among the volume subgroups is achieved.

In some cases, internal consistency results directly from the seasonal calculations, but there may be an exception period within a volume subgroup or a lower subgroup may exhibit erratic behavior. It may be necessary to review the item seasonal coefficients to identify particular items whose demand history is exceptional and may be causing a distortion in the group seasonal coefficients. This review can be done rapidly by identifying the particular period in which a group seasonal coefficient appears to be erratic and identifying the corresponding items that designated a mode (or peak) in the coefficients. These items can be rapidly located because the items are listed in sequence, grouping the items by the type of distribution (e.g., unimodal, bimodal, trimodal) and period of occurrence. The sequencing of the items makes it very easy to identify the items whose item seasonal coefficients have modes corresponding to the periods of erratic behavior in the group seasonal coefficients. Once erratic items are identified, they can be eliminated using the Item Demand History Maintenance display (AM2131), and the group seasonal coefficients can be recalculated.

Where a volume subgroup in total appears quite erratic and is not internally consistent with the other volume subgroups in the seasonal group, it usually is necessary to manually override that volume subgroup and force it to correspond with a higher-volume subgroup's seasonal coefficients. Such overrides can only be applied to the group seasonal coefficients after the entire seasonal update cycle is completed. These overrides are applied through the Seasonal Group Profile Inquiry/Maintenance display (AM2171).

Note: This display cannot be used with the Seasonal Group Profile (GRPTMP) file that is temporarily constructed for purposes of completing the seasonal update until the seasonal update process is completed and last year's seasonal group profiles, which are retained during this process, are deleted.

Once the review of the group seasonal coefficients is completed and a particular set of coefficients is established, the forecast coordinator should review the group reliability coefficients to ensure that they are appropriate for use in the forecasting process. FCST only calculates group reliability coefficients when ten or more items

are used in seasonal group calculations from the volume subgroup. This limitation exists to ensure reasonable statistical validity in the group reliability coefficient. If ten items are not used, FCST artificially generates the group reliability coefficients.

Therefore, for volume subgroups where less than ten items are used, it may be desirable to manually override the artificial group reliability coefficients that are generated by FCST.

The review of group reliability coefficients should be oriented toward establishing a reasonably consistent and increasing level of group reliability coefficients across the volume subgroups. The lowest group reliability coefficient should be associated with the highest volume subgroup and the group reliability coefficients should progressively increase across the volume subgroups. It is often necessary, especially for low-volume subgroups, to manually override the group reliability coefficients that are calculated to keep them at a reasonable and consistent level.

As with the overrides to seasonal group coefficients, group reliability coefficients can only be maintained after the entire seasonal update process is completed.

Conclusion of managing the seasonal update

Once the review and calculation of seasonal group coefficients is completed, FCST must be instructed to conclude the seasonal update process. This instruction causes the Demand History file to be saved on offline media (Vol ID DEMHIS) and deleted from the disk. This frees up the space that is temporarily used by having the Demand History file available for the seasonal update process. These files are not needed during the year because the Forecast Master file carries the most recent year of demand history. This processing step also causes the Seasonal Group Profile file that was used in the prior year for forecasting purposes to be deleted and replaced by the new Seasonal Group temporary file that was generated during the seasonal update process.

At this time, it is necessary to incorporate any overrides of the group seasonal coefficients or group reliability coefficients that are necessary. These overrides are performed using the Seasonal Group Profile Inquiry/Maintenance display (AM2171). These overrides can only be input to the new Seasonal Group Profile file after the above processing step occurs. If such overrides are supplied to the Seasonal Group Profile file before this step is completed, the overrides are applied to last year's Seasonal Group Profile file and are deleted as a result of the above step. If overrides to the seasonal group profile data are required, they should be applied as soon as practical, and before the next period update.

Warehouse seasonality

FCST provides for the use of warehouse demand history in the calculation of seasonal coefficients. The retention of such data and its use in seasonal calculations is highly recommended. Warehouse demand history should be retained for loading of forecasts to the planning applications. If separate seasonal groups are established for a warehouse, warehouse demand history data should only be used in the seasonal calculations. There is no need to use warehouse demand history data in the seasonal calculations if separate seasonal groups are not established.

Special considerations

There are instances where it is inappropriate to use the FCST demand history data to generate seasonal coefficients for purposes of forecasting in future years. These situations relate to special historical occurrences that may have a significant impact on the demand data that was captured. Such occurrences may include price increases that are preannounced and cause a temporary influx of orders, a strike by a competitor, or significant changes in economic conditions that have an unusually large affect on the company. In these instances, it may be necessary to disregard an entire year of history to compensate for the effects of the unusual situation. An alternative method is to use FCST to calculate seasonal coefficients and to carefully modify the coefficients to remove the affects of the unusual event.

Future events that can be anticipated by management that are not reflected in history may require similar treatment. For example, suppose the company provides its customers with an inducement to order early in anticipation of an upcoming season. Customer response should be anticipated by revising the seasonal coefficients. This can be done by using the Seasonal Group Profile option on the Inquiry and File Maintenance menu (AM2M10).

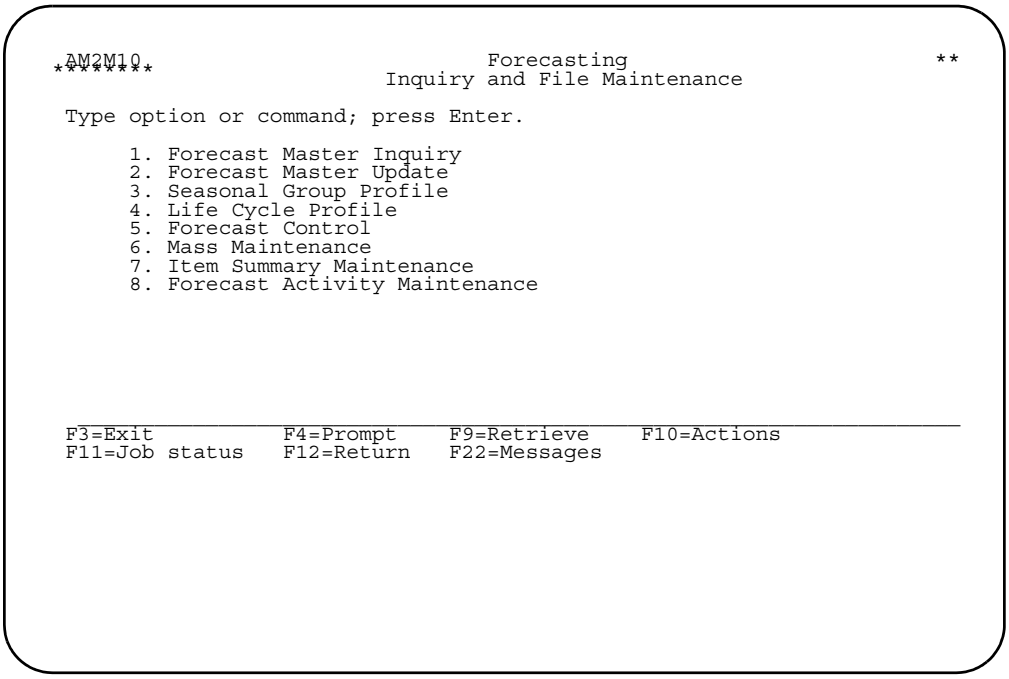
Chapter 3. Inquiry and File Maintenance

The Inquiry and File Maintenance menu appears when you select option 1 on the Forecasting Main Menu.

Use this menu to look at or change a forecast master record, a seasonal group profile, a life cycle profile, or the forecast control record, to run mass maintenance on the Forecast Master file, and to maintain the Item Summary or Forecast Activity files.

Item substitution maintenance on the Forecast Master file must be done before the Forecast Master file is reconciled with the Item Master file.

Option 1. Forecast Master Inquiry (AM2M10) 3-3
Option 2. Forecast Master Update (AM2M10) 3-10
Option 3. Seasonal Group Profile (AM2M10) 3-18
Option 4. Life Cycle Profile (AM2M10) 3-22
Option 5. Forecast Control (AM2M10) 3-25
Option 6. Mass Maintenance (AM2M10) 3-29
Option 7. Item Summary Maintenance (AM2M10) 3-33
Option 8. Forecast Activity Maintenance (AM2M10) 3-40



Option 6. Forecast Master Inquiry. Use this option to look at a forecast master record for a requested item. This option can be used to simulate changes to forecasts or projections based on overrides of annual forecast, seasonal group code, etc. For this reason, you can type data over the data shown and press Enter to simulate your overrides. The same information appears when you select option 2, Forecast Master Update, except that option 2 lets you make changes to the data shown instead of simulating changes.

Option 7. Forecast Master Update. Use this option to look at and change fields in a forecast master record. Use this option to override forecasts or projections through this option.

Option 8. Seasonal Group Profile. Use this option to look at or change a seasonal group profile record for a requested profile group and volume subgroup.

Option 9. Life Cycle Profile. Use this option to look at, add, or change a life cycle profile record.

Option 10.Forecast Control. Use this option to look at or change the forecast control record.

Option 11.Mass Maintenance. Use this option to change a number of forecast master records at one time. You can choose the selection criteria. The system schedules the mass change for processing.

Option 12.Item Summary Maintenance. Use this option to add, change, or delete item summary records and print all item summary files. This option is available only during FCST implementation.

Option 13.Forecast Activity Maintenance. Use this option to add, change, or print forecast activity records.

Option 1. Forecast Master Inquiry (AM2M10)

Use this option to simulate changes to forecasts, projections based on overrides of annual forecast, or seasonal group code.

What information you need: The item number and warehouse for each forecast master record.

What reports are printed: None.

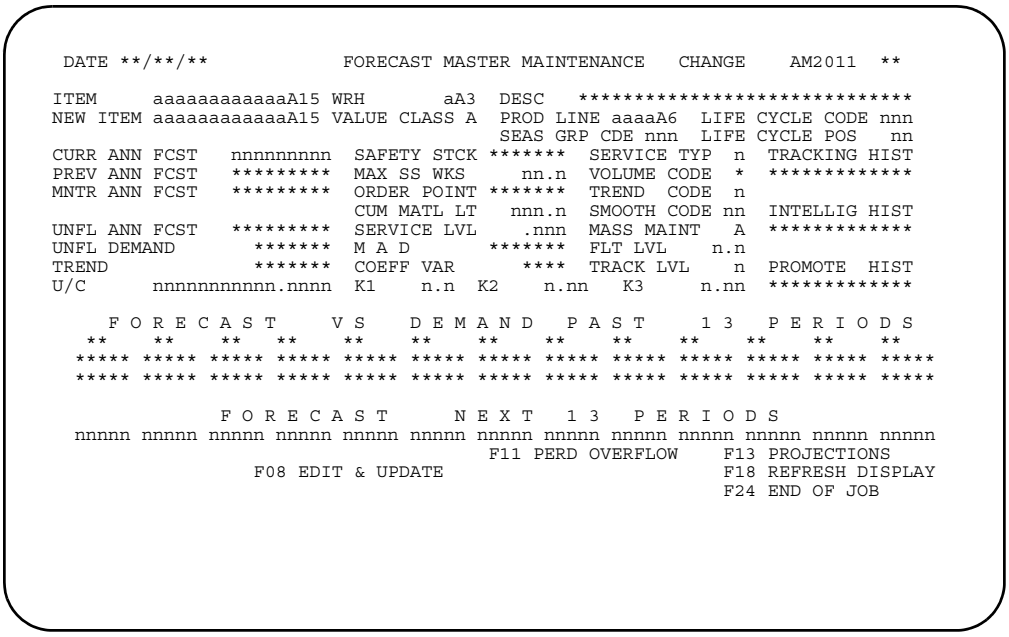
What forms you need: None.

The basic steps to do Forecast Master Inquiry/Maintenance follow each display.

AM2011—Forecast Master Inquiry

Use this display to look at a forecast master record.

This display appears in Select mode when you select option 1 on the Inquiry and File Maintenance menu (AM2M10). After you type in an item and warehouse number, the display appears in Inquiry mode.



What to do

- Look at the information for a forecast master record:
  - Type the item number and warehouse. Press **Enter**. This display appears again. To look at the information for another item, type over the item number and warehouse. Press **Enter**. Repeat this step if there are more items you want to see.
  - To end the session, use **F24**. Go to menu AM2M10.
- Look at a period forecast:
  - Type the item number and warehouse. Press **Enter**. This display appears again with the information about the item you requested.
  - To look at a period forecast where the period forecast is greater than 5 digits, use **F11**. Go to display AM2013.
  - To end the session, use **F24**. Go to menu AM2M10.
- Look at period projection:
  - Type the item number and warehouse. Press **Enter**. This display appears again with the information about the item you requested.
  - To look at the period projection for the item shown, use **F13**. Go to display AM2041.
  - To end the session, use **F24**. Go to menu AM2M10.

Function keys

F11 PERD OVERFLOW shows the Period Forecast Inquiry display (AM2013) which allows you to look at a 7-digit forecast display. **F11** appears at the bottom of the display only when any period forecast is larger than 5 digits.

F13 PROJECTIONS shows the Projection Inquiry display (AM2041), which shows a 3-year projection. **F13** is available only if you tailored the application to calculate projections.

F18 REFRESH DISPLAY returns the original data shown, but does not accept changes, and does not update the record.

F24 END OF JOB leaves this display and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begin a master file search.

ITEM [?]. Type the number of the item you want.

WRH. Type the warehouse of the item you want. If you leave this field blank, the system warehouse is used.

You can use the following fields for information purposes. You can see more details on the codes in the Item Master Maintenance section of the *IM User's Guide*.

DESC. The description of the item from the Item Master file.

NEW ITEM [?]. Defines a new item number and transfers the old item number data to this new item number.

VALUE CLASS. The value class from the Item Master file, or data you defined in Forecasting.

PROD LINE. The item class from the Item Master file plus any data you entered, or data you defined in Forecasting.

LIFE CYCLE CODE. The life cycle profile code assigned to the item.

SEAS GRP CDE. The seasonal group profile code assigned to the item.

LIFE CYCLE POS. Where the item is currently on the life cycle curve.

The following fields are described in descending order:

CURR ANN FCST. The current period's annual forecast for the item shown.

PREV ANN FCST. The previous period's annual forecast for the item shown.

MNTR ANN FCST. The current period's monitor annual forecast, and monitors the overrides to the current annual forecast.

UNFL ANN FCST. If present, the current period's annual forecast based on the unfiltered demand.

UNFL DEMAND. If present, the unfiltered demand of the current period.

TREND. The period rate of change due to increasing or decreasing demand.

U/C. The unit cost of the item from the Item Master file. You can define the unit cost in Forecasting.

SAFETY STCK. In units, the amount of safety stock required to support the specified service level.

MAX SS WKS. The maximum safety stock shown in weeks of forecasted demand.

ORDER POINT. The calculated order point which is the sum of forecasted demand over the lead time plus safety stock.

CUM MATL LT. The cumulative material lead time of the item from the Item Balance file, or the cumulative material lead time defined in Forecasting.

SERVICE LVL. The planned customer service level.

M A D. The de-seasonalized mean absolute deviation of the period forecast error.

COEFF VAR. The coefficient of variation.

The following three fields are used as exception testing constants to help keep the forecast on target. They are used to test for unacceptably large errors (K3), or forecasts that remain above or below actual demand for too long (K1). When the forecast fails these test, FCST changes to exception mode processing.

K1. Indicates the greatest number of consecutive periods in which the forecast error can have the same sign before causing an exception. The acceptable ranges are 2.0 to 6.9.

K2. The exception mode adjustment factor. During exception mode processing, this factor exponentially corrects the forecast error. The acceptable range is 1.25 to 2.00.

K3. Tests the magnitude of the forecast error. It represents the maximum forecast error (computed as K3 x MAD) allowed before shifting to exception mode processing. The acceptable range is 1.25 to 5.00.

SERVICE TYP. Defines the meaning of the service level:

1 Percentage of replenishment cycles with no stockouts
2 Percentage of demand satisfied

VOLUME CODE. The seasonal group profile volume subgroup for the item.

TREND CODE. The indicator that shows whether Forecasting identifies trend:

0 No trend
1 Trend

SMOOTH CODE. Sets the number of prior months demand to add together to represent current month demand. This is useful for leveling demand for low volume items.

MASS MAINT. The indicator that shows whether mass maintenance changes are applied:

Y Change allowed
N Change not allowed

FLT LVL. Sets the limit for the maximum number of MADs that a forecast error may attain. Any higher error is reduced to this level.

TRACK LVL. The tracking level. The item is flagged when the number of reporting periods between exception mode occurrences are less than or equal to this field.

TRACKING HIST. The exception tracking history by reporting period starting with the first reporting period:

0 Satisfactory forecast
1 Filtered demand
2 No demand reported, first year only
3 Forecast exception
4 Filtered demand and forecast exception
5 Satisfactory forecast, annual forecast revised
6 Filtered demand, annual forecast revised
7 No demand reported, annual forecast revised
8 Forecast exception, annual forecast revised
9 Filtered demand and forecast exception, annual forecast revised.

INTELLIG HIST. The intelligence history by reporting period, starting with the first reporting period:

0 Satisfactory forecast.

1 Current period operational model forecast error is greater than monitor model forecast error.

2 Operational model MAD is at least 10% greater than monitor model MAD.

3 Codes 1 and 2 both occur.

PROMOTE HIST. A series of one digit numbers, each of which represents a reporting period in the year. Each number indicates the number of times this period forecast has been overridden in prior years.

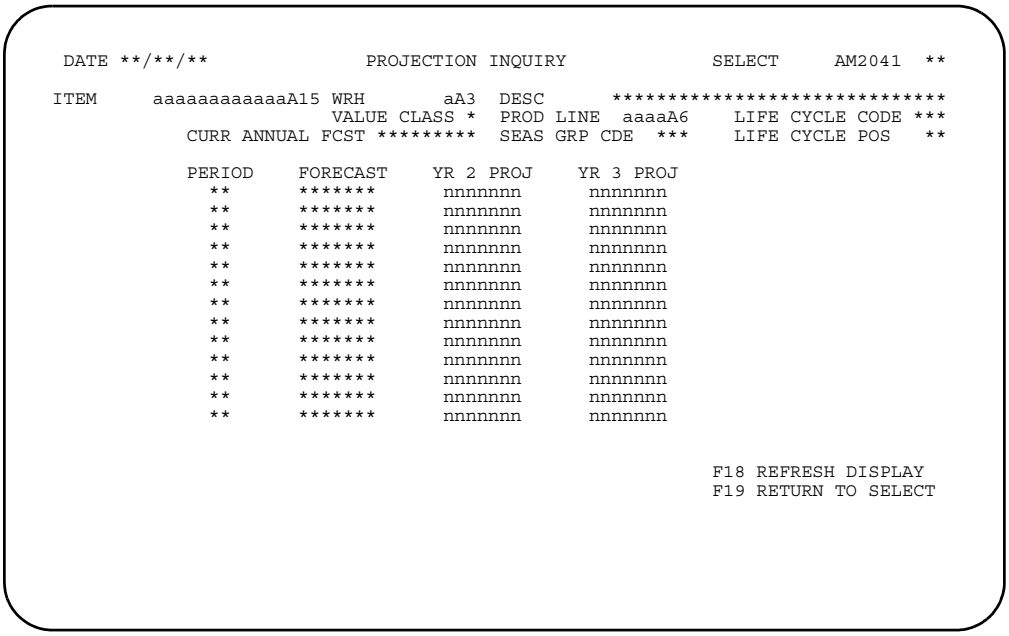
FORECAST VS DEMAND PAST 12 OR 13 PERIODS. The historical forecast and demand quantities for each of the past 12 or 13 periods starting with the oldest period through the period just ended. An overridden forecast is underlined.

FORECAST NEXT 12 OR 13 PERIODS. The forecast quantity for this item starting with the next forecast cycle period. When the forecast is greater than 5 digits, use **F11** to see all 7 digits.

AM2041—Projection Inquiry

Use this display to look at period projections for an item.

This display appears when you use **F13** on the Forecast Master Inquiry display (AM2011).



```
 DATE **/**/**              PROJECTION INQUIRY             SELECT     AM2041  **

ITEM     aaaaaaaaaaaaA15 WRH       aA3  DESC      ******************************
                       VALUE CLASS *  PROD LINE  aaaaA6    LIFE CYCLE CODE ***
            CURR ANNUAL FCST *********  SEAS GRP CDE  ***    LIFE CYCLE POS   **

             PERIOD    FORECAST    YR 2 PROJ    YR 3 PROJ
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn
               **      *******      nnnnnnn      nnnnnnn

                                                F18 REFRESH DISPLAY
                                                F19 RETURN TO SELECT
```

What to do

- To look at a period projection for another item, type over the item number and warehouse and press **Enter**. Repeat this step until you've looked at all of the period projections you wanted to see.
- To end the session, use **F19**, then **F24**. Go to menu AM2M10.

Function keys

F18 REFRESH DISPLAY returns the original data shown, but does not accept changes, and does not update the record.

F19 RETURN TO SELECT returns to the Forecast Master Inquiry display (AM2011).

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begin a master file search.

ITEM [?]. Type the number of the item you want.

WRH. Type the warehouse of the item you want.

You can use the following fields for information purposes:

DESC. The description of the item.

VALUE CLASS. The value class from the Item Master file, or it shows data you defined in Forecasting.

PROD LINE. The item class from the Item Master file plus any data you entered, or it shows data you defined in Forecasting.

LIFE CYCLE CODE. The life cycle profile code assigned to the item.

CURR ANNUAL FCST. The current period's annual forecast for the item shown.

SEAS GRP CDE. The seasonal group profile code assigned to the item.

LIFE CYCLE POS. The field shows where the item is currently on the life cycle curve.

PERIOD. The reporting period.

FORECAST. The first year period forecasts.

YR 2 PROJ. The second year period projections.

YR 3 PROJ. The third year period projections.

Option 2. Forecast Master Update (AM2M10)

Use this option to update the Forecast Master file data.

What information you need: The item number and warehouse for each record you want to change, look at, or plot.

What reports are printed:

- Forecast Master Maintenance Edit List (AM201)
- Projection Maintenance Edit List (AM204).

What forms you need: None.

The basic steps to update the Forecast Master follow each display.

AM2011—Forecast Master Maintenance

Use this display to change a forecast master record.

This display appears in Select mode when you select option 2 on the Inquiry and File Maintenance menu (AM2M10). After you type in the item number and warehouse, the display appears again in Change mode.

```
 DATE **/**/**            FORECAST MASTER MAINTENANCE   CHANGE    AM2011  **

ITEM     aaaaaaaaaaaaA15 WRH       aA3  DESC   ******************************
NEW ITEM aaaaaaaaaaaaA15 VALUE CLASS A  PROD LINE aaaaA6  LIFE CYCLE CODE nnn
                                        SEAS GRP CDE nnn  LIFE CYCLE POS   nn
CURR ANN FCST   nnnnnnnnn  SAFETY STCK *******  SERVICE TYP  n  TRACKING HIST
PREV ANN FCST   *********  MAX SS WKS     nn.n  VOLUME CODE  *  **************
MNTR ANN FCST   *********  ORDER POINT *******  TREND  CODE  n
                           CUM MATL LT   nnn.n  SMOOTH CODE nn  INTELLIG HIST
UNFL ANN FCST   *********  SERVICE LVL    .nnn  MASS MAINT   A  **************
UNFL DEMAND       *******  M A D       *******  FLT LVL    n.n
TREND             *******  COEFF VAR      ****  TRACK LVL    n  PROMOTE  HIST
U/C      nnnnnnnnnnn.nnnn  K1    n.n  K2    n.nn   K3     n.nn  **************

     F O R E C A S T     V S    D E M A N D   P A S T     1 3   P E R I O D S
   **    **    **   **    **    **    **    **    **    **    **    **    **
  ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****
  ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** ***** *****

              F O R E C A S T      N E X T   1 3   P E R I O D S
  nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn nnnnn
                                          F11 PERD OVERFLOW     F13 PROJECTIONS
                 F08 EDIT & UPDATE                              F18 REFRESH DISPLAY
                                                                F24 END OF JOB
```

What to do

- Change a current annual forecast.
  - To change a current annual forecast, type the item number and warehouse. Press **Enter**. This display appears again with the information about the item you requested.

    Note: The following changes to the ***CURR ANNUAL FCST*** field recalculate the ***FORECAST NEXT PERIODS*** fields:

    – If you make any change to the current annual forecast

    – If you change the current annual forecast to the monitor annual forecast (this change also changes the MAD)

    – If you change the current annual forecast to the unfiltered annual forecast, (the last reported period demand changes to the unfiltered demand, also, the MAD changes).
  - If the period forecast is underlined it does not recalculate.
  - To change the current annual forecast for the item shown, type the changes and press **Enter**.
  - To update the current annual forecast with the changes you have made, use **F08**.
  - To change another current annual forecast, type over the item number and warehouse and press **Enter**.

- To cancel what you have done on this display, use **F18** This display appears again.
- To end the session, use **F24**. Go to menu AM2M10.

- Change a forecast master record. Type the item number and warehouse and press **Enter**. The Forecast Master Maintenance display (AM2011) appears again with the information about the item you requested.

  Note: If you change the ***SEAS GRP CDE*** field, the period forecasts are recalculated.

  - To change the data shown, type the changes and press **Enter**. This display appears again with the changes you have made.
  - To update the record with the changes you have made, use **F08**. This display appears again.
  - To change another forecast master record, type over the item number and warehouse and press **Enter**. This display appears again.
  - To cancel what you did on this display, use **F18**.
  - To update the record without reviewing the changes you have made, use **F08**.
  - To end the session, use **F24**. Go to menu AM2M10.
- Change a period forecast:
  - To change a period forecast, type the item number and warehouse and press **Enter**. The Forecast Master Maintenance display (AM2011) appears again with the information about the item you requested.

    Note: An underlined period forecast shows that the forecast has been changed by the forecast coordinator.
  - To change a period forecast where the period forecast is greater than 5 digits, use **F11**. Go to display AM2013.
  - To change the period forecast for the item shown, type the changes and press **Enter**. This display appears again with the changes you have made.
  - To update the period forecast with the changes you have made, use **F08**.
  - To change a period forecast for another item, type over the item number and warehouse and press **Enter**.
  - To have FCST resume forecasting for the period, type **0** in the overridden period. FCST will then resume forecasting for that period.
  - To cancel what you did on this display, use **F18**.
  - To update the period forecast without reviewing the changes you have made, use **F08**
  - To end the session, use **F24**. Go to menu AM2M10.
- Change a period projection:
  - To change a period projection, type the item number and warehouse and press **Enter**.
  - To change the period projection for the item shown, use **F13**. Go to display AM2041.
  - To end the session, use **F24**. Go to menu AM2M10.

- Plot a period projection:
  - To plot a period projection, type the item number and warehouse and press **Enter**. This display appears again with information about the item.
  - To plot the period projection for the item shown, use **F13**. Go to display AM2041.
  - To end the session, use **F24**. Go to menu AM2M10.

Function keys

F08 EDIT & UPDATE accepts the changes and updates the record, and then returns to the same display.

See "AM2011—Forecast Master Inquiry" for a description of the function keys that appear on this display.

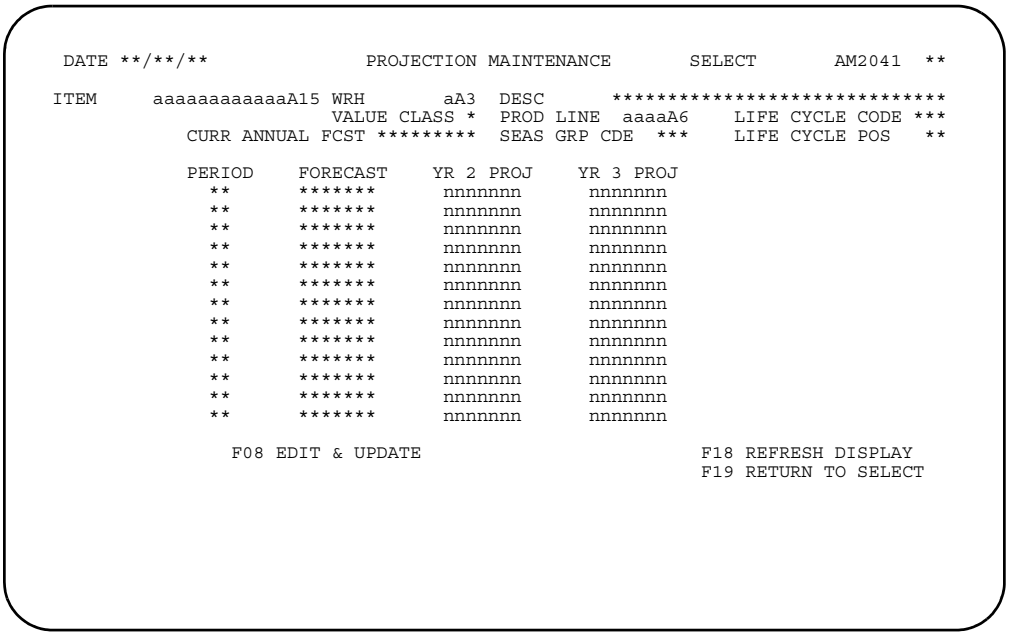
Fields

See "AM2011—Forecast Master Inquiry" for a description of the fields that appear on this display.

AM2041—Projection Maintenance

Use this display to change the period projections for an item.

This display appears when you use **F13** on the Forecast Master Maintenance display (AM2011).



```
 DATE **/**/**              PROJECTION MAINTENANCE       SELECT       AM2041  **

ITEM     aaaaaaaaaaaaA15 WRH       aA3  DESC      ******************************
                       VALUE CLASS *  PROD LINE  aaaaA6    LIFE CYCLE CODE ***
            CURR ANNUAL FCST *********  SEAS GRP CDE  ***    LIFE CYCLE POS   **

             PERIOD    FORECAST    YR 2 PROJ    YR 3 PROJ
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn
               **       *******      nnnnnnn      nnnnnnn

                  F08 EDIT & UPDATE                      F18 REFRESH DISPLAY
                                                         F19 RETURN TO SELECT
```

What to do

The information you requested on the item on display AM2011 appears. Do one of the following:

- To change the period projection for the item shown, type the changes and press **Enter**. This display appears again with the changes you have made.
- To update the period projection, use **F08**.
- To change a period projection for another item, type over the item number and warehouse and press **Enter**.
- To cancel what you did on this display, use **F18**.
- To end the session, use **F19**, then **F24**. Go to menu AM2M10.

Function keys

F08 EDIT & UPDATE accepts changes, updates the record, and then returns to the same display. You can type another item number or warehouse to change another record. **F08** is used in the maintenance mode only.

F18 REFRESH DISPLAY returns the original data shown, but does not accept any change, and does not update the record.

F19 RETURN TO SELECT returns to the Forecast Master Maintenance display (AM2011).

Fields

See "AM2041—Projection Inquiry" for a description of the fields that appear on this display.

AM2013—Period Forecast Inquiry/Maintenance

Use the inquiry display to look at the period forecasts for an item. Use the maintenance display to change the period forecasts for an item.

This display appears when you use **F11** on the Forecast Master Inquiry/Maintenance display (AM2011).

```
 DATE **/**/**           PERIOD FORECAST INQUIRY           *******    AM2013  **

ITEM     aaaaaaaaaaaaA15 WRH       aA3  DESC   ******************************
                         VALUE CLASS A  PROD LINE aaaaA6  LIFE CYCLE CODE nnn
            CURR ANNUAL FCST nnnnnnnnn  SEAS GRP CDE nnn  LIFE CYCLE POS   nn


            PERIOD    PAST FCST      DEMAND     FORECAST
```

```
 DATE **/**/**           PERIOD FORECAST MAINTENANCE                AM2013  **

ITEM     aaaaaaaaaaaaA15 WRH       aA3  DESC   ******************************
                         VALUE CLASS A  PROD LINE aaaaA6  LIFE CYCLE CODE nnn
            CURR ANNUAL FCST nnnnnnnnn  SEAS GRP CDE nnn  LIFE CYCLE POS   nn


            PERIOD    PAST FCST      DEMAND     FORECAST
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn
              **       *******       *******      nnnnnnn

                  F08 EDIT & UPDATE                    F18 REFRESH DISPLAY
                                                       F19 RETURN TO SELECT
```

What to do

- To change the period forecast for the item shown, type the changes and press **Enter**. This display appears again with the changes you have made.
- To update the period forecast with the changes, use **F08**.
- To change a period forecast for another item, use **F19**.
- To cancel what you did on this display, use **F18**.
- To end the session, use **F19**, then **F24**. Go to menu AM2M10.

Function keys

F08 EDIT & UPDATE accepts changes, updates the record, and then returns to the same display. You can type another item number/WRH to change another record. **F08** is used in maintenance mode only.

F18 REFRESH DISPLAY returns the original data shown, but does not accept changes, and does not update the record.

F19 RETURN TO SELECT returns to the Forecast Master Inquiry display (AM2011).

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begin a master file search.

ITEM [?]. Type the number of the item you want. The item number.

WRH. Type the warehouse of the item you want. The warehouse.

You can use the following fields for information purposes:

DESC. The description of the item.

VALUE CLASS. The value class from the Item Master file, or it shows data you defined in Forecasting.

PROD LINE. The Item Class from the Item Master file plus any data you entered, or it shows data you defined in Forecasting.

LIFE CYCLE CODE. The life cycle profile code assigned to the item.

CURR ANNUAL FCST. The current period's annual forecast for the item shown.

SEAS GRP CDE. The seasonal group profile code assigned to the item.

LIFE CYCLE POS. This field shows where the item is currently on the life cycle curve.

PERIOD. The reporting period.

PAST FCST. The previous forecasts for this item.

DEMAND. The actual period demand for this item.

FORECAST. The future period forecast for this item.

Option 3. Seasonal Group Profile (AM2M10)

Use this option to change, plot, or look at a seasonal group profile record.

What information you need: The seasonal group profile code and volume code for the record you want to change, look at, or plot.

What reports are printed: Seasonal Group Profile Maintenance Edit List (AM217).

What forms you need: PF-01.

The basic steps to do Seasonal Group Profile follow each display.

AM2171—Seasonal Group Profile Inquiry/Maintenance

Use this display to look at or change a seasonal group profile. All changes to the Seasonal Group Profile file are made before the Period Update process. Otherwise, the changes applied are not used in calculating the period forecasts.

This display appears when you select option 3 on the Inquiry and File Maintenance menu (AM2M10).

```
 DATE **/**/**  SEASONAL GROUP PROFILE INQUIRY/MAINTENANCE  CHANGE    AM2171  **

  SEAS GRP CDE   nnn
   VOLUME CODE    n      GROUP DESCRIPTIONaaaaaaaaaaaaaaaaaA20

LOW  VOL  *********  ITEMS          *****  ITEM RATIO    **   ITEM PRINT      A
HIGH VOL  *********  ITEMS USED     *****  GRP RATIO     **   COMP FLAG       *
AVG  VOL  *********  ITEMS ACCEPTED *****  FILTER LEVEL  **   GRP MODES   aaaaA6

                    S E A S O N A L    C O E F F I C I E N T S
     01    02    03    04    05    06    07    08    09    10    11    12    13

   .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn


               R E L I A B I L I T Y   C O E F F I C I E N T S
   .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn  .nnn



                                                      F08 EDIT & UPDATE
                                                      F18 REFRESH DISPLAY
                                                      F24 END OF JOB
```

What to do

- Change a seasonal group profile record:
  - Type the seasonal group profile code and volume code and press **Enter**.
  - To change the seasonal group profile for the code shown, type the changes and press **Enter**.
  - To update the seasonal group profile with the changes you have made, use **F08**.
  - To change another seasonal group profile, type over the seasonal group profile code and volume code and press **Enter**.
  - To cancel what you did on this display, use **F18**.
  - To end the session, use **F24**. Go to menu AM2M10.
- Look at a seasonal group profile record:
  - Type the seasonal group profile code and volume code and press **Enter**.
  - To look at another seasonal group profile, type another seasonal group profile code and volume code over the codes shown and press Enter. Repeat this step.
  - To end the session, use **F24**. Go to menu AM2M10.

Function keys

F08 EDIT & UPDATE accepts changes and updates the record, and then returns to the same display. You can type another Seasonal Group Profile Code to change another record.

F18 REFRESH DISPLAY returns the original data shown, but does not accept any changes, and does not update the record.

F24 END OF JOB leaves the display and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

SEAS GRP CDE. The seasonal group profile code you want to look at or change.

VOLUME CODE. The volume subgroup within the seasonal group.

GROUP DESCRIPTION. The description of the seasonal group.

ITEM PRINT. This field shows whether the seasonal group profile code and volume code data are printed:

Y Print
N No print

SEASONAL COEFFICIENTS. The proportion of annual demand which is expected for each reporting period for the seasonal group.

RELIABILITY COEFFICIENTS. The mean absolute deviation of all item seasonal coefficients to the seasonal group coefficients.

You can use the following fields for information purposes:

LOW VOL. The low volume limit in annual demand units for this volume code.

HIGH VOL. The high volume limit in annual demand units for this volume code.

AVG VOL. The average volume for all items in this volume code.

ITEMS. The number of items belonging to the seasonal group profile code and volume code.

ITEMS USED. The number of items used to define the seasonal group profile.

ITEMS ACCEPTED. The number of items that statistically fit the seasonal group profile.

ITEM RATIO. The minimum item ratio required to use an item in the seasonality calculations.

GRP RATIO. The minimum group ratio required to classify an item as seasonal relative to the group seasonal coefficients.

FILTER LEVEL. Sets the limit for the maximum number of MADs that a forecast error may attain. Any higher error is reduced to this level.

COMP FLAG. The source of the seasonal coefficients:

S System calculated
U User applied
D Dummy system generated
N Not used

GRP MODES. The reporting periods within the year where the seasonal peaks occur:

00 No significant peak

Option 4. Life Cycle Profile (AM2M10)

Use this option to add, look at, change, plot, or print a life cycle profile record.

What information you need: The life cycle profile code for the record you want to add, look at, change, or print.

What reports are printed:

- Life Cycle Profile Report (AM2203)
- Life Cycle Profile Maintenance Edit List (AM220).

What forms you need: PF-02.

The basic steps to do determine life cycle profiles follow each display.

AM2201—Life Cycle Profile Inquiry/Maintenance

Use the display to look at, add, or change a life cycle profile.

This display appears when you select option 4 on the Inquiry and File Maintenance menu (AM2M10).

```
DATE 06/01/**    LIFE CYCLE PROFILE INQUIRY/MAINTENANCE              AM2201  **

 LIFE CYCLE CODE 023    DESCRIPTION PROD GRP - BICYCLES

    *****         Q U A R T E R L Y   C O E F F I C I E N T S  (3)    *****
      01       02       03       04       05       06       07       08
      .100    .100      .100     .100     .100     .100     .100     .100

      09       10       11       12       13       14       15       16
      .150     .150     .150     .150     .200     .200     .200     .100

      17       18       19       20       21       22       23       24
      .100     .100     .050     .050     .050     .050     .050     .050

      25       26       27       28       29       30       31       32
      .000     .000     .000     .000     .000     .000     .200-    .200-

      33       34       35       36       37       38       39       40
      .100-    .100-    .050-    .050-    .000     .000     .000     .000

                               F08 EDIT & UPDATE
                                                  F13 PRINT LIFE PROFILE
                                                  F18 REFRESH DISPLAY
                                                  F24 END OF JOB
```

What to do

- Add a life cycle profile record:
  - Type the life cycle profile code and press **Enter**. This display appears again. Type the description and quarterly coefficient data and press **Enter**.
  - To add the life cycle profile record, use **F08**.
  - To add another life cycle profile record, type over the cycle profile code and press **Enter**.
  - To cancel what you did on this display, use **F18**.
  - To end the session, use **F24**. Go to menu AM2M10.
- Change the life cycle profile record:
  - Type the life cycle profile record and press **Enter**. This display appears again.
  - To change the life cycle profile for the code shown, type the changes and press **Enter**.
  - To update the life cycle profile with the changes you have made, use **F08**.
  - To change another life cycle profile, type over the life cycle profile code and press **Enter**.
  - To cancel what you did on this display, use **F18**.
  - To end the session, use **F24**. Go to menu AM2M10.

- Look at a life cycle profile record:
  - Type the life cycle profile code and press **Enter**. This display appears again.
  - To look at another life cycle profile, type another life cycle profile code over the code shown and press **Enter**. Repeat this step.
  - To end the session, use **F24**. Go to menu AM2M10.
- Print a life cycle profile record:
  - Type the life cycle profile code and press **Enter**. This display appears again.
  - To print the life cycle profile for the code shown, use **F13**.
  - To print another life cycle profile, type over the life cycle profile code shown and press **Enter**.
  - To end the session, use **F24**. Go to menu AM2M10.

Function keys

F08 EDIT & UPDATE accepts changes and updates the record, and then returns to the same display. You can type another Life Cycle Profile Code to change another record.

F13 PRINT LIFE PROFILE prints the life cycle curve showing the life cycle coefficients and the effective life cycle coefficients.

F18 REFRESH DISPLAY returns the original data shown, but does not accept any changes, and does not update the record.

F24 END OF JOB leaves the display and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

LIFE CYCLE CODE. The life cycle profile code you want to look at, add, or change.

DESCRIPTION. The description of the life cycle profile.

QUARTERLY COEFFICIENTS. The expected increase or decrease in demand from quarter to quarter starting with quarter 1 up to quarter 40.

Option 5. Forecast Control (AM2M10)

Use this option to look at, or change the forecast control records.

What information you need: Planning warehouse number.

What reports are printed: None.

What forms you need: None.

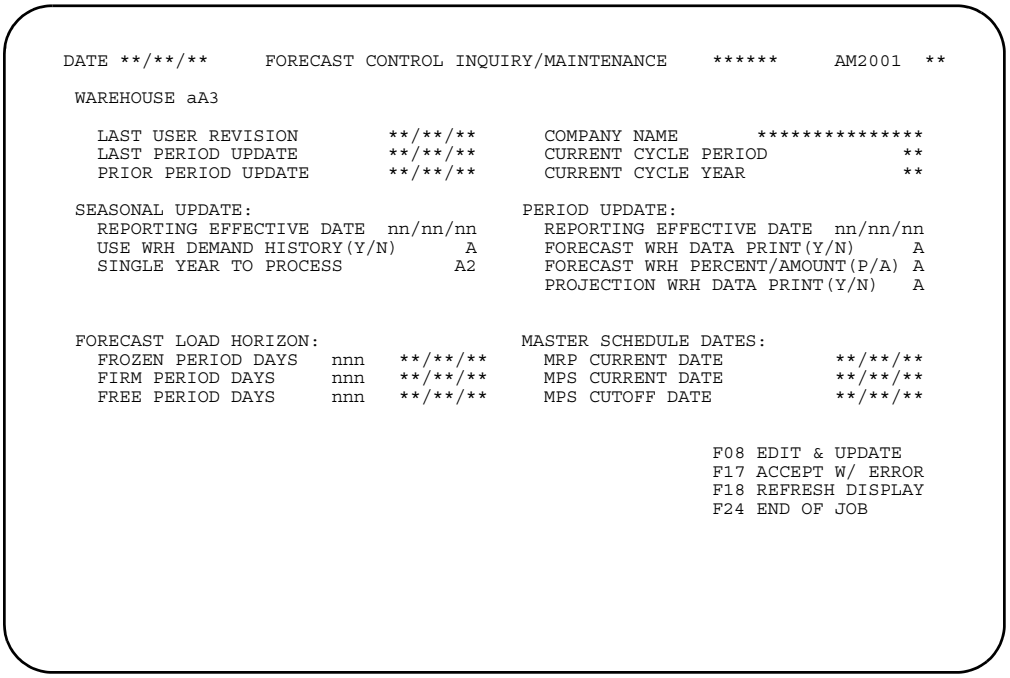
The basic steps to inquire about and maintain Forecast Control follow the display.

AM2001—Forecast Control Inquiry/Maintenance

Use this display to change or look at the forecast control record.

This display appears when you select option 5 on the Inquiry and File Maintenance menu (AM2M10).

Note: You must be authorized to the proper level of security in the planning warehouse you select.



What to do

- Change the forecast control record:
  - Type the changes and press **Enter**. This display appears again with the changes you made.
  - To update the forecast control record, use **F08**. This display appears again.
  - To change the forecast control record again, type the changes and press **Enter**.
  - To cancel what you did on this display, use **F18**.
  - To end the session, use **F24**. Go to menu AM2M10.
- Look at the forecast control record:
  - To end the session, use **F24**. Go to menu AM2M10.
  - Select another option or return to the Main Menu.

Function keys

F08 EDIT & UPDATE accepts changes and updates the record, and then returns to the same display.

F17 ACCEPT W/ ERROR replaces Function Key 08 when a warning message occurs and accepts planning horizon differences between FCST and MPSP. The record is updated with the planning horizon shown.

F18 REFRESH DISPLAY returns the original data shown, but does not accept any changes, and does not update the record.

F24 END OF JOB leaves this display and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

WAREHOUSE. Type in the warehouse identifier you want to use. The description of that warehouse appears when you press **Enter**.

LAST USER REVISION. This is the date of the last user revision of forecast control data.

LAST PERIOD UPDATE. The date of the last period update.

PRIOR PERIOD UPDATE. The date of the period update prior to the last update.

COMPANY NAME. The name of your company.

CURRENT CYCLE PERIOD. The most recent reported demand period.

CURRENT CYCLE YEAR. The year of the current cycle period.

You can change the following fields:

SEASONAL UPDATE. (The next three fields appear only at year end):

REPORTING EFFECTIVE DATE: The effective date of the next seasonal update.

USE WRH DEMAND HISTORY (Y/N): Shows whether warehouse demand history is used in seasonality calculations.

Y	Yes, use warehouse demand history in seasonality calculations.
N	No, do not use warehouse demand history in seasonality calculations.

SINGLE YEAR TO PROCESS: The year (2 digits only) used in seasonality calculations.

PERIOD UPDATE. The next four fields appear.

REPORTING EFFECTIVE DATE: The effective date of the next period update.

FORECAST WRH DATA PRINT (Y/N): Shows whether warehouse data is printed in forecast reports:

Y	Yes, print warehouse data.
N	No, do not print warehouse data.

FORECAST WRH PERCENT/AMOUNT (P/A): Shows whether warehouse period forecasts are printed as percents or amounts:

P Print percent
A Print amount

PROJECTION WRH DATA PRINT (Y/N): Shows whether warehouse data is printed in projection reports.

Y Yes, print warehouse data.
N No, do not print warehouse data.

FORECAST LOAD HORIZON. (The next three fields appear only if MRP is interfacing):

FROZEN PERIOD DAYS: Defines the period in which no action is taken in updating the REQMTS file in MRP.

FIRM PERIOD DAYS: Defines the period in which no action is taken in updating requirements for MRP but where the forecasts are updated or loaded to the Requirements file for MPSP. This period is overridden by an item's CMTLT if specified.

FREE PERIOD DAYS: Defines the period in which the requirements and the forecasts are updated or loaded to the REQMTS file. This period is overridden by the MPS Cutoff Date if MPSP is interfacing and data is passed to the Demand Interface (DMDIFF) file. The maximum data loaded is through the forecast horizon (1, 2, or 3 years).

MASTER SCHEDULE DATES. (The next three fields appear only if MRP or MPSP are interfacing):

MRP CURRENT DATE: The current date used in MRP. The forecast load horizon begins with this date.

MPS CURRENT DATE: The current date used in MPSP for master production scheduling.

MPS CUTOFF DATE: The cutoff date used in MPSP for master production scheduling. The forecast load horizon free period date should correspond to the cutoff date in MPSP, and MPSP and FCST should have similar planning horizons.

Option 6. Mass Maintenance (AM2M10)

Use this option to change a number of forecast master records.

What information you need: The selection criteria for the mass maintenance option. You will also need to know that the mass maintenance field contains Y in the records you want to change.

What reports are printed: Forecast Master Mass Maintenance Transactions (AM205).

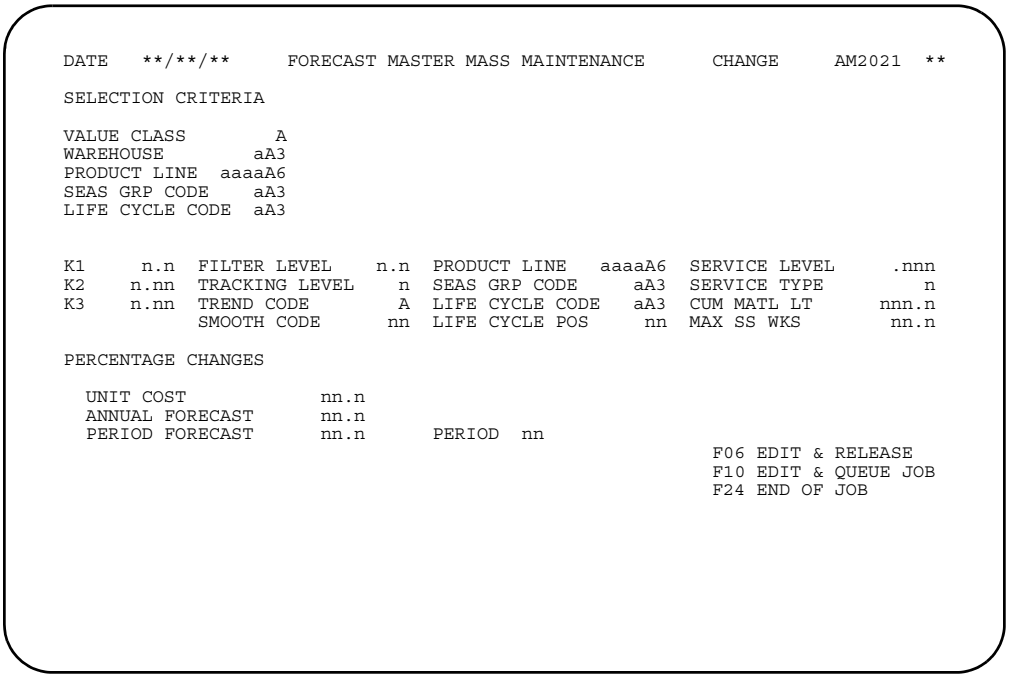
What forms you need: None.

The basic steps to do Mass Maintenance follow the display.

AM2021—Forecast Master Mass Maintenance

Use this display to change several forecast master records. Forecast master records are changed by a maximum of 50 transaction records at one time.

This display appears when you select option 6 on the Inquiry and File Maintenance menu (AM2M10). You can choose the selection criteria to define the records you want to change.



What to do

- Type the selection criteria and the fields you want to change and press **Enter**. This display appears again.
- To change the forecast master records based upon the selection criteria, use **F06** for processing at a later time.
- To change more of the forecast master records by mass maintenance, type the selection criteria and the fields you want to change and press **Enter**.
- To update the forecast master records based upon selection criteria, use **F10** for immediate processing. Go to menu AM2M10.
- To cancel the session, use **F24**. Go to menu AM2M10.

Function keys

F06 EDIT & RELEASE accepts changes, and saves up to 50 transaction records. The use of this function key does not update the records. **F06** returns to the same display.

F10 EDIT & QUEUE JOB accepts changes and runs a batch job to update the records. This function key can be used with the last transaction record. **F10** returns to the Inquiry and File Maintenance menu (AM2M10).

F24 END OF JOB leaves this display, processes no transactions, and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

VALUE CLASS. The value class selected.

WAREHOUSE. The warehouse selected.

PRODUCT LINE. The product line selected.

SEAS GRP CODE. The seasonal group profile code selected.

LIFE CYCLE CODE. The life cycle profile code selected.

You can change the following fields. These fields are used as exception testing constants to help keep the forecast on target. They are used to test for unacceptably large errors (K3), or forecasts that remain above or below actual demand for too long (K1). When the forecast fails these test, FCST changes to exception mode processing.

K1. Indicates the greatest number of consecutive periods in which the forecast error can have the same sign before using an exception. The acceptable ranges are 2.0 to 6.9.

K2. The exception mode adjustment factor. During exception mode processing, this factor exponentially corrects the forecast error. The acceptable range is 1.25 to 2.00.

K3. Tests the magnitude of the forecast error. It represents the maximum forecast error (computed as K3 x MAD) allowed before shifting to exception mode processing. The acceptable range is 1.25 to 5.00.

FILTER LEVEL. Sets the limit for the maximum number of MADs that a forecast error may attain. Any higher error is reduced to this level.

TRACKING LEVEL. Shows whether the item is flagged on the Forecast Report. The item is flagged when the number of reporting periods between exception mode occurrences are less than or equal to the tracking level.

TREND CODE. Shows whether Forecasting identifies a trend:

0 No trend
1 Trend

SMOOTH CODE. Sets the number of prior months demand to add together to represent current month demand. This is useful for leveling demand for low volume items.

PRODUCT LINE. The new product line.

SEAS GRP CODE. The new seasonal group profile code.

LIFE CYCLE CODE. The new life cycle profile code.

LIFE CYCLE POS. Shows where the item is currently on the life cycle curve.

SERVICE LEVEL. Planned customer service level.

SERVICE TYPE. The meaning of the service level:

1 Percentage of replenishment cycles with no stockouts
2 Percentage of demand satisfied

CUM MATL LT. The cumulative material lead time.

MAX SS WKS. The maximum safety stock in weeks of forecasted demand.

PERCENTAGE CHANGES. The percentage changes and the reporting period affected by this maintenance session.

UNIT COST: The unit cost adjustment percent.

ANNUAL FORECAST: The current annual forecast adjustment percent.

PERIOD FORECAST: The period forecast adjustment percent.

PERIOD: The reporting period for the period forecast adjustment percent.

Option 7. Item Summary Maintenance (AM2M10)

Use this option to add, change, delete, or print item summary records. This option is available only during FCST implementation.

The Item Summary (ITSMxx) file contains the total number of sales by month or period for each item. The Item Summary Maintenance option allows you to maintain these item quantities. During the initial implementation of FCST, the data contained in the ITSMxx file is used to establish historical data that enables FCST to calculate seasonal patterns.

What information you need: The item number and year for the record you want to add, change, or delete.

What reports are printed: Item Summary Data Print (AM237).

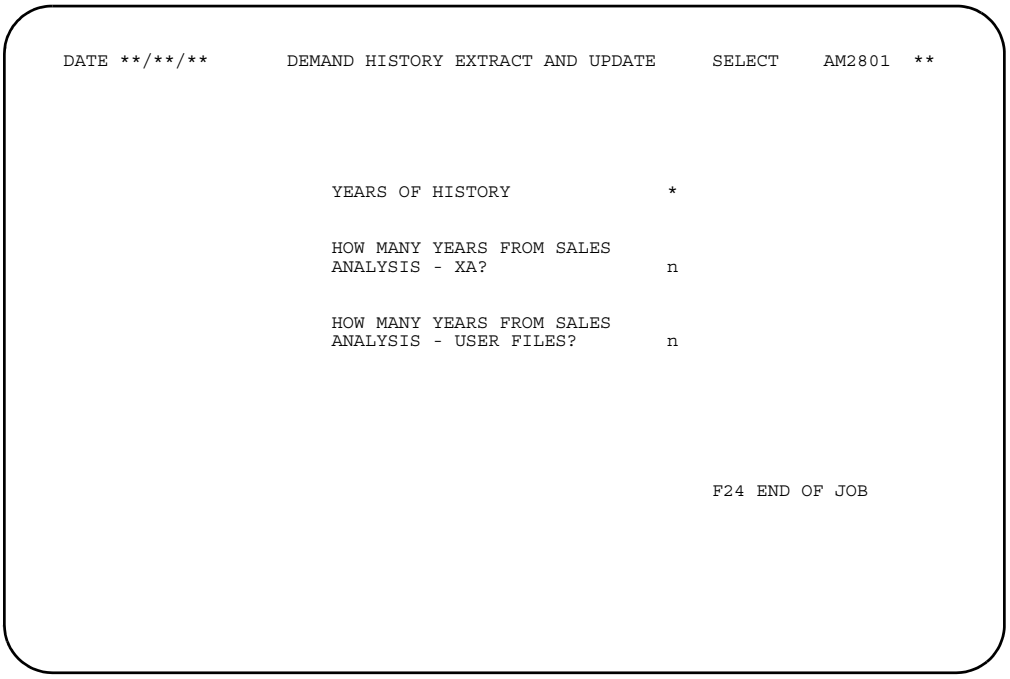
What forms you need: PF-03.

The basic steps to do Item Summary Maintenance follow each display.

AM2801—Demand History Extract and Update

Use this display to tell Forecasting how many years of history will come from Sales Analysis - XA and Sales Analysis - User Files. You can extract the sales history for up to six years from the Temporary Item Summary file or the Item History file and create the Demand History file.

This display appears when you select option 7 on the Inquiry and File Maintenance menu (AM2M10) and option 1 on the Seasonal Update menu (AM2M50.



What to do

Type the number of years of Sales Analysis data from XA and user (YEARXX) files. Press **Enter**. Go to the previous menu. Select another option, or return to the Main Menu.

The information is processed and report AM288 is printed. If the total of the number of years from MAPICS II and XA do not equal the years of history, you will receive an error message.

Function keys

F24 END OF JOB leaves the display and returns to the previous menu.

Fields

YEARS OF HISTORY. The total number of years to be included when starting Forecasting. This number is supplied by an answer in the Forecasting Questionnaire.

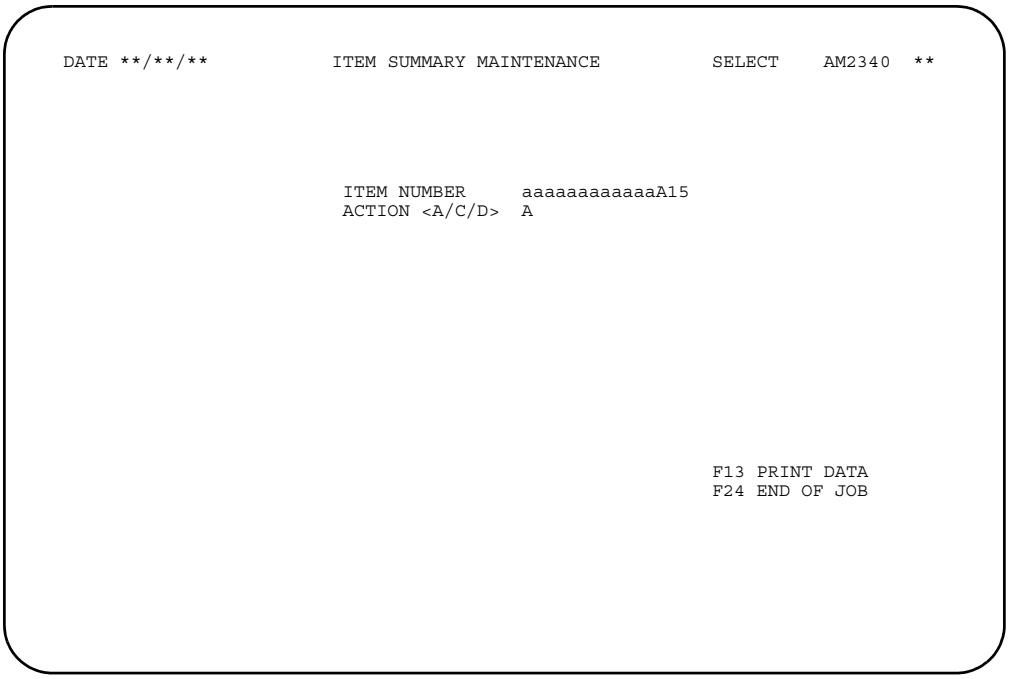
HOW MANY YEARS FROM SALES ANALYSIS - XA. Type the total number of years to be supplied from Sales Analysis - XA.

HOW MANY YEARS FROM SALES ANALYSIS - USER FILES. Type the total number of years to be supplied from Sales Analysis - User (YEARXX) files.

AM2340—Item Summary Maintenance (Select)

Use this display to select item summary records to add, change, or delete, or to print all item summary files.

This display appears when you press Enter on the Demand History Extract and Update display (AM2801).



What to do

To add the item summary records, do the following:

- Type the item number and action code **A** and press **Enter**. Go to display AM2341.
- To add another item summary record, type over the item number and press **Enter**.
- To end the session, use **F24**. Go to menu AM2M10.

Function keys

F13 PRINT DATA leaves the display, schedules the Item Summary Data Print report for printing, and returns to the Inquiry and File Maintenance menu (AM2M10).

F24 END OF JOB leaves the display and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begin a master file search.

ITEM NUMBER [?]. Type in the number of the item you want to add, change, or delete.

ACTION <A/C/D>. Type the code for the action you want to complete:

A Add
C Change
D Delete

AM2341—Item Summary Maintenance

Use this display to add, change, or delete item summary files.

This display appears when you press **Enter** on the Item Summary Maintenance (Select) display (AM2340) and the action code is A, C, or D.

```
 DATE **/**/**          ITEM SUMMARY MAINTENANCE         CHANGE    AM2341  **

ITEM NUMBER  aaaaaaaaaaaaA15
         *******               PERIOD QUANTITY                     *******
YEAR        01/07    02/08    03/09    04/10    05/11    06/12       13
 **       nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
          nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn

 **       nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
          nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn

 **       nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
          nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn

 **       nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
          nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn

 **       nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
          nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn

 **       nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
          nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn  nnnnnnn
                                                   F19 RETURN TO SELECT
```

What to do

- Type the period quantities for each year and press **Enter**. This display appears again.
- To add item summary records for another item number, type over the item number and press **Enter**.
- To end the session, use **F19**. Go to display AM2340.

Function keys

F19 RETURN TO SELECT returns to the Item Summary Maintenance (Select) display (AM2340).

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begin a master file search.

ITEM NUMBER [?]. The number of the item you want to add or change. To select another item, type in a new item number.

PERIOD QUANTITY. The demand quantity for each period. If you are adding files, the fields are blank. If you are changing, type in the demand quantity for each period.

Note: If all period quantities are changed to zero, the record is removed.

YEAR. The period quantity year from the forecast control record.

Option 8. Forecast Activity Maintenance (AM2M10)

Use this option to add, change, or print forecast activity records.

Note: To change an existing forecast activity record, you must add an offsetting record by doing one of the following:

- Quantity change: type in the same item number, warehouse, period, and day; type in a positive or negative quantity.
- Request date change: type in the same item number, warehouse, period, and day with a negative quantity; and type in the same item number, warehouse, and quantity with the new period and day.

The data is added to the data file sequentially. Up to 15 transactions can be typed before pressing Enter to accept the data.

What information you need: The item number, warehouse, quantity, period, and day (if 13 four-week or 12 four- or five-week manufacturing periods) for the record you want to add or change.

What reports are printed: Forecast Activity Data Print (AM236).

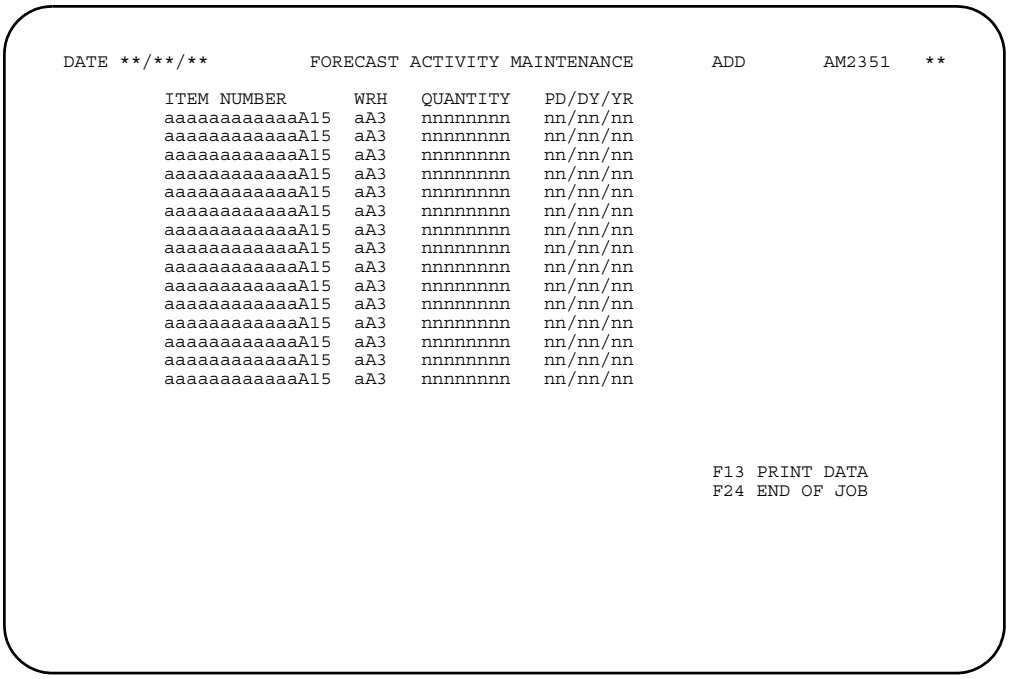
What forms are need: PF-04.

The basic steps to maintain Forecast Activity follows the display.

AM2351—Forecast Activity Maintenance

Use this display to add or change forecast activity records, or to print the forecast activity file.

This display appears when you select option 8 on the Inquiry and File Maintenance menu (AM2M10).



What to do

- Add one or more forecast activity reports:
  - Type the item number, warehouse, quantity, period, and day (if 13 four-week or 12 four- or five-week manufacturing periods) and press **Enter**. This display appears again.
  - To add more forecast activity records, repeat the previous step.
  - To end the session, use **F24**. Go to menu AM2M10.
- Change one or more forecast activity records:
  - Type the item number, warehouse, quantity, period, and day (if 13 four-week or 12 four- or five-week manufacturing periods) and press **Enter**. This display appears again.
  - To change more forecast activity records, repeat the previous step.
  - To end the session, use **F24**. Go to menu AM2M10.
- Print the Forecast Activity file:
  - Use **F13**. Go to display AM236.
  - To end the session, use **F24**. Go to menu AM2M10.

Function keys

F13 PRINT DATA leaves the display, schedules the Forecast Activity Data Print reports for printing, and returns to the Inquiry and File Maintenance menu (AM2M10). No update occurs.

F24 END OF JOB leaves the display and returns to the Inquiry and File Maintenance menu (AM2M10).

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begin a master file search.

ITEM NUMBER [?]. The number of the item you want to add or change. Type in the number of the item you want.

WRH. Type in the warehouse of the item you want.

QUANTITY. The period demand quantity for the item and warehouse.

PD/DY/YR (Period/Day/Year). The period, day, and year in which the demand occurred. This field appears only when 13 four-week or 12 four- or five-week manufacturing periods are used.

Chapter 4. Period Update

The period Update menu appears when you select option 2 on the Forecasting Main Menu.

Use this menu to capture the period demand data from the Monthly Activity file, and reconcile the Forecast Master file with the Item Master file. Also use this menu to calculate the period forecasts and projections, calculate the inventory parameters, and load forecasts, projections, and inventory parameters to the master schedule. Only option 5 has a display associated with it.

Option 1. Period Demand Data Capture (AM2M20).....4-4
Option 2. Forecast Master Reconciliation (AM2M20).....4-5
Option 3. Forecast Calculation (AM2M20) 4-6
Option 4. Inventory Parameter Calculation (AM2M20).....4-7
Option 5. Forecast Load to Master Schedule (AM2M20) 4-8

```
 AM2M20                              Forecasting                          **
********
                                    Period Update


 Type option or command; press Enter.


      1. Period Demand Data Capture
      2. Forecast Master Reconciliation
      3. Forecast Calculation
      4. Inventory Parameter Calculation
      5. Forecast Load to Master Schedule
```

Option 14.Period Demand Data Capture. Use this option to capture the period demand from the Monthly Activity file. The system schedules the period demand data capture for processing.

Option 15. The first step in the period update process is extracting period demand data from the Forecast Activity (FORACT) file.

Option 16. If you are using the COM application, the COM Questionnaire question concerning whether the booking records should be placed in the Monthly Activity (MTHACT) file must be answered with Y (yes). Also, if you are using the COM application with the FCST application, the Monthly Activity (MTHACT) file is renamed to the Forecast Activity (FORACT) file as part of the period-end closing process. Thus, the demand data is automatically saved for use in this step.

Option 17. If you are using another order entry system, FCST requires that your booking records be placed in the Forecast Activity file. If you are not using an order

entry system, FCST requires that you create item/warehouse period demand data records and place the records into the Forecast Activity file.

Option 18.Forecast Master Reconciliation. Use this option to reconcile the Forecast Master file with the Item Master file. The system schedules the file reconciliation for processing.

Before you run the Forecast Calculation option, the Forecast Master file should be updated to reflect master level items that are added to or deleted from the product line. This option compares the contents of the Forecast Master file to the Item Master file for the purpose of automatically maintaining the Forecast Master file. This routine adds records to, updates records in, and deletes records from the Forecast Master file, assigning default values for the various forecast parameters.

Option 19.Forecast Calculation. Use this option to calculate forecasts based upon the most recent demand data. The system schedules the forecast calculation for processing.

Period forecasts are updated each reporting cycle by initiating the Forecast Calculation option. This option should be done as soon as practical after:

- The Period Demand Data capture option is complete
- The Forecast Master Reconciliation option is done
- Any additional file maintenance is completed.

The Forecast Calculation option retains the period demand data extracted for the most recent period and appropriately updates the forecast for each item.

The Forecast Calculation option generates a control totals report that should be used to reconcile to order entry booking control totals. The control totals fields, Unfiltered Demand (units) and Unfiltered Cost, provide unit and cost hash totals used in the reconciliation. In addition, any nonzero demand data exceptions that are listed on the Demand Data Edit Diagnostics Report are items that need to be reconciled because the exception records are not included in the control totals.

If you answered the tailoring questionnaire to calculate projections for years 2 and 3, this option generates the period projections.

Option 20.Inventory Parameter Calculation. Use this option to calculate reorder point and safety stock using the latest forecasts. The system schedules the inventory parameter calculation for processing.

If you choose not to perform the inventory parameter calculation this period, the previous (the last time this option was selected) inventory control parameters are reported to the master schedule.

Option 21.Forecast Load to Master Schedule. Use this option to load the period forecasts and inventory parameters to the master schedule. A display appears for you to choose a range of planning warehouses to use. The system schedules the forecast load for processing.

The final step in the period update process is loading the period forecasts and inventory parameters into the master schedule. This step is important because the interface to the master schedule actually updates and generates the requirements. This action updates the MRP Requirements (REQMTS) and FCST Demand Interface (DMDIFF) files. In addition, the safety stock and reorder point quantities are updated in the Item Balance (ITEMBL) file.

Also, the MRP load interface routine within FCST requires that the forecast coordinator specify the length in working days of three zones:

- The frozen period
- The firm period
- The free period.

It is very important that you maintain consistency in the day of week you load the period forecasts. An inconsistent day of week causes FCST to duplicate forecast and requirements data that overlap successive forecast loads. Planning dates conventions used in FCST, MRP, and MPSP are discussed in Appendix D. “Coordinating the planning calendar”.

Option 1. Period Demand Data Capture (AM2M20)

Use this option to capture demand data for the current period customer orders. However, it is recommended that you use this option only one time per period.

What information you need: None.

What reports are printed: Period Demand Extract (AM210).

What forms you need: None.

To capture the demand data for the current period customer orders, select option 1 and press **Enter**. The system schedules the demand data capture for the most recent customer orders by request date. Go to menu AM2M20. Select another option, or return to the Main Menu.

Option 2. Forecast Master Reconciliation (AM2M20)

Use this option to compare and reconcile the Forecast Master file with the Item Master file. It is recommended you use this option before the forecast calculation.

What information you need: None.

What reports are printed: Forecast Master Reconciliation Maintenance (AM211).

What forms you need: None.

To reconcile the Forecast Master file with the Item Master file, select option 2 and press **Enter**. The system schedules the reconciliation for processing. Go to menu AM2M20. Select another option, or return to the Main Menu.

Option 3. Forecast Calculation (AM2M20)

Use this option to calculate a new forecast/ projection based upon the most recent demand data. It is recommended that you use this option after the most recent demand data has been captured and the Forecast Master file has been reconciled with the Item Master file. It is recommended that you use this option one time per period.

What information you need: None.

What reports are printed:

- Demand Data Edit Diagnostics (AM203)
- Projection Edit Diagnostics (AM221).

What forms you need: None.

To calculate the forecast/projection, select option 3 and press **Enter**. The system schedules the forecast calculation for processing. Go to menu AM2M20. Select another option, or return to the Main Menu.

Option 4. Inventory Parameter Calculation (AM2M20)

Use this option to calculate the safety stock and reorder point. It is recommended that the inventory parameter calculations be done after the forecasts are calculated and you have reviewed the Forecast Exception/Detail Report (AM243/AM244) and entered any overrides which are necessary.

What information you need: None.

What reports are printed:

- Inventory Detail Report (AM206)
- Inventory Summary Report (AM206).

What forms you need: None.

To calculate the inventory parameters, select option 4 and press **Enter**. The system schedules the safety stock and reorder point calculations for processing. Go to menu AM2M20. Select another option, or return to the Main Menu.

Option 5. Forecast Load to Master Schedule (AM2M20)

Use this option to load the forecast to the master schedule. Loading the forecast to the master schedule creates a preliminary gross requirements plan in the planning interval specified by you.

What information you need: Planning warehouse identifiers.

Note: To perform tasks in this menu option, you must be authorized to the proper security in the warehouse you select.

What reports are printed:

- Forecast Load Diagnostics (AM218)
- Inventory Load Control Totals (AM215).

What forms you need: None.

The basic steps to perform the forecast load follow the display.

AMV3HP—Forecast Load to Master Schedule

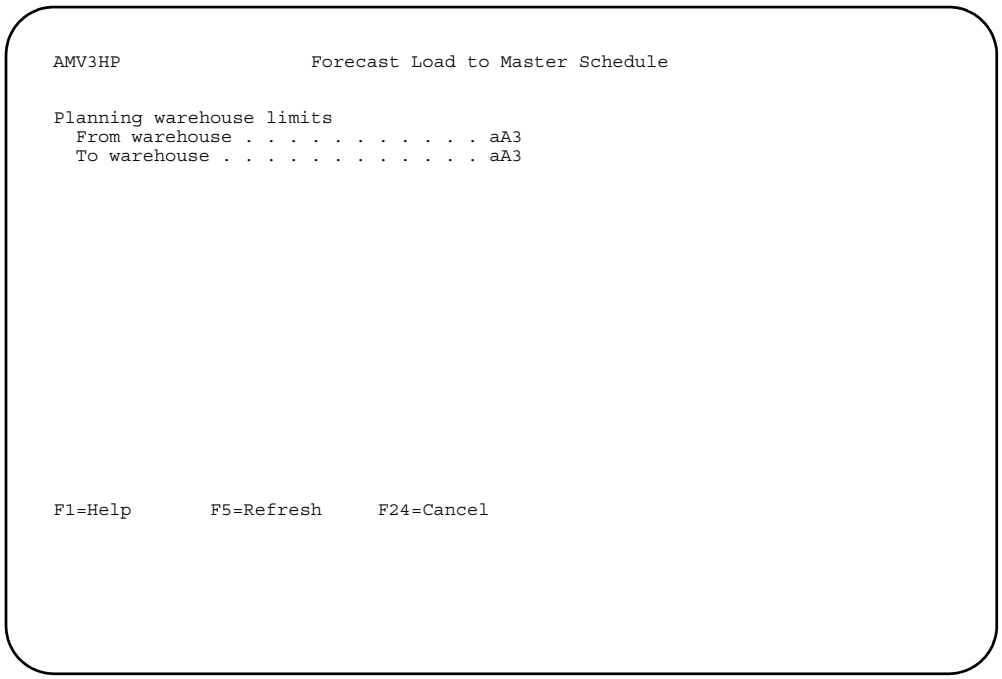
Use this display to choose which planning warehouses you would like to load forecasts against. You can select a single planning warehouse, or a range of planning warehouses. For each warehouse that falls in the range selected, separate jobs are initiated and separate reports are printed.

Note: You must be authorized to the proper level of security in the warehouses you select.

This display appears when you select option 5, Forecast Load to Master Schedule, on menu AM2M20.

For the ***From*** and ***To*** ranges on this display, the value you type in the ***To*** field must be greater than or equal to the value you type in the ***From*** field when both fields are used. the range begins with and includes the value you type in the ***From*** field; it ends with and includes the value you type in the ***To*** field.

If you type a value in the ***From*** field only, the system ends the range with the highest value for that field. If you type a value in the ***To*** field only, the system begins the range with the lowest value for that field. If you want to select records by a single value instead of a range, use that value in both the ***From*** and ***To*** fields.



What to do

- To perform the downloads, select a range of planning warehouses and press **Enter**. The system schedules the job for processing. Go to menu AM2M20.
- To cancel the session, use **F24**. Menu AM2M20 appears again.

Function keys

F1=Help shows information about this display. Using **F1** or pressing the help key shows you the same information.

F5=Refresh resets this display as it was before you typed in any values.

F24=Cancel ends processing and any data you typed is ignored. The Period Update menu (AM2M20) appears again.

Fields

[?] appears next to a field name in the following field definitions to identify a field from which you can begi[n a master file search.

Planning warehouse limits.

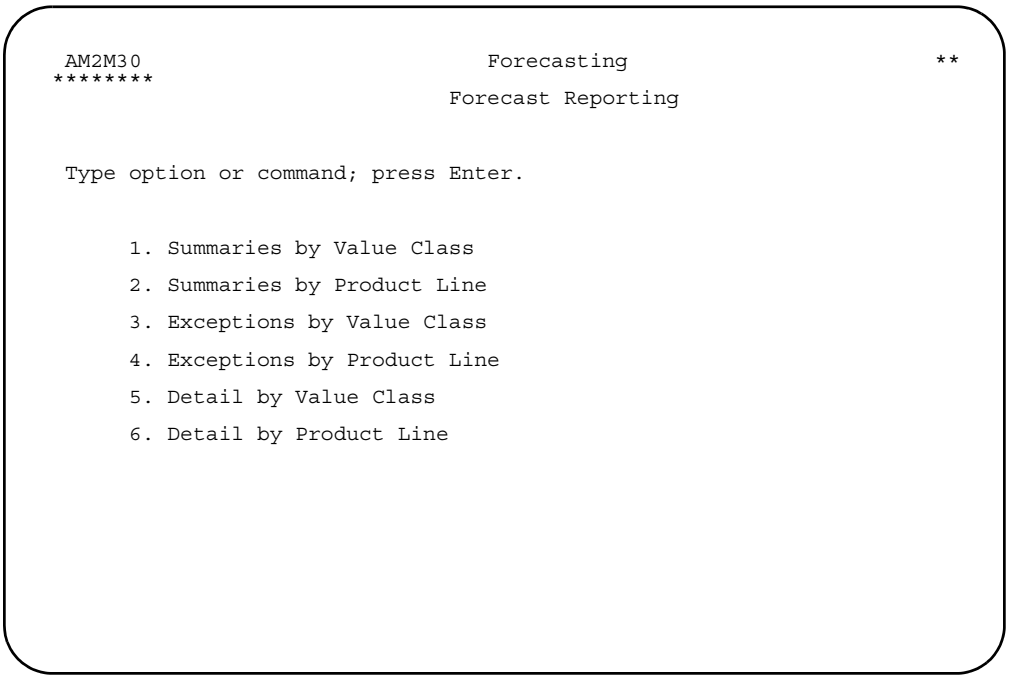
> ***From warehouse/To warehouse [?]***. The range of warehouses to use for loading forecasts.

Chapter 5. Forecast Reporting

The Forecast Reporting menu appears when you select option 3 on the Forecasting Main Menu.

Use this menu to print the Forecast Report in value class or product line sequence. Summary, exception, and detail reports are available. No displays are associated with this option.

Option 1. Summaries by Value Class (AM2M30) 5-2
Option 2. Summaries by Product Line (AM2M30) 5-3
Option 3. Exceptions by Value Class (AM2M30) 5-4
Option 4. Exceptions by Product Line (AM2M30) 5-5
Option 5. Detail by Value Class (AM2M30) 5-6
Option 6. Detail by Product Line (AM2M30) 5-7



Option 22.Summaries by Value Class. Use this option to print the Forecast Summary Report in value class sequence.

Option 23.Summaries by Product Line. Use this option to print the Forecast Summary Report in product line sequence.

Option 24.Exceptions by Value Class. Use this option to print the Forecast Exception Report in value class sequence for exceptions only.

Option 25.Exceptions by Product Line. Use this option to print the Forecast Exception Report in product line sequence for exceptions only.

Option 26.Detail by Value Class. Use this option to print the Forecast Detail Report in value class sequence.

Option 27.Detail by Product Line. Use this option to print the Forecast Detail Report in product line sequence.

Option 1. Summaries by Value Class (AM2M30)

Use this option to print a Forecast Summary Report by value class.

What information you need: None.

What reports are printed: Forecast Summary Report (AM241, AM245).

What forms you need: None.

To print the Forecast Summary Report by value class, select option 1 and press **Enter**. The system schedules the Forecast Summary Report for printing. Go to menu AM2M30. Select another option, or return to the Main Menu.

Option 2. Summaries by Product Line (AM2M30)

Use this option to print a Forecast Summary Report by product line.

What information you need: None.

What reports are printed: Forecast Summary Report (AM242, AM245).

What forms you need: None.

To print the Forecast Summary Report by product line, select option 2 and press **Enter**. The system schedules the Forecast Summary Report for printing. Go to menu AM2M30. Select another option, or return to the Main Menu.

Option 3. Exceptions by Value Class (AM2M30)

Use this option to print a Forecast Exception Report by value class.

What information you need: None.

What reports are printed: Forecast Exception Report (AM243).

What forms you need: None.

To print the Forecast Exception Report by value class, select option 3 and press **Enter**. The system schedules the Forecast Exception Report for printing. Go to menu AM2M30. Select another option, or return to the Main Menu.

Option 4. Exceptions by Product Line (AM2M30)

Use this option to print a Forecast Exception Report by product line.

What information you need: None.

What reports are printed: Forecast Exception Report (AM244).

What forms you need: None.

To print the Forecast Exception Report by product line, select option 4 and press **Enter**. The system schedules the Forecast Exception Report for printing. Go to menu AM2M30. Select another option, or return to the Main Menu.

Option 5. Detail by Value Class (AM2M30)

Use this option to print a Forecast Detail Report by value class.

What information you need: None.

What reports are printed: Forecast Detail Report (AM243).

What forms you need: None.

To print the Forecast Detail Report by value class, select option 5 and press **Enter**. The system schedules the Forecast Detail Report for printing. Go to menu AM2M30. Select another option, or return to the Main Menu.

Option 6. Detail by Product Line (AM2M30)

Use this option to print a Forecast Detail Report by product line.

What information you need: None.

What reports are printed: Forecast Detail Report (AM244).

What forms you need: None.

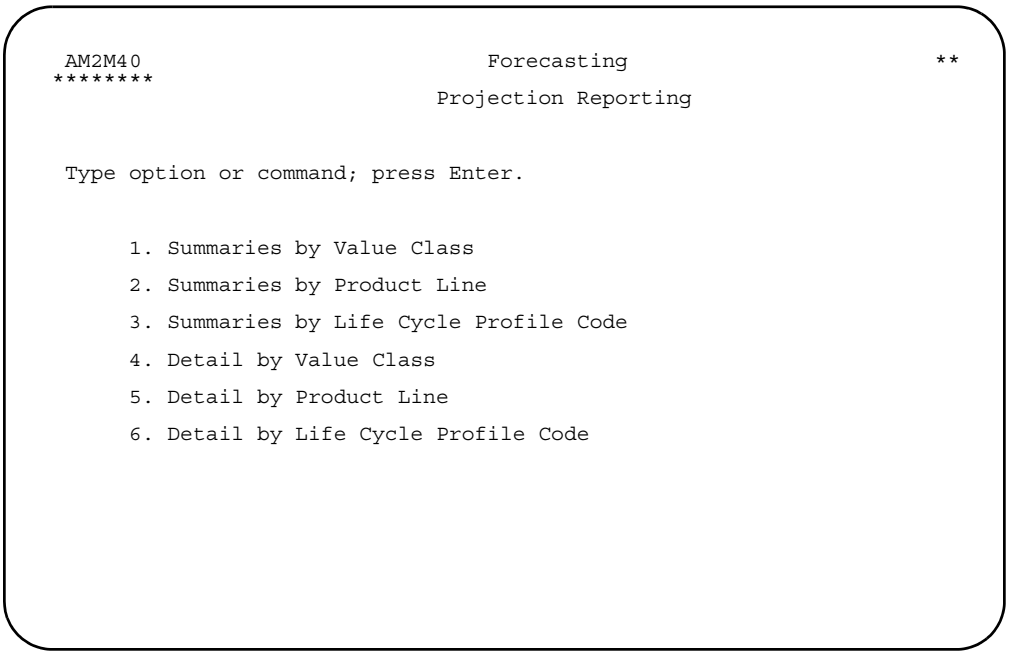
To print the Forecast Detail Report by product line, select option 6 and press **Enter**. The system schedules the Forecast Detail Report for printing. Go to menu AM2M30. Select another option, or return to the Main Menu.

Chapter 6. Projection Reporting

The Projection Reporting menu appears when you select option 4 on the Forecasting Main Menu.

Use this menu to print the Projection Report in value class, product line, or life cycle profile sequence. Summary and detail reports are available. No displays are associated with this option.

Option 1. Summaries by Value Class (AM2M40) 6-2
Option 2. Summaries by Product Line (AM2M40) 6-2
Option 3. Summaries by Life Cycle Profile Code (AM2M40) 6-2
Option 4. Detail by Value Class (AM2M40) 6-2
Option 5. Detail by Product Line (AM2M40) 6-3
Option 6. Detail by Life Cycle Profile Code (AM2M40) 6-3



Option 1. Summaries by Value Class. Use this option to print the Projection Summary Report in value class sequence.

Option 2. Summaries by Product Line. Use this option to print the Projection Summary Report in product line sequence.

Option 3. Summaries by Life Cycle Profile Code. Use this option to print the Projection Summary Report in life cycle profile code sequence.

Option 4. Detail by Value Class. Use this option to print the Projection Detail Report in value class sequence.

Option 5. Detail by Product Line. Use this option to print the Projection Detail Report in product line sequence.

Option 6. Detail by Life Cycle Profile Code. Use this option to print the Projection Detail Report in life cycle profile code sequence.

Option 1. Summaries by Value Class (AM2M40)

Use this option to print a Projection Summary Report by value class.

What information you need: None.

What reports are printed: Projection Summary Report (AM251, AM253).

What forms you need: None.

To print the Projection Summary Report by value class, select option 1 and press **Enter**. The system schedules the Projection Summary Report for printing. Go to menu AM2M40. Select another option, or return to the Main Menu.

Option 2. Summaries by Product Line (AM2M40)

Use this option to print a Projection Summary Report by product line.

What information you need: None.

What reports are printed: Projection Summary Report (AM251, AM253).

What forms you need: None.

To print the Projection Summary Report by product line, select option 2 and press **Enter**. The system schedules the Projection Summary Report for printing. Go to menu AM2M40. Select another option, or return to the Main Menu.

Option 3. Summaries by Life Cycle Profile Code (AM2M40)

Use this option to print a Projection Summary Report by life cycle profile code.

What information you need: None.

What reports are printed: Projection Summary Report (AM251, AM253).

What forms you need: None.

To print the Projection Summary Report by life cycle profile code, select option 3 and press **Enter**. The system schedules the Projection Summary Report for printing. Go to menu AM2M40. Select another option, or return to the Main Menu.

Option 4. Detail by Value Class (AM2M40)

Use this option to print a Projection Detail Report by value class.

What information you need: None.

What reports are printed: Projection Detail Report (AM252).

What forms you need: None.

To print the Projection Detail Report by value class, select option 4 and press **Enter**. The system schedules the Projection Detail Report for printing. Go to menu AM2M40. Select another option, or return to the Main Menu.

Option 5. Detail by Product Line (AM2M40)

Use this option to print a Projection Detail Report by product line.

What information you need: None.

What reports are printed: Projection Detail Report (AM252).

What forms you need: None.

To print the Projection Detail Report by product line, select option 5 and press **Enter**. The system schedules the Projection Detail Report for printing. Go to menu AM2M40. Select another option, or return to the Main Menu.

Option 6. Detail by Life Cycle Profile Code (AM2M40)

Use this option to print a Projection Detail Report by life cycle profile code.

What information you need: None.

What reports are printed: Projection Detail Report (AM252).

What forms you need: None.

To print the Projection Detail Report by life cycle profile code, select option 6 and press **Enter**. The system schedules the Projection Detail Report for printing. Go to menu AM2M40. Select another option, or return to the Main Menu.

Chapter 7. Seasonal Update

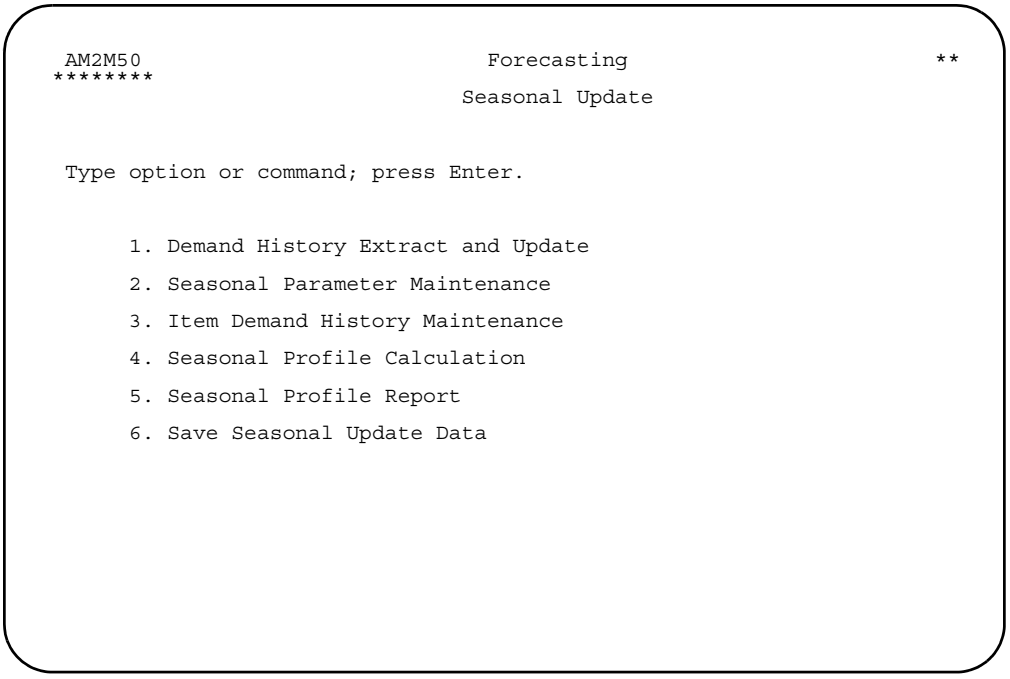
The Seasonal Update menu appears when you select option 5 on the Forecasting Main Menu. The options on this menu are valid only at year end processing.

Use this menu after you complete a forecast year to add or change seasonal parameters, copy demand history from the Forecast Master file to the Demand History file, and change Demand History records. Use this menu to calculate item and group profiles, print the Seasonal Profile Report, and end the annual seasonal update process by saving the demand history for the next year analysis.

Only options 1, 2, and 3 have displays associated with them.

Note: If you override any of the group seasonal coefficients or reliability coefficients before you complete the seasonal update process, the overrides are applied to the last year's Seasonal Group Profile file and are deleted with this option.

Option 1. Demand History Extract and Update (AM2M50).....7-3
Option 2. Seasonal Parameter Maintenance (AM2M50).....7-5
Option 3. Item Demand History Maintenance (AM2M50).....7-8
Option 4. Seasonal Profile Calculation (AM2M50).....7-10
Option 5. Seasonal Profile Report (AM2M50).....7-10
Option 6. Save Seasonal Update Data (AM2M50).....7-10



Option 7. Demand History Extract and Update. Use this option to extract the demand history for the current year from the Forecast Master file and add it to the Demand History file. The system schedules the demand history update for processing.

Note: When you implement FCST, the item sales information for one to six years is extracted from the Temporary Item Summary file or the Item History file to create the Demand History file.

At the end of each year you must extract the demand history from the Forecast Master file and add it to the Demand History file. The Forecasting application restores the Demand History file from offline media in order to add the new year of demand history. At this time, seasonal parameters are created and used to calculate new seasonal coefficients.

Option 8. Seasonal Parameter Maintenance. Use this option to add or change seasonal parameters in preparation for the seasonal update process.

Option 9. Item Demand History Maintenance. Use this option to change demand history records for individual items.

Option 10.Seasonal Profile Calculation. Use this option to calculate new item and group seasonal profiles. You may choose a particular year of history using the Forecast Control Inquiry/Maintenance display (AM2001) to be used in the calculations before you select this option.

Option 11.Seasonal Profile Report. Use this option to print the item and group seasonal profile report. The system schedules the Seasonal Profile Report for printing.

FCST generates seasonal profile listings that display the calculated seasonal coefficients for each volume subgroup in all seasonal groups. In addition, seasonal coefficients relating to individual items are displayed. The field that controls whether item seasonal coefficients are printed is one of the seasonal parameters that is established at the beginning of the seasonal update process. This parameter is termed the ***Item Print*** field. The ***Item Print*** field determines whether the volume subgroup data prints. It is generally recommended that the ***Item Print*** field be set to N (No) for volume subgroup 0 in each seasonal group. This setting limits the size of reports because these items are rarely reviewed in detail.

Option 12.Save Seasonal Update Data. Use this option to transfer the Demand History file to offline media (Volume ID DEMHIS), erase the Demand History and Item Profile files on disk and replace the old Seasonal Group Profile file with the new Seasonal Group Profile file. During implementation, this option also initiates the Forecast Master and Forecast Future Years files.

Once the review and calculation of seasonal group coefficients is completed, FCST must be instructed to conclude the seasonal update process. This instruction saves the Demand History file on offline media (Volume ID DEMHIS) and deletes it from the disk. This frees up the space that is temporarily used by having the Demand History file available for the seasonal update process. This file is not needed during the year because the Forecast Master file carries the most recent year of demand history. This processing step also deletes the Seasonal Group Profile file that was used in the prior year for forecasting purposes and replaces it with the new Seasonal Group Profile file that was generated during the seasonal update process.

Note: The first time you select this option, FCST initializes the Forecast Master file. In addition, every time you select this option you must provide offline media (Volume ID DEMHIS) for the Demand History file backup.

Option 1. Demand History Extract and Update (AM2M50)

Use this option to transfer the demand history from offline media to disk and then add the demand history saved in the Forecast Master file for the completed year. After implementation, this option is valid only at year end.

What information you need: None.

What reports are printed:

- Demand History Extract and Update (AM207) at year-end when it is not being implemented
- Demand History Construction (AM208) at implementation time only.

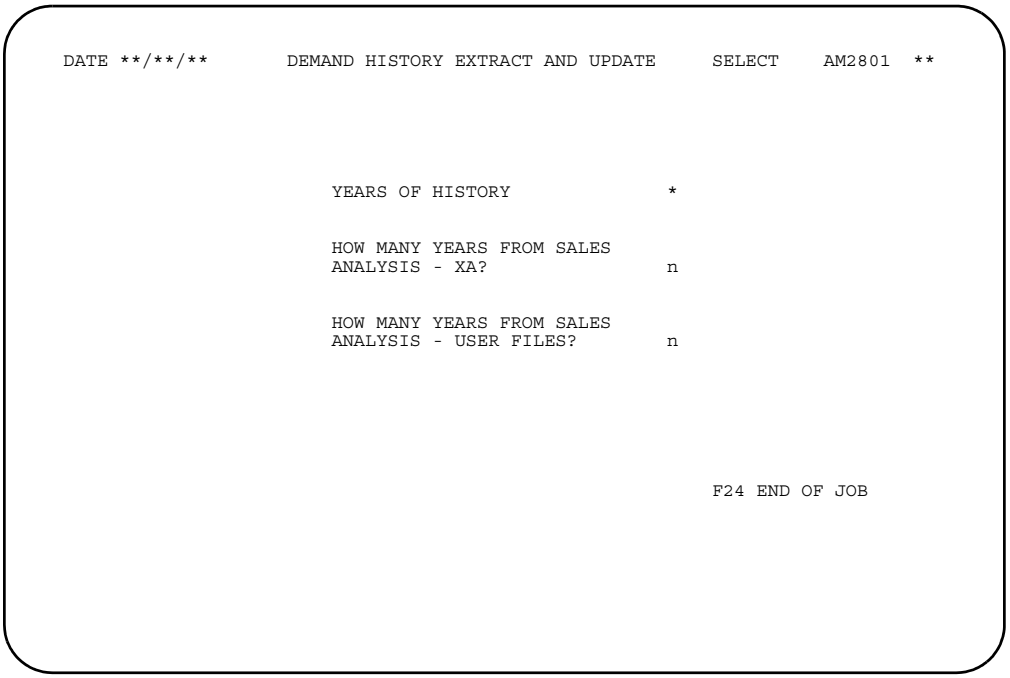
What forms you need: None.

The basic steps to do Demand History Extract and Update are listed below the display.

AM2801—Demand History Extract and Update

Use this display to tell Forecasting how many years of history will come from Sales Analysis - XA and Sales Analysis - User Files. You can extract the sales history for up to six years from the Temporary Item Summary file or the Item History file and create the Demand History file.

This display appears when you select option 1 on the Seasonal Update menu (AM2M50) and option 7 on the Inquiry and File Maintenance menu (AM2M10)..



What to do

Type the number of years of Sales Analysis data from XA and user (YEARXX) files. Press **Enter**. Go to the previous menu. Select another option, or return to the Main Menu.

The information is processed and report AM288 is printed. If the total of the number of years from MAPICS II and XA do not equal the years of history, you will receive an error message.

Function keys

F24 END OF JOB leaves the display and returns to the previous menu.

Fields

YEARS OF HISTORY. The total number of years to be included when starting Forecasting. This number is supplied by an answer in the Forecasting Questionnaire.

HOW MANY YEARS FROM SALES ANALYSIS - XA. Type the total number of years to be supplied from Sales Analysis -XA.

HOW MANY YEARS FROM SALES ANALYSIS - USER FILES. Type the total number of years to be supplied from Sales Analysis - User (YEARXX) files.

Option 2. Seasonal Parameter Maintenance (AM2M50)

Use this option to add or change a seasonal group profile record during seasonal update. This option is valid only at year end.

What information you need: The seasonal group profile code of the record you want to add or change.

What reports are printed: None.

What forms you need: None.

The basic steps to do Seasonal Parameter Maintenance are listed below the display.

AM2161—Seasonal Parameter Maintenance

Use this display to add or change seasonal parameters used in seasonality calculations. See the chart in Chapter 2 “Managing Forecasting” for a recommended list of parameters.

This display appears when you select option 2 on the Seasonal Update menu (AM2M50).

```
 DATE   **/**/**        SEASONAL PARAMETER MAINTENANCE                AM2161  **

SEASONAL GROUP CODE  nnn     GROUP DESCRIPTION aaaaaaaaaaaaaaaaaA20

           VOLUME      VOLUME      ITEM      ITEM     GROUP      FILTER
            CODE        BREAK      PRINT     RATIO    RATIO       LEVEL

              *      nnnnnnnnn       A        n.n      n.n         .nn

              *      nnnnnnnnn       A        n.n      n.n         .nn

              *      nnnnnnnnn       A        n.n      n.n         .nn

              *      nnnnnnnnn       A        n.n      n.n         .nn

              *      nnnnnnnnn       A        n.n      n.n         .nn

              *      nnnnnnnnn       A        n.n      n.n         .nn


                                                  F08 EDIT & UPDATE
                                                  F16 DELETE GROUP
                                                  F24  END OF JOB
```

What to do

- Add a seasonal group profile record:
  - Type the seasonal group profile code and press **Enter**. This display appears again.
  - Type the description and volume code data and press **Enter**. This display appears again with the seasonal group profile record.
  - Use **F08**. This display appears again.

  - To add another seasonal group profile record, type over the seasonal group profile code and press **Enter**. This display appears again.
  - To add the seasonal group profile record without reviewing the record, type the description and volume code data and use **F08**.
  - To end the session, use **F24**. Go to menu AM2M50. Select another option, or return to the Main Menu.

- Change a seasonal group profile record:
  - Type the seasonal group profile code and press **Enter**. This display appears again with the information about the profile you requested.
  - Type the changes and press **Enter**. This display appears again with the changes you made.
  - To update the seasonal group profile record without reviewing the changes, use **F08**. This display appears again.
  - To change another seasonal group profile record, type over the seasonal group profile code and press **Enter**.
  - To end the session, use **F24**. Go to menu AM2M50. Select another option, or return to the Main Menu.

Function keys

F08 EDIT & UPDATE accepts changes and updates the record, and then returns to the same display. You can type another Seasonal Group Profile Code to change or add another record.

F16 DELETE GROUP allows deletion of the group shown in Seasonal Group Code field.

F24 END OF JOB leaves the display and returns to the Seasonal Update menu (AM2M50).

Fields

SEASONAL GROUP CODE. This field shows the seasonal group profile code added or changed.

GROUP DESCRIPTION. This field shows the description of the seasonal group.

VOLUME CODE. This field shows the volume subgroup within a seasonal group. It cannot be changed.

VOLUME BREAK. This field shows the maximum annual demand for items assigned to the volume subgroup. The last entry must be 9999999.

ITEM PRINT. This field shows whether the items assigned to this seasonal group profile code and volume code are printed:

Y Print.
N Do not print.

ITEM RATIO. This field shows the minimum item ratio required to use an item in the seasonality calculations.

GROUP RATIO. This field shows the minimum group ratio required to classify an item as seasonal relative to the group seasonal coefficients.

FILTER LEVEL. This field shows the level of resolution used to define a seasonal group profile as horizontal, unimodal, bimodal, or trimodal.

Option 3. Item Demand History Maintenance (AM2M50)

Use this option to change an item demand history record during the seasonal update process. This option is valid only at year end.

What information you need: The item number, warehouse, and year for the demand history record you want to change.

What reports are printed: None.

What forms you need: None.

The basic steps to do Item Demand History Maintenance are listed below the display.

AM2131—Item Demand History Maintenance

Use this display to change an item's demand history parameters.

This display appears when you select option 3 on the Seasonal Update menu (AM2M50).

```
DATE   **/**/**      ITEM DEMAND HISTORY MAINTENANCE      ******     AM2131  **


                  ITEM                      aaaaaaaaaaaaA15
                  WAREHOUSE                 aA3
                  YEAR                      aA3

                  SEASONAL GROUP CODE       nnn

                  ITEM PROCESS CODE (Y/N)   A

                  GROUP PROCESS CODE (Y/N)  A









                                                F08 EDIT & UPDATE
                                                F24 END OF JOB
```

What to do

- To change a demand history record, type the item number, warehouse, and year and press **Enter**. This display appears again with the information about the item you requested.
- Type the changes and press **Enter**. This display appears again with the changes you have made.
- To update the demand history record, use **F08**. This display appears again.
- To change another demand history record, type over the item number, warehouse, and year and press **Enter**.

- To update the demand history record without reviewing the changes, use **F08**. This display appears again.
- To end the session, use **F24**. Go to menu AM2M50. Select another option, or return to the Main Menu.

Function keys

F08 EDIT & UPDATE accepts changes and updates the record, and then returns to the same display.

F24 END OF JOB leaves the display and returns to the Seasonal Update menu (AM2M50).

Fields

ITEM [?]. This field shows the item number. Type in the number of the item you want.

WAREHOUSE. This field shows the warehouse. Type in the number of the warehouse you want. If this field is blank, the system warehouse is used.

YEAR. This field shows the last 2 digits of the demand history year. If you type in ALL, all years are used.

SEASONAL GROUP CODE. This field shows the seasonal group profile code assigned to this item. If you change this field, the same field in the Forecast Master file is changed.

Note: Maintenance to this field is valid only when the demand history year is ALL.

ITEM PROCESS CODE (Y/N).

Y This year is used in seasonality calculations.
N This year is not used in seasonality calculations. The item will not be included on the Seasonal Profile Report (AM214).

GROUP PROCESS CODE (Y/N).

Y This item is used in building a seasonal group profile.
N This item is not used in building a seasonal group profile.

Option 4. Seasonal Profile Calculation (AM2M50)

Use this option to calculate the item and group seasonal profiles during the seasonal update process. Use this option annually. This option is valid only at year end.

What information you need: None.

What reports are printed: Seasonal Profile Construction (AM209).

What forms you need: None.

To calculate the item and group seasonal profiles, select option 4 and press **Enter**. The system schedules the calculation for processing. Go to menu AM2M50. Select another option, or return to the Main Menu.

Option 5. Seasonal Profile Report (AM2M50)

Use this option to print the Seasonal Report (AM214) during the seasonal update process. This option is valid only at year end.

What information you need: None.

What reports are printed: Seasonal Profile Report (AM214).

What forms you need: None.

To print the Seasonal Profile Report, select option 5 and press **Enter**. The system schedules the report for printing. Go to menu AM2M50. Select another option, or return to the Main Menu.

Option 6. Save Seasonal Update Data (AM2M50)

Use this option to save the seasonal update data after you have completed the seasonal update process. This option completes the annual seasonal update process. The Demand History file is saved on offline media and the seasonal update work files are deleted from the disk. This option is valid only at year end.

What information you need: None.

What reports are printed: None.

> **Note:** Forecast Master Reconciliation (AM211) and Forecast Master Initialization (AM212) are printed at implementation time only.

What forms you need: None.

To save the seasonal update data, select option 6 and press **Enter**. The system schedules the data save for processing. Go to menu AM2M50. Select another option, or return to the Main Menu.

Chapter 8. Report descriptions

This chapter contains samples of reports the FCST application produces. Depending on which functions you choose when you tailor the application to your company's need, you may not need some of the reports described.

Note: You do not select the control total reports. They are printed automatically when various application functions are performed, and provide audit and status information.

Table 8-1. List of reports, sorted by report name

Report	ID	See page
Forecast Detail Report	AM243	8-2
Forecast Exception Report	AM243	8-5
Forecast Summary Report	AM241	8-6
Forecast Summary Report (control totals)	AM245	8-8
Inventory Detail Report	AM206	8-10
Life Cycle Profile Report	AM2203	8-12
Projection Detail Report	AM252	8-14
Projection Summary Report	AM251	8-16
Seasonal Profile Report	AM214	8-18
Seasonal Profile Report (group reliability coefficients)	AM214	8-24
Seasonal Profile Report (group seasonal coefficients)	AM214	8-21

Table 8-2. List of reports, sorted by report ID

ID	Report	See page
AM206	Inventory Detail/Summary Report	8-10
AM214	Seasonal Profile Report	8-18
	Seasonal Profile Report (group seasonal coefficients)	8-21
	Seasonal Profile Report (group reliability coefficients)	8-24
AM2203	Life Cycle Profile Report	8-12
AM241	Forecast Summary Report	8-6
AM243	Forecast Detail Report	8-2
	Forecast Exception Report	8-5
AM245	Forecast Summary Report (control totals)	8-8
AM251	Projection Summary Report	8-16
AM252	Projection Detail Report	8-14

Forecast Detail Report (AM243)

```
 NORTHCREEK IND.          FORECAST DETAIL REPORT                DATE  2/28/**  TIME  9:32:30  PAGE    1  AM243
CYCLE YEAR **   CYCLE PERIOD 02   EFFECTIVE DATE  2/03/
**  VALUE CLASS                                AMOUNT WAREHOUSE FORECASTS
TC ITEM NUMBER         SEAS GRP CUR ANN ******                          FORECAST FOR NEXT  12  PERIODS
             ******
IC    PRODUCT LINE  WRH     VOL PRV ANN ******                          FORECAST FOR PAST  12  PERIODS
             ******
     DESCRIPTION          CFVR   TREND ******                          DEMAND   FOR PAST  12  PERIODS
             ******
                                          03     04     05     06     07     08     09     10     11     12
  01     02
-------------------------------------------------------------------------------------------------------------------

   54-
06811                 002      7666    326    215     84      0      0      0      0      0    613    525    437
  392
     54  0         SYS       2     10057    853*   992    952*  1108*  1552*  1642*  1116    905    738    712
 681    841*
     TY242-240U-E1          .70      1103-
  1871   1905      0      0      0    327    327    327    627    639   1422    499
   01-
08800                 000      1182     99     98     98     98     98     98     98     98     98     98
   98
     01  0         SYS       0       212      0      0      0      0      0      4      6     18      0      0
   0      0
     UT4-
48"2 LITE SHOP L 3.63          0      0      0      0      0      4     21     68    305      0      0      0
 0
   01-
08800                 000      1182     99     98     98     98     98     98     98     98     98     98
   98
     01  0         A         0       212      0      0      0      0      0      4      6     18      0      0
   0      0
     UT4-
48"2 LITE SHOP L 3.63          0      0      0      0      0      4     21     68    305      0      0      0
 0
   01-
15151                 005     42429   5092   4243   3394   2970   2121   2970   3819   4243   3394   2970   2970
 4243
     01  0         SYS       0    125530   7795*  7550*  8093*  6051*  5295*  5899*  7380* 12553  12744   6150*
6640* 10345*
     SL-1KB-
48" SHOP LITE  .92          0  14134   3660      0      0      0      0  10596    300  10881   9157  14940   6941
   01-
15151                 005     57336   6880   5733   4587   4014   2867   4013   5160   5734   4587   4013   4014
 5734
     01  0         A         0     85705  14466  12019  15333* 10378*  6192*  6647*  7431   8571  11688  11374  1
0680  13168*
     SL-1KB-
48" SHOP LITE  .70          0  14125   3580      0      0      0      0  10596    300  10844   8945  14930   6788
   01-
15153                 005     92426  11091   9243   7394   6470   4621   6470   8318   9243   7394   6470   6470
 9242
     01  0         SYS       0    122581   6670*  6470*  6932*  5184*  4530*  5054*  6320* 12258  12173   5270*
5690*  8857*
     SL-1B-
48"SHOP LITE W  .79          0   5765   9397    600      0      0   2652   2652   2652  13028  16939  12604  10822

   01-
15153                 005     87290  10475   8729   6983   6110   4365   6110   7856   8729   6983   6111   6110
 8729
     01  0         A         0    104917  15707  12094  16650* 11269*  8871*  9522* 10645  10492  12135  11975  1
1957  14743*
     SL-1B-
48"SHOP LITE W  .69          0   5746   9397    600      0      0   2652   2652   2652  13001  16939  12594  10814

   06-
00002                 006     14529   1525   1308   1162    872    872   1162   1307   1526   1308   1089   1090
 1308
     06  0         SYS       2     14457   1959   1600   1627*  1056    945   1090   1272   1518   1702   1697
1532   1348*
     WRW220-
A              .36          0   1087   1415    160      0      4   1593   1597   1597   1427   1294   1590   1650
   06-
00002                 006     11272   1183   1015    902    676    676    902   1014   1184   1014    846    845
 1015
     06  0         A         2     10923   1960   1416   1628*   920    680    632    827   1147   1984   1924
1563   1376*
     WRW220-
A              .69          0    740   1016    160      0      4   1497   1597   1501   1066    808   1238   1206
```

```
   NORTHCREEK IND.                        FORECAST DETAIL REPORT                    DATE **/**/
**  TIME 14:37:24  PAGE    7  AM243

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/
**  VALUE CLASS *                              AMOUNT WAREHOUSE FORECASTS

                                  WRH          READ         SELECTED
     FORECAST MASTER RECORDS      SYS             1              1
                                  A               1              1
                                  1               1              1
                                  2               0              0
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

VALUE CLASS. The product line or value class for which information is printed. This field designates the major sequence of reporting of the forecast and exception information.

AMOUNT WAREHOUSE FORECASTS. This field defines whether the warehouse forecasts, if printed, are printed as actual amounts or as percents.

TC. The tracking code indicates the value of the tracking history exception code in the current cycle period.

ITEM NUMBER. The item number for which the forecast information is being printed.

SEAS GRP CUR ANN. The seasonal group profile code to which this item has been assigned.

CUR ANN. The current annual forecast in units for the item.

FORECAST FOR NEXT 12 PERIODS. The amount of demand in units forecasted for each reporting period in the year beginning with the next reporting period of the year (i.e., one greater than the cycle period).

IC. The intelligence code shows the value of the intelligence history in the current cycle period. This field is printed immediately beneath the tracking code.

PRODUCT LINE. The product line is a marketing grouping to which this item belongs.

WRH. The warehouse for which the forecast is printed. SYS designates the total company information and warehouse corresponds to a warehouse.

VOL PRV ANN. The volume subgroup within the seasonal group into which this item's annual demand falls.

FORECAST FOR PAST 12 PERIODS. The total quantity of demand forecasted over the past year that this system was in operation. These amounts begin with the oldest forecast, i.e., one year ago, and increase to the most recent past forecast.

DESCRIPTION. The description of the item for which forecast information is printed.

CFVR. The coefficient of variation is the mean absolute deviation of the forecast errors divided by a nonseasonal period forecast.

TREND. Period trend in units for this item.

DEMAND FOR PAST 12 PERIODS. The total quantity of actual demand that occurred over the past year, beginning with the oldest demand information printed first.

Notes:

1. The demand information stored in the system is net of filtering actions taken by the FCST application forecast model.
2. If the forecast report requested by the user was for exception items only, only those items with nonzero tracking history exception codes or intelligence history codes are printed.

FORECAST MASTER RECORDS.

WRH: The warehouse for which the control totals are printed. SYS designates the total company control totals, and warehouse corresponds to a warehouse.

READ: The number of Forecast Master records that were read for reporting purposes.

SELECTED: The number of Forecast Master records that were selected for reporting purposes.

Forecast Exception Report (AM243)

```
   NORTHCREEK IND.              FORECAST EXCEPTION REPORT      DATE **/**/**  TIME 14:36:02  PAGE    1  AM243

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**  VALUE CLASS

TC ITEM NUMBER          SEAS GRP CUR ANN ******                          FORECAST FOR NEXT  12  PERIODS
          ******

IC     PRODUCT LINE  WRH     VOL PRV ANN ******                          FORECAST FOR PAST  12  PERIODS
          ******

       DESCRIPTION          CFVR   TREND ******                          DEMAND   FOR PAST  12  PERIODS
          ******
                                            02     03     04     05     06     07     08     09     10     11
  12     01
3  03423                      002      10      1      1      0      1      1      1      1      1      0      1
   1      1
       50             SYS       0      12      0      0      0      0      0      0      0      0      0      0
   0      0
       TREADLE               1.20       0      0      0      0      0      0      0      0      0      0      0
   0      0
3  03425                      003      10      1      1      1      1      1      1      1      1      1      0
   0      1
       50             SYS       0      12      0      0      0      0      0      0      0      0      0      0
   0      1
       COVER                 1.20       0      0      0      0      0      0      0      0      0      0      0
   0      0
4  99001                      003     419     30     39     47     41     48     30     43     51     54      2
   0     35
       10             SYS       0     459      0      0      0      0      0      0      0      0      0      0
   0     39
       SPRAY UNIT            .22       0     30     45     45     40     45     30     43     50     89      7
   0     12
       UNFILTERED FORECAST            401
       UNFILTERED DEMAND                0
```

```
   NORTHCREEK IND.                        FORECAST EXCEPTION REPORT                DATE **/**/
**  TIME 14:36:02  PAGE    3  AM243

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**  VALUE CLASS *

 ***********

                                    WRH          READ        SELECTED
     FORECAST MASTER RECORDS        SYS            28            10
                                    A               7             0
                                    1              28             0
```

Fields

See "Forecast Detail Report (AM243)" for a description of the fields on this report.

Forecast Summary Report (AM241)

```
   NORTHCREEK IND.          FORECAST SUMMARY REPORT             DATE **/**/**  TIME 14:34:25  PAGE    1  AM241

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**  VALUE CLASS
WRH CUR ANN R ******                                SUMMARY  OF  FORECASTS  (UNITS/
COSTS)  FOR  NEXT  12  PERIODS            ******

    PRV ANN R ******                                SUMMARY  OF  FORECASTS  (UNITS/
COSTS)  FOR  PAST  12  PERIODS            ******

        TREND ******                                SUMMARY  OF  DEMAND     (UNITS/
COSTS)  FOR  PAST  12  PERIODS            ******
                          01       02       03       04       05       06       07       08       09       1
0       11       12
-------------------------------------------------------------------------------------------------------------
----------------
SYS           7666             841              215              1108             1642                0
       525
          102836          11281             2884             14863            22026               0
      7042
                                    853              952             1552                0               61
3              437
                                  11442            12770            20819               0              822
3             5862
             10057             841              992             1108             1642              905
       712
             134910          11281            13307            14863            22026            12140
      9551
                                    853              952             1552             1116               73
8              681
                                  11442            12770            20819            14970              989
9              9135
              1103-
            449              1905                0               327              327              639
             14796-
           6693             25554                0              4386             4386             8571
                                 1871                0                0              327               62
7              1442
                                 25098                0                0             4386              841
0             19075

   ******       TRACKING HISTORY         EXCEPTION CODES       ******    INTELLIGENCE     HISTORY    COEFFICIENT
OF VARIATION

        0     1     2     3     4     5     6     7     8     9     *         0     1     2     3    AVERAGE  WEI
GHTED AVERAGE
        1     0     0     0     0     0     0     0     0     0     0         1     0     0     0       .70
    .70
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to FCST.

EFFECTIVE DATE. The effective date of the report.

VALUE CLASS. The value class is the inventory classification to which this item belongs. The product line is a marketing grouping to which this item belongs.

WRH. The warehouse for which the summary information is printed. SYS designates the total company information and warehouse corresponds to a warehouse.

CUR ANN R. Current annual forecast in units and in costs for all the forecasts in the designated location.

PRV ANN R. Previous annual forecasted demand in units and costs for all items.

Note: This field contains the forecast as of one period less than the cycle period printed on the heading of this report.

TREND. The period trend in units and costs for this warehouse.

SUMMARY OF FORECAST (UNITS/COSTS) FOR NEXT 12 PERIODS. The forecasts in units and costs for each of the reporting periods within the year beginning with the next reporting period of the year (i.e., one greater than the cycle period).

SUMMARY OF FORECASTS (UNITS/COSTS) FOR PAST 12 PERIODS. The total quantity and costs of the forecasts that were made over the past year that the system was in operation. These begin with the oldest forecast, e.g., one year ago, and increase to the most recent past forecast.

SUMMARY OF DEMAND (UNITS/COSTS) FOR PAST 12 PERIODS. The total quantity and costs of demand that occurred over the past year beginning with the oldest demand information printed first.

TRACKING HISTORY. The frequency count of occurrence for each code, code 0 through 9, and a total count of items listed under the asterisk. These frequency counts indicate the number of Forecast Master records in this sequence that have the exception code value in the current cycle period.

INTELLIGENCE. A frequency count of the value of the intelligence history codes, code 0 through 3. These show the count of Forecast Master records in a particular warehouse that have the intelligence history code value in the current cycle period.

COEFFICIENT OF VARIATION. The arithmetic average of the coefficient of variation for all Forecast Master records in this warehouse and value class/product line.

WEIGHTED AVERAGE. The weighted average coefficient of variation for all Forecast Master records in this warehouse and value class/product line (weighted by current annual forecast in units).

Note: Each page of the Forecast Summary Report provides for listing the summary information for three warehouses (if warehouse data is requested). All cost information displayed on this report is the result of extending the quantity information for an individual item by the standard unit cost that is carried in the FCST application and provided through the file extraction routine. This cost is the standard unit cost from the Item Master file.

Forecast Summary Report (control totals) (AM245)

```
   NORTHCREEK IND.              FORECAST SUMMARY REPORT          DATE  1/08/80  TIME 14:34:40  PAGE    1  AM245
CYCLE YEAR 80   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/
80  VALUE CLASS *                              AMOUNT WAREHOUSE FORECASTS
WRH CUR ANN R ******                             SUMMARY  OF  FORECASTS  (UNITS/
COSTS)  FOR  NEXT  12  PERIODS            ******
    PRV ANN R ******                             SUMMARY  OF  FORECASTS  (UNITS/
COSTS)  FOR  PAST  12  PERIODS            ******
       TREND ******                              SUMMARY  OF  DEMAND     (UNITS/
COSTS)  FOR  PAST  12  PERIODS            ******
                     02       03       04       05       06       07       08       09       10       11       1
2       01
-------------------------------------------------------------------------------------------------------------------

SYS      2326        173      195      206      177      192      124      152      158      157       17
3       77
        53779       3906              5851              5930              5344              6381                1
0
                                4858              5159              3787              6289              207
      4228
         2674          0        0        0        0        0        0        0        0        0        0
0      218
         58437         0                 0                 0                 0                 0
0
                                  0                 0                 0                 0                 0
      4962
          131-
        192       238      295      253      311      191      274      319      321       19        0       66
          306       3979              5984              6004              5706              9761
0
                                5498              5304              3978              6634              631
      1881
******       TRACKING HISTORY         EXCEPTION CODES       ******    INTELLIGENCE     HISTORY    COEFFICIENT OF
VARIATION
         0     1     2     3     4     5     6     7     8     9     *          0     1     2     3    AVERAGE  WEI
GHTED AVERAGE
        18     3     0     5     2     0     0     0     0     0    28         28     0     0     0      1.43
    .20
-------------------------------------------------------------------------------------------------------------------
A           7          0        0        0        0        0        0        0        0        0        0
0        0
          147          0                 0                 0                 0                 0
0
                                  0                 0                 0                 0                 0
         0
            7          0        0        0        0        0        0        0        0        0        0
0        0
          147          0                 0                 0                 0                 0
0
                                  0                 0                 0                 0                 0
         0
   ******       TRACKING HISTORY         EXCEPTION CODES       ******    INTELLIGENCE     HISTORY    COEFFICIENT
OF VARIATION
         0     1     2     3     4     5     6     7     8     9     *          0     1     2     3    AVERAGE  WEI
GHTED AVERAGE
         7     0     0     0     0     0     0     0     0     0     7          7     0     0     0      2.00
   2.00
-------------------------------------------------------------------------------------------------------------------
1           28          0        0        0        0        0        0        0        0        0        0       0

          385          0                 0                 0                 0       0       0
                                  0                 0                 0                 0                 0
         0
            28          0        0        0        0        0        0        0        0        0        0      00

          385          0                 0                 0                 0                 0                0

                                  0                 0                 0                 0                 0
                                  0                 0                 0                 0                 0
         0
   ******       TRACKING HISTORY         EXCEPTION CODES       ******    INTELLIGENCE     HISTORY    COEFFICIENT
OF VARIATION
         0     1     2     3     4     5     6     7     8     9     *          0     1     2     3    AVERAGE  WEI
GHTED AVERAGE
        28     0     0     0     0     0     0     0     0     0    28         28     0     0     0      2.00
   2.00
   NORTHCREEK IND.                    FORECAST SUMMARY REPORT                DATE  1/08/
80  TIME 14:34:40  PAGE    2  AM245
CYCLE YEAR 80   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/80  VALUE CLASS *
                                  WRH          READ
     FORECAST MASTER RECORDS      SYS            28
                                   A              7
                                   1             28
                                   2
```

Fields

See "Forecast Detail Report (AM243)" for a description of the fields on this report.

Inventory Detail Report (AM206)

```
      NORTHCREEK IND.                      INVENTORY DETAIL REPORT                DATE **/**/
**  TIME 14:23:01  PAGE    1  AM206

  CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**

                       SERVICE   CUM MATL    -- SAFETY STOCK --        REORDER
  ITEM NUMBER      WRH    LEVEL   LEAD TIME   QUANTITY      COST        POINT
  03370            SYS    .500         0             0         0            0
                   1      .500         0             0         0            0
  03398            SYS    .500         0             0         0            0
                   A      .500         0             0         0            0
                   1      .500         0             0         0            0
  03415-1          SYS    .500         0             0         0            0
                   A      .500         0             0         0            0
                   1      .500         0             0         0            0
  03418            SYS    .500        32             1         6            1
                   1      .500        32             0         0            0
  03418-1          SYS    .500         0             0         0            0
                   1      .500         0             0         0            0
  03420            SYS    .500         0             0         0            0
                   1      .500         0             0         0            0
  03423            SYS    .500         0             0         0            0
                   1      .500         0             0         0            0
  03424            SYS    .500         0             0         0            0
                   A      .500         0             0         0            0
                   1       500         0             0         0            0
```

```
       NORTHCREEK IND.                        INVENTORY SUMMARY REPORT          DATE **/**/
**  TIME 14:23:01  PAGE    3  AM206

  CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**

              AVG      TOTAL            TOTAL ANNUAL
            SERVICE   NUMBER            SAFETY STOCK
  WAREHOUSE   LEVEL    ITEMS                COST
     SYS       .532        28                   14
     1         .500        28                    0
     A         .500         7                    0

  FORECAST MASTER RECORDS UPDATED    63
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

ITEM NUMBER. The item number for which the inventory information is being printed.

WRH. The warehouse for the item which is printed.

SERVICE LEVEL. The service level that has been specified for all items in the warehouse.

CUM MATL LEAD TIME. The cumulative material lead time from the Item Balance file.

SAFETY STOCK QUANTITY COST. The safety stock for the item which is printed in both quantity and costs. Safety stock quantity which have been computed based upon desired level of service are extended by the standard unit cost for each item.

REORDER POINT. The reorder point for the item which is printed in units. Reorder point is the total demand over the cumulative material lead time plus safety stock units.

WAREHOUSE. The warehouse for which the inventory information is being printed. SYS designates the total company information and warehouse corresponds to a warehouse.

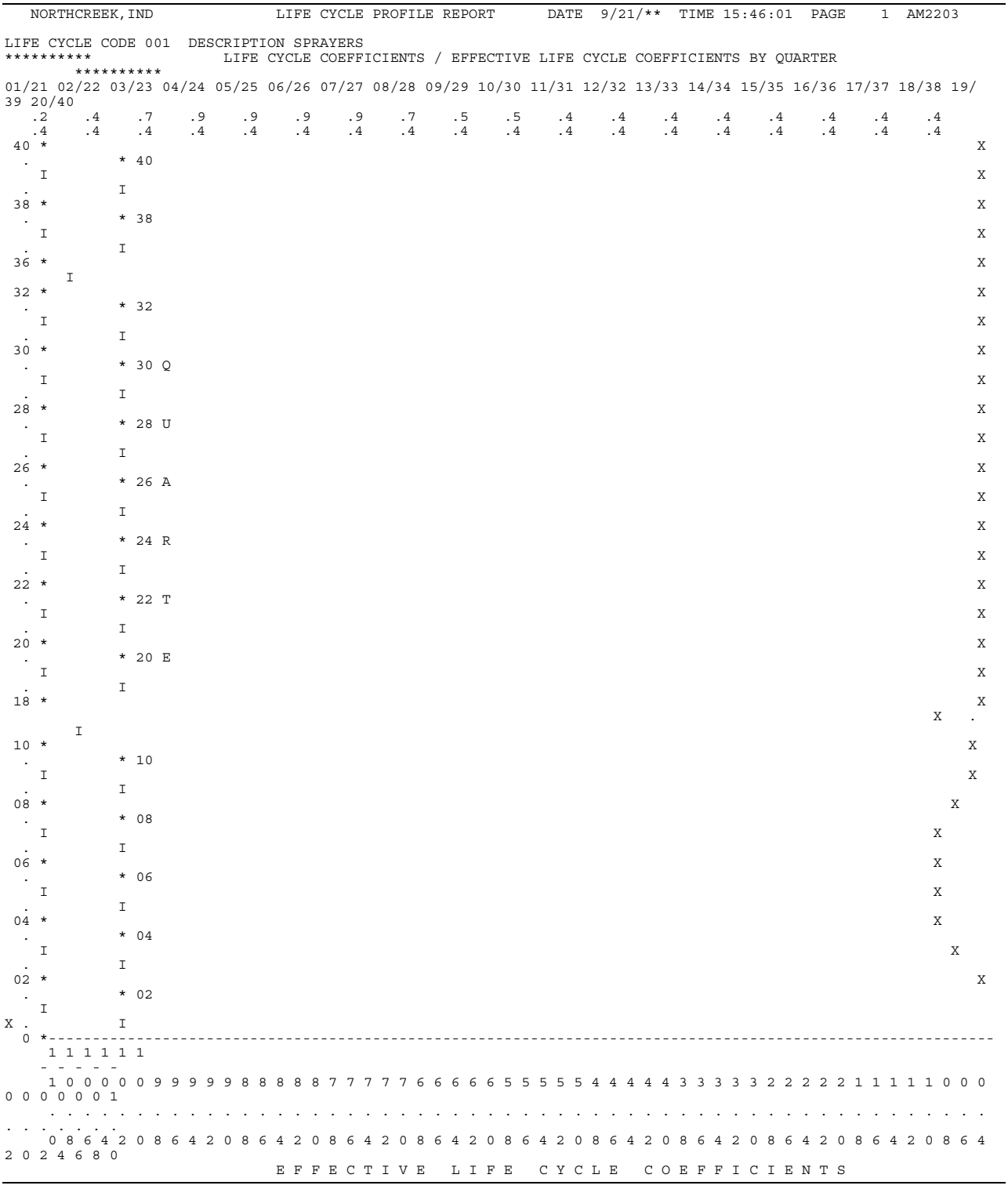
AVG SERVICE LEVEL. The average service level that has been specified for all items in the location.

TOTAL NUMBER ITEMS. The total number of items in this warehouse.

TOTAL ANNUAL SAFETY STOCK COST. This field represents the extended value of the safety stock units, which have been computed based upon desired level of service, extended by the standard unit cost for each item within warehouse.

FORECAST MASTER RECORDS UPDATED. Defines the count of Forecast Master records for which new inventory parameters have been calculated.

Life Cycle Profile Report (AM2203)



Fields

LIFE CYCLE CODE. The life cycle profile code assigned.

DESCRIPTION. The description of the life cycle profile.

LIFE CYCLE COEFFICIENTS BY QUARTER. The life cycle coefficients by quarter printed on top of the corresponding effective life cycle coefficients. The effective life cycle coefficients are printed in graph form.

Note: This report is generated by pressing a function key on the Life Cycle Profile Inquiry/Maintenance display (AM2201). Refer to “Option 4. Life Cycle Profile (AM2M10)” on page 3-22 for more information.

Projection Detail Report (AM252)

```
   NORTHCREEK IND.                        PROJECTION DETAIL REPORT                DATE **/**/
**  TIME 14:41:15  PAGE    1  AM252

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**   PRODUCT LINE 10

ITEM NUMBER     WRH CDE POS ******                                  PROJECTIONS  FOR  YEAR 2
          ******

      DESCRIPTION           ******                                  PROJECTIONS  FOR  YEAR 3
          ******
                                 02      03      04      05      06      07      08      09      10      11
12      01
-------------------------------------------------------------------------------------------------------------------
----------------
99001           SYS 000 01       30      39      47      41      48      30      43      51      54       2
 0      35
      SPRAY UNIT                 30      39      47      41      48      30      43      51      54       2
 0      35
99001           001 000 01        0       0       0       0       0       0       0       0       0       0
 0       0
      SPRAY UNIT                 0       0       0       0       0       0       0       0       0       0
 0       0
```

```
      NORTHCREEK IND.                        PROJECTION DETAIL REPORT              DATE **/**/
**  TIME 14:41:15  PAGE    7  AM252

  CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**   PRODUCT LINE *****

                                   WRH          READ
      FORECAST MASTER RECORDS       SYS           28

                                   001            7
                                   002           28
                                   003
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

PRODUCT LINE. The product line, value class, or life cycle code for which information is printed. This field designates the major sequence of reporting of the projection information.

ITEM NUMBER. The item number for the data printed.

WRH. The warehouse for which the projection is printed. SYS designates the total company control totals, and warehouse corresponds to a warehouse.

CDE. The life cycle profile code to which this item has been assigned.

POS. This item's position on the life cycle curve.

PROJECTIONS FOR YEAR 2. The amount of demand in units projected for each reporting period in year 2, beginning with the next forecasted reporting period of year 1.

DESCRIPTION. The description of the item for which projection information is printed.

PROJECTIONS FOR YEAR 3. The amount of demand in units projected for each reporting period in year 3, beginning with the next projected reporting period of year 2.

FORECAST MASTER RECORDS.

WRH: The warehouse for which the projection is printed. SYS designates the total company control totals, and warehouse corresponds to a warehouse.

READ: The number of Forecast Master records that were read for reporting purposes.

Projection Summary Report (AM251)

```
   NORTHCREEK IND.        PROJECTION SUMMARY REPORT      DATE **/**/**  TIME 14:39:33  PAGE    1  AM251

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**   PRODUCT LINE 10

WRH           ******                        SUMMARY OF PROJECTIONS  (UNITS/
COSTS)  FOR  YEAR 2  PERIODS                    ******

              ******                        SUMMARY OF PROJECTIONS  (UNITS/
COSTS)  FOR  YEAR 3  PERIODS                    ******
                      01       02       03       04       05       06       07       08       09       10       1
1       12
-------------------------------------------------------------------------------------------------------------------
----------------
SYS                  30               47               48               43               54
0
                   2549             3993             4078             3653             4588
0
                              39               41               30               51                2
        35
                           3314             3483             2549             4333              170
      2974

                     30               47               48               43               54
0
                   2548             3993             4078             3653             4587
0
                              39               41               30               51                2
        35
                           3313             3483             2548             4333              169
      2973
-------------------------------------------------------------------------------------------------------------------
----------------
001                  0                0                0                0                0
0
                     0                0                0                0                0
0
                              0                0                0                0                0
         0
                              0                0                0                0                0
         0

                     0                0                0                0                0
0
                     0                0                0                0                0
0
                              0                0                0                0                0
         0
                              0                0                0                0                0
         0
-------------------------------------------------------------------------------------------------------------------
----------------
002                  0                0                0                0                0
0
                     0                0                0                0                0
0
                              0                0                0                0                0
         0
                              0                0                0                0                0
         0

                     0                0                0                0                0
0
                     0                0                0                0                0
0
                              0                0                0                0                0
         0
                              0                0                0                0                0
         0
```

```
       NORTHCREEK IND.                    PROJECTION SUMMARY REPORT              DATE **/**/
**  TIME 14:38:54  PAGE    2  AM251

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE **/**/**   VALUE CLASS *

                                  WRH         READ
     FORECAST MASTER RECORDS      SYS            1

                                  001
                                  002
                                  003
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

PRODUCT LINE. This indicates whether the summaries pertain to the selection of records by product line, value class, or life cycle code, and identifies that product line, value class, or life cycle code.

WRH. The warehouse for which the summary information is printed. SYS designates the total company control totals, and warehouse corresponds to a warehouse.

SUMMARY OF PROJECTIONS (UNITS/COSTS) FOR YEAR 2 PERIODS. The projections in units and costs for each of the reporting periods within year 2, beginning with the next forecasted reporting period after year 1.

SUMMARY OF PROJECTIONS (UNITS/COSTS) FOR YEAR 3 PERIODS. The projections in units and costs for each of the reporting periods within year 3, beginning with the next projected reporting period after year 2.

FORECAST MASTER RECORDS.

WRH: The warehouse for which the projection is printed. SYS designates the total company control totals, and warehouse corresponds to a warehouse.

READ: The number of Forecast Master records that were read for reporting purposes.

Seasonal Profile Report (AM214)

```
   NORTHCREEK IND.                          SEASONAL PROFILE REPORT                DATE **/**/
**  TIME 16:05:18  PAGE    1  AM214

EFFECTIVE DATE  1/07/**

SEAS GRP CODE 000  GRP DESC   *** NON-
SEASONAL ***  ITEMS USED     0  GRP MODES 000000   ITEM RATIO 1.0  VOL RANGE    0-9999999

VOLUME CODE     0  ITEM PRINT Y        ITEMS     3  ITEMS ACPT     2  FILTER LEVEL .99  GROUP RATIO 1.1  AVE ANN
VOL        311

            GROUP RELIABILITY COEFFICIENTS                                                GROUP SEASONAL COEFFICIE
NTS
 01   02   03   04   05   06   07   08   09   10   11   12           01   02   03   04   05   06   07   08   09
 10   11   12

.028 .028 .028 .028 .028 .028 .028 .028 .028 .028 .028 .028         .083 .083 .083 .083 .083 .083 .083 .083 .083
.083 .083 .083

ITEM NUMBER     WRH MODES YR  LST YR   MAD  PROMOTION     RATIO  REC                     ITEM SEASONAL COEFFICIEN
TS
                              VOLUME   NS       HISTORY  ITM GRP  PC 01   02   03   04   05   06   07   08   09
 10   11   12

33480-
A         SYS 000000 2     206     6 000000000000  6.0 1.0 Y  .088 .072 .088 .136 .098 .136 .072 .107 .122 .082 .
000 .000

34250-
A         SYS 000000 2     727    22 000000000000 22.0 1.0 Y  .086 .074 .086 .111 .099 .111 .074 .107 .123 .126 .
000 .000

03415-
1         SYS 100000 2       1     0 000000000000  0.0*1.0 N  .000 .000 .000 .000 .000 .000 .000 .000 .000 .999 .
000 .000
```

```
       NORTHCREEK IND.                          SEASONAL PROFILE REPORT              DATE **/**/
**  TIME 16:05:18  PAGE   15  AM214

  EFFECTIVE DATE  1/07/**

  GROUP PROFILE RECORDS READ        6

  ITEM  PROFILE RECORDS READ       12
```

Fields

EFFECTIVE DATE. The effective date of the report.

SEAS GRP CODE. The profile code assigned to this seasonal group.

GRP. The volume subgroup within this seasonal group.

DESC. The description of the seasonal group.

ITEMS USED. Items used. The number of items that were used to calculate the group seasonal coefficients.

GRP MODES. Group modes. The period numbers within the year where the peaks of the seasonal pattern occur, beginning with the first peak and identifying as many as three peaks. If the modes fields are all zero, this means that no significant peaks in the seasonal pattern were detected.

ITEM RATIO. The user defined limit of the item ratio. It is the ratio of the pattern errors due to item seasonality expressed as a ratio of the errors assuming a nonseasonal pattern. Items whose ratio is less than this limit are considered nonseasonal and are not used in the seasonal coefficient calculations.

VOL RANGE. Volume range defines the annual demand limits of this volume subgroup within a seasonal group profile code.

ITEMS. The number of items comprising this volume subgroup within seasonal group.

ITEMS ACPT. Items accepted. The number of items that were designated as belonging to the calculated group seasonal coefficients.

FILTER LEVEL. Filter level designates the tolerance to be used in identifying seasonal modes. This tolerance is expressed in percent of a nonseasonal coefficient. For example, a .50 filter level would mean that any seasonal coefficient that was greater than 150% of a nonseasonal coefficient is considered a mode.

GROUP RATIO. The user defined limit of the group ratio. It is the ratio of the errors due to the assumption of group seasonality expressed as a ratio of the errors due to assuming a nonseasonal pattern. Items whose ratio is less than this limit are designated as not belonging to the seasonal group. The recommend code identifies the result.

AVE ANN VOL. The average annual demand volume of all items belonging to this volume subgroup within seasonal group profile code for the most recent year of history.

GROUP RELIABILITY COEFFICIENTS. Group reliability coefficients represent the measured average mean absolute deviation of the item seasonal coefficients from the group seasonal coefficients in any given reporting period within the year.

GROUP SEASONAL COEFFICIENTS. Seasonal group coefficients describe the percent of demand expected in each period of the year for items assigned to this profile number and volume range.

ITEM NUMBER. The item number for which seasonal data is printed.

WRH. The warehouse for which seasonal data is printed. This field will contain SYS for company history and one character for particular warehouses.

MODES. Modes describes the periods (if any) when the peaks in the seasonal pattern occur. A maximum of three peaks (modes) can occur.

YR. The number of years of demand history that are available for this item.

LST YR VOLUME. The annual demand in units for the most recent year of demand history for this item.

MAD NS. The mean absolute deviation of historical demand on a per period basis from an assumption of a nonseasonal pattern.

RATIO ITM GRP. Item ratio expresses the errors due to assuming item seasonality as a ratio of the nonseasonal error. An asterisk indicates that this item was not used in the group seasonal coefficients calculation.

Note: The item ratio is not calculated for items with less than 2 years of demand history.

REC PC. A series of one digit fields representing each reporting period within the year. A nonzero entry in any of these fields denotes that the period forecast had been overridden in prior years. The nonzero number contained in this field designates the number of times over historical years this period forecast has been overridden.

ITEM SEASONAL COEFFICIENTS. Item seasonal coefficients denote the seasonal pattern calculated for the item number/warehouse printed. These express the expected percent of demand per period in each period of the reporting year.

Note: The printing of item detail may be suppressed on this report by specifying **N** on the item print option during seasonal parameter maintenance.

GROUP PROFILE RECORDS READ. The count of Group Profile records read.

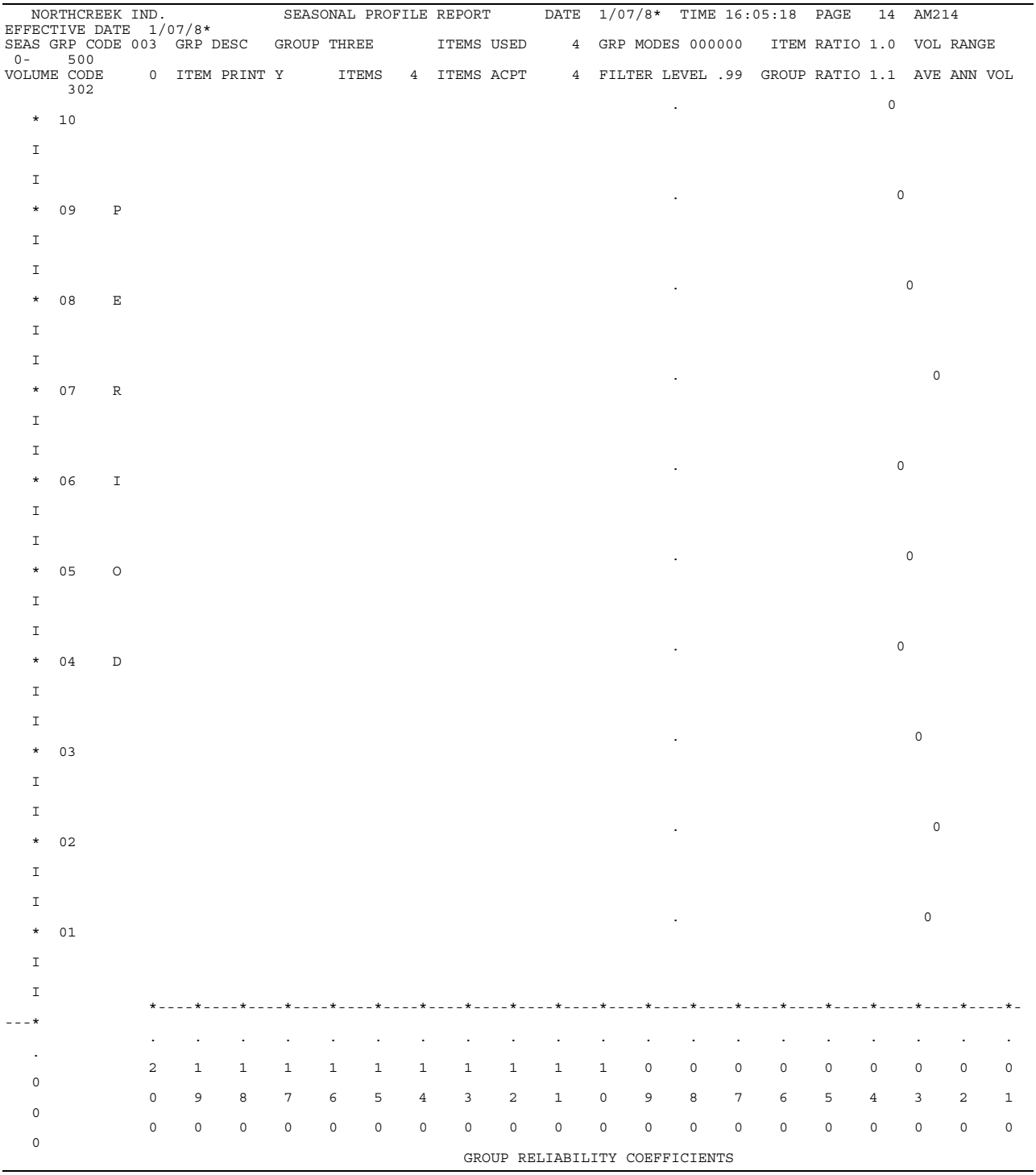
ITEM PROFILE RECORDS READ. The count of Item Profile records read.

Seasonal Profile Report (graph presentation of group seasonal coefficients) (AM214)

```
   NORTHCREEK IND.         SEASONAL PROFILE REPORT     DATE  1/07/8*  TIME 16:05:18  PAGE   13  AM214
EFFECTIVE DATE  1/07/8*
SEAS GRP CODE 003  GRP DESC   GROUP THREE           ITEMS USED     4  GRP MODES 000000   ITEM RATIO 1.0  VOL RANG
E    0-    500
VOLUME CODE     0  ITEM PRINT Y        ITEMS     4  ITEMS ACPT     4  FILTER LEVEL .99  GROUP RATIO 1.1  AVE ANN
VOL        302


LEGEND                                                                    .
0  *  11
A-
. 0
 I

   I
   *  10                                            0                     .

   I

   I
   *  09     P                                         0                  .

   I

   I
   *  08     E                                                  0         .

   I

   I
   *  07     R                                                            .     0

   I

   I
   *  06     I                                             0              .

   I

   I
   *  05     O                                                     0      .

   I

   I
   *  04     D                                             0              .

   I

   I
   *  03                                                             0    .

   I

   I
   *  02                                                                  .     0

   I

   I
   *  01                                                                  A

   I

   I
                *----*----*----*----*----*----*----*----*----*----*----*----*----*----*----*----*----*----*----*-
---*
                .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .    .
                2    1    1    1    1    1    1    1    1    1    1    0    0    0    0    0    0    0    0    0
   0
                0    9    8    7    6    5    4    3    2    1    0    9    8    7    6    5    4    3    2    1
   0
                0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
   0
                                                    GROUP  SEASONAL  COEFFICIENTS
```

This report shows, in a graph, the group seasonal coefficients for all of the volume subgroups within the seasonal group profile code listed in the heading of this page. The curve for each volume subgroup is plotted using the volume code as the plot point. Where the graph values coincide, the legend entry is used to explain multiple occurrences on one point of the graph. A one-position letter code, A through Z, is used as the cross reference point in this legend entry.

Seasonal Profile Report (graph presentation of group reliability coefficients) (AM214)



This report shows the group reliability coefficients, in a graph, for each of the volume subgroups within the seasonal group profile code defined in the heading of this page. The reliability coefficients for each volume subgroup are graphed using the volume code to indicate the point on the graph where the coefficient would fall. Where more than one group reliability coefficient falls on the same point of the graph, the legend entry is used to define multiple occurrences. A one-position letter code, A through Z, is used as the cross-reference point in this legend entry.

Chapter 9. Forms

This chapter contains blank forms for use with the FCST application. These forms are not copyrighted and may be reproduced without permission from Infor

Seasonal Group Profile Maintenance (PF-01)

Display AM2161

*Seasonal group profile code (N3) _ _ _

*Group description (A20) _

*Volume break 0 (N9) _ _ _ _ _ _ _ _ _

*Item print 0 (A) _

*Item ratio 0 (N2.1) _ . _

*Group ratio 0 (N2.1) _ . _

*Filter level 0 (N2.2) . _ _

Volume break 1 (N9) _ _ _ _ _ _ _ _ _

Item print 1 (A) _

Item ratio 1 (N2.1) _ . _

Group ratio 1 (N2.1) _ . _

Filter level 1 (N2.2) . _ _

Volume break 2 (N9) _ _ _ _ _ _ _ _ _

Item print 2 (A) _

Item ratio 2 (N2.1) _ . _

Group ratio 2 (N2.1) _ . _

Filter level 2 (N2.2) . _ _

Volume break 3 (N9) _ _ _ _ _ _ _ _ _

Item print 3 (A) _

Item ratio 3 (N2.1) _ . _

Group ratio 3 (N2.1) _ . _

Filter level 3 (N2.2) . _ _

Volume break 4 (N9) _ _ _ _ _ _ _ _ _

Item print 4 (A) _

Item ratio 4 (N2.1) _ . _

Group ratio 4 (N2.1) _ . _

Filter level 4 (N2.2) . _ _

Volume break 5(N9) _ _ _ _ _ _ _ _ _

Item print 5(A) _

Item ratio 5(N2.1) _ . _

Group ratio 5(N2.1) _ . _

Filter level 5(N2.2) . _ _

* Indicates a required field

Life Cycle Profile Maintenance (PF-02)

Display AM2201

* Life cycle code (N3) _ _ _

* Life cycle description (A20) _

Life cycle coefficient - Quarter 1 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 2 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 3 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 4 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 5 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 6 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 7 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 8 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 9 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 10 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 11 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 12 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 13 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 14 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 15 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 16 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 17 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 18 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 19 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 20 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 21 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 22 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 23 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 24 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 25 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 26 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 27 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 28 (n4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 29 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 30 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 31 (N4.3) _ . _ _ _ _

Life cycle coefficient - Quarter 32 (n4.3) _ . _ _ _ _

+/1 Write + or - in last position

* Indicates a required field

Item Summary Maintenance (PF-03)

Display AM2341
Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Year 1 (N2)	_ _	Year 2 (N2)	_ _
Period quantity-01 (Ny)	_ _ _ _ _ _ _	Period quantity-01 (Ny)	_ _ _ _ _ _ _
Period quantity-02 (Ny)	_ _ _ _ _ _ _	Period quantity-02 (N7)	_ _ _ _ _ _ _
Period quantity-03 (N7)	_ _ _ _ _ _ _	Period quantity-03 (N7)	_ _ _ _ _ _ _
Period quantity-04 (N7)	_ _ _ _ _ _ _	Period quantity-04 (N7)	_ _ _ _ _ _ _
Period quantity-05 (N7)	_ _ _ _ _ _ _	Period quantity-05 (N7)	_ _ _ _ _ _ _
Period quantity-06 (N7)	_ _ _ _ _ _ _	Period quantity-06 (N7)	_ _ _ _ _ _ _
Period quantity-07 (N7)	_ _ _ _ _ _ _	Period quantity-07 (N7)	_ _ _ _ _ _ _
Period quantity-08 (N7)	_ _ _ _ _ _ _	Period quantity-08 (N7)	_ _ _ _ _ _ _
Period quantity-09 (N7)	_ _ _ _ _ _ _	Period quantity-09 (N7)	_ _ _ _ _ _ _
Period quantity-10 (N7)	_ _ _ _ _ _ _	Period quantity-10 (N7)	_ _ _ _ _ _ _
Period quantity-11 (N7)	_ _ _ _ _ _ _	Period quantity-11 (N7)	_ _ _ _ _ _ _
Period quantity-12 (N7)	_ _ _ _ _ _ _	Period quantity-12 (N7)	_ _ _ _ _ _ _
Period quantity-13 (N7)	_ _ _ _ _ _ _	Period quantity-13 (N7)	_ _ _ _ _ _ _
Year 3 (N2)	_ _	Year 4 (N2)	_ _
Period quantity-01 (Ny)	_ _ _ _ _ _ _	Period quantity-01 (Ny)	_ _ _ _ _ _ _
Period quantity-02 (Ny)	_ _ _ _ _ _ _	Period quantity-02 (N7)	_ _ _ _ _ _ _
Period quantity-03 (N7)	_ _ _ _ _ _ _	Period quantity-03 (N7)	_ _ _ _ _ _ _
Period quantity-04 (N7)	_ _ _ _ _ _ _	Period quantity-04 (N7)	_ _ _ _ _ _ _
Period quantity-05 (N7)	_ _ _ _ _ _ _	Period quantity-05 (N7)	_ _ _ _ _ _ _
Period quantity-06 (N7)	_ _ _ _ _ _ _	Period quantity-06 (N7)	_ _ _ _ _ _ _
Period quantity-07 (N7)	_ _ _ _ _ _ _	Period quantity-07 (N7)	_ _ _ _ _ _ _
Period quantity-08 (N7)	_ _ _ _ _ _ _	Period quantity-08 (N7)	_ _ _ _ _ _ _
Period quantity-09 (N7)	_ _ _ _ _ _ _	Period quantity-09 (N7)	_ _ _ _ _ _ _
Period quantity-10 (N7)	_ _ _ _ _ _ _	Period quantity-10 (N7)	_ _ _ _ _ _ _
Period quantity-11 (N7)	_ _ _ _ _ _ _	Period quantity-11 (N7)	_ _ _ _ _ _ _
Period quantity-12 (N7)	_ _ _ _ _ _ _	Period quantity-12 (N7)	_ _ _ _ _ _ _
Period quantity-13 (N7)	_ _ _ _ _ _ _	Period quantity-13 (N7)	_ _ _ _ _ _ _
Year 5 (N2)	_ _	Year 6 (N2)	_ _
Period quantity-01 (Ny)	_ _ _ _ _ _ _	Period quantity-01 (Ny)	_ _ _ _ _ _ _
Period quotient-02 (Ny)	_ _ _ _ _ _ _	Period quantity-02 (N7)	_ _ _ _ _ _ _
Period quantity-03 (N7)	_ _ _ _ _ _ _	Period quantity-03 (N7)	_ _ _ _ _ _ _
Period quantity-04 (N7)	_ _ _ _ _ _ _	Period quantity-04 (N7)	_ _ _ _ _ _ _
Period quantity-05 (N7)	_ _ _ _ _ _ _	Period quantity-05 (N7)	_ _ _ _ _ _ _
Period quantity-06 (N7)	_ _ _ _ _ _ _	Period quantity-06 (N7)	_ _ _ _ _ _ _
Period quantity-07 (N7)	_ _ _ _ _ _ _	Period quantity-07 (N7)	_ _ _ _ _ _ _
Period quantity-08 (N7)	_ _ _ _ _ _ _	Period quantity-08 (N7)	_ _ _ _ _ _ _
Period quantity-09 (N7)	_ _ _ _ _ _ _	Period quantity-09 (N7)	_ _ _ _ _ _ _
Period quantity-10 (N7)	_ _ _ _ _ _ _	Period quantity-10 (N7)	_ _ _ _ _ _ _
Period quantity-11 (N7)	_ _ _ _ _ _ _	Period quantity-11 (N7)	_ _ _ _ _ _ _
Period quantity-12 (N7)	_ _ _ _ _ _ _	Period quantity-12 (N7)	_ _ _ _ _ _ _
Period quantity-13 (N7)	_ _ _ _ _ _ _	Period quantity-13 (N7)	_ _ _ _ _ _ _

Forecast Activity Maintenance (PF-04)

Display AM2351

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Item number (A15) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _
WRH (Warehouse) (A3) _ _ _
Quantity (N8) _ _ _ _ _ _ _ _
PD/DY/YR (N6) _ _ _ _ _ _

Chapter 10. Accounting controls and audits

How will you maintain control over the accuracy of the files? You maintain control by verifying that planning exceptions are resolved, that master file backup is performed on schedule, that offline media is labeled carefully, and that reports are properly logged and distributed.

Control procedures are an essential part of your Forecasting application. The following reports assist in providing an audit trail for your master files.

The FCST accounting controls and audits reports are listed in the following table.

Note: You do not select the control total reports. They are printed automatically when various application functions are done, and provide audit and status information.

Table 10-1. List of reports, sorted by report name

Report	ID	See page
Demand Data Edit Diagnostics	AM203	10-2
Demand History Construction	AM208	10-4
Demand History Extract and Update	AM207	10-6
Forecast Activity Data Print	AM236	10-7
Forecast Load Diagnostics	AM218	10-8
Forecast Master Initialization	AM212	10-10
Forecast Master Maintenance Edit List	AM201	10-11
Forecast Master Mass Maintenance Transactions	AM205	10-13
Forecast Master Reconciliation Maintenance	AM211	10-15
Inventory Load Control Totals	AM215	10-17
Item Summary Data Print	AM237	10-18
Life Cycle Profile Maintenance Edit List	AM220	10-19
Period Demand Extract	AM210	10-20
Projection Edit Diagnostics	AM221	10-22
Projection Maintenance Edit List	AM204	10-24
Seasonal Group Profile Maintenance Edit List	AM217	10-25
Seasonal Profile Construction	AM209	10-26

Demand Data Edit Diagnostics (AM203)

```
   NORTHCREEK IND.                        DEMAND DATA EDIT DIAGNOSTICS            DATE  1/31/
**  TIME 14:03:33  PAGE    1  AM203

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  */**/**

ITEM NUMBER     WRH   STATUS     DEMAND
03014           SYS     E             0
```

```
   NORTHCREEK IND.                        DEMAND DATA EDIT DIAGNOSTICS            DATE  */**/
**  TIME 14:03:33  PAGE    2  AM203

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/31/**

FORECAST MASTER RECORDS READ                    63

PERIOD DEMAND RECORDS READ                      10

EXTRANEOUS PERIOD DEMAND RECORDS                 1
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

ITEM NUMBER. The number of the item whose demand record was rejected by the FCST forecast routine.

WRH. The warehouse for the item number's demand record. This field contains SYS for company or system records, and a warehouse for all warehouse records in the Forecast Master file.

STATUS. The status code indicates the exception related to the demand record that is printed.

E Extraneous. Designates that the demand record was submitted to FCST but that FCST had no matching Forecast Master record.

R Rejected. Designates that the demand record that was submitted to FCST was not valid for some reason; for example, the Demand field was non-numeric.

N Negative. Denotes that the demand reported was negative.

DEMAND. The quantity in units of demand during the reporting period.

FORECAST MASTER RECORDS READ. The count of Forecast Master records read during forecast update processing.

PERIOD DEMAND RECORDS READ. The count of demand records submitted to the FCST application.

EXTRANEOUS PERIOD DEMAND RECORDS. The count of extraneous demand records submitted.

ZERO DEMAND FOR NEW ITEMS. The count of uninitialized Forecast Master records for which zero or no demand was reported in the current period.

Note: The FCST application cannot initialize a new item's forecast based upon a reported demand of zero. A new item's forecast will be initialized upon the first report of nonzero demand or by an override of the current annual rate.

NEGATIVE PERIOD DEMAND RECORDS. The count of demand records submitted whose reported demand was negative. The FCST application flags these records with status code N and zeros the demand quantity field.

UNFILTERED DEMAND. The hash total of the demand quantities submitted to the forecasting program. This total can be used as a control to reconcile to the total demand from the order entry system by the FCST Period Demand Capture (AM2M20, Option 1) function.

UNFILTERED COST. The hash total of the extended value of the demand submitted to FCST by the Period Demand Capture.

Note: This field can be used as a control to reconcile to the totals produced by the extract function.

Demand History Construction (AM208)

```
   NORTHCREEK IND.                    DEMAND HISTORY CONSTRUCTION                DATE  */**/
**  TIME 15:53:34  PAGE    1  AM208

ITEM NUMBER     WRH YEAR STATUS/DEMAND PER PERIOD (01-
12)                                                                          CODE
03014           SYS  79        0       0       0       0       0       0       0       0       0      20       0
      0      000
03385           SYS  79       35      30      35      45      40      45      30      42      50     165       0
      0      000
03415-
1         SYS  79        0       0       0       0       0       0       0       0       0       1       0
0      000
03423           SYS  79  DEMAND HISTORY REJECTED -- ZERO OR NEGATIVE VOLUME FOR YEAR
03424           SYS  79  DEMAND HISTORY REJECTED -- ZERO OR NEGATIVE VOLUME FOR YEAR
03590           SYS  79        4       6      10       5       4      20       5       7       8      12      10
      0      000
03591-
08        SYS  79       14      12      15      18      17      19      12      18      21      10       0
0      000
03591-
10        SYS  79       35      30      35      45      40      45      30      42      50      35       0
0      000
03591-
12        SYS  79       17      15      17      28      20      28      15      21      25      20       0
0      000
26006-20        SYS  79  DEMAND HISTORY REJECTED -- ZERO OR NEGATIVE VOLUME FOR YEAR
26006-
21        SYS  79        0       0       0       0       0       0       0       0       0       0       2
0      000
27005-
A         SYS  79       35      30      35      45      40      45      30      43      50      46       0
0      000
33480-
A         SYS  79       18      15      18      28      20      28      15      22      25      17       0
0      000
34250-
A         SYS  79       63      54      63      81      72      81      54      78      90      91       0
0      000
99001           SYS  79       35      30      45      45      40      45      30      43      50      89       7
      0      000
                    79  DEMAND HISTORY ADDED SUCCESSFULLY

03014           SYS  78        0       0       0       0       0       0       0       0       0      20       0
      0      000
03385           SYS  78       35      30      35      45      40      45      30      42      50     165       0
      0      000
03415-
1         SYS  78        0       0       0       0       0       0       0       0       0       1       0
0      000
03423           SYS  78  DEMAND HISTORY REJECTED -- ZERO OR NEGATIVE VOLUME FOR YEAR
03424           SYS  78  DEMAND HISTORY REJECTED -- ZERO OR NEGATIVE VOLUME FOR YEAR
03590           SYS  78        4       6      10       5       4      20       5       7       8      12      10
      0      000
03591-
08        SYS  78       14      12      15      18      17      19      12      18      21      10       0
0      000
03591-
10        SYS  78       35      30      35      45      40      45      30      42      50      35       0
0      000
03591-
12        SYS  78       17      15      17      28      20      28      15      21      25      20       0
0      000
26006-20        SYS  78  DEMAND HISTORY REJECTED -- ZERO OR NEGATIVE VOLUME FOR YEAR
26006-
21        SYS  78        0       0       0       0       0       0       0       0       0       0       2
0      000
27005-
A         SYS  78       35      30      35      45      40      45      30      43      50      46       0
0      000
33480-
A         SYS  78       18      15      18      28      20      28      15      22      25      17       0
0      000
34250-
A         SYS  78       63      54      63      81      72      81      54      78      90      91       0
0      000
99001           SYS  78       35      30      45      45      40      45      30      43      50      89       7
      0      000
                    78  DEMAND HISTORY ADDED SUCCESSFULLY
```

```
   NORTHCREEK IND.                    DEMAND HISTORY CONSTRUCTION                DATE **/**/
**  TIME 15:53:34  PAGE    2  AM208

ITEM SUMMARY RECORDS READ                    30

ITEM SUMMARY RECORDS REJECTED                 6

DEMAND HISTORY SYSTEM RECORDS WRITTEN        24

DEMAND HISTORY WAREHOUSE RECORDS WRITTEN      0
```

Fields

ITEM NUMBER. The item number for demand history construction exception printed.

WRH. The warehouse for the totals that are printed. SYS designates the total company control totals, and warehouse corresponds to a warehouse.

YEAR. The year of the demand history for the exception printed.

STATUS/DEMAND PER PERIOD (01-12). Description of the condition causing the demand history data for the item and year to be rejected or detail demand data by period, if tailored to print.

CODE. The seasonal group profile code assigned to this item/warehouse.

Note: If multiple warehouses are used during the demand history construction and the system warehouse data was not supplied by the user, demand history construction will create a system warehouse record. The system warehouse will be the first record listed, if supplied by the user, or the last record listed, if created during demand history construction.

ITEM SUMMARY RECORDS READ. The total number of Item Summary records read from the history files.

ITEM SUMMARY RECORDS REJECTED. The count of Item Summary records rejected and not included in the demand history.

DEMAND HISTORY SYSTEM RECORDS WRITTEN. The total number of system records comprising the Demand History file.

DEMAND HISTORY WAREHOUSE RECORDS WRITTEN. The total number of warehouse records comprising the Demand History file.

Demand History Extract and Update (AM207)

```
   NORTHCREEK IND.                DEMAND HISTORY EXTRACT AND UPDATE             DATE **/**/
**  TIME  9:33:44  PAGE    1  AM207

EFFECTIVE DATE 1/03/**

FORECAST MASTER RECORDS READ       192

DEMAND HISTORY RECORDS READ        195

DEMAND HISTORY RECORDS DELETED      61

ZERO VOLUME RECORDS DELETED          1

DEMAND HISTORY RECORDS WRITTEN     325
          TEMPORARY SEASONAL GROUP PROFILE FILE IS FORMATTED FOR YEAR-END SEASONAL UPDATE PROCESS
```

Fields

FORECAST MASTER RECORDS READ. The count of Forecast Master records read.

DEMAND HISTORY RECORDS READ. The count of Demand History records read.

DEMAND HISTORY RECORDS DELETED. The number of Demand History records dropped due to their year being older than the horizon defined by the number of years of history which should be retained. This parameter is established in the FCST application's control record and controls the oldest year of history that is saved.

ZERO VOLUME RECORDS DELETED. The number of current year Demand History records for which all demand periods had zero reported. These records are not retained within the FCST application.

DEMAND HISTORY RECORDS WRITTEN. The total number of Demand History records in the new Demand History file. This total can be reconciled to the number of Forecast Master records read plus the number of Demand History records read less the number of Demand History records deleted less the number of zero volume records deleted.

Forecast Activity Data Print (AM236)

```
   GATEWAY MFG. CO.              FORECAST ACTIVITY DATA PRINT                  DATE **/**/
**  TIME 8:03:30   PAGE    1  AM236

ITEM NUMBER      WRH    QTY   PD  DAY     ITEM NUMBER     WRH   QTY  PD  DAY     ITEM NUMBER    WRH   QTY  PD  DA
Y
10009            A      215   01   12
10025            B       14   01   19
10035            A       99   01   01
10036            A      258   01   12
                 A       58   01   23
                 B      125   01   25
10040            C       37   01   05
10041            B      362   01   05
                 B      401   01   19
10043            A       12   01   18
                 A       10   01   15
                 A        9   01   22
10044            B      102   01   12
                 B       21   01   15
                 B       25   01   19
                 B       34   01   30
10046            B      111   01   02
                 B       12   01   16
                 B      211   01   18
                 B       65   01   22
                 C       44   01   15
                 C       59   01   16
                 C       65   01   17
10050            A       11   01   05
                 A       25   01   21
                 C       45   01   10
                 C       95   01   25
                 C       65   01   26

FORECAST ACTIVITY RECORDS          28
```

Fields

ITEM NUMBER. The item number.

WRH. The warehouse.

QTY. The demand order quantity.

PD. The period in which the demand occurred.

DAY. The day in the period if 13 four-week periods or 12 four- or-five-week periods.

FORECAST ACTIVITY RECORDS. The number of forecast activity records printed.

Forecast Load Diagnostics (AM218)

```
   NORTHCREEK IND.                      FORECAST LOAD DIAGNOSTICS                 DATE  */**/
**  TIME 14:30:35  PAGE    1  AM218

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**   FROZEN  1/14/**  FIRM  2/11/**  FREE  1/16/
**  PERIOD FCSTS TO WKS  3

                                                          FIRST FORECAST PERIOD DATE 2/01/**

ITEM NUMBER      WRH        CAUSE                                              STATUS

03398            001        PERIOD FCSTS NOT AVAILABLE FOR NEW ITEM            FCST AND RQMTS NOT LOADED

03418            001        PERIOD FCSTS NOT AVAILABLE FOR NEW ITEM            FCST AND RQMTS NOT LOADED

03418-1          001        PERIOD FCSTS NOT AVAILABLE FOR NEW ITEM            FCST AND RQMTS NOT LOADED
```

```
   NORTHCREEK IND.                      FORECAST LOAD DIAGNOSTICS                 DATE  */**/
**  TIME 14:30:35  PAGE    2  AM218

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**   FROZEN  1/14/**  FIRM  2/11/**  FREE  1/16/
**  PERIOD FCSTS TO WKS  3

                                                          FIRST FORECAST PERIOD DATE 2/01/**

FORECAST MASTER RECORDS READ                28

FORECAST MASTER RECORDS LOADED TO REQMTS     2

FORECAST MASTER RECORDS LOADED TO DMDIFF       1
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period number within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

FROZEN. The date computed as the ending date of the frozen period.

FIRM. The date computed as the ending date of the firm period.

FREE. The date computed as the ending date of the free period.

PERIOD FCSTS TO WKS. The number of first year period forecasts that are converted to weekly forecasts.

FIRST FORECAST PERIOD DATE. The beginning date for the data loaded to the DMDIFF file.

ITEM NUMBER. The item number for which the diagnostics are printed.

WRH. The warehouse for which the diagnostics are printed. A character designates the MRP planning warehouse.

CAUSE. A description identifying the cause for the diagnostic printed.

STATUS. The description of the action taken by the FCST application related to the cause that was previously listed. A possible status indicator is as follows: “FCST and/or REQMT quantities loaded through,” which indicates that forecast and requirement quantities were loaded only through the date indicated in the status printed.

FORECAST MASTER RECORDS READ. The number of Forecast Master records read.

FORECAST MASTER RECORDS LOADED TO REQMTS. The number of Forecast Master records that were loaded by the FCST application to the Requirements (REQMTS) file.

FORECAST MASTER RECORDS LOADED TO DMDIFF. The number of Forecast Master records that were loaded by the FCST application to the Demand Interface (DMDIFF) file.

Note: If the load program could not find a master schedule for an item, these counters are not incremented.

Forecast Master Initialization (AM212)

```
     NORTHCREEK IND.                    FORECAST MASTER INITIALIZATION          DATE  */**/
**  TIME 16:19:04  PAGE    1  AM212

  EFFECTIVE DATE  1/07/**

  MISSING ITEM PROFILE RECORD FOR         FORECAST MASTER RECORD ASSIGNED TO

  ITEM NUMBER     AND    LOCATION         SEAS CODE AND VOLUME CODE
  03370                      SYS          000           0
  03370                      1            000           0
  03398                      SYS          000           0
  03398                      A            000           0
  03398                      1            000           0
  03418                      SYS          000           0
```

```
     NORTHCREEK IND.                     FORECAST MASTER INITIALIZATION         DATE **/**/
**  TIME 16:19:04  PAGE    2  AM212

  EFFECTIVE DATE  1/07/**

  FORECAST MASTER RECORDS READ             63

  FORECAST MASTER RECORDS INITIALIZED      10

  ITEM PROFILE RECORDS READ                12
```

Fields

EFFECTIVE DATE. The effective date of the report.

MISSING ITEM PROFILE RECORD FOR ITEM NUMBER AND LOCATION: . The item number and warehouse (where SYS designates system level record) for which no Item Profile record was found.

FORECAST MASTER RECORD ASSIGNED TO SEAS CODE AND VOLUME CODE: . The seasonal group profile code and volume subgroup for the item and warehouse assigned during the initialization process.

Note: It may be necessary to use item or mass maintenance to revise the seasonal group profile code assignments that are made by this initialization function to ensure proper initial assignment of all Forecast Master records to seasonal groups.

FORECAST MASTER RECORDS READ. The count of Forecast Master records read during the initialization.

FORECAST MASTER RECORDS INITIALIZED. The count of Forecast Master records that were initialized.

ITEM PROFILE RECORDS READ. The count of Item Profile records that were read.

Forecast Master Maintenance Edit List (AM201)

```
  NORTHCREEK IND.                FORECAST MASTER MAINTENANCE EDIT LIST            DATE  */**/
**  TIME 14:50:51  PAGE    1  AM201

ITEM 99001               WAREHOUSE SYS    DESCRIPTION  SPRAY UNIT
   ***** BEFORE *****                                                              UPDATE

NEW ITEM             TREND CODE          1

VALUE CLASS          B      MASS MAINT CODE     Y      K1            3.0     CURR ANN FCST          44     LIFE CY
CLE CODE     001
SERVICE TYPE         1      FILTER LEVEL      4.5      K2            1.50    U/
C              850.0000     LIFE CYCLE POSITION  01
SMOOTH CODE          01     TRACKING LEVEL       3      K3            2.50    PRODUCT LINE       PU
SEAS GRP CODE      000      SERVICE LEVEL     .980      CUM MATL LT   5.0     MAX SAFETY STOCK     99.9

*****                                        P E R I O D    F O R E C A S T S
         *****
      03         04         05         06         07         08         09         10         11         12         01
  02
      4          4          4          4          4          4          4          4          4          4          4
   4


                                                                *** UPDATE ***

NUMBER OF UPDATED RECORDS      3
```

Fields

ITEM. The item number for the forecast data printed.

WAREHOUSE. The warehouse for the item printed.

DESCRIPTION. The description for the item printed.

NEW ITEM. The new item which replaces the item.

TREND CODE. The trend code.

VALUE CLASS. The value class for the item printed.

SERVICE TYPE. The service type.

SMOOTH CODE. The smoothing code.

SEAS GRP CODE. The seasonal group profile code to which this item has been assigned.

MASS MAINT CODE. The mass maintenance code.

FILTER LEVEL. The filter level.

TRACKING LEVEL. The tracking level.

SERVICE LEVEL. The service level.

K1. The K1 forecast model factor.

K2. The K2 forecast model factor.

K3. The K3 forecast model factor.

CUM MATL LT. The cumulative material lead time.

CURR ANN FCST. The current annual forecast in units for the item.

U/C. The unit cost for this item.

PRODUCT LINE. The product line for this item.

MAX SAFETY STOCK. The maximum safety stock expressed in time periods of supply.

LIFE CYCLE CODE. The life cycle profile code for this item.

LIFE CYCLE POSITION. The life cycle position for this item on the life cycle curve.

PERIOD FORECASTS. The period forecasts by period.

NUMBER OF UPDATED RECORDS. The count of the Forecast Master records revised.

Forecast Master Mass Maintenance Transactions (AM205)

```
   NORTHCREEK IND.              FORECAST MASTER MASS MAINTENANCE TRANSACTIONS     DATE  */**/
**  TIME  9:16:30  PAGE    1  AM205

** SELECTION CRITERIA *                                          SERVCE CMT  MAX **** PERCENT CHANGES ****
  LC  NUMBER OF
VC WRH PRD LN SGCD LCCD    K1   K2   K3  F/L T/
L TR SM PRD LN SGCD  LVL T  LT   SS  COST  A FCST  P FCST PER LCCD POS  RECORDS REV

 A                        2.5
            6

FORECAST MASTER RECORDS READ   40
```

Fields

SELECTION CRITERIA. This field refers to the following selection criteria:

VC The value class selected for this maintenance transaction

WRH The warehouse selected for this maintenance transaction

PRD LN The product line selected for this maintenance transaction

SGCD The seasonal group profile code selected for this maintenance transaction

LCCD The life cycle profile code selected for this maintenance transaction.

Note: For the maintenance transaction to have been applied, the transaction record must satisfy all of the selection criteria specified, and the mass maintenance code for the item record must not be equal to N.

K1. The revised value of the K1 forecast model factor for all selected records.

K2. The revised value of the K2 forecast model factor for all selected records.

K3. The revised value of the K3 forecast model factor for all selected records.

F/L. The revised value of the filter level for all selected records.

T/L. The revised value of the tracking level for all selected records.

TR. The revised value of the trend codes for all selected records.

SM. The revised value of the smoothing codes for all selected records.

PRD LN. The revised value of the product line for all selected records.

SGCD. The revised value of the seasonal group profile codes for all selected records.

SERVICE LVL. The revised value of the service level for all selected records.

T. The revised value of the type for all selected records.

CMT LT. The revised value of the cumulative material lead time in days for all selected records.

MAX SS. The maximum quantity of safety stock quantity expressed in time periods of supply for all selected records.

PERCENT CHANGES. This field refers to the following percent changes:

COST	The percent change up or down that was made to the cost of each item for all selected records.
A FCST	The percent change up or down that was applied to the annual forecast in units for all items selected.
P FCST PER LCCD	The percent change applied to the period forecast in the period number displayed for all selected records.

LC POS. The revised life cycle profile code and position for all selected records.

NUMBER OF RECORDS REV. The number of records to which this maintenance transaction was applied.

FORECAST MASTER RECORDS READ. The count of Forecast Master records that were read during the mass maintenance.

Forecast Master Reconciliation Maintenance (AM211)

```
   NORTHCREEK IND.        FORECAST MASTER RECONCILIATION MAINTENANCE         DATE **/**/
**  TIME 14:01:54  PAGE    1  AM211

                                                                                           UNIT COST  V
ALUE ITEM  CMT M
ITEM NUMBER     SYSTEM  WAREHOUSE(S)                                 STATUS    DESCRIPTION                  DEFAULT   C
LASS CLASS  LT P

03370                N     1                                         UPDATED   MOTOR                         9.9500
 B    70     0  M

03398                N     A1                                        UPDATED   CORD BRACKET                   .1005
 B    80     0  M

03415-
1          N     A1                                        UPDATED    SPRAY NOZZLE                    .9500    B
70    0  M

03418                N     1                                         UPDATED   BOLTS -
 SOLD BY THE BOX          6.0000    B    80   32  M

03418-1              N     1                                         UPDATED   NYLON CORD -
 SOLD BY THE FO      .0900    B    80    0  M

03420                N     1                                         UPDATED   BOLT ASSEMBLY                16.3400
 B    20     0  M

03423                N     1                                         UPDATED   TREADLE                       3.1714
 B    50     0  M

03424                N     A1                                        UPDATED   TREADLE ASSEMBLY             10.6290
 B    20     0  M

03425                N     1                                         UPDATED   COVER                          .9426
 B    50     0  M

03427                N     1                                         UPDATED   BOLT ASSEMBLY                16.3400
 B    20     0  M
```

```
   NORTHCREEK IND.            FORECAST MASTER RECONCILIATION MAINTENANCE         DATE **/**/
**  TIME 14:01:54  PAGE    3  AM211

FORECAST MASTER RECORDS ADDED                    0

FORECAST MASTER RECORDS DELETED                  0

FORECAST MASTER RECORDS UPDATED                 63
```

Fields

ITEM NUMBER. The item number for forecast master maintenance applied.

SYSTEM. Y (yes) or N (no) designates whether or not the system level record was affected by the maintenance action.

WAREHOUSE(S). A listing of the warehouses that were affected by the maintenance action.

STATUS. A description of the maintenance action that was performed.

DESCRIPTION. The description of the item from the Item Master file.

UNIT COST DEFAULT. The unit cost of the item from the Item Master file.

VALUE CLASS. The value class of the item from the Item Master file.

ITEM CLASS. The item class of the item from the Item Master file.

CMT LT. The cumulative material lead time for the item from the Item Balance file.

MP. The Master scheduled item code for the item from the Item Master file.

FORECAST MASTER RECORDS ADDED. The count of the number of master records added to the Forecast Master file.

FORECAST MASTER RECORDS DELETED. The count of Forecast Master records deleted.

FORECAST MASTER RECORDS UPDATED. The count of Forecast Master records revised.

Inventory Load Control Totals (AM215)

```
   NORTHCREEK IND.                  INVENTORY LOAD CONTROL TOTALS              DATE  */**/
**  TIME 14:32:26 PAGE     1  AM215

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**

ITEM BALANCE RECORDS UPDATED WITH REORDER POINT/SAFETY STOCK      63
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

ITEM BALANCE RECORDS UPATED WITH REORDER POINT/SAFETY STOCK.

The count of the Item Balance records revised with reorder point, safety stock, or both.

Note: If you answered Y (yes) to the Questionnaire questions about updating either reorder point, or safety stock, or both, this report is printed.

Item Summary Data Print (AM237)

```
   GATEWAY MFG. CO.              ITEM SUMMARY DATA PRINT                      DATE **/**/
**  TIME 8:03:30   PAGE    1  AM237

                    *******                P E R I O D   Q U A N T I T Y
        ********

 YEAR    ITEM NUMBER     01      02      03      04      05      06      07      08      09      10      11      12      13
  8x     10009          125     120     100      96     100     150      56     199      86     138     258     126     144
         10010          325     360     365     370     400     453     399     289     589     377     425     456     409
         10020          294     283    1095     822     502    1204     588     310     237      97     276     298     159
         10021          508     532     890    1244    1662     901     194    1206     491     308     554     681     332
         10035          162      84       2      99     116     236     232     138     114     133     108     146     251

  8y     10009          255     332     867     207     990    1407     514     105     632     161     711    1271    1250
         10010         1188     678     871    1176    1118     800    1423    1570    1162    1627    1747    1357    1005
         10020          565      78     308      12      13       0    1098      96     236     231     359     533     621
         10021          108      92     125       0     315      21     105     165      42      40      88      95      25
         10035         6914    2027   14454   10557   11739   13771    7780   10690   10298    4968   10459    5997    6587

  8z     10009         2094     114     507    1098    1348     153    4263     593     250     916     364     817     355
         10010        13958   12323   13219   12458   18767   21588   27363   31232   20907    9533   15700   18378   14525
         10020         4634    5317    5582    4808    9578    9702   13325   14320    8017    4353    8237    8529    2237
         10021         6737    7976   10000    8322   11919   15381    9796   19917   10981    5591    8164    9383     777
         10035          950     566     523     347     425     307     402     316     318     490     583     985     252

ITEM SUMMARY RECORDS FOR YEAR 8x    5
                              8y    5
                              8z    5
```

Fields

YEAR. The year for the data printed.

ITEM NUMBER. The item number.

PERIOD QUANTITY. The period quantities for the periods 01 through 12 or 13.

ITEM SUMMARY RECORDS FOR YEAR. The number of item summary records for each year.

Life Cycle Profile Maintenance Edit List (AM220)

```
   NORTHCREEK IND.              LIFE CYCLE PROFILE MAINTENANCE EDIT LIST          DATE **/**/
**  TIME 14:46:33  PAGE    1  AM220

LIFE CYCLE CODE 011   DESCRIPTION LIFE CYCLE 11
   ***** BEFORE *****

  01    02    03    04    05    06    07    08    09    10    11    12    13    14    15    16    17    18    19
   20

  21    22    23    24    25    26    27    28    29    30    31    32    33    34    35    36    37    38    39
   40


LIFE CYCLE CODE 011   DESCRIPTION LIFE CYCLE 11
   ***** AFTER *****

  01    02    03    04    05    06    07    08    09    10    11    12    13    14    15    16    17    18    19
   20

  21    22    23    24    25    26    27    28    29    30    31    32    33    34    35    36    37    38    39
   40

                                                    ***  ADD   ***
NUMBER OF ADDED RECORDS                 1

NUMBER OF UPDATED RECORDS               0
```

Fields

LIFE CYCLE CODE. The life cycle profile code.

DESCRIPTION LIFE CYCLE. The description of the life cycle.

COEFFICIENTS LIFE CYCLE. The current and revised life cycle coefficients for the life cycle code specified. The 40 quarters (10 years) that were entered are shown.

NUMBER OF ADDED RECORDS. The count of the number of records added to the Life Cycle Profile file.

NUMBER OF UPDATED RECORDS. The count of the Life Cycle Profile records revised.

Period Demand Extract (AM210)

```
   NORTHCREEK IND.                        PERIOD DEMAND EXTRACT                        DATE  1/08/
**  TIME 14:00:32 PAGE     1  AM210

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**

ITEM NUMBER     WRH   QUANTITY

03014           SYS          0

03415-1         SYS          0

03423           SYS          0

03425           SYS          0

03590           SYS          0

03591-08        SYS          0

03591-10        SYS          0

03591-12        SYS          0

33480-A         SYS          0

34250-A         SYS          0
```

```
 NORTHCREEK IND.              PERIOD DEMAND EXTRACT              DATE  */**/**  TIME 14:00:32 PAGE     2  AM210

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**

PERIOD DEMAND RECORDS READ                10

PERIOD DEMAND WAREHOUSE RECORDS WRITTEN      0

PERIOD DEMAND SYSTEM RECORDS WRITTEN        10
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

ITEM NUMBER. The item number for the demand information printed.

WRH. The warehouse for the demand printed. SYS designates the total company, and warehouse corresponds to a warehouse.

QUANTITY. The units of the item for the demand information printed.

PERIOD DEMAND RECORDS READ. The count of order entry current period demand and future period demand records.

PERIOD DEMAND WAREHOUSE RECORDS WRITTEN. The count of warehouse demand records written for all warehouses.

PERIOD DEMAND SYSTEM RECORDS WRITTEN. The count of system demand records written.

Projection Edit Diagnostics (AM221)

```
   NORTHCREEK IND.                          PROJECTION EDIT DIAGNOSTICS            DATE **/**/
**  TIME 14:04:02  PAGE    1  AM221

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**

                                                  *---- LIFE CYCLE ----*
ITEM NUMBER     WRH  DESCRIPTION                  PROFILE CODE  POSITION  MESSAGE

03370           SYS  MOTOR                            000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03370           001  MOTOR                            000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03398           SYS  CORD BRACKET                     000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03398           A    CORD BRACKET                     000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03398           001  CORD BRACKET                     000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03415-
1         SYS  SPRAY NOZZLE                      000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUA
RTER :  1
03415-
1         A    SPRAY NOZZLE                      000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUA
RTER :  1
03415-
1         001  SPRAY NOZZLE                      000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUA
RTER :  1
03418           SYS  BOLTS -
 SOLD BY THE BOX            000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUARTER :  1
03418           001  BOLTS -
 SOLD BY THE BOX            000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUARTER :  1
03418-1         SYS  NYLON CORD -
 SOLD BY THE FOOT       000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUARTER :  1
03418-1         001  NYLON CORD -
 SOLD BY THE FOOT       000          01     ZERO PROJECTION OCCURRED IN LIFE CYCLE QUARTER :  1
03420           SYS  BOLT ASSEMBLY                    000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03420           001  BOLT ASSEMBLY                    000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03423           001  TREADLE                          000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03424           SYS  TREADLE ASSEMBLY                 000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03424           A    TREADLE ASSEMBLY                 000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
03424           001  TREADLE ASSEMBLY                 000          01     ZERO PROJECTION OCCURRED IN LIFE CYC
LE QUARTER :  1
```

```
   NORTHCREEK IND.                          PROJECTION EDIT DIAGNOSTICS            DATE **/**/
**  TIME 14:04:02  PAGE    2  AM221

CYCLE YEAR **   CYCLE PERIOD 01   EFFECTIVE DATE  1/28/**

FORECAST FUTURE YEARS RECORDS UPDATED     192

ZERO PROJECTION ITEMS IN YEAR 2            14

ZERO PROJECTION OTEMS IN YEAR 3             0

ITEMS REQUIRING LIFE CYCLE POSITION CHANGE  0
```

Fields

CYCLE YEAR. The last two digits of the current year.

CYCLE PERIOD. The last period within the year that demand was reported to the FCST application.

EFFECTIVE DATE. The effective date of the report.

ITEM NUMBER. The item number for which the diagnostics are printed.

WRH. The warehouse for which the diagnostics are printed. SYS designates the total company, and warehouse corresponds to a warehouse.

DESCRIPTION. The description of the item for which diagnostic data is printed.

LIFE CYCLE PROFILE CODE. The life cycle profile code for the item printed.

LIFE CYCLE POSITION. The life cycle position for the item printed.

MESSAGE. Statement on the report that indicates when the item/warehouse first had period projections of zero.

FORECAST FUTURE YEARS RECORDS UPDATED. The count of Forecast Future Years records updated.

ZERO PROJECTION ITEMS IN YEAR 2. The number of items that have period projections of zero in year 2.

ZERO PROJECTION ITEMS IN YEAR 3. The number of items that have period projections of zero in year 3.

ITEM REQUIRING LIFE CYCLE POSITION CHANGE. The number of items that require a life cycle position change, for example, the life cycle position is at 40.

Projection Maintenance Edit List (AM204)

```
   NORTHCREEK IND.                PROJECTION MAINTENANCE EDIT LIST              DATE **/**/
**  TIME 14:33:37  PAGE    1  AM204

ITEM MLI004             WAREHOUSE SYS    DESCRIPTION  MLI NUMBER 4
   ***** BEFORE *****                                                          UPDATE

PERIOD/YEAR 2/YEAR 3
     02        03        04        05        06        07        08        09        10        11        12
  01
    185       170       198       193       179       177       205       189       187       185       190
 187
    185       170       198       193       179       177       205       189       187       185       190
 187


ITEM MLI004             WAREHOUSE SYS    DESCRIPTION  MLI NUMBER 4
    ***** AFTER *****                                                          UPDATE

PERIOD/YEAR 2/YEAR 3
     02        03        04        05        06        07        08        09        10        11        12
  01
    195       170       198       195       179       177       205       189       187       185       190
 187
    195       170       198       195       179       177       205       189       187       185       190
 187

                                                  *** UPDATE ***

NUMBER OF UPDATED RECORDS     1
```

Fields

ITEM. The item number for the projection information printed.

WAREHOUSE. The warehouse for the projection printed. SYS designates the total company, and warehouse corresponds to a warehouse.

DESCRIPTION. The description of the item.

PERIOD. The periods (12 or 13) for the projections.

YEAR 2. The projections for year 2.

YEAR 3. The projections for year 3.

NUMBER OF UPDATED RECORDS. The count of the Forecast Future Years Master records revised.

Seasonal Group Profile Maintenance Edit List (AM217)

```
   NORTHCREEK IND.                SEASONAL GROUP PROFILE MAINTENANCE EDIT LIST    DATE **/**/
**  TIME  8:13:42  PAGE    1  AM217

SEASONAL GROUP CODE   004    VOLUME CODE 1
   ***** BEFORE *****                                                  CHANGE

DESCRIPTION   DIFFERENT BREAKS         ITEM PRINT    Y
                          01    02     03    04    05    06    07    08    09    10    11    12

SEASONAL COEFFICIENTS    .046  .032  .059  .364  .071  .056  .026  .034  .137  .020  .060  .093

RELIABILITY COEFFICIENTS .030  .061  .033  .227  .049  .034  .079  .049  .088  .014  .025  .140

SEASONAL GROUP CODE   004    VOLUME CODE 1
   ***** AFTER  *****

DESCRIPTION   DIFFERENT BREAKS         ITEM PRINT    Y
                          01    02     03    04    05    06    07    08    09    10    11    12

SEASONAL COEFFICIENTS    .046  .032  .059  .364  .071  .056  .026  .034  .137  .021  .060  .093

RELIABILITY COEFFICIENTS .030  .061  .033  .227  .049  .034  .079  .049  .088  .014  .025  .140

                                          *** UPDATE ***

NUMBER OF UPDATED RECORDS     1
```

Fields

SEASONAL GROUP CODE. The seasonal group profile code.

VOLUME CODE. The volume subgroup code.

DESCRIPTION. The description of the seasonal group.

ITEM PRINT. The item print for the seasonal group and volume subgroup. Either Y or N.

Y Yes, print the item.
N No, do not print the item.

SEASONAL COEFFICIENTS. The seasonal coefficients for the seasonal group and volume subgroup.

RELIABILITY COEFFICIENTS. The reliability coefficients for the seasonal group and volume subgroup.

NUMBER OF UPDATED RECORDS. The count of the Seasonal Group Profile records revised.

Seasonal Profile Construction (AM209)

```
   NORTHCREEK IND.                    SEASONAL PROFILE CONSTRUCTION                DATE  */**/
**  TIME 16:04:23  PAGE    1  AM209

EFFECTIVE DATE  1/07/**

DEMAND HISTORY RECORDS READ      24

ITEM PROFILE RECORDS WRITTEN     12

GROUP PROFILE RECORDS UPDATED     6
```

Fields

EFFECTIVE DATE. The effective date of the report.

DEMAND HISTORY RECORDS READ. The count of Demand History records read.

ITEM PROFILE RECORDS WRITTEN. The count of Item Profile records written during the construction process.

GROUP PROFILE RECORDS UPDATED. The count of Seasonal Group Profile records updated.

Appendix A. Statistical forecasting methodology

This appendix describes the basic features and statistical methods in the FCST application. Each feature is described in an independent subsection. The purpose of each subsection is to provide a basic conceptual understanding of the features and statistical methods in FCST. The features are:

Forecast methodology A-1
Description of FCST's experiential roughing technique A-2
Sensitivity of the forecast model A-6
Mean Absolute Deviation A-6
Coefficient of variation A-8
Inventory control theory A-8
Inventory control methodology A-10
Tracking signal A-11
Tracking history A-12
Demand filter A-12
Trend A-13
Monitor forecast model A-14
Lumpy demand A-14
Intelligence history A-14
Item seasonality A-15
Group seasonality A-15

Forecast methodology

The FCST application forecast methodology is an adaptive technique called experiential roughing. Adaptive techniques are based upon the premise that the best indication of the short-term future is reflected in the most recent past. If this premise holds true, then adaptive forecasting can be very effective. If this premise becomes invalid at any point in time, the forecasting method should identify this invalid condition and signal the forecast coordinator to intervene.

The premises of the FCST forecasting model are:

- The demand history for a particular item is a good indicator of short-term future demand. The forecast is an estimate of what future demand will be if the historical demand pattern continues as it has in the recent past.
- Whenever management knows of some factor that will significantly change the demand pattern of an item, the forecast for that item should be revised accordingly.
- The recent past is more significant than earlier periods. The forecast errors (for example, the difference between forecasted and actual demand) must be monitored to determine whether the forecasts are biased.
- A new forecast for an item should take into account the magnitude of the individual and cumulative forecast errors (+ or -) for the recent past, as well as the number of time intervals for which the accumulation of forecast errors was consistently positive or negative.
- Under some conditions, the demand history may exhibit a consistent pattern of increasing or decreasing volume, which is commonly referred to as a trend.
- A forecasting system must monitor each item for unusual events and identify those items that require management's attention.

Description of FCST's experiential roughing technique

The methodology used to develop a forecast is based upon two different operational modes: the normal mode and the exception mode. In order to develop a forecast, the normal mode uses the previous forecasted annual forecast, the item's seasonal profile, and the demand reported for the current period. A seasonal profile consists of a coefficient for each reporting period, where each coefficient is based upon past demand history, and specifies the percentage of annual demand expected to be realized in the reporting period. Since the value of a seasonal coefficient is not accurately known, some of the forecast error must be attributed to the errors inherent in the seasonal coefficients used to develop the annual forecast for the current period. This measure of error is applied as a criterion to determine whether to operate in the normal mode, or to shift to the exception mode.

The normal mode is operative as long as forecast error can statistically be attributed to the lack of accuracy in the seasonal coefficient; see Figure 10-1. Once FCST determines that a significant shift in the demand pattern occurred then a shift is made to the exception mode; see Figure 10-2. Whenever the exception mode is active, extraordinary action is taken to bring the forecast back into line with the actual sales. These extraordinary actions continue for each successive reporting period until the forecast is back in phase with actual demand.

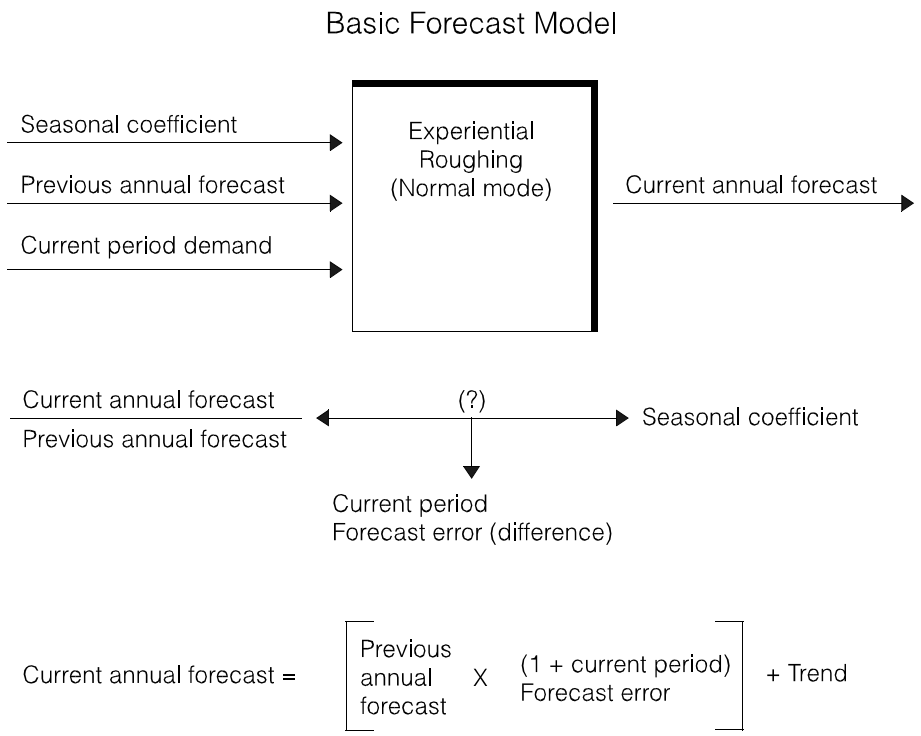


Figure 10-1. Basic forecast model

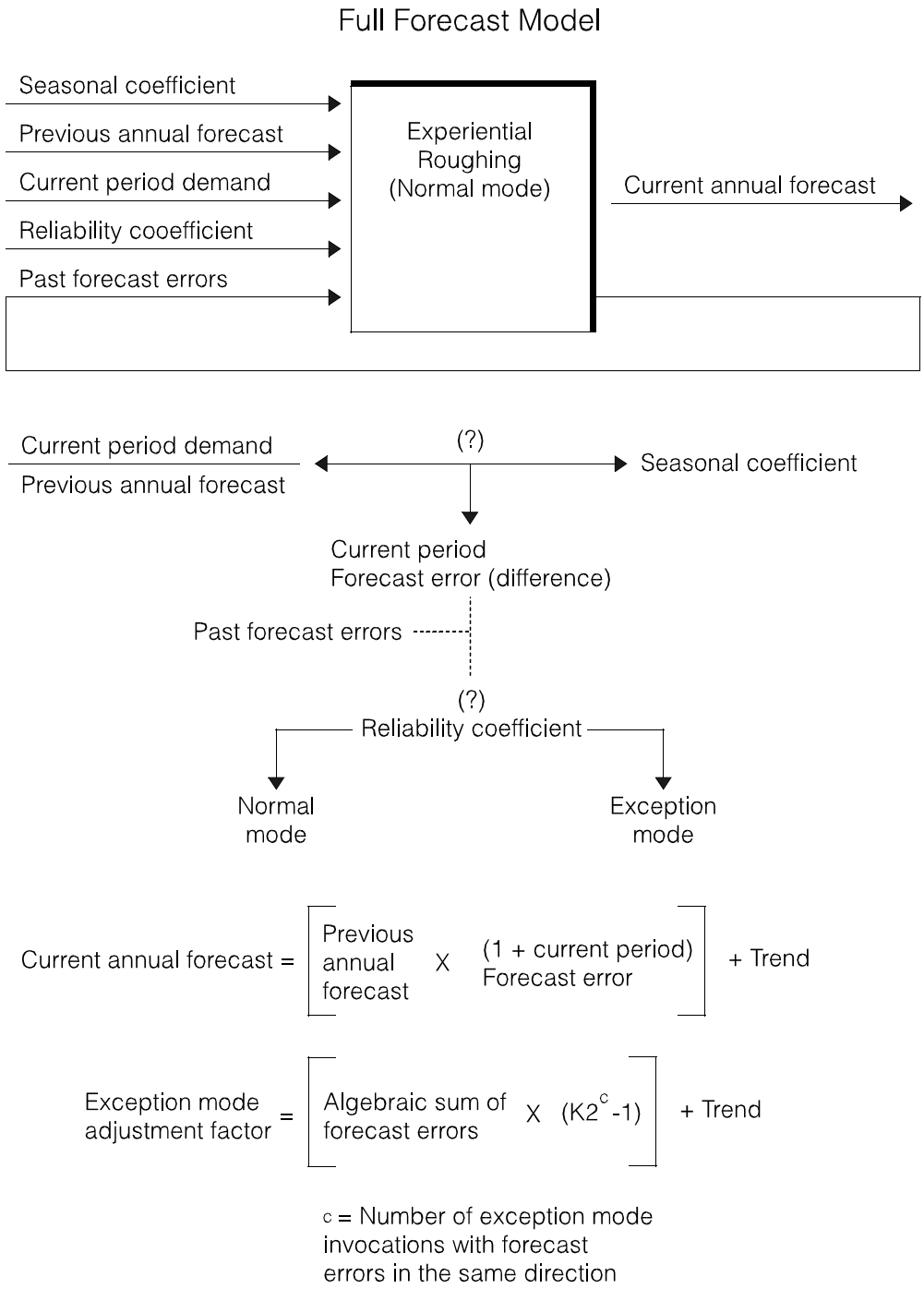


Figure 10-2. Full forecast model

The normal mode responds to the forecast error for the current period for the most recent reported demand by modifying the forecast. In contrast, the exception mode responds not only to the most recent forecast error but also to an accumulation of

history of forecast errors. The exception mode modifies the forecast to move in the direction needed to correct the observed error. The degree of modification is also markedly greater than in the normal mode. If the forecast is consistently less (or consistently more) than actual demand for several reporting periods, the exception mode forces the forecast to compensate; the extent of the compensation depends upon the value assigned by the forecast coordinator to a feedback parameter (K2) and upon both the magnitude and the duration of the accumulated error.

Note: Error accumulation stops each time the exception mode is invoked, and a new accumulation begins with the next reporting period. If the forecast is still in error in the same direction the next time the exception mode is active, the next revision to the forecast is even greater relative to the accumulated error. This revision continues until the forecast catches up with or overshoots the actual demand.

The exception mode is triggered when one of the following tests fails relative to the user-defined constraints which are:

- Forecast error is too large (test A).
- Cumulative forecast error is too large (test B).
- Forecast is wrong in the same direction too many times (test C).

These exception mode “triggers” utilize user defined factors. K1 and K3 test for wrong direction and magnitude of forecast error, respectively. K2 is used to make an extraordinary adjustment, given that one of the following tests in Figure 10-3 fails.

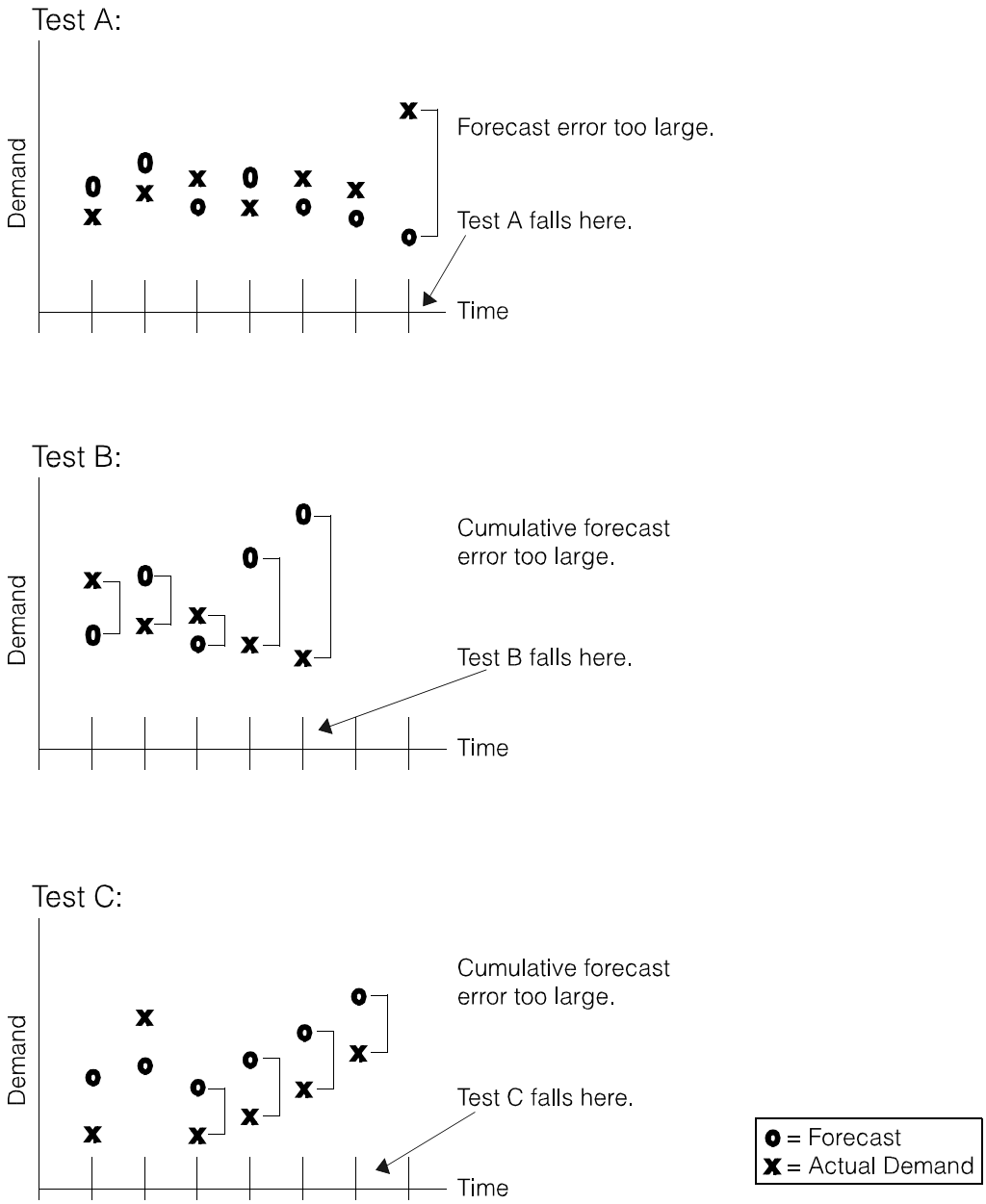


Figure 10-3. Tests for the exception mode

Sensitivity of the forecast model

The frequency of invocation of the exception mode is related to the sensitivity of the forecast model. The sensitivity of the forecast model can be adjusted on an item-by-item basis through changes in any of the model's K factors (namely K1, K2, K3).

Note: Generally speaking, the model becomes more sensitive or responsive as K2 is increased and as K1 and K3 are decreased. The default values assigned to new items serve as good starting points for K factors.

Mean Absolute Deviation

The mean absolute deviation (MAD) is defined as the weighted (e.g., exponentially smoothed) mean of the absolute differences (deviations) between forecasted and actual demand. MAD is a measurement of an item's demand fluctuation. The larger the MAD for an item the greater the demand fluctuates; conversely, the smaller the MAD the less the demand fluctuates. For example:

Case 1

Demand History 8, 12, 8, 12, 8, 12
Average 10
MAD .20 or 20%

Case 2

Demand History 6, 14, 6, 14, 6, 14
Average 10
MAD .40 or 40%

This example shows that even though the averages (mean) are the same, the MADs are different. Thus, the MAD measures the variation around the mean (average).

Within the FCST application, the MAD is used in two calculations. One is in setting control limits on incoming demand; the other is in setting inventory safety stocks.

Note: As previously stated, the MAD is used in calculating control limits on incoming demand; the other is in setting inventory safety stocks. It is important to remember that while the MAD is a measure of the difference between forecasted and actual demand, it is also intended as a measure of the forecast model's ability to forecast the actual demand. Be aware that repeated use of period forecast overrides limits the forecast model's ability to calculate a period forecast and the resulting MAD on its own. As a result, the MAD could be over- or understated.

The annual forecasts and the MAD for a new item are created automatically when the first nonzero period demand is reported for a new item. After an initial estimate of the current annual demand forecast is made, and the MAD is calculated, then the MAD is updated every time the annual forecast is updated. A new value of MAD is derived by utilizing the technique commonly referred to as simple exponential smoothing.

The forecasts are mechanisms by which to control inventory, with safety stock requirements very sensitive to forecast error, while working stock requirements are distinctly less sensitive. To control the safety stock, the random demand pattern of the item must be taken into consideration. Despite the use of the best known techniques, some amount of forecast error persists and must be protected against. This error is a combination of the variability in the demand, the seasonality, and forecasting mechanism, all of which are never precisely known and are always estimated. Relatively, the best and simplest way to set protective safety stock is to use the MAD as the control.

The MAD is also used to establish confidence levels. A confidence level is defined as: What is the possibility of an event occurring as a normal, distributed sample. (See Figure 10-4.)

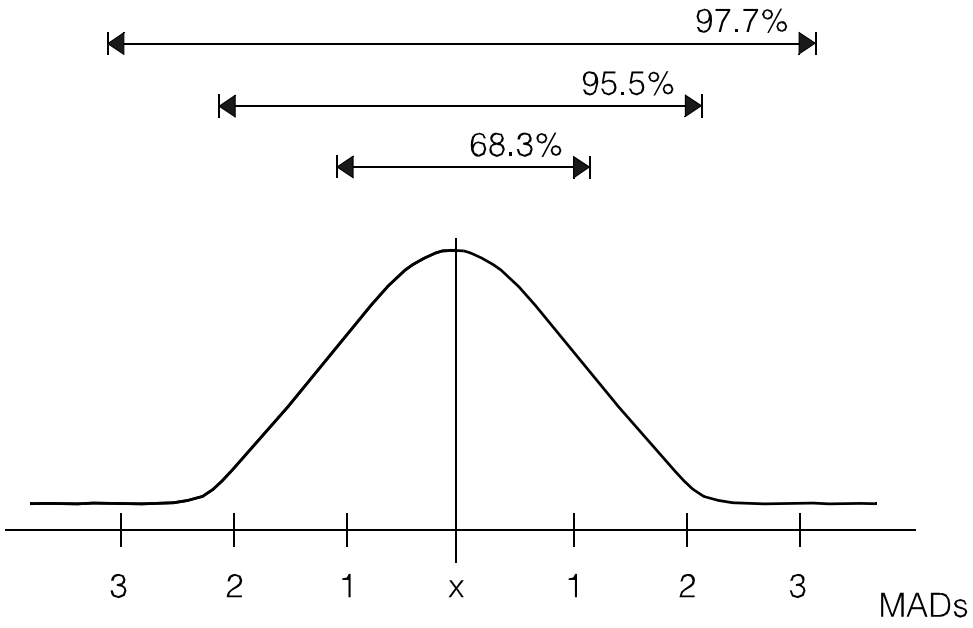


Figure 10-4. A normal distributed sample

For example, if the mean (/X) is 1000 and the MAD is 20 the confidence levels are:

Confidence Levels	Number of MADs	Range
68.3	1	980 - 1020
95.5	2	960 - 1040
97.7	3	940 - 1060
99.9	4	920 - 1080

Thus, you can be 95.5% confident that the next sample is in the range of 960-1040.

Note: The MAD is maintained in a deseasonalized form. Before using the MAD in inventory control calculations, the MAD is seasonalized appropriately for future periods.

Coefficient of variation

The FCST application uses the coefficient of variation as a relative performance measure. The coefficient of variation is a measurement of item demand fluctuations and is based on the actual forecast errors rather than on absolute values. For example:

Demand History 8, 12, 8, 12
Average 10
Deviations -2, +2, -2, +2
Coefficient of Variation 0

By definition, the coefficient of variation is directly related to an item's MAD. The coefficient of variation expresses MAD as a percent of a nonseasonal period forecast. A nonseasonal period forecast is used because the MAD is maintained in nonseasonal form by FCST.

The forecast summary reports generated by FCST print the average and weighted average coefficient of variation for a group of items. The weighted average is calculated by weighting each item by its current annual forecast (in units).

Inventory control theory

Whenever demand is above average, the safety stock, which is the reserve portion of the inventory, provides insurance against a stockout. The level set for the safety stock greatly affects the frequency of stockouts, since (everything else remaining the same) the higher the safety stock, the less frequent the shortages and the better the quality of customer service, and vice versa. However, the larger the safety stock, the higher are the carrying costs associated with the inventory, and the higher the cost incurred in maintaining the quality of service to customers. Thus, in establishing safety stocks, you must achieve a balance between two opposing costs, the cost of lost sales (including the cost of operating contingencies caused by stockouts), and the cost of more inventory than is actually needed to meet expected demand. A decrease in one cost can, however, sometimes be realized by little or no increase in the other.

The inventory cost and inventory balancing for a business that provides one month's supply as the safety stock for every item can be improved by acting on the following line of reasoning. In a typical business situation, demand for some items is quite stable and predictable; for others, it is volatile. If a month's supply is adequate for the desired service level on volatile items, less is needed for the stable items, and the inventory investment can be reduced. If, on the other hand, a month's supply is not adequate for the more volatile items, the overall service is improved if part of the investment removed from the stable items is directed to the less stable ones. Therefore, if we measure the fluctuation in the demand for each item, we can distribute the investment in safety stock more effectively, with a net improvement in services and a reduction in inventory investment.

To provide an illustration of why this line of reasoning is valid, assume the use of a very simple (no change) forecasting rule; that is, that the forecast for the next period is simply the demand experienced in the latest period. Apply this rule to the following demand data:

Period	Actual Demand (Units)	Forecasted Demand (Units)	Absolute Forecast Error (Units)
Item A:			
1	12,942		
2	14,005	12,942	1,063
3	9,873	14,005	4,132
4	13,104	9,873	3,231
5	10,990	13,104	2,114
6	12,556	10,990	1,566
Total	73,470		12,106
Item B:			
1	27,038		
2	9,909	27,038	17,129
3	5,777	9,909	4,132
4	7,200	5,777	1,423
5	4,397	7,200	2,803
6	19,149	4,397	14,752
Total	73,470		40,239

This example shows that the two items have exactly the same total demand over the six time periods, but the demand for Item B varies over a much larger range than for Item A. Demand for Item A ranges from 9,873 to 14,005, while for Item B the limits are 4,397 and 27,038. In other words, demand for Item B is subject to much greater change, or random variations than is the demand for Item A. In order to maintain the same service level, Item A requires less safety stock than Item B.

Relatively large demand variations make a significant difference in the level of accuracy that is achievable by any particular forecasting methodology and in the level of safety stock that is required. As stated previously, MAD is used as a measure for developing the amount of safety stock required to provide a designated service level.

Experience and theory both show that the demand actually realized in the next time period seldom falls outside the range defined by the limits A minus 2.5 MAD (lower limit) and A plus 2.5 MAD (upper limit), where A designates the average demand for the item that is being forecast. (“Seldom” here means about one time in twenty.) In the example cited above, you find the following:

	Item A	Item B
Average Demand (units)	12,245	12,245
MAD	2,421	8,048
2.5 MAD	6,052	20,120
Lower limit (Average - 2.5 MAD)	6,193	0
Upper limit (Average + 2.5 MAD)	18,297	32,365

Thus, it is to be noted that an inventory policy that allocates the same average months of supply of safety stock to every item is not a very good strategy unless the random variations in the demand are of the same relative magnitude for all items, which is highly improbable. Safety stock must cover fluctuations during a lead time, and lead times vary among items, therefore you should avoid a policy that requires the same average months of supply of safety stock for all items. In this discussion, the following simple definition of service level for an item is:

$$\text{Service level} = \frac{\text{number of reorder periods in which no stockout occurs}}{\text{total number of reorder periods}}$$

Then, based upon the performance of the simple forecasting rule that has been used here, to attain a service level of 95%, 6,052 units of safety stock should be allocated to Item A and 20,120 units to Item B. If one month’s average supply is the safety stock for each item, approximately 12,245 units are allocated to Item A and an identical quantity to Item B. Hence, for a desired service level of 95%, Item A is greatly overprotected and Item B is greatly underprotected.

It is important that the method you use to control inventories, that the method provide a level of reliability commensurate with the cost of implementing and operating the system. The FCST application was developed specifically with this consideration as a criterion.

Inventory control methodology

The FCST inventory calculations are based on the latest forecast information.

The forecast coordinator specifies the desired service level in terms of:

- Proportion of total demand satisfied, or
- Proportion of reorder periods where no stockout occurs.

The forecast coordinator can specify an upper limit on the safety stock for any item in terms of time-supply value (expressed in weeks). If the calculated safety stock exceeds the specified maximum, the safety stock is set at the maximum level.

Negative safety stock can occur in those instances where the MAD is small or the requested service level is low. However, FCST does not permit negative safety stock. That is, if the calculated safety stock turns out to be negative, the safety stock is set to zero.

The calculations are based on the assumption that the error in the forecasted demand during a lead time is a normally distributed random variable, with zero mean and with variance related to the MAD of the forecast.

FCST calculates the reorder point using the forecasted demand over the lead time plus safety stock. The lead time for each item is assumed to be known with certainty.

Tracking signal

Forecasted demand seldom, if ever, coincides with actual demand. When FCST finds repeated use of exception mode, it will activate a tracking signal and place the item on the Forecast Exception Report. The automatic monitoring of each item is accomplished by testing against a limit called the tracking-signal-trigger-limit (tracking level). Tracking level tells FCST how many prior periods of tracking history to examine for exceptions. For example, if the tracking level is set to 2, the item appears on the Forecast Exception Report when the number of reporting periods between repeated use of the exception mode is 2 or less. Hence, setting the tracking level to 1 causes the item to appear only when the exception mode is used for two consecutive periods.

As the tracking level is set to progressively higher values, the probability increases that a series of random fluctuations that are all below or all above average demand will cause a false tracking level to trip. Such false trips are a nuisance since you need to determine whether a revision to the annual forecast is warranted. Trips due to random causes can be reduced by decreasing the value of the tracking level. However, this decrease may preclude or delay detection in some instances where the forecasts really do require revision.

Note: Tracking levels should differ from item to item. It is recommended that a value of 1 or 2 be set for the less important low volume items, and a value of 5 or 6 be set for the expensive and/or high volume items, with intermediate value items being assigned the value 3 or 4. Assigning higher values to the more important items assures more frequent review of the forecasts for these items. The default in FCST is to set tracking levels to 3 for new items. Admissible values lie in the range from 1 through 9. You can modify the tracking level on an item-by-item basis or by mass maintenance.

Tracking history

The tracking history for each item is displayed on the Forecast Master Inquiry/ Maintenance display (AM2011). The history is comprised of one-digit elements corresponding to a reporting period in the year. Each element identifies tracking signals, demand filtering, and overriding actions taken by the forecast coordinator.

The various values of the tracking history exception codes are shown below.

Note: Codes 5 through 9 denote the same system condition as do Codes 0 through 4. Additionally, these codes indicate annual forecast overrides by the forecast coordinator.

0 Forecast satisfactory per model
1 Demand filtered before being reported to forecast model
2 Uninitialized periods indicating no demand reported
3 Annual forecast may require revision: model not tracking well
4 Conditions denoted by code 1 and code 3 exist concurrently
5 Same as code 0; annual forecast revised
6 Same as code 1; annual forecast revised
7 Same as code 2; annual forecast revised
8 Same as code 3; annual forecast revised
9 Same as code 4; annual forecast revised.

FCST automatically updates these 1-digit elements.

Demand filter

The FCST application uses a demand filter to detect reported demand values that differ too much from the forecasted demand. This condition can occur for a number of reasons, some of which are:

- Clerical errors
- Promotions that were not accounted for in the system
- Unusual “one-time” occurrences
- A sudden, large change in the actual demand pattern.

The demand filter consists of testing whether the actual demand for a forecast period differs from forecasted demand for the same period by more than a specified number of MADs, where the value of MAD is the MAD calculated in the previous reporting period. The number of MADs specified reflects the desired degree of confidence that the difference specified between actual and forecasted demand is a significant difference rather than a difference due to normal random fluctuations. Limits based upon four MADs, corresponding to over 99.8% confidence, are frequently used. A demand filter “trip” occurs when a demand falls outside these limits. For example, assume the following:

MAD	20
Forecasted Demand	100
Actual Demand	250
Filter Level	3.0

Since the forecast error expressed as a multiple of the MAD is:

```
(250 - 100) / 20 = 7.5
```

and since 7.5 is greater than the filter level, the demand is filtered so that only 160 is reported to the forecast model; for example:

```
Filtered Demand = Forecasted Demand + (Filter Level) (MAD)
or
Filtered Demand = 100 + (3.0)(20) equals 160
```

The filtered demand of 160 is entered into the item's demand history.

If the MAD is less than 10% of the deseasonalized average demand per period, FCST uses 10% of this average, instead of MAD, in the demand filter calculations.

When the filter level is triggered, the calculation for the new estimate of MAD utilizes the forecast error relevant to the filtered rather than the actual demand; for example, in the example cited above, the reported deviation used to update MAD is 60 units rather than 150 units.

The filter level is initially set to 4.5 for new items. You can modify the filter level on an item-by-item basis or on a mass basis.

Each item that triggers the filter level is identified on the Forecast Exception Report. In addition, each such event is identified in the item's tracking history by an exception code.

When demand is filtered, two forecasts for the item are displayed on the Forecast Exception Report, namely, an annual forecast based on the filtered demand and an annual forecast based upon the demand actually reported. Forecasting always selects the forecast based on the filtered demand as the operational model annual forecast. If the forecast coordinator decides that the demand should not be filtered because there is a change in the level of demand that is likely to persist, it is necessary to override the current annual forecast (operational model annual forecast) with the unfiltered annual forecast.

Trend

Demand history may exhibit a consistent pattern of increasing or decreasing volume, which is commonly referred to as a trend. Because of the difficulty frequently encountered of differentiating trend from random fluctuations when making short-term forecasts, the forecast model used in FCST is designed so that it is not necessary to predict trends. Instead, the model quickly detects when a trend develops and compensates for this condition.

Note: The forecast coordinator can specify conditional recognition of trend by assigning a trend code of 1 to an item. In this instance, Forecasting determines whether there is a statistically significant linear trend and, if so, takes the trend into account. FCST defaults to a trend code of 1 for new items.

The FCST application is also designed to monitor trends in historical data. Recognition of trend in the forecasts produced by FCST is only provided when a historical trend is considered statistically significant at a 99% confidence level. When a statistically significant trend is detected, the trend is applied to the period forecasts

generated by FCST. Once trend is detected and applied to the period forecasts, the period forecasts will not crossfoot to the current annual forecast.

The conditional recognition of trend described above is automatic for new items. However, the forecast coordinator can request that no trend calculations be performed by setting the trend code to 0 (zero) for any particular item.

Note: The trend code can be changed on an item basis or on a mass basis.

Monitor forecast model

Since the forecast coordinator has complete freedom to override any of the forecasts developed by the FCST application, it is quite possible for the reliability of some forecasts to be adversely affected by the revisions. To guard against this event, FCST uses two forecast models, an operational model and a monitor model.

The forecast developed by the monitor model cannot be overridden by the forecast coordinator. At the end of each period, FCST compares the forecast error and the MAD of the monitor model to that of the operational model. The current period intelligence history on the Forecast Exception Report identifies whether the forecast developed by the monitor model has a smaller forecast error or MAD. The most likely reason for a difference between the operational and monitor model annual forecasts is due to an operational model annual forecast being overridden by the forecast coordinator.

Note: The FCST feature to support lumpy demand is applied only to the operational model. Lumpy demand's smoothing code could also be the difference between the two forecast models. When specifying a smoothing code other than one there may be a difference between the operational and monitor model annual forecasts.

Lumpy demand

In lieu of reporting demand for the current period to the forecast model, the forecast coordinator has the option of reporting the total demand for two or more periods. If the volume of demand is low and extreme variations from one period to the next exist, the forecast coordinator can specify that all of the demand be reported to the forecast model. The forecast coordinator does this at the end of each period, by means of the smoothing code. This specification can be accomplished within a maximum time horizon of one year.

Intelligence history

The intelligence history for each item is displayed on the Forecast Master Inquiry/ Maintenance display (AM2011). The history is comprised of one-digit elements corresponding to a reporting period in the year. Each element identifies the performance of the forecast coordinator for the corresponding period. The intelligence history identifies the following conditions:

1. With regard to the annual forecast:
    - The current period forecast error is larger for the operational model than for the monitor model (caused by a prior period annual forecast override), or
    - An annual forecast revision by the forecast coordinator has led to a larger current period forecast error than if it had not been overridden.

2. The MAD of the annual forecast is greater for the operational model than for the monitor model (caused by a prior period annual forecast override).
    - Code 0 in the intelligence history indicates that neither conditions 1 nor 2 apply.
    - Code 1 indicates that condition 1 applies.
    - Code 2 indicates that condition 2 applies.
    - Code 3 indicates that both conditions 1 and 2 exist.

The forecast error corresponds to the current period. The MAD corresponds to several historical periods, including the current period. The number of historical periods is controlled by an annual forecast override.

Conditions 1, 2, and 3 can occur under the following situations:

- Annual forecast override
- Use of smoothing code—only applied to operational model, not to monitor model
- Period forecast override—forecast error calculation based on overridden period forecast.

Item seasonality

The FCST application uses a very effective technique to calculate item seasonal coefficients. It is the “ratio to moving average” technique. Up to six years of demand history for each item and item/warehouse is saved and all of the demand history is used to calculate seasonal coefficients for the item. This technique involves creating a series of one-year moving averages for the historical data. These averages are then matched with individual demand history periods. The ratio of the demand in the historical period to the centered moving averages is calculated. This calculation results in coefficients which are averaged across the years of historical data and adjusted to sum to one.

FCST creates two statistics relating to item seasonality: (1) the mean absolute deviation (MAD) of the demand history and (2) the item ratio. The mean absolute deviation is the comparison of the item seasonal pattern to a nonseasonal (linear trend line) pattern. The item seasonal MAD is divided into the nonseasonal MAD to obtain the item ratio. The size of this ratio relative to the item ratio specified by the forecast coordinator determines whether FCST considers the item seasonal and whether it is used in the group seasonal calculation. The FCST application also identifies peaks in the item seasonal pattern and displays the period where the peak occurs. The identification of peaks can be very helpful in reviewing the results of group seasonal calculations.

Group seasonality

The FCST application requires the forecast coordinator to specify seasonal groups (up to 999 may be defined). Group seasonality works well because the randomness (noise), which is present in the item demand history and related item seasonal coefficients, tends to be dampened when the item seasonal patterns are grouped. This process generally results in a clearer picture of seasonal patterns.

Note: A seasonal group can consist of a single item in which case the seasonal coefficients for the group are those of the one item only.

FCST allows the forecast coordinator to subdivide a seasonal group by defining volume (annual demand) boundaries. These subgroups are termed volume subgroups, and each subgroup is assigned a volume code beginning with zero. Up to six volume subgroups may be defined.

The group seasonal coefficients calculated by FCST are the result of a simple-weighted-average method. Item seasonal coefficients for selected group items within the volume subgroup are weighted based upon the most recent year of annual demand. Only items whose item seasonal ratio is greater than the item MAD ratio set by the forecast coordinator are used in the group seasonal coefficient calculations. The forecast coordinator may also prevent specific items from being used in the calculations. Once the group seasonal coefficients are developed, the MAD of each item's demand history to the group seasonal pattern is measured. The group seasonal ratio for the item is then calculated by dividing the group seasonal MAD into the nonseasonal MAD. The size of this ratio relative to the group ratio set by the forecast coordinator determines the overall FCST recommendation of the item's seasonality. This recommendation is used for information purposes.

The FCST application calculates reliability coefficients for each volume subgroup in the seasonal group. These coefficients are important to the sensitivity of the forecast model. The coefficients are generally high for the first volume subgroup (lower volume items) and decrease across subsequent ranges. The reliability coefficients (group reliability coefficients) are the mean absolute deviation between the item seasonal coefficients and the group seasonal coefficients for all items within the group and volume subgroup.

Appendix B. Extended horizon projection methodology

This appendix describes the basic features of the extended horizon projection methodology in the FCST application. Each feature is described in an independent subsection. The purpose of each subsection is to provide a basis conceptual understanding of the features and methods in FCST. The subsections are:

Using Forecasting's extended horizon projection technique B-1
Product life cycles.....B-2
Stages of product life B-3
Changes in a product life cycle.....B-4
Calculating the extended horizon projection.....B-10
Life cycle position B-11

The extended horizon projection methodology in the FCST application satisfies an important need in providing information needed by top management to have a higher degree of control over production plans, inventory levels, and customer service. The extended horizon projection can be associated with a form of strategic planning.

The extended horizon projection methodology extends the statistical forecast from one year to three years of projected demand. The FCST application develops these projections for customer demand based upon product life cycles. These projections can then be used in supporting the capacity planning activity of a company.

The extended horizon projection methodology that is used in FCST, has a framework based on the marketing concept of product life cycles. FCST uses this concept to identify the important characteristics of forecasting situations at different stages in a product's life.

To understand the extended horizon projection methodology you must have an understanding of product life cycles. This appendix gives a brief overview, but you may want to review product life cycles in a Marketing textbook.

The information in the Modular Applications System Training (MAST) for Forecasting will be most helpful to you. See your local IBM branch representative for additional information on MAST.

Using Forecasting's extended horizon projection technique

The extended horizon projection methodology used in the Forecasting application is based on the life cycle of an item or a group of items. The life cycle you define relates to the increases and decreases in the annual projection over the life of a product. To use the extended horizon projection methodology you must complete the following steps in order:

1. Identify an item or a group of items that have unique product life cycle characteristics.
2. Develop the product life cycle curve for the item(s).
3. Decide where on the product life curve the item(s) is currently.

Product life cycles

A product life cycle can be defined for an individual item or for a group of items. Each product life cycle should consist of an item or group of items that have unique characteristics to distinguish that product life cycle from other product life cycles.

To use the product life cycle, you must analyze your Master Level Items (MLIs) and group them according to unique characteristics that have an influence on that group. The following table is a general list of characteristics that can be used to identify item groupings.

Note: This list is only a sample of how you might want to group your products.

Table 10-2. Sample product grouping

Product	**Place**	**Promotion**	**Price**
Features	Channels	Promotion blend	Flexibility
Accessories	Market exposure	Kind of sales people	Level
Installation	Kinds of middlemen	Selection	Pricing
Instructions	Who handles storing and transporting	Motivation	Allowances
Service	Service levels	Kind of advertising	Discounts
Warranty Package		Media type publicity	Geographic terms
Brand name		Sales promotion	

The next step is to designate an item to a particular product life cycle. You do this by assigning a life cycle profile code to the item. This is done by choosing the Forecast Master Update option on the Inquiry and File Maintenance menu (AM2M10).

The life cycle profile code for an item is independent from its value class, product line, and seasonal group profile code designations. However, you might want to use these designations in setting up your different life cycle groupings. FCST allows up to 999 different life cycle profile codes, which means you can have up to 999 different product life cycles.

Stages of product life

Normally, a product goes through various stages from its conception to its obsolescence. These stages are defined to be a product's life cycle. The cycle is divided into four stages:

- Introduction
- Growth
- Maturity
- Decline.

The relationship of the product life cycle and total items is illustrated in Figure 10-5.

Note: The way in which you define the life cycle will determine the y-axis. For example, total items can be either the number of items your company produces or can be the number that is produced by all vendors. The y-axis can also be defined as sales or profit and you should get the same shaped life cycle curve.

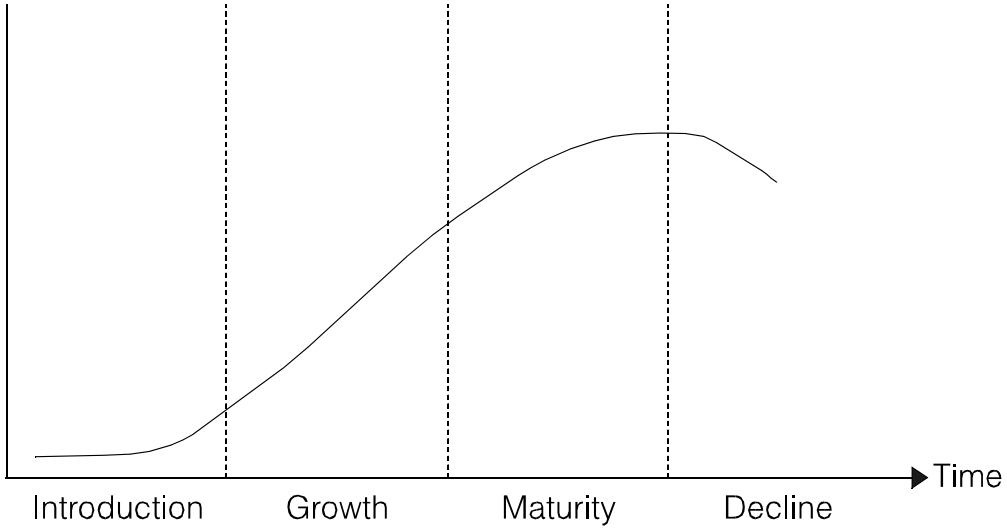


Figure 10-5. Product life cycle

Introduction

The conception and introduction stage occurs when a new idea is being developed and introduced into the market place. This stage is characterized by the continuing R&D effort needed on the product. Also, there is no historical data to forecast from since there is no developed market, customer base or competitors to analyze. At this stage the viability of the product is still in question. Even though you promote the product it will take time for customers to learn about it.

Growth

The market growth stage occurs when industry sales start growing with competitors coming into the market. During this stage the sales are rising fast as more and more customers learn of the product and start to buy. When a product enters this stage, there are important decisions relating to capacity requirements and how or if you are going to expand to meet these requirements.

Maturity

The market maturity stage occurs when industry sales, trends, and growth rates have become reasonably stable. In this stage your product market share determines capacity requirements.

In the United States, the markets for most automobiles, household appliances, groceries, television sets, and tobacco products are in market maturity. Even though new models or different brands may come and go, the product life cycle remains consistent until a new product idea comes along and replaces the old one.

Decline

The market decline and obsolescence of the product occurs when new product ideas replace old products. You will have to make decisions on your excess capacity resulting from the sales decline.

Changes in a product life cycle

You must manually create the product life cycles for each of the life cycle profiles you developed. To create the life cycle profile for a life cycle profile code, you must calculate the percentage change (of the y-axis) from one quarter to the next. There are three possible changes that can occur from one quarter to the next:

- Steady state
- Growth
- Decline.

Steady state

A life cycle profile is in steady state when there is no change from one quarter to the next on the product life cycle. Thus the same projection that occurs in one quarter will occur in the next quarter. The following table shows what happens to a product over a two year period in a steady state situation, starting with 200 units.

Ending quarterly forecast = 200

	Quarter				Year	Quarter				Year
	1	2	3	4	2	5	6	7	8	3
growth at 0% per quarter	200	200	200	200	800	200	200	200	200	800

Growth

The FCST application allows for growth from one quarter to the next to range from one tenth of one percent (0.1%) to nine hundred and ninety-nine percent (999%). The following table shows the two growth extremes and what happens to a product over a two year period.

Ending quarterly forecast = 200

	Quarter				Year	Quarter				Year
	1	2	3	4	2	5	6	7	8	3
Growth at 0.1% per quarter	200	200	201	201	802	201	201	201	202	805
Growth at 20% per quarter	240	288	346	415	1289	498	597	717	860	2672
Growth at 999.9% per quarter					3,219,658				47,121,871,000	

Note: The preceding table shows the quarterly change has a compounding effect. This means that the percentage change is applied to the sum of all quarters preceding.

Decline

The FCST application allows for decline from one quarter to the next to range from one tenth of one percent (-0.1%) to one hundred percent (-100%). This table shows the two decline extremes and what happens to a product over a two year period.

Ending quarterly forecast = 200

	Quarter				Year	Quarter				Year
	1	2	3	4	2	5	6	7	8	3
Growth at -0.1% per quarter	200	200	199	199	798	199	199	199	198	795
Growth at -10% per quarter	180	162	146	131	619	118	106	96	86	406
Growth at -100% per quarter	0	0	0	0	0	0	0	0	0	0

Note: This table shows that the quarterly change has a compounding effect. This means that the percentage change is applied to the sum of all quarters preceding.

Once the product life cycles are created and the percentage change from one quarter to the next quarter has been calculated, the next step is to develop a life cycle profile for each product life cycle. This is done by using the Life Cycle Profile option on the Inquiry and File Maintenance menu (AM2M10).

To create a life cycle profile, you enter the percent change from one quarter to the next. You should then compare the life cycle profile you entered with the product life cycle you developed. This can be done using **F13** on the Life Cycle Profile Inquiry/ Maintenance display. **F13** schedules the printing of the product life cycle curve (see Figure 10-6) showing the life cycle effective coefficients.

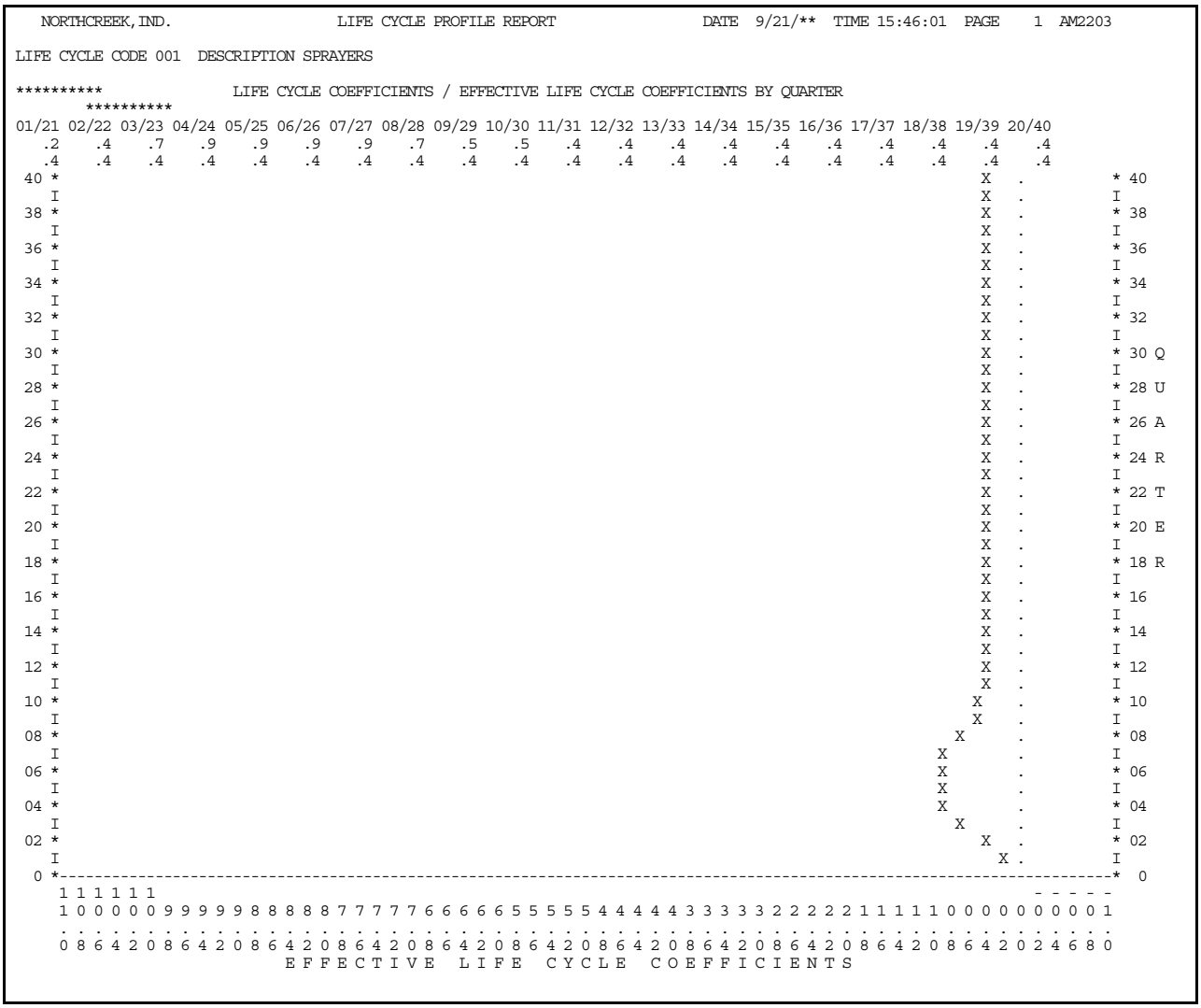


Figure 10-6. Life Cycle Profile Report

Fields

LIFE CYCLE COEFFICIENTS/EFFECTIVE LIFE CYCLE COEFFICIENTS BY QUARTER. The life cycle coefficients by quarter printed on top of the corresponding effective life cycle coefficients.

The product life cycle (for example, life cycle effective coefficients) is the first derivative (x) of the life cycle coefficients. This relationship is shown in the following example:

	Quarter														
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Life Cycle Coefficient	.20	.20	.20	.10	0	0	0	-.10	-.10	-.05	.05	0	0	0	0

Ending quarterly forecast = 100

Quarter	Beginning Amount	Life Cycle Coefficient	Life Cycle Index	Ending Amount
1	100	0.20	1.20	120
2	120	0.20	1.20	144
3	144	0.20	1.20	173
4	173	0.10	1.10	190
5	190	0.00	1.00	190
6	190	0.00	1.00	190
7	190	0.00	1.00	190
8	190	-0.10	0.90	171
9	171	-0.10	0.90	154
10	154	-0.05	0.95	146
11	146	-0.05	0.95	139
12	139	0.00	1.00	139
13	139	0.00	1.00	139
14	139	0.00	1.00	139
15	139	0.00	1.00	139

Note: The Life Cycle Index equals the Life Cycle Coefficient plus 1. When developing the product life cycles, it is important to take into account the compounding effects of the life cycle coefficients. This is especially true when you calculate a product life cycle from yearly data. In Table 10-3, " Effects of compounding" you can see that a yearly 30% increase does not equal four 7.5% quarterly increases. The quarterly increase should be 10.8%.

```
Ending annual forecast = 5000
Ending quarterly forecast = 1250
```

Table 10-3. Effects of compounding

	Quarter				Year	Quarter				Year
	1	2	3	4	2	5	6	7	8	3
growth yearly at 30%					6500					8450
growth quarterly at 7.5%	1344	1445	1553	1669	6011	1794	1929	2074	2230	8027
growth quarterly at 10.8%	1385	1535	1701	1885	6506	2089	2315	2565	2842	9811

Notice that the quarterly increase of 10.8% results in a 30% increase (as desired) in going from year 1 forecast to year 2 projection. The compounding effects going from year 2 projection to year 3 projection result in a 51% increase if the 10.8% quarterly increase is applied to year 3.

The preceding example shows that the compounding effect must be taken into consideration when you are calculating quarterly percent changes from data supplied in yearly percent changes. Table 10-4, “Yearly percentage and equivalent quarterly percentages” shows the yearly percent changes to move from year 1 forecast to year 2 projection.

Table 10-4. Yearly percentage and equivalent quarterly percentages

Yearly change	Quarterly change
05%	2.0%
10	4.0
15	5.7
20	7.5
25	9.1
30	10.8

Thus, a 10% change yearly is equal to a 4.0% change quarterly.

Calculating the extended horizon projection

The second and third year projection is based upon the ending first year quarterly forecast. This quarterly forecast is multiplied by an index to calculate an adjusted quarterly projection (this index is determined from the life cycle coefficients). The adjusted quarterly projections are multiplied by the corresponding seasonal coefficient to calculate the period projections. An example follows:

Ending quarterly forecast = 215

Quarter	1	2	3	4	5	6	7	8	9	10	11	12
Life Cycle Index	1.2	1.2	1.2	1.1	1.0	1.0	1.0	0.9	0.9	.95	.95	1.0
Adjusted Quarterly Projection (AQP)	258	310	372	409	409	409	409	368				
Period Projection	115	142	115	81	136	167	136	96				
(PP)	128	128	94	94	152	152	112	112				
	142	115	81	115	167	136	96	136				

Next AQP = Previous AQP * Life Cycle Index
PP1 = AQP * Seasonal Coefficient1

Note: The seasonal coefficients are calculated on an item by item basis. Thus, there does not have to be any relationship between an item's life cycle profile code and its seasonal group profile code unless you want it that way.

Life cycle position

You must decide what quarter on the product life curve your Master Level Items (MLIs) are currently. See Table 10-6 for a general list of characteristics that can be used to identify the different stages where your items might be.

Table 10-5. General characteristics of different stages in a product life cycle

	Introduction	**Growth**	**Maturity**	**Decline**
Product	Unique One-of-a-kind	Variety	Brand Battles	Some Drop Out
Place	Build Dist. Channels	Selective Distribution	Intensive Distribution	Mass Distribution
Promotion	Inform Build Demand	Persuade Build Demand	Persuade Remind	Remind
Price	Maximize Profit	Meet Competition	Price Dealing	Price Cutting

The next step is to designate an item to a particular position on the product life cycle. You do this by assigning a life cycle position to the item. This is done by choosing the Forecast Master Update option on the Inquiry and File Maintenance menu (AM2M10).

Note: The life cycle position corresponds to the quarter on the product life curve where your items are currently.

Appendix C. Group seasonality methodology

This appendix describes the basic features of the group seasonality methodology in the FCST application. Each feature is described in an independent subsection. The purpose of each subsection is to provide a basic conceptual understanding of the features and methods in FCST. The subsections are:

Seasonality C-1
Item seasonality C-2
Group seasonality C-2

Seasonality

Seasonality is the measure of the demand variation from period to period. It can be defined as the change in seasons, market changes, trade shows, pre-announced price increases, and anything that affects demand on a periodic basis.

The FCST application calculates the seasonal coefficients (percents) by period for each item. The resulting seasonal pattern may be used to define true seasonality for an item. However, you should be aware that the pattern may contain random fluctuations (noise) which is present in the Demand History file. This randomness comes from customer purchase patterns.

In order to obtain a “pure” picture of seasonality, you should define seasonal groups. The FCST application averages the item seasonal coefficients together which produces group seasonal coefficients (see Figure 10-7). The group seasonal coefficients are likely to provide a truer picture of seasonality. Along with the group seasonal coefficients, the FCST application calculates the reliability coefficients.

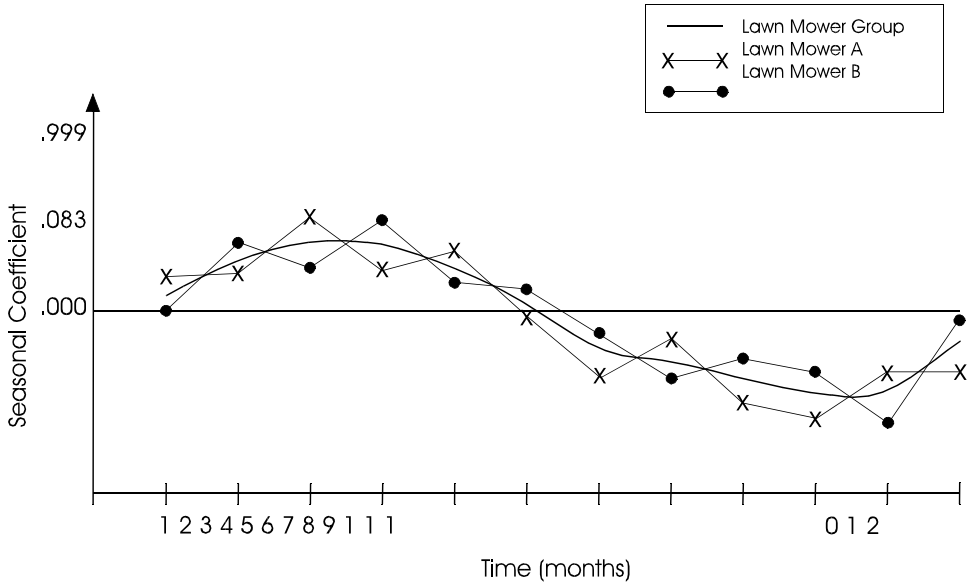


Figure 10-7. A graph of seasonal coefficients

In this example, the seasonality for two lawn mowers is used. In actual practice, you should use more items for a group. If a new lawn mower is introduced, the seasonal coefficient for the group would be used to define the seasonality of the new lawn mower. If you were to look at the seasonal pattern in a summary chart you would see that the seasonal pattern must equal the sum of 1.000.

Period	1	2	3	4	5	6	7	8	9	10	11	12
Seasonal Coefficient	.085	.095	.105	.105	.095	.085	.085	.070	.060	.060	.070	.085

Item seasonality

FCST stores up to six years of demand history for each item and item/warehouse. All of the demand history is used to calculate seasonal coefficients for the item. FCST does not allow direct maintenance of demand history quantity fields. However, a specific year(s) of demand history can be excluded from the item seasonal calculations.

FCST uses the “ratio to moving average” technique for calculating item seasonal coefficients. This technique involves creating a series of one-year moving averages for the historical data. These averages are matched with individual demand history periods. The ratio of the demand in the historical period to the centered moving averages is calculated. This calculation results in a series of coefficients which are averaged across the years of historical data and adjusted to sum to one. This technique is very effective in identifying an item’s seasonality and in removing the effects of trend.

Note: When an item has only one year of data, this method can only be used in a simplified form by calculating the percent per period using a single year’s total.

FCST creates two statistics relating to item seasonality: the mean absolute deviation (MAD) of the demand history and the item ratio. The mean absolute deviation is the comparison of the item seasonal pattern to a nonseasonal (linear trend line) pattern. The item seasonal MAD is divided into the nonseasonal MAD to obtain the item ratio. The sizes of this ratio relative to the item ratio specified by the forecast coordinator determines whether FCST considers the item seasonal and whether it is used in the group seasonal calculation. The FCST application also identifies peaks in the item seasonal pattern and displays the reporting period number where the peak occurs. The identification of peaks can be very helpful in reviewing the results of group seasonal calculations.

Group seasonality

Combining items into relatively large seasonal groups is effective in identifying seasonal patterns. This combining of items is generally more effective than using item seasonal coefficients for forecasting. FCST requires the forecast coordinator to specify seasonal groups (up to 999 may be defined). However, as few as one item may be assigned to a group which results in the use of the item seasonal coefficients for that item. Group seasonality works well because the randomness (noise), which is present in the item demand history and related item seasonal coefficients, tends to be dampened when the item seasonal patterns are combined. This process generally results in a clearer picture of seasonality. This method also allows for the assignment of seasonal patterns to new items by association with the appropriate seasonal group.

FCST allows the forecast coordinator to subdivide a seasonal group by defining volume (annual demand) boundaries. These subdivisions are termed volume subgroups, and each subgroup is assigned a volume code beginning with zero. Up to six volume subgroups may be defined. This capability is important for the following reasons:

- Low-volume items, which generally have erratic seasonal patterns, can be isolated from high-volume items that tend to have more stable seasonal patterns.
- Subtle shifts in seasonal patterns that are volume dependent can be detected.
- The internal consistency of a seasonal group can be assessed by comparing patterns across volume subgroups.
- FCST measures the reliability (representativeness) of the group seasonal coefficients relative to the item seasonal coefficients. This measure varies greatly across volume subgroups. Identification of this variance is important because it determines the relative sensitivity of the forecast model.

Individual items are assigned to a volume subgroup based on the annual demand that occurred in the most recent year of demand history. The group seasonal coefficients calculated by FCST are the result of a simple-weighted-average method. Item seasonal coefficients for selected group items within the volume subgroup are weighted based upon the most recent year annual demand. Only items whose item ratio is greater than the item ratio set by the forecast coordinator are used in the group seasonal coefficient calculations. The forecast coordinator may also manually prevent specific items from being used in the calculations. Once the group seasonal coefficients are developed, the MAD of each item's demand history to the group seasonal pattern is measured. The group ratio for the item is calculated by dividing the group seasonal MAD into the nonseasonal MAD. The size of this ratio relative to the group ratio set by the forecast coordinator determines the overall recommendation of the item's seasonality. This recommendation is used for information purposes.

FCST calculates a set of reliability coefficients for each volume subgroup in the seasonal group. These coefficients are important to the sensitivity of the forecast model. The coefficients are generally high for the first volume subgroup (lower volume items) and decrease across subsequent ranges. The group reliability coefficients are the mean absolute deviation between the item seasonal coefficients and the group seasonal coefficients for all items within the group and volume subgroup.

Notes:

1. All items assigned to the group and volume subgroup are used in this calculation.
2. Both the group reliability coefficients and the group seasonal coefficients generated by FCST may be overridden.
3. For volume subgroups that have less than ten items, FCST generates artificial group reliability coefficients.

Appendix D. Coordinating the planning calendar

This section of the Appendix gives information to help you coordinate the planning calendars you use for Material Requirements Planning (MRP), FCST, Master Production Schedule Planning (MPSP) (if interfacing), and Inventory Management (IM). It includes the following topics:

Load day of the scheduling week D-1
Type of manufacturing periods D-1
FCST, MRP, and MPSP planning horizons..... D-3
Special planning codes..... D-5

Load day of the scheduling week

The load day of the scheduling week is the day on which your planning occurs. The load day is required for FCST and MPSP. You specify the load day in the questionnaires for those applications. During installation, several planning date records are created in the Planning Information file, based on the shop calendar you specified in IM or MRP and the load day of the week. Once the load day of the scheduling week is established, it should not change since planning information based upon the original load day is not deleted. Therefore, when you load forecasts and requirements again, you will create a second set of forecasted demand for each week, due on a different day; and MRP will respond to both sets of demand.

To successfully change the load day of the scheduling week, follow these steps:

1. Delete all manufacturing requirements created by FCST in the Demand Interface file (DMDIFF) and the MRP Requirements file.
2. Reload DMDIFF before the next MPSP planning run.
3. Generate master schedules again and respond to the exception messages. Many orders will be rescheduled, expedited, or deferred by a few days.
4. If your manufacturing periods are type 1 or type 2, aggregate item information and review all family and item plans. All period dates will change.
5. Because of rescheduled orders and shifts in demand, test resources again for family operating plans and master production schedules.

Type of manufacturing periods

The type of multi-week manufacturing periods you choose determines how many reporting periods are available per year and the size of the period. These are the periods that MPSP uses for production planning; MPSP also uses periods for master scheduling when your master schedules extend beyond the number of weekly periods you specify in the FCST Questionnaire. You select a manufacturing period when you answer the FCST or the MPSP Questionnaire. The available alternatives are:

Manufacturing periods	Reporting periods	Period size
13	13	Four-week periods/year
12	12	Four- or five-week periods/year
12	12	Months/year

The type of manufacturing period you choose does not determine the type of accounting periods you use (you choose accounting periods when you answer Question X01 in the CAS questionnaire). However, you must consider the relationship when you choose a type of manufacturing period, especially when FCST is installed.

The accounting period close process determines the quality of history data (inventory receipts and shipments) used in FCST. An accounting period can be a very flexible time period in order to account for applicable transactions. The applications that support the accounting period close process do not require an accounting period close process for every accounting period. However, FCST requires a period close process for every period defined by the type of manufacturing periods install/tailor question. Therefore, the applications supporting an accounting period close process must define at least as many periods per year as FCST and MPSP use. Acceptable combinations are:

Accounting periods	Manufacturing periods
12	12 months/year
12	12 four- or five-week periods/year
13	12 months/year
13	13 four-week periods/year
13	12 four-or five-week periods/year

If you use 12 accounting periods per year, you cannot use 13 FCST or MPSP manufacturing periods per year.

If you use 13 accounting periods per year and choose FCST or MPSP manufacturing periods, the thirteenth accounting period must be a full accounting period (4 weeks), not a random-length adjustment period.

Once you choose a type of manufacturing period, you should not change it. Changing the type of manufacturing periods may cause unacceptable results in defining FCST seasonality.

FCST, MRP, and MPSP planning horizons

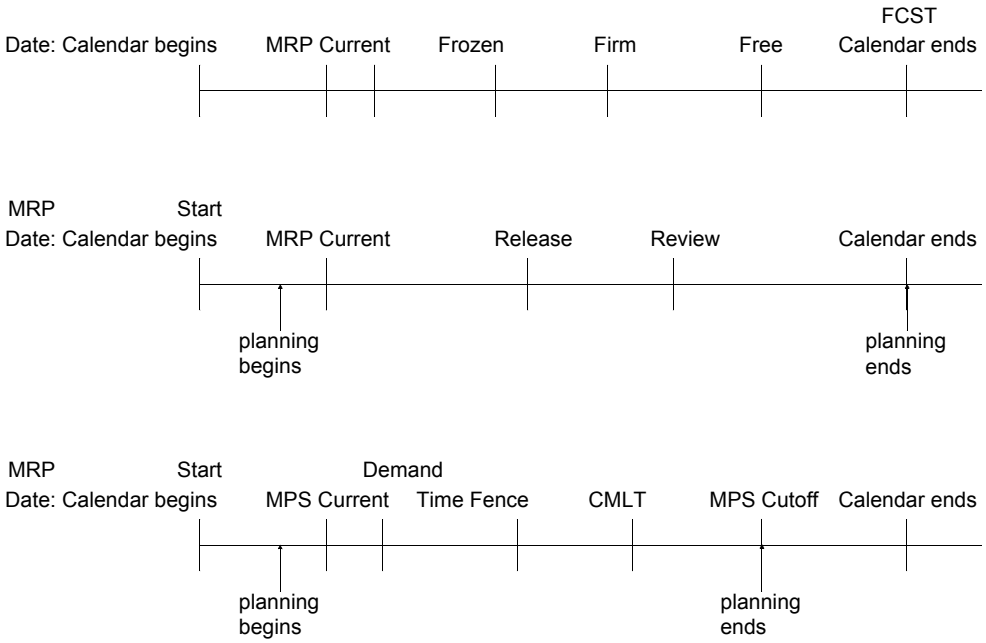
The duration of planning (planning horizon) in FCST, MRP, and MPSP depends on dates that you enter in MRP and MPSP. The list below shows the controlling dates for the planning horizons of FCST, MRP, and MPSP. For more information about how these dates affect planning, see the user's guide for each of these applications.

Planning horizons are specified in FCST, MRP, and MPSP based on several dates.

Application	Date	Based upon Date
FCST	Frozen	MRP Current
	Firm	MRP Current (overridden by CMLT if applicable)
	Free	MRP Current (overridden by MPS Cutoff if applicable)
MRP	Start	MRP Current
	MRP Current	User specified
	Release	MRP Current
	Review	MRP Current
MPSP	MPS Start	MPS Current
	MPS Current	User specified
	MPS Cutoff	MPS Current

In order to set the frozen, firm, and free dates, you enter the number of days from the MRP current date (these dates must be the same) for each of those elements using option 5 on menu AM2M10.

The planning horizons for FCST, MRP, and MPSP should be consistent. The following time lines define the relationships among these planning horizons.



FCST Firm: Overridden by CMLT if applicable.

FCST Calendar ends: Overridden by MPS Cutoff if applicable; number of years to forecast determines how far into the future.

Note: Free date and MPS Cutoff dates must be the same.

MPSP CMLT and Calendar ends: Item dependent.

MRP, MPSP Start: Must be the same date.

Special planning codes

When FCST or MPSP is installed, the codes that you enter for certain fields in the Item Master file affect how FCST, MPSP, and MRP plan an item. They determine whether FCST generates a forecast for the item, and whether MPSP or MRP plans the item.

The codes are:

Forecasting code — FCST. If 1, 2, or 3, the item is forecasted. If 0, no forecast master.

- **0** Do not maintain a forecast master for this item.
- **1** Maintain a forecast master, but load nothing to MRP or MPSP.
- **2** Maintain a forecast master, load forecasts to MRP and MPSP.
- **3** Maintain a forecast master, load forecasts to MRP and MSPSP; also load requirements to MRP.

Order policy code

- **FCST** All codes, forecast master maintained, if forecast code is 1, 2, or 3.
- **MPSP** If B or C, forecast not passed to Demand Interface file.
- **MRP** If B or C, forecast and requirements not passed to Requirements file.

Master scheduled item code

- **FCST** If blank, MRP planned item.
- **MPSP** If M or P, planned in MPSP.

Master level item code

- **FCST** If M or S and forecasting load is:
  - **2** Loads forecast
  - **3** Loads both forecasts and requirements
- **MRP** if M or S, master level item. Blank only gets dependent demand.

Appendix E. Security areas

The options on the CAS Security Maintenance menu (AMZM38) allow you to protect application tasks from unauthorized users. You can define security areas and then define specific tasks associated with each area.

Security areas protect access to a group of menu options. The following table shows the application security areas and their associated menu options and task IDs. To print a report of all application areas, see the description of the Generate reports option in the Security Maintenance chapter of the *CAS User's Guide*.

Table 10-6. Forecasting security areas

Security area	Menu/option	Description	Task ID
Forecast Master Inquiry	AM2M10/1	Forecast Master Inquiry	AM2M1001
Reporting	AM2M30/1	Summaries by Value Class	AM2M3001
	AM2M30/2	Summaries by Product Line	AM2M3002
	AM2M30/3	Exceptions by Value Class	AM2M3003
	AM2M30/4	Exceptions by Product Line	AM2M3004
	AM2M30/5	Detail by Value Class	AM2M3005
	AM2M30/6	Detail by Product Line	AM2M3006
	AM2M40/1	Summaries by Value Class	AM2M4001
	AM2M40/2	Summaries by Product Line	AM2M4002
	AM2M40/3	Summaries by Life Cycle Profile Code	AM2M4003
	AM2M40/4	Detail by Value Class	AM2M4004
	AM2M40/5	Detail by Product Line	AM2M4005
	AM2M40/6	Detail by Life Cycle Profile Code	AM2M4006
Inquiry and Maintenance	AM2M10/2	Forecast Master Update	AM2M1002
	AM2M10/3	Seasonal Group Profile	AM2M1003
	AM2M10/4	Life Cycle Profile	AM2M1004
	AM2M10/5	Forecast Control	AM2M1005
	AM2M10/6	Mass Maintenance	AM2M1006
	AM2M10/7	Item Summary Maintenance	AM2M1007
	AM2M10/8	Forecast Activity Maintenance	AM2M1008
	AM2M50/1	Demand History Extract and Update	AM2M5001
	AM2M50/4	Seasonal Profile Calculation	AM2M5004
	AM2M50/5	Seasonal Profile Report	AM2M5005
Seasonal & Period Update	AM2M20/1	Period Demand Capture	AM2M2001
	AM2M20/2	Forecast Master Reconciliation	AM2M2002
	AM2M20/3	Forecast Calculation	AM2M2003
	AM2M20/4	Inventory Parameter Calculation	AM2M2004
	AM2M50/2	Seasonal Parameter Maintenance	AM2M5002
	AM2M50/3	Item Demand History Maintenance	AM2M5003
	AM2M50/6	Save Seasonal Update Data	AM2M5006

Glossary

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- The *ISO Vocabulary – Information Processing and the ISO Vocabulary – Office Machines*, developed by the International Organization for Standardization, Technical Committee 97, Subcommittee 1. Definitions of published sections of the vocabulary are identified by symbol (I) after definition; definitions from draft international standards draft proposals, and working papers in development by the ISO/TC97/SC1 vocabulary subcommittee are identified by symbol (T) after definition, indicating final agreement has not yet been reached among participating members.

coefficient. A number that serves as a measure of some property or characteristic and is used in calculations.

coefficient of variation. A statistic that measures the variability in the forecast. The smaller the number, the more the annual forecast represents the actual demand.

cumulative lead time. The number of days between the decision to issue a replenishment order and when the ordered goods are on-hand.

current annual forecast. The current annual forecast for an item.

cycle period. The last period in the cycle year that demand was reported.

cycle year. The last 2 digits of the current year.

demand. The quantity of an item in units wanted by a customer during a reporting period.

demand history. Actual order entry demand for past time periods accumulated in a history file.

exception mode. A method used to calculate forecasts after there has been a major shift in the demand pattern for an item. When the exception mode is started, extraordinary action is taken to bring the forecasts back in line with actual demand.

experiential roughin. Proprietary statistical forecasting method developed by Ernst & Young.

extended horizon projection. The method used to extend the statistical forecast from one year to three years of projected demand based upon product life cycles.

filter level. The user-defined value, shown as a percent of a nonseasonal coefficient, used to find reported demand values that go beyond the defined limits of the forecasted demand (demand filtering); or for seasonality, used to define the level of resolution in determining if an item and seasonal group profile is horizontal, unimodal, bimodal, or trimodal (modes filtering).

firm period. The planning horizon time period in which no action is taken in updating gross requirements but where the forecast is updated or loaded to MRP; cumulative material lead time overrides this date.

forecast coordinator. The person who is responsible for coordinating the input data and parameters for forecast calculations and providing information to the materials management function. The person serves as the focal point between Marketing and Material Management.

forecast model. Connotes collectively the operational model and the monitor model.

free period. The planning horizon time period beyond the current date in which both the forecast data and gross requirements can be changed. The free period is the time period beyond the frozen and firm periods.

frozen period. The planning horizon time period beyond the current date in which no changes to either the forecast data or gross requirements data should be made. The frozen period is the period between the current date and the beginning of the firm period.

group reliability coefficients. Values that show the measure of the average reliability of the item's seasonal coefficients in any given reporting period in a year.

group MAD ratio. The minimum value of an item's ratio of nonseasonal reliability to seasonal reliability where the item is considered belonging to a seasonal group.

group seasonal coefficients. Values that show the percent of demand expected in each period of the year for items in a given seasonal group.

group seasonality. Groups of items that exhibit similar seasonality characteristics. Grouping of items to reduce the effects of individual item seasonal randomness. Seasonality is not limited to the changes in the seasons, but could include the effect of trade shows or other extrinsic data.

intelligence history. An annual forecast performance history by reporting period, starting with the first period in the year.

0 Satisfactory annual forecast.

1 Current period operational model forecast error is much greater than monitor model forecast error.

2 Operational model MAD is at least 10% greater than monitor model MAD.

3 Code 1 and Code 2 both occur.

item MAD ratio. The minimum value of an item's ratio of nonseasonal reliability to seasonal reliability where the item is still considered seasonal.

item number. The unique identification of a part or an assembly.

item seasonal coefficients. This is the seasonal pattern calculated for an item. Shows the expected percent of demand per period in each period of the reporting year.

K1. This value indicates the greatest number of consecutive periods in which the forecast error can have the same sign before causing an exception. The acceptable ranges are 2.0 to 6.9.

K2. This value is the exception mode adjustment factor. During exception mode processing, this factor exponentially corrects the forecast error. The acceptable range is 1.25 to 2.00.

K3. This value is used to test the magnitude of the forecast error. It represents the maximum forecast error (Computed as K3 x MAD) allowed before shifting to exception mode processing. The acceptable range is 1.25 to 5.00.

life cycle profile code. Defines the life cycle of the item(s) for the growth/decay pattern you have defined.

life cycle position. Position of the item, on the life cycle curve. Position on the curve shows whether the item is in the development, growth, maturing or declining stage.

MAD. See mean absolute deviation.

mean absolute deviation. Weighted average of the absolute differences between forecasted and actual demand (MAD).

monitor model annual forecast. The internal control forecast model that cannot be changed. It monitors the overrides to the operational model annual forecast.

normal mode. The operational mode in which the item's seasonal profile and demand are stable within the parameters defined by the user.

operational model annual forecast. The current annual forecast that can be overridden and is what the period forecasts are calculated from.

order point. The calculated order point that is the sum of demand over the lead time plus safety stock.

period. The reporting period.

planning warehouse. A warehouse used as a manufacturing facility, although customer order demand is received at the planning warehouse. This warehouse can have a material plan and supports all of MRP's and MPSP's functions.

previous annual forecast. The previous operational model annual forecast for an item.

product line. The user-defined product line of an item from the item class.

promotion history. The number of forecast changes entered by the user because of a promotional forecast exception in a given forecast period.

ratio to moving average technique. Method of calculating item seasonal coefficients. A series of one year moving averages of historical data are matched with individual demand history periods. The ratio of the demand in the historical period to the moving averages that result in a series of coefficients that are averaged across the years of historical data and adjusted to sum to one.

reliability coefficient. Mean absolute deviation between the item seasonal coefficients for all items within the group and volume subgroup. The reliability coefficient affects the sensitivity of the forecast model.

safety stock. The required amount of safety stock in units to satisfy the user-defined service level.

seasonal group profile code. Group of items that exhibit period-to-period variations in demand consistently on an annual basis.

seasonality coefficient. Period-to-period variations in demand for a product that occurs consistently on an annual basis.

selling warehouse. Location for which demand data is kept. Selling warehouses are identified by a character that is kept in the forecast control record.

service level. The percent of service to be maintained.

service type. Defines the meaning of the service type and how safety stock is computed with the service level:

1 Percentage of replenishment cycles with no stockouts.

2 Percentage of demand satisfied.

system warehouse. Location that accumulates the forecast for an item for an entire enterprise.

tracking signal. A number that defines whether the item should be flagged on the Forecast Exception/Detail Report. The record is flagged when the number of reporting periods between starts of the exception mode is less than or equal to this number.

tracking history exception codes. Defines Forecast History starting with the first period of the year.

0 Satisfactory annual forecast.
1 Filtered demand.
2 No demand reported, first year only.
3 Forecast exception.
4 Filtered demand and forecast exception.
5 Satisfactory forecast; annual forecast revised.
6 Filtered demand; annual forecast revised.
7 No demand reported; annual forecast revised.
8 Forecast exception; annual forecast revised.
9 Filtered demand and forecast exception; annual forecast revised.

trend. Consistent pattern of increasing or decreasing volume.

unfiltered annual forecast. The annual forecast for the current period when the demand has not been filtered.

unfiltered cost. The hash total of the extended value of the demand used by Forecasting. This total can be used as a control to reconcile the total demand taken by the Forecasting demand data extract routine from order entry.

unfiltered demand. The hash total of the demand quantities used by FCST. This total can be used as a control to reconcile the total demand taken by the Forecasting demand data extract routine from order entry.

unit cost. The unit cost of the item from the item master record.

value class. The value class of the item from the item master record.

volume subgroup. Volume subgroup defines the annual demand limits within a seasonal group profile code.

Yr 1 Fcst. The first year forecast.

Yr 2 Proj. The second year forecast projection.

Yr 3 Proj. The third year forecast projection.

Index

A

add a life cycle profile record 3-23
advanced statistical forecasting methodology 1-5
AM2001–Forecast Control Inquiry/Maintenance display 3-26
AM2011–Forecast Master Inquiry display 3-4
AM2011–Forecast Master Maintenance display 3-11
AM2013—Period Forecast Inquiry/Maintenance display 3-16
AM201—Forecast Master Maintenance Edit List report 10-11
AM2021–Forecast Master Mass Maintenance display 3-30
AM2041–Projection Inquiry display 3-8
AM2041–Projection Maintenance display 3-14
AM204—Projection Maintenance Edit List report 10-24
AM205—Forecast Master Mass Maintenance Transactions report 10-13
AM206—Inventory Detail Report 8-10
AM207—Demand History Extract and Update report 10-6
AM208—Demand History Construction report 10-4
    Demand History Construction 10-4
AM209—Seasonal Profile Construction report 10-26
AM210—Period Demand Extract report 10-20
AM211—Forecast Master Reconciliation Maintenance report 10-15
AM212—Forecast Master Initialization report 10-10
AM2131–Item Demand History Maintenance display 7-8
AM214—Seasonal Profile Report 8-18
AM214—Seasonal Profile Report (graph presentation of group reliability coefficients) 8-24
AM214—Seasonal Profile Report (graph presentation of group seasonal coefficients) 8-21
AM215—Inventory Load Control Totals report 10-17
AM2161–Seasonal Parameter Maintenance display 7-5
AM2171–Seasonal Group Profile Inquiry/Maintenance display 3-19
AM217—Seasonal Group Profile Maintenance Edit List report 10-25
AM218—Forecast Load Diagnostics report 10-8
AM2201–Life Cycle Profile Inquiry/Maintenance display 3-23
AM2203—Life Cycle Profile Report 8-12
AM220—Life Cycle Profile Maintenance Edit List report 10-19
AM221—Projection Edit Diagnostics report 10-22
AM2340–Item Summary Maintenance (Select) display 3-36
AM2341–Item Summary Maintenance display 3-38
AM2351–Forecast Activity Maintenance display 3-41
AM236—Forecast Activity Data Print report 10-7
    Forecast Activity Data Print report 10-7
AM237—Item Summary Data Print report 10-18
AM241—Forecast Summary Report 8-6
AM243—Forecast Detail Report 8-2
AM243—Forecast Exception Report 8-5
AM245—Forecast Summary Report (control totals) 8-8
AM251—Projection Summary Report 8-16
AM252—Projection Detail Report 8-14
AM2801–Demand History Extract and Update display 3-34, 7-3

AM2M50—Demand History Extract and Update 7-3
AM2M50—Save Seasonal Update Data 7-10
AM2M50—Seasonal Profile Calculation 7-10
AM2M50—Seasonal Profile Report 7-10
automatic file maintenance 1-6

C

calculating the extended horizon projection B-10
calculation of inventory parameters 2-19
calendar,coordinating planning D-1
change
    current annual forecast 3-11
    forecast master record 3-12
    forecast,control record 3-26
    life cycle profile record 3-23
    period forecast 3-12
    period projection 3-12
    seasonal group profile record 3-19, 7-6
CIM Series/400, using XA with 1-2
coefficient of variation A-8
conclusion of managing the seasonal update 2-26
control
    accounting 10-1
    forecast 3-25
coordinating planning calendar D-1

D

decline, market B-4
defining seasonal groups and volume subgroups 2-22
demand
    filter 2-10, A-12
    history extract and update 2-23
    lumpy A-14
Demand History Construction report—AM208 10-4
Demand History Extract and Update (AM207) 10-6
Demand History Extract and Update display–AM2801 3-34, 7-3
Demand History Extract and Update report —AM207 10-6
Demand History Extract and Update—AM2M50 7-3
discontinuity in the demand pattern 2-16
displays
    Demand History Extract and Update –AM2801 3-34, 7-3
    Forecast Activity Maintenance –AM2351 3-41
    Forecast Control Inquiry/Maintenance –AM2001 3-26
    Forecast Master Inquiry –AM2011 3-4
    Forecast Master Maintenance –AM2011 3-11
    Forecast Master Mass Maintenance –AM2021 3-30
    Item Demand History Maintenance –AM2131 7-8
    Item Summary Maintenance (Select) –AM2340 3-36
    Item Summary Maintenance –AM2341 3-38
    Life Cycle Profile Inquiry/Maintenance –AM2201 3-23

Period Forecast Inquiry/Maintenance –AM2013 3-16
Projection Inquiry –AM2041 3-8
Projection Maintenance –AM2041 3-14
Seasonal Group Profile Inquiry/Maintenance –AM2171 3-19
Seasonal Parameter Maintenance –AM2161 7-5

E

effects of compounding B-9
eWorkPlace—graphical user interface for XA 1-9
exception codes, history 2-16
exception mode 2-9
experiential roughing 1-5
experiential roughing technique A-2
extended horizon projection methodology B-1
extended horizon projection technique, using B-1

F

FCST application
files 1-7
group seasonality methodlogy C-1
how it works 1-1
information flow 1-2
major reports overview 1-8
managing 2-1
summary of features and methodology 2-8
what it does 1-1
FCST, MRP, and MPSP planning horizons D-3
features
advanced statistical forecasting methodology 1-5
and methodology in FCST 2-8
automatic file maintenance 1-6
flexible reporting 1-6
forecast error measurement 1-5
group seasonality 1-6
inventory parameter calculation 1-5
mass parameter maintenance 1-6
monitor forecast model 1-5
multiple selling warehouses 1-5
strategic forecasting 1-6
system internal controls 1-6
user forecast override 1-5
variable reporting frequency 1-5
files 1-7
filter level 2-13
filtered demand 2-17
firm date period 2-20
flexible reporting 1-6
flow of information
between Forecasting and other applications 1-1
within Forecasting 1-2

forecast
control 3-25
coordinator responsibilities 2-1
error measurement 1-5
master reconciliation 2-13
methodology 2-8, A-1
model 2-9
model sensitivity A-6
monitor model A-14
reporting 2-18, 5-1
Forecast Activity Data Print report—AM236 10-7
forecast activity maintenance 3-40
Forecast Activity Maintenance display–AM2351 3-41
Forecast Calculation menu—AM2M20 4-6
Forecast Control Inquiry/Maintenance display–AM2001 3-26
Forecast Detail by Product Line menu—AM2M30 5-7
Forecast Detail by Value Class menu—AM2M30 5-6
Forecast Detail Report—AM243 8-2
Forecast Exception Report—AM243 8-5
Forecast Exceptions by Product Line menu—AM2M30 5-5
Forecast Exceptions by Value Class menu—AM2M30 5-4
Forecast Load Diagnostics report—AM218 10-8
Forecast Load to Master Schedule menu—AM2M20 4-8
Forecast Master Initialization report—AM212 10-10
Forecast Master Inquiry display–AM2011 3-4
Forecast Master Inquiry menu—AM2M10 3-3
Forecast Master Maintenance display–AM2011 3-11
Forecast Master Maintenance Edit List report—AM201 10-11
Forecast Master Mass Maintenance display–AM2021 3-30
Forecast Master Mass Maintenance Transactions report—AM205 10-13
Forecast Master Reconciliation Maintenance report—AM211 10-15
Forecast Master Reconciliation menu—AM2M20 4-5
Forecast Master Update menu—AM2M10 3-10
Forecast Summary by Product Line menu—AM2M30 5-3
Forecast Summary by Value Class menu—AM2M30 5-2
Forecast Summary Report (control totals)—AM245 8-8
Forecast Summary Report—AM241 8-6
forecasting
operations 2-1
statistical methodology A-1
technique 2-9
free date period 2-20
frozen date period 2-20

G

general information 1-1
graphical user interface for XA—eWorkPlace 1-9
group
ratio C-3
seasonal coefficients 2-11, C-3
seasonality 1-1, 1-6, 2-11, A-15, C-2
seasonality methodology C-1

growth B-4, B-5

H

history, exception codes 2-16
history, intelligence A-14
how Forecasting works 1-1
    with other applications 1-1

I

information flow 1-2
inquiry
    and file maintenance 3-1
    forecast master 3-3
intelligence history 2-11, 2-17, A-14
inventory control
    methodology 2-10, A-10
    theory 2-9, A-8
Inventory Detail Report—AM206 8-10
Inventory Load Control Totals report—AM215 10-17
Inventory Parameter Calculation menu—AM2M20 4-7
inventory, parameter calculation 1-5
item
    demand history maintenance 2-24, 7-8
    MAD ratio C-2
    number 2-14
    number change 2-14
    seasonal coefficients 2-11, C-2
    seasonality 2-11, A-15, C-2
    substitution 2-14
    summary maintenance 3-33
Item Demand History Maintenance display–AM2131 7-8
Item Summary Data Print report—AM237 10-18
Item Summary Maintenance (Select) display–AM2340 3-36
Item Summary Maintenance display–AM2341 3-38

L

life cycle
    changes in B-4
    decline B-4
    position B-11
    profile 3-22
    stages of B-3
Life Cycle Profile Inquiry/Maintenance display–AM2201 3-23
Life Cycle Profile Maintenance Edit List report—AM220 10-19
Life Cycle Profile Report—AM2203 8-12
load day of the scheduling week D-1
loading the forecast to the master schedule 2-20
look at
    forecast control record 3-26

life cycle profile record 3-24
seasonal group profile record 3-19
lumpy demand 2-11, A-14

M

MAD (mean absolute deviation) 2-9, A-6, C-2
maintenance
forecast activity 3-40
inquiry and file 3-1
item summary 3-33
mass 3-29
major reports overview 1-8
managing forecasting 2-1
manufacturing periods, type D-1
mass
maintenance 3-29
parameter maintenance 1-6
master files, overview 1-7
maturity B-4
maturity, market B-4
mean absolute deviation (MAD) 2-9, A-6, C-2
menus
AM2M10—Forecast Master Inquiry 3-3
AM2M10—Forecast Master Update 3-10
AM2M20—Forecast Calculation 4-6
AM2M20—Forecast Load to Master Schedule 4-8
AM2M20—Forecast Master Reconciliation 4-5
AM2M20—Inventory Parameter Calculation 4-7
AM2M20—Period Demand Data Capture 4-4
AM2M30—Forecast Detail by Product Line 5-7
AM2M30—Forecast Detail by Value Class 5-6
AM2M30—Forecast Exceptions by Product Line 5-5
AM2M30—Forecast Exceptions by Value Class 5-4
AM2M30—Forecast Summary by Product Line 5-3
AM2M30—Forecast Summary by Value Class 5-2
AM2M40—Projection Detail by Life Cycle Profile Code 6-3
AM2M40—Projection Detail by Product Line 6-3
AM2M40—Projection Detail by Value Class 6-2
AM2M40—Projection Summaries by Life Cycle Profile Code 6-2
AM2M40—Projection Summary by Product Line 6-2
AM2M40—Projection Summary by Value Class 6-2
AM2M50—Demand History Extract and Update 7-3
AM2M50—Save Seasonal Update Data 7-10
AM2M50—Seasonal Profile Calculation 7-10
AM2M50—Seasonal Profile Report 7-10
methodology in FCST, summary of 2-8
monitor forecast model 1-5, 2-11, A-14
MRP, MPSP, and FCST planning horizons D-3
multiple selling warehouses 1-5

N

normal mode 2-9

P

period
demand data capture 2-12, 4-4
update 4-1
calculations 2-15, 2-19
demand data capture 2-12
forecast master reconciliation 2-13
forecast reporting 2-18
item number change 2-14
item substitution 2-14
load forecast to master schedule 2-20
managing 2-12
projection reporting 2-19
review forecast exceptions 2-15
review projections 2-19
revision of effective date 2-12
Period Demand Data Capture menu—AM2M20 4-4
Period Demand Extract report—AM210 10-20
Period Forecast Inquiry/Maintenance display—AM2013 3-16
PF-01—Seasonal Group Profile Maintenance 9-2
PF-02—Life Cycle Profile Maintenance 9-3
PF-03—Item Summary Maintenance 9-4
PF-04—Forecast Activity Maintenance 9-5
planning
calendars, coordinating D-1
codes, special D-5
horizons, FCST, MRP, and MPSP D-3
plot
period projection 3-13
print
Forecast Detail by Product Line 5-7
Forecast Detail by Value Class 5-6
Forecast Exceptions by Product Line 5-5
Forecast Exceptions by Value Class 5-4
Forecast Summary by Product Line 5-3
Forecast Summary by Value Class 5-2
life cycle profile record 3-24
Projection Detail by Life Cycle Profile Code 6-3
Projection Detail by Product Line 6-3
Projection Detail by Value Class 6-2
Projection Summaries by Life Cycle Profile Code 6-2
Projection Summary by Product Line 6-2
Projection Summary by Value Class 6-2
product
in steady state B-5
introduction B-3
life cycle B-2, B-4
life cycle position B-11
life, stages of B-3
with decline B-6

profile
life cycle 3-22
seasonal group 3-18
Projection Detail by Life Cycle Profile Code menu—AM2M40 6-3
Projection Detail by Product Line menu—AM2M40 6-3
Projection Detail by Value Class menu—AM2M40 6-2
Projection Detail Report—AM252 8-14
Projection Edit Diagnostics report—AM221 10-22
Projection Inquiry display–AM2041 3-8
Projection Maintenance display–AM2041 3-14
Projection Maintenance Edit List report—AM204 10-24
Projection Summaries by Life Cycle Profile Code menu—AM2M40 6-2
Projection Summary by Product Line menu—AM2M40 6-2
Projection Summary by Value Class menu—AM2M40 6-2
Projection Summary Report—AM251 8-16
projection, reporting 2-19, 6-1
promotions 2-17, 2-18

R

ratio to moving average technique C-2
reorder point 2-10
reports displays
Demand History Construction—AM208 10-4
Demand History Extract and Update—AM207 10-6
Forecast Activity Data Print report—AM236 10-7
Forecast Detail—AM243 8-2
Forecast Exception—AM243 8-5
Forecast Load Diagnostics—AM218 10-8
Forecast Master Initialization—AM212 10-10
Forecast Master Maintenance Edit List—AM201 10-11
Forecast Master Mass Maintenance Transactions—AM205 10-13
Forecast Master Reconciliation Maintenance—AM211 10-15
Forecast Summary (control totals)—AM245 8-8
Forecast Summary—AM241 8-6
Inventory Detail—AM206 8-10
Inventory Load Control Totals—AM215 10-17
Item Summary Data Print—AM237 10-18
Life Cycle Profile Maintenance Edit List—AM220 10-19
Life Cycle Profile—AM2203 8-12
Period Demand Extract—AM210 10-20
Projection Detail—AM252 8-14
Projection Edit Diagnostics—AM221 10-22
Projection Maintenance Edit List—AM204 10-24
Projection Summary Report—AM251 8-16
Seasonal Group Profile Maintenance Edit List—AM217 10-25
Seasonal Profile (graph presentation of group reliability coefficients)—AM214 8-24
Seasonal Profile (graph presentation of group seasonal coefficients)—AM214 8-21
Seasonal Profile Construction—AM209 10-26
Seasonal Profile—AM214 8-18
review projections 2-19

revision of effective date 2-12, 2-23

S

safety stock 2-9, 2-14
Save Seasonal Update Data—AM2M50 7-10
searches , See master file searches
seasonal
  coefficients C-1
  group profile 3-18
  parameters
    maintenance 2-23, 7-5
    suggested 2-23
  profile
    calculation 2-24
    report 2-25
  update 7-1
    conclusion of managing 2-26
    define seasonal groups and volume subgroups 2-22
    demand history extract and update 2-23
    item demand history maintenance 2-24
    managing 2-22
    revise effective date 2-23
    seasonal parameter maintenance 2-23
    seasonal profile calculation 2-24
    seasonal profile report 2-25
    special considerations 2-27
    warehouse seasonality 2-26
Seasonal Group Profile Inquiry/Maintenance display–AM2171 3-19
Seasonal Group Profile Maintenance Edit List report—AM217 10-25
Seasonal Parameter Maintenance display–AM2161 7-5
Seasonal Profile Calculation—AM2M50 7-10
Seasonal Profile Construction report—AM209 10-26
Seasonal Profile Report (graph presentation of group reliability coefficients)—AM214 8-24
Seasonal Profile Report (graph presentation of group seasonal coefficients)—AM214 8-21
Seasonal Profile Report—AM214 8-18
Seasonal Profile Report—AM2M50 7-10
seasonality
  group A-15
  group methodology C-1
  item A-15
selling warehouses, multiple 1-5
sensitivity of the forecast model A-6
service code 2-14
special considerations 2-27
statistical
  forecasting methodology A-1
  summary of methods used in Forecasting 2-8
steady state B-5
  decline B-4
  growth B-5

strategic forecasting 1-6
suggested periodic reporting 2-19
system
    control file 1-7
    internal controls 1-6
System Control 1-7

T

technique 2-9
temporary files 1-7
tracking
    history 2-10, A-12
    history exception codes 2-16
    level 2-13, 2-16
    signal 2-10, A-11
trend 2-10, 2-13, A-13
    code 2-14

U

unfiltered
    cost 2-15
    demand 2-15
update forecast master 3-10
update, or load action 2-20
user forecast override 1-5
Using eWorkPlace with Infor XA documentation 1-9
Using Infor XA with CIM Series/400 1-2

V

value class 2-13
variable reporting frequency 1-5
volume subgroups 2-22, C-3

W

warehouse seasonality 2-26
work files 1-7