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# Contents

**List of Figures** .......................... 5

**Preface** .................................. 7
Adobe Portable Document Format .................. 9
Documentation Conventions ..................... 10

**What’s New in AF/OPERATOR Version 340** ........... 13

**Chapter 1.**  **What is Message Manager?** ............ 17
Introduction .................................. 18
How Message Manager Works ..................... 19

**Chapter 2.**  **The ISPF Dialog Component** .......... 23
Overview of Operation .......................... 24
Special Instructions for First Time Use .......... 25
Using the Message Table Resource List .......... 26
Adding New Sublists ........................... 28
Viewing/Editing Startup Defaults ................. 30
Changing Global Sublist Parameters ............... 32
Deleting Message Lists ........................ 33
Updating Message Lists ........................ 34
Browsing Message Lists ........................ 39
Generating Message List Command Files .......... 40
Message Processing Options Panels ............... 41
Table Generator Panels ....................... 49
Userlist Generator Panels ..................... 53

**Chapter 3.**  **User-Defined List (SYSLOG Analysis)** .... 57
Preparing for Analysis ........................ 58
Performing the Analysis ....................... 61
Creating the Selection List ................... 65
Using Help .................................. 67

**Chapter 4.**  **Using the Service Subroutines** .......... 69
Starting the Service Subroutines ............... 70
Monitoring Message Manager Message Lists ........ 71
<table>
<thead>
<tr>
<th>FIGURE</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Example ISPF Entry Panel</td>
<td>19</td>
</tr>
<tr>
<td>2</td>
<td>Message Table Resource List Panel</td>
<td>26</td>
</tr>
<tr>
<td>3</td>
<td>Message Selection Panel for Master List</td>
<td>28</td>
</tr>
<tr>
<td>4</td>
<td>Message Manager Startup Defaults Panel</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Update Panel for Master List</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Update Panel for Sublist</td>
<td>37</td>
</tr>
<tr>
<td>7</td>
<td>Add Message Type Prompt</td>
<td>37</td>
</tr>
<tr>
<td>8</td>
<td>Browse Panel</td>
<td>39</td>
</tr>
<tr>
<td>9</td>
<td>Generated Sublist Status</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>Message Processing Options Panel 1</td>
<td>42</td>
</tr>
<tr>
<td>11</td>
<td>Message Processing Options Panel 2</td>
<td>45</td>
</tr>
<tr>
<td>12</td>
<td>Message Processing Options Panel 3</td>
<td>47</td>
</tr>
<tr>
<td>13</td>
<td>Message Manager Table Generator Panel 1</td>
<td>49</td>
</tr>
<tr>
<td>14</td>
<td>Message Manager Table Generator Panel 2</td>
<td>51</td>
</tr>
<tr>
<td>15</td>
<td>Userlist Generator Menu</td>
<td>53</td>
</tr>
<tr>
<td>16</td>
<td>Message Table Resource List Panel</td>
<td>54</td>
</tr>
<tr>
<td>17</td>
<td>Message Selection Panel for MPF List</td>
<td>55</td>
</tr>
<tr>
<td>18</td>
<td>Typical Predefined Selection List</td>
<td>56</td>
</tr>
<tr>
<td>19</td>
<td>The User Defined List Menu</td>
<td>61</td>
</tr>
<tr>
<td>20</td>
<td>SYSLOG Analysis Program JCL Generator Panel</td>
<td>61</td>
</tr>
<tr>
<td>21</td>
<td>Typical JCL</td>
<td>64</td>
</tr>
<tr>
<td>22</td>
<td>SYSLOG Analyzer Output File Panel</td>
<td>65</td>
</tr>
<tr>
<td>23</td>
<td>Message Selection Panel for SYSLOG Analysis</td>
<td>66</td>
</tr>
<tr>
<td>24</td>
<td>The More: Field</td>
<td>67</td>
</tr>
<tr>
<td>25</td>
<td>MCF Command Syntax</td>
<td>71</td>
</tr>
<tr>
<td>26</td>
<td>Sample Control Dataset to Process JES2 SYSLOGs</td>
<td>79</td>
</tr>
<tr>
<td>27</td>
<td>JCL Report (AOLOGRPT) Part 1, a Partial Sample</td>
<td>83</td>
</tr>
<tr>
<td>28</td>
<td>JCL Report (AOLOGRPT) Part 2, a Partial Sample</td>
<td>83</td>
</tr>
<tr>
<td>29</td>
<td>Sample Control Dataset To Process JES3 SYSLOGS</td>
<td>84</td>
</tr>
</tbody>
</table>
About this document

Message Manager is a component of AF/OPERATOR that helps you manage console message traffic in your data center. This guide describes how to implement and customize Message Manager for your site. It assumes you have a working knowledge of data center operations and procedures and that AF/OPERATOR has been installed in your enterprise. (If they have not been installed, please read *AF/OPERATOR Configuration and Customization Guide*).

Documentation set information

The following manuals comprise the AF/OPERATOR documentation set:

- AF/OPERATOR Configuration and Customization Guide
- AF/OPERATOR User’s Guide
- AF/OPERATOR Command Reference Manual
- AF/OPERATOR User Interface Guide
- AF/OPERATOR OMEGAMON II for SMS Data Interface
- AF/OPERATOR Message Manager
- AF/OPERATOR Started Task Manager
- AF/OPERATOR: Using the Subsystem Logging Facility
- Connecting AF/OPERATOR and AF/REMOTE Using TCP/IP
- Candle Product Messages Manual

Where to look for more information

For more information related to this product and other related products, please see the:

- technical documentation CD-ROM that came with your product
- technical documentation information available on the Candle Web site at www.candle.com
- online help provided with this and the other related products.
Ordering additional documentation

To order additional product manuals, contact your Candle Customer Support representative.

We would like to hear from you

Candle welcomes your comments and suggestions for changes or additions to the documentation set. A user comment form, located at the back of each manual, provides simple instructions for communicating with the Candle Information Development department.

You can also send email to UserDoc@candle.com. Please include "AF/OPERATOR Message Manager Version 340" in the subject line.
Adobe Portable Document Format

Printing this book

Candle supplies documentation in the Adobe Portable Document Format (PDF). The Adobe Acrobat Reader will print PDF documents with the fonts, formatting, and graphics in the original document. To print a Candle document, do the following:

1. Specify the print options for your system. From the Acrobat Reader Menu bar, select **File > Page Setup**... and make your selections. A setting of 300 dpi is highly recommended as is duplex printing if your printer supports this option.

2. To start printing, select **File > Print...** on the Acrobat Reader Menu bar.

3. On the Print pop-up, select one of the **Print Range** options for
   - All
   - Current page
   - Pages from: [ ] to: [ ]

4. (Optional). Select the Shrink to Fit option if you need to fit oversize pages to the paper size currently loaded on your printer.

Printing problems?

The print quality of your output is ultimately determined by your printer. Sometimes printing problems can occur. If you experience printing problems, potential areas to check are:

- settings for your printer and printer driver. (The dpi settings for both your driver and printer should be the same. A setting of 300 dpi is recommended.)
- the printer driver you are using. (You may need a different printer driver or the Universal Printer driver from Adobe. This free printer driver is available at www.adobe.com.)
- the halftone/graphics color adjustment for printing color on black and white printers (check the printer properties under **Start > Settings > Printer**). For more information, see the online help for the Acrobat Reader.
- the amount of available memory in your printer. (Insufficient memory can cause a document or graphics to fail to print.)

For additional information on printing problems, refer to the documentation for your printer or contact your printer manufacturer.

Contacting Adobe

If additional information is needed about Adobe Acrobat Reader or printing problems, see the Readme.pdf file that ships with Adobe Acrobat Reader or contact Adobe at www.adobe.com.
Documentation Conventions

Introduction
Candle documentation adheres to accepted typographical conventions for command syntax. Conventions specific to Candle documentation are discussed in the following sections.

Panels and figures
The panels and figures in this document are representations. Actual product panels may differ.

Required blanks
The slashed-b (\) character in examples represents a required blank. The following example illustrates the location of two required blanks.

```
beBA*ServiceMonitor\0990221161551000
```

Revision bars
Revision bars (|) may appear in the left margin to identify new or updated material.

Variables and literals
In examples of command syntax, uppercase letters are actual values (literals) that the user should type; lowercase letters are used for variables that represent data supplied by the user. Default values are underscored.

```
LOGON APPLID (cccccccc)
```

In the above example, you type LOGON APPLID followed by an application identifier (represented by cccccccc) within parentheses.

*Note:* In ordinary text, *variable names appear in italics.*
Symbols

The following symbols may appear in command syntax:

Table 1. Symbols in Command Syntax

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The “or” symbol is used to denote a choice. Either the argument on the left or the argument on the right may be used. Example: YES</td>
<td>NO In this example, YES or NO may be specified.</td>
</tr>
<tr>
<td>[ ] Denotes optional arguments. Those arguments not enclosed in square brackets are required. Example: APPLDEST DEST [ALTDEST] In this example, DEST is a required argument and ALTDEST is optional.</td>
<td></td>
</tr>
<tr>
<td>{ } Some documents use braces to denote required arguments, or to group arguments for clarity. Example: COMPARE {workload} - REPORT={SUMMARY</td>
<td>HISTOGRAM} The workload variable is required. The REPORT keyword must be specified with a value of SUMMARY or HISTOGRAM.</td>
</tr>
</tbody>
</table>
| _ Default values are underscored. Example: COPY infile outfile - [COMPRESS=\{YES | NO\}] In this example, the COMPRESS keyword is optional. If specified, the only valid values are YES or NO. If omitted, the default is YES.
This section provides a description of the new features that have been incorporated into AF/OPERATOR Version 340.

TCP/IP connectivity enhancements
TCP/IP communications have been simplified by permitting you to optionally remove the AF packet header when communicating between AF/OPERATOR and systems or applications that are unable to comply with the Candle AF packet header protocol. You accomplish this by means of a new option on the LINK DEFINE and COMM START commands. In addition, new SEND and RECEIVE datatypes have been added to the COMSDRCV REXX function. You must use the SEND and RECEIVE datatypes when you want to transfer data over a link having the AF packet header turned off.

New keywords have been added to COMM START and COMM STOP commands. The CONNECT_EXEC keyword on the COMM START command identifies a named exec that runs whenever a connection to the server is established and is mandatory when you have specified AFPACKET(OFF). The CID keyword on the COMM STOP command identifies a particular connection to a server to be stopped.

A new COMADMIN REXX function provides GIVE and TAKE options that permit passing ownership of a connection from one match to another.

Passing larger amounts of data on a TCP/IP match
You can now pass more data to an individual match. AF/OPERATOR will permit passing a larger amount of parameter data to a REXX procedure. In addition, it will provide the capability to create a conversation between matches so that multiple 32K packets can be transferred. This is accomplished by permitting the DATARPLY datatype to code the replylength keyword on the COMSDRCV REXX function.

Automated peer-to-peer link management
By predefining link attributes, it is now possible to automatically establish connections at AF/OPERATOR startup. The following product changes support this function:

- The optional RECOVERY keyword on the LINK DEFINE command indicates that an INACTIVE link having a desired state of ACTIVE is to be automatically started when the specified server becomes available.
The new ACTIVATE keyword on the LINK DEFINE command indicates that a LINK START is to be automatically attempted for a particular linkid, assuming a successful link definition.

The new SCOPE keyword on the LINK START command specifies those links that are to be selected for LINK START processing according to their activation state.

Two new startup parameters, HOSTNAME and LINKDEFS are added. HOSTNAME(xxxxxxxxx) overrides the default name of the trusted hostnames member in RKANPAR. The LINKDEFS(xxxxxxxxx) parameter overrides the default name of the link definitions member in RKANPAR. During product startup, when TIMEOUT(nnn) is specified on the LINKDEFS keyword, it specifies the amount of time to wait for the LINK START command issued immediately after processing the LINKDEFS member to complete before startup is allowed to continue.

Changes to the OPER command when RESP is specified

The OPER command issues an MVS or subsystem command. On this command, the RESP parameter specifies that a set of line variables will receive the response text resulting from the command. Additional parameters have been added to the OPER command when specified with the RESP parameter:

- TIMEOUT(pp,ss): The new ss value specifies the number of seconds (from 1 through 3600) that AF/OPERATOR is to wait for each response message line from a multi-line write to operator before assuming the response is complete.
- MAXLINES(nnnn): This new parameter specifies that a response is to be deemed complete when the specified number of lines is received.
- ENDMMSG(prefix): This new parameter specifies that the response is to be deemed complete when the specified prefix is encountered in one of the response lines.

The ss value is also added to the OPERRESP AF/OPERATOR startup parameter.

In addition, the CMDSDRCV function has been modified such that when it causes an OPER command with RESP specified to be executed on a remote system, it also causes an AOCASE variable to be built when the reply from the remote system is received.

Additional modifications

- New global variables have been added for COM matches.
- A DUB_AS_PROCESS command, having the same function as the AF/OPERATOR startup parameter of the same name, has been provided.

Storage Constraint Relief

The amount of storage constraint relief realized will vary depending on AF/OPERATOR startup parameters and will be equal to (MAXMAT - MAXRUN) * 480 bytes.
Online documentation

With Version 340, Candle Corporation has moved AF/OPERATOR manuals from IBM BookMaster to Adobe FrameMaker. This move was made to better enable us to address our customers’ needs by providing tools that enhance productivity.

One of the results of the move is that it is no longer possible to create BookManager versions of the AF/OPERATOR manuals. However, the manuals remain available online in the Adobe PDF version on CD-ROM and are also available on the Candle Corporation website at www.Candle.com.

The documentation CD being provided with this release has robust and easy-to-use search capabilities. You can search for information in multiple volumes, multiple versions, and across products. The CD also provides easy setup of search indexes with a single click of the mouse.

If you want to order printed copies of the documentation, please contact your Candle Support Services representative.

Enhancements to product documentation

- Additional documentation about obtaining SMF data has been added to the AF/OPERATOR User’s Guide.

- Additional documentation about using the Probe Directive, Probe Input, and Misc. Parms fields has been added to the OMEGACENTER Status Manager User’s Guide.
What is Message Manager?

This chapter introduces you to Message Manager by describing its purpose in your data center and by giving a detailed overview of its components and features.

Chapter Contents

Introduction ........................................... 18
How Message Manager Works ..................... 19
  Components of Message Manager ............. 19
  Message List Types .............................. 21
  Message Processing Options ................. 21
  ISPF Table ................................... 22
  TSO Interface .................................. 22
Introduction

The Problem
As data center operations have become more complex and CPUs have become more powerful, it has become practically impossible for operators to see and respond to every message displayed by the system. The message stream on a JES console, for instance, is often an unreadable blur. In addition, some common WTOs always require exactly the same response; the reply becomes a time-wasting formality that requires no decision making.

The advent of sophisticated automation software such as AF/OPERATOR allowed data center personnel to write their own custom automation programs to manage message traffic. But this in itself didn’t completely solve the problem because many people don’t have the time or desire to write automation programs.

The Solution
Message Manager is a component of AF/OPERATOR that writes the automation programs for you, making it easy to use the full power of AF/OPERATOR for managing your console message traffic.

All you need to do is decide which messages you want to manage with Message Manager, and then you use a panel-driven interface to create various lists of messages you want to manage as a group. When creating these message lists you can globally assign certain message processing parameters to every message in the list. For example, you can choose to globally suppress every message in one list, and to reroute every message in another list.

In addition to these global message processing parameters, you can individually tailor Message Manager’s response to each message in a list by filling in a set of panel entry fields that essentially duplicate the functionality of the TRAP ADD WTO command parameters in AF/OPERATOR. This allows you to specify various triggering conditions, immediate and extended actions, and trap control parameters. You can even send the triggering message from a remote system to a local point system with the Multi-System Management Facility (MSMF).

After creating your message lists and defining message processing options with the panel-driven interface, Message Manager then uses this information to build an ISPF table and to generate AF/OPERATOR command files (automation programs executed by AF/OPERATOR) that automatically monitor your console message traffic for the specified messages and take action when those messages are encountered.

As you can see, the automation programs that Message Manager writes for you have enough basic features to completely insulate you from the need to design and code the logic that manages your console message traffic for you. However, due to the open-ended nature of the AF/OPERATOR language used by Message Manager you can easily extend Message Manager’s functionality by linking the command files it generates to others that you have written using the AF/OPERATOR or REXX languages.
How Message Manager Works

The section “Introduction” on page 18 describes, in very broad terms, how Message Manager operates. This section contains a more detailed overview that should prepare you to use Message Manager wisely and to its fullest extent.

Components of Message Manager

Message Manager has three components: an ISPF dialog, message list command files, and service subroutines.

ISPF Dialog

The ISPF dialog presents you with a set of fill-in-the-blanks entry panels that you use to create the message lists you want to manage with Message Manager. The figure below is an example of such a panel.

FIGURE 1. Example ISPF Entry Panel

The chapter “The ISPF Dialog Component” on page 23 describes using the ISPF dialog in detail.

Message List Command Files

When you finish creating a message list with the ISPF dialog, Message Manager stores the information in an ISPF table. You then issue a command for the list that directs Message Manager to build an AF/OPERATOR command file, called a message list command file, to manage the messages in the list. These command files generate WTO traps, which are special AF/OPERATOR entities that watch for and react to WTO and WTOR messages when they occur.
How Message Manager Works

Every time you create a new message list or modify an existing one, you can issue a command that instructs the ISPF dialog to generate (or regenerate) a message list command file to manage that list accordingly. The message list command files, in conjunction with the Message Manager service subroutines, will manage your messages without any additional control or supervision on your part.

These message list command files are just like any other AF/OPERATOR command file except that:

- they can be controlled as a group by the Message Manager service subroutines. This is the recommended method, and is described in “Using the Service Subroutines” on page 69.
- users familiar with the AF/OPERATOR command language and the Automation Facility automation language can, with some modifications, directly incorporate these message list command files into their own automation scenarios. This alternative is not recommended unless you are an accomplished automation programmer and you fully understand the ramifications.

Service Subroutines

The third component is a special group of AF/OPERATOR command files called the service subroutine. These subroutines are used to start, stop, and perform other management functions on message list command files created by Message Manager.

This command file creates an MVS console command, called MCF, that allows you to perform various global management functions on the group of traps generated by a message list command file. With the MCF command you can add, delete, disable, enable, initialize, show, and view the status of all traps associated with a message list. Note that this command works globally: you cannot, for example, disable a single trap in a group. You can use a standard AF/OPERATOR trap command to accomplish this.

The service subroutines comprise two special command files:

- **@MSTART**
  This command file executes all existing message list command files, which in turn each create an AF/OPERATOR WTO trap for every message in the corresponding message list. It is normally meant to be included in your site’s initialization command file for AF/OPERATOR (Candle name: $$AOINIT). This command file also executes the @MCNTL file described below.

- **@MCNTL**
  This command file creates an MVS console command, called MCF, that allows you to perform various global management functions on the group of traps generated by a message list command file. With the MCF command you can add, delete, disable, enable, initialize, show, and view the status of all traps associated with a message list. Note that this command works globally: you cannot, for example, disable a single trap in a group. You can use a standard AF/OPERATOR trap command to accomplish this.

The chapter “Using the Service Subroutines” on page 69 describes using the service subroutines in detail.
Message List Types

There are two different types of message lists:

**Master List**

The master list is named USERLIST by default. This name cannot be changed. There is only one master list, and you create it the very first time you use Message Manager. When you create the master list, you should include every message you think you will want to later organize into various sublists; however, don’t be too concerned with making it all-inclusive, because you can always modify it or even delete it and create a different one at any time.

**Sublists**

These are subsets of the master list. The message list command files used to manage your message traffic are all created from sublists—you cannot generate a command file from the master list.

Sublists allow you to group related messages together and assign common message processing options to every message in the list. For example, you could create two sublists that contain exactly the same messages, but one list would suppress every message during the night shift, while the other would reroute them to a different console during the day shift.

Message Processing Options

The whole purpose of Message Manager is to automatically react to console messages by performing a wide array of processing options. By filling out a set of panel driven dialogs ("Message Processing Options Panels" on page 41), you can customize the processing options for any message. These message processing options fall into several different categories:

**WTO Pattern**

This option provides a WTO string search pattern that will trigger a match, thereby initiating the remaining processing options.

**Triggering Conditions**

These parameters augment the WTO pattern further defining the scope of conditions that will trigger a match.

**Immediate Actions**

These options allow you to suppress messages, and to add or replace route and descriptor codes.

**Extended Actions**

These options allow you to execute MVS operator commands or AF/OPERATOR command files.

**MSMF Support**

This option uses Candle’s Multi-System Management Facility to echo the message to a remote system.

Note that you can have multiple instances of a message in the same message list, each with a different set of processing options. For example, you could specify three different sets of triggering conditions for the same message ID, each with a different combination of immediate and extended actions.

To save you from having to individually specify the message processing options for every message in a list, Message Manager displays a special set of ISPF Table Generator panels when you create a new sublist. These panels allow you to globally specify triggering conditions and immediate actions for the entire list. After you choose the messages to include in the sublist, Message Manager automatically inserts the specified values into each message.
in the list. You can easily change these global processing options at any time with the Change option of the Message Table Resource List.

**ISPF Table**

The message list command files and service subroutines generated by Message Manager are all based on message lists. The master list (USERLIST) and all sublists are stored in an ISPF table. This table is updated by Message Manager every time you add or update a message list. It is stored in the output table library `prefix.ALVnnn.RKANISP` with the ddname ALTABL that was allocated the first time you installed the Application Library (see the *AF/OPERATOR Configuration and Customization Guide*).

Message Manager is designed to allow multiple users to edit the same table. This allows data center personnel responsible for different resources to access Message Manager and define their message lists separately.

**TSO Interface**

AO*TSO is a fully functional version of AF/OPERATOR, running under ISPF, that runs outside of your production environment. This provides you with a test environment you can use to verify your message list command files.

In order for Message Manager to function properly under AO*TSO you need to establish a TSO interface by declaring a setup system variable TSOAOTST and executing `@MSTART` at initialization. To facilitate this, use a single system variable with an initial value of 1.

**What’s Next?**

Now that you understand what Message Manager is and have been given an overview of its operation, you are ready to put it to work in your data center. The remaining three chapters will describe how to use the ISPF dialog and service subroutines.
In this chapter you will learn how to use Message Manager’s ISPF dialog component to define message lists and generate message list command files. If you find any aspect of this component confusing, you may find it helpful to review the chapter “What is Message Manager?” on page 17, especially the section “How Message Manager Works” on page 19.

Chapter Contents

Overview of Operation ................................................................. 24
Special Instructions for First Time Use .............................................. 25
   Using the Message Table Resource List ........................................ 26
Adding New Sublists ................................................................. 28
   Viewing/Editing Startup Defaults ................................................ 30
Changing Global Sublist Parameters ............................................... 32
Deleting Message Lists .............................................................. 33
Updating Message Lists ............................................................. 34
   Updating the Master List ......................................................... 35
Browsing Message Lists ............................................................ 39
Generating Message List Command Files ....................................... 40
Message Processing Options Panels ............................................. 41
   Panel 1 ................................................................................. 42
   Panel 2 ................................................................................. 45
   Panel 3 ................................................................................. 47
   Usage Notes for the Message Processing Options ............................ 48
Table Generator Panels ............................................................... 49
   Panel 1 ................................................................................. 49
   Panel 2 ................................................................................. 51
Userlist Generator Panels ............................................................ 53
   MPF List ................................................................................. 53
   Predefined Lists ..................................................................... 56
Overview of Operation

There are three parts to the ISPF dialog: a message table resource list, various message list definition panels, and a startup defaults panel. The message table resource list is the “command center” of the ISPF dialog; from there you navigate to the other panels as determined by the operation you want to perform.

You use the message table resource list and related definition panels every time you add, update, delete, or browse message lists. You also use it to generate command files for message lists. For instructions on using the message table resource list, refer to the section “Using the Message Table Resource List” on page 26.

You use the startup defaults panel to specify configuration information the first time Message Manager is used at your site. For instructions on using the startup defaults panel, refer to the section “Viewing/Editing Startup Defaults” on page 30.
Special Instructions for First Time Use

If this is the very first time Message Manager has been used at your site, you must configure some startup defaults and build your master list. In fact, you will be unable to access the resource list and message list definition panels until you have done this.

To define the startup defaults for Message Manager, use the following procedure:

1. From the Tools pull-down of the AF/OPERATOR main panel, select MESSAGE*MANAGER. The first time you access Message Manager, the Message Manager Start-up Defaults panel appears. The three fields on this panel contain Candle-supplied values that are used to name user lists and command files.

2. Fill in the fields of this panel as described in “Viewing/Editing Startup Defaults” on page 30. Press Enter to save your defaults and then press PF3. The system next displays the Userlist Generator panel.

3. Use this panel as described in “Userlist Generator Panels” on page 53 to create your master list. When you’ve finished, you’ll be able to use all options on the message table resource list.
Using the Message Table Resource List

To access the Message Manager Resource List, follow the steps below.

1. From the Tools pull-down of the AF/OPERATOR main panel, select MESSAGE*MANAGER. The system displays the Message Table Resource List panel, shown in Figure 2. This resource list shows all of the message lists that are currently defined to Message Manager, including the most basic parameters of list name, current status, ISPF table name, suppression type, system ID, and active times.

FIGURE 2. Message Table Resource List Panel

<table>
<thead>
<tr>
<th>LIST NAME</th>
<th>STATUS</th>
<th>LIST NO.</th>
<th>TYPE</th>
<th>SYSID</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>_JESRMT</td>
<td>CMDFILE</td>
<td>91/06/07</td>
<td>17:38</td>
<td>@M11</td>
<td>SUP</td>
</tr>
<tr>
<td>_USERLIST</td>
<td>CREATED</td>
<td></td>
<td></td>
<td>@M10</td>
<td></td>
</tr>
</tbody>
</table>

Resource List Options

This panel is the entry point for all panels of the ISPF dialog. All functions of the ISPF dialog are available by choosing one of the following options. The list below describes the function of each option. Detailed instructions for using each option are contained in the following subsections. Online Help is available at any panel; see the section “Using Help” on page 67 for details on using help.

Add

This option creates a new sublist; it is described in “Adding New Sublists” on page 28. You can add only sublists—you cannot add a second master list (USERLIST).

Note that this option only creates the sublist. To generate the corresponding message list command file you must manually do so using the generate option described below. Also, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

Profile

This option allows you to view the startup defaults; it is described in “Viewing/Editing Startup Defaults” on page 30.
Change
This option allows you to globally define triggering conditions and immediate actions for all messages in a sublist. You can also specify shift start and end times during which the sublist’s associated message list command file will be active. This option is described in “Changing Global Sublist Parameters” on page 32.

Since this option modifies the sublist, you must regenerate the corresponding message list command file using the generate option described below. Also, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

Delete
This option deletes a message list; it is described in “Deleting Message Lists” on page 33. You can delete both sublists and the master list (USERLIST), although there are very few cases where you would choose to delete the latter.

Note that this option deletes the both the message list and its associated command file. However, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69)

Update
This option allows you to:
- add new messages to a message list
- delete messages from a message list
- change the message processing options for messages in a list

“Updating the Master List” on page 35 describes how to update the master list. The section “Updating Sublists” on page 36 describes how to update sublists. As when adding a new sublist, changes to sublists do not take effect until you regenerate the associated message list command file and restart the service subroutines. (See “Using the Service Subroutines” on page 69.)

Browse
This option allows you to browse the contents of a message list; it is described in “Browsing Message Lists” on page 39

Generate
This option generates a message list command file; it is described in “Generating Message List Command Files” on page 40. Whenever you create a new sublist or update an existing one, you must use this option to generate the proper command file. Note that a regenerated command file will not take effect until you restart the Message Managerservice subroutines. (See “Using the Service Subroutines” on page 69.)
Adding New Sublists

Message manager allows you to create up to 90 sublists. You cannot create additional master lists: there is only one, named USERLIST. (You can, however, modify the master list with the update option described “Updating the Master List” on page 35.)

**Note:** This option only creates a sublist. To generate the corresponding message list command file you must manually do so using the generate option described in “Generating Message List Command Files” on page 40. Also, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

To create a new sublist, use the following procedure:

1. At the Message Table Resource List (Figure 3 on page 28), choose A to add a new sublist. The Message Manager Table Generator panel is displayed. This panel allows you to specify the sublist name, shift start and end times, and some global message processing options.

2. Fill out the fields of this panel as described in “Table Generator Panels” on page 49. When you’ve finished, Message Manager displays the message selection panel for the master list (USERLIST). Note that panel displays the name of the sublist you are adding.

**FIGURE 3. Message Selection Panel for Master List**

![Message Selection Panel for Master List](image)

3. Using PF7 and PF8 to scroll through all the panels, type the letter S to the left of every message you want to include in the new sublist.

---

28 AF/OPERATOR Message Manager Version 340
4. When you’ve finished choosing messages, press Enter. The message SELECTED is displayed in the Status column.

5. Press PF3 to return to the Resource List panel.
Viewing/Editing Startup Defaults

If at the Message Table Resource List (Figure 3 on page 28) you choose P to update the Message Manager configuration profile, the Startup Defaults panel is displayed.

FIGURE 4. Message Manager Startup Defaults Panel

The Startup Defaults panel allows you to specify configuration information that will be used by Message Manager when generating message list command files. This information specifies:

- The command file library location and the name of the ISPF table that stores the message lists.
- The trap, variable, and command file name prefixes used to distinguish Message Manager message list command files from Started Task Manager entities and other AF/OPERATOR command files. This allows message list command files to be controlled as a group by the Message Manager service subroutines.

To fill out the Startup Defaults panel, enter the following information at each field:
TRAP AND VARIABLE PREFIX

The prefix you want Message Manager to apply to all AF/OPERATOR traps, variables, and command file names associated with Message Manager. This prefix allows the Message Manager service subroutines to identify and manage Message Manager entities as a group distinct from other AF/OPERATOR entities or from Started Task Manager entities.

The default prefix is @M. If you change the prefix (for example, from @M to @G), change all occurrences of the prefix on this panel to the same value.

Important
You must be absolutely sure that you do not use any prefixes associated with Started Task Manager at your site. (The Candle default prefix for Started Task Manager entities is @R.) If you use the same prefix, all your command files and ISPF tables for both Started Task Manager and Message Manager may be corrupted.

MESSAGE TABLE NAME

The name of the ISPF table in which you want to store Message Manager’s message list definitions. Candle recommends that you use the prefix defined in the previous fields as part of the table name. This is to help distinguish Message Manager tables from Started Task Manager tables.

COMMAND FILE DSN

The command file dataset (default name CANDLE.V250.RKANCMD) is where Message Manager puts all its generated message list command files and service subroutines.

Important
The message list command files generated by Message Manager cannot be used in your production AF/OPERATOR system until you make them available to the command file dataset used by AF/OPERATOR. You can do this in two ways. One is to manually copy the message list command files to the AF/OPERATOR command file dataset. The second way is to concatenate the command file dataset name specified here to the RKANCMD DD statement in your AF/OPERATOR startup PROC. See the AF/OPERATOR Configuration and Customization Guide.
Changing Global Sublist Parameters

For any given sublist, you can globally change certain message processing options: triggering conditions and immediate actions. You can also rename the list and specify different shift start and end times.

*Note:* This option only modifies a sublist. To regenerate the corresponding message list command file you must manually do so using the generate option described in “Generating Message List Command Files” on page 40. Also, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

To globally change sublist parameters, use the following procedure:

1. At the Message Table Resource List (Figure 3 on page 28), choose C to change sublist parameters. The Message Manager Table Generator panel is displayed.

2. Fill out the fields of this panel as described in “Table Generator Panels” on page 49. When you’ve finished, Message Manager returns to the Resource List.
Deleting Message Lists

You can delete both sublists and the master list (USERLIST). Deleting the master list allows you to create an entirely new master list, and this action will have no effect on existing sublists.

**Note:** Even though this option deletes the command file associated with the deleted message list, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

To delete a message list, type the letter D beside the desired list and then press Enter. The system briefly displays a message that it is generating service subroutines, and then it returns to the Message Table Resource List panel.

If you delete the master list, the system instead displays the Userlist Generator panel. Build a new master list as described in “Userlist Generator Panels” on page 53.
Updating Message Lists

When updating a message list, you can perform a variety of actions:

- change the processing options for a message
- add new messages to the list
- delete messages from the list

“Updating the Master List” on page 35 describes how to update the master list. The section “Updating Sublists” on page 36 describes how to update sublists.
Updating the Master List

When updating the master list (USERLIST), you can both modify existing messages and add new messages. Detailed instructions follow:

To update the master list, use the following procedure:

1. At the Message Table Resource List (Figure 3 on page 28), type the letter S next to USERLIST and then press Enter. Message Manager displays an update panel for the master list.

FIGURE 5. Update Panel for Master List

```
!Candle                   AF/OPERATOR - MESSAGE MANAGER     ROW 1 OF 16
COMMAND ===> Updating USERLIST

Select a message, press S for Update or D for Delete, then press Enter
To add a new message to table, enter A on command line, then press
Enter

PF3 = Exit    PF7 = Bkwd    PF8 = Fwd

MESSAGE   zSTATUS    DESCRIPTION
----------  --------  -------------------------------------------------
_ $HASPO01    R,TEXT VIA $DM
_ $HASPO02    AUTOMATIC COMMANDS HALTED
_ $HASPO94    I/O ERRORS ON LINE XX
_ $HASPO10    ON TSO/DR/INTRDR/ETC..... RDR
_ $HASPO11    JOBNAME HELD
_ $HASPO10    JOBNAME -- ILLEGAL JOB CARD
_ $HASPO11    JOBNAME -- INVALID ROUTE CARD
_ $HASPO12    JOBNAME -- INVALID JOBPARM CARD
_ $HASPO13    JOBNAME -- INVALID OUTPUT CARD
_ $HASPO14    JOBNAME -- INVALID EXECUTION MODE
_ $HASPO15    JOBNAME -- INVALID NETACCT CARD
_ $HASPO16    JOBNAME -- INVALID NOTIFY CARD
_ $HASPO17    JOBNAME -- INVALID XMIT CARD
_ $HASPO18    JOBNAME -- INVALID CONTROL STATEMENT
_ $HASPO12    DEVNAME COMMAND (E.G. INTRDR $VS,‘CMD’)a
```

2. If you want to change the processing options for an existing message:
   a. Type the letter S to the left of the message you want to update. Message Manager displays the Message Processing Options panels for the chosen message.
   b. Fill out the panels as described in “Message Processing Options Panels” on page 41.
   c. When your changes are complete, press Enter to save them and then press PF3 to return to the Master List Update panel.

3. If you want to add new messages to the list:
   a. Type the letter A in the command field and press Enter. Message Manager displays the following prompt.
b. If you want to add a single message, choose option 1 to display a blank set of Message Processing Options panels. Fill out the panels as described in “Message Processing Options Panels” on page 41. When your changes are complete, press Enter to save them and then press PF3 to return to the master list update panel.

c. If you want to select from a set of predefined messages and custom-generated lists, choose option 2 to display the Userlist Generator menu. Choose the messages to add as described in “Userlist Generator Panels” on page 53. When finished, press PF3 to return to the master list update panel.

4. Once you’re back at the Master List Update panel, press PF3 to return to the Message Table Resource List panel.

**Updating Sublists**

When updating a sublist, you can both modify existing messages and add new messages. Detailed instructions follow this section.

*Note:* This option only modifies a message list. To generate the corresponding message list command file you must manually do so using the generate option described in “Generating Message List Command Files” on page 40. Also, you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

To update a sublist, use the following procedure:

1. At the Message Table Resource List (Figure 3 on page 28), type the letter S next to the desired sublist and then press Enter. Message Manager displays an update panel for the sublist.
2. If you want to change the processing options for an existing message:
   a. Type the letter S to the left of the message you want to update. Message Manager displays the Message Processing Options panels for the chosen message.
   b. Fill out the panels as described in See “Message Processing Options Panels” on page 41.
   c. When your changes are complete, press Enter to save them and then press PF3 to return to the Sublist Update panel.

3. If you want to add new messages to the list:
   a. Type the letter A in the command field and press Enter. Message Manager displays the following prompt.

   FIGURE 7. Add Message Type Prompt

```
!Candle                   AF/OPERATOR - MESSAGE MANAGER           Version Vnnn
Option ===> 1

1  Add a single message.
2  Select from Master Message List.
```
b. If you want to add a single message, choose option 1 to display a blank set of Message Processing Options panels. Fill out the panels as described in See “Message Processing Options Panels” on page 41. When your changes are complete, press Enter to save them and then press PF3 to return to the Master List Update panel.

c. If you want to select from messages defined in the master list (USERLIST), choose option 2. Message Manager first displays a set of Table Generator panels. You can either press Enter to bypass these or you can use them to globally define certain message processing options for all the messages you are about to select from the master list.

1. Fill out the fields of this panel as described in See “Table Generator Panels” on page 49. When you’ve finished, Message Manager displays the message selection panel for the master list (USERLIST). Note that panel displays the name of the sublist you are adding.

2. Using PF7 and PF8 to scroll through all the panels, type the letter S to the left of every message you want to add to the sublist.

3. When you’ve finished choosing messages, press Enter. The message SELECTED is displayed in the Status column.

4. Press PF3 to return to the Sublist Update panel.

4. Once you’re back at the Sublist Update panel, press PF3 to return to the Message Table Resource List panel.
Browsing Message Lists

When browsing a list, you cannot make changes to it: you cannot edit or delete existing messages, nor add new messages to the list. To browse the contents of a message list, use the following procedure:

1. At the Message Table Resource List (Figure 3 on page 28.), type the letter B next to the desired message list and then press Enter. Message Manager displays a browse panel for the sublist.

FIGURE 8. Browse Panel

2. Use PF7 and PF8 to view the various panels.

3. When finished viewing, press PF3 to return to the Message Table Resource List panel.
Generating Message List Command Files

Message Manager cannot actually perform automation for a message list until you generate a command file for that list. Any time you create a new list or update an existing list, you must then generate (or regenerate) it with this option. You can generate only sublists—the master list (USERLIST) is meant to be used only for creating sublists.

**Note:** This option only generates a command file; you must restart the Message Manager service subroutines for the changes to take effect on your system. (See “Using the Service Subroutines” on page 69.)

To generate or regenerate a message list command file, type the letter G next to the desired sublist on the Message Table Resource List (Figure 3 on page 28), and then press Enter. Message Manager will briefly display status messages as it is generating the command file. When finished, the Message Table Resource List displays the date and time the command file was generated.

**FIGURE 9. Generated Sublist Status**

<table>
<thead>
<tr>
<th>LIST NAME</th>
<th>STATUS</th>
<th>LIST NO.</th>
<th>TYPE</th>
<th>SYSID</th>
<th>TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>_JESRMT</td>
<td>CMDFILE</td>
<td>91/06/13</td>
<td>@M11</td>
<td>SUP</td>
<td>ALL</td>
</tr>
<tr>
<td>_USERLIST</td>
<td>CREATED</td>
<td></td>
<td>@M10</td>
<td>ALL</td>
<td>ALL DAY</td>
</tr>
</tbody>
</table>
Message Processing Options Panels

The Message Processing Options panels form the nucleus of Message Manager’s automation power. Consisting of three fill-in-the-blanks panels, they duplicate all the options of AF/OPERATOR’s TRAP ADD WTO command. These options fall into the following categories:

- WTO pattern
- triggering conditions
- immediate actions
- extended actions
- Multi-System Management Facility (MSMF) support

The traps generated by the Message Processing Options panels have the same capabilities and restrictions as normal AF/OPERATOR WTO traps. Specifically, they:

- are triggered by write-to-operator (WTO) messages and write-to-operator-with-reply (WTOR) messages.
- monitor all messages issued by SVC 35, IMS or JES3 interfaces, or other user-defined sources.
- monitor only the first line of a multi-line WTO; that is, MLWTO(FIRST).

You can change the message processing options for any message in a message list by using the update (U) option of the Message Table Resource List (see “Updating Message Lists” on page 34).

There are three Message Processing Options panels. To scroll between panels, use PF7 and PF8. To fill out each panel, enter the following information at each field. Note that each field is followed by a blank line, the length of this line determines the number of characters you can enter in that field. Also, context sensitive Help is available for every field; press PF1 with the cursor on the field.

**Note:** Most fields are optional; you can choose the basic defaults defined by the startup parameters in your AF/OPERATOR startup PROC by pressing PF3 to exit as soon as you are brought to the first panel.
### Panel 1

**FIGURE 10. Message Processing Options Panel 1**

<table>
<thead>
<tr>
<th>Trap Identification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSGID</strong></td>
<td>The WTO message ID of the message you are trapping. When updating an existing message this field is already filled in for you.</td>
</tr>
<tr>
<td><strong>DESCRIPTION</strong></td>
<td>A freeform description for the message. When updating an existing message this field is already filled in for you.</td>
</tr>
</tbody>
</table>
WTO

**Pattern**
An optional freeform text string to be compared with the full WTO string of the message ID you are trapping. Use this field as a filter to narrow the number of matches that will occur on this message ID. Messages that do not match this pattern are ignored.

Patterns may contain the AF/OPERATOR wildcard characters:

- ? One alphanumeric character
- # One numeric character
- * Any number of alphanumeric characters

A single blank space in your pattern also acts as a wildcard for one or more blanks in the WTO string. Note that leading blanks are truncated from the second input line of the panel.

Embedded quotes within a pattern must follow special syntax conventions described in “Rules for Quotes in Pattern Fields” on page 73.

If you leave this field blank, the default is `MSGID*`.

**Trap Control**

**Aotrap**
Specify Y if you want the trap to be triggered by AF/OPERATOR-generated messages. Specify N if you want the trap to ignore messages from AF/OPERATOR.

**Enable**
Specify Y to enable (activate) the trap as soon as the message list command file is executed. Specify N if you would rather the trap starts out disabled until it is enabled by a TRAP ENABLE command. (This command would be issued from another command file or directly from the operator’s console.

**Log**
Specify Y if you want a message written to the AF/OPERATOR message log (RKOGLOGM) every time the trap is triggered. Specify N if you want no record of the trap being triggered nor of the trap action taken.

**Retain**
Specify Y if you want information about each match recorded for display by the AF/OPERATOR RETAIN*VIEW facility. Specify N if you don’t want match information recorded.

**Test**
Specify Y if you want to disable immediate and extended actions for this trap: the only commands that will execute are the ones that would normally execute in AF/OPERATOR warn mode. When the trap is triggered, no action is taken. However, a record of the action that would have been taken is still logged in RKOGLOGM.

Specify N if you want a match to carry out immediate and extended actions.

**Wait**
Specify Y if you want the address space from which the message was issued to be suspended while the Automation Facility is executing the trap action. Specify N if you do not want to suspend the issuing address space. The trap action occurs while the address space continues normal execution.
Immediate Actions

**Suppress**
Specify Y if you want to prevent the trapped message from being displayed. The issuing address space continues as if the message had been displayed normally, and the message appears in SYSLOG. Specify N if you want the message displayed normally.

**Add Descriptors**
A descriptor code or set of codes you want to append to the message’s existing descriptor codes. This field affects only WTOs, not WTORs. You can specify from 1–16 new descriptor codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field.

**Add Route Codes**
A route code or set of codes you want to append to the message’s existing route codes. You can specify from 1–16 new route codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field.

**New Descriptors**
A descriptor code or set of codes you want to replace the message’s existing descriptor codes with. This field affects only WTOs, not WTORs. You can specify from 1–16 replacement descriptor codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field.

**New Route Codes**
A route code or set of codes you want to replace the message’s existing route codes with. You can specify from 1–16 replacement route codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field.

**Important**
Never specify **WAIT=Y** in traps for message from CONSOLE or multi-user address spaces such as ACF2, CICS, IMS, JES, or VTAM™. This would suspend the address space.
Panel 2

Figure 11. Message Processing Options Panel 2

<table>
<thead>
<tr>
<th>Command: MESSAGE PROCESSING OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSGID: $HASP101</td>
</tr>
<tr>
<td>DESCRIPTION: JOBNAME HELD</td>
</tr>
<tr>
<td>TRIGGERING CONDITIONS:</td>
</tr>
<tr>
<td>Asid (nnnn):</td>
</tr>
<tr>
<td>Console(s):</td>
</tr>
<tr>
<td>Days: MON TUE WED THU FRI SAT SUN</td>
</tr>
<tr>
<td>Descriptors:</td>
</tr>
<tr>
<td>Job classes:</td>
</tr>
<tr>
<td>Jobname:</td>
</tr>
<tr>
<td>Job type: (IMS JOB STC TSU)</td>
</tr>
<tr>
<td>Match limit:</td>
</tr>
<tr>
<td>Route Codes:</td>
</tr>
<tr>
<td>SYSID:</td>
</tr>
</tbody>
</table>

PF1 =Help  PF3 =Exit  PF7 =Bkwd  PF8 =Fwd

Triggering Conditions

Asid (nnnn) The address space ID of the message that you want to be trapped. Messages from other address spaces will be ignored.

Leave this field blank to allow messages from jobs in any address space to trigger the trap.

Console(s) The console IDs that you want to trigger this trap. Messages routed to other console IDs will be ignored. You can specify 1–32 console IDs. Use commas or blanks to separate each code.

Leave this field blank to allow messages routed to any console to trigger the trap.

Days The days on which you want the trap to be triggered. The trap will be triggered only on days explicitly listed here. Use the form: MON TUE WED THU FRI SAT SUN. Note that you must enter the days in a positional manner: for example, MON—WED—FRI——.

Descriptors The descriptor codes that you want to trigger this trap. Messages that do not have at least one of these descriptor codes will be ignored. You can specify 1–16 descriptor codes. Use commas or blanks to separate each code.

Leave this field blank to allow any descriptor code to trigger the trap.
**Job classes**
The job classes that you want to trigger this trap. Messages that do not have at least one of these job classes will be ignored. You can specify 1–38 job classes. Do not use commas or blanks to separate job classes. For example, ‘ABCDE’ specifies 5 job classes. Specify a job class by a text character as follows:
- alphanumeric (A to Z, 0 to 9)
- @ for TSO users
- $ for started tasks
- Leave this field blank to allow any job class to trigger this trap.

**Jobname**
A job name pattern, system task name pattern, or TSO user ID pattern that you want to trigger this trap. The AF/OPERATOR wildcards ?, #, and * are all allowed (see AF/OPERATOR Command Reference Manual for details about wildcards). Messages with job names, task names, or user IDs that do not match this pattern are ignored.
Leave this field blank to allow any job name, system task name, or TSO user ID to trigger the trap.

**Job type**
The task types that you want to trigger this trap. Messages that are not issued from one of these job types are ignored. The options are:
- IMS for IMS MTOs
- JOB for batch jobs
- STC for system-started tasks
- TSU for TSO users
- Leave this field blank to allow any job type to trigger the trap.

**Match limit**
This field is used in conjunction with the Altact field on panel 3. Specify here a number n, where every nth time the trap is triggered, the Automation Facility issues the command specified in the Altact field instead of the command specified in the Action field.

**Route codes**
The route codes that you want to trigger this trap. Messages that do not have at least one of these route codes will be ignored. You can create a list that has up to 16 members; each member in this list must be in the 1–16 range. Use commas or blanks to separate each code.
Leave this field blank to allow any route code to trigger the trap.

**SYSID**
An SMF system ID pattern that you want to trigger this trap. The AF/OPERATOR wildcards ?, #, and * are all allowed (see AF/OPERATOR Command Reference Manual, AO53-6196., for details about wildcards). Messages with system IDs that do not match this pattern are ignored.
Leave this field blank to set the system ID to the default system SMF ID specified by the LSYSTYPE startup parameter specified in yourAF/OPERATOR startup PROC. Use an asterisk (*) to allow messages from any SMF system to trigger the trap.
Panel 3

FIGURE 12. Message Processing Options Panel 3

Extended Action

Action
An MVS operator command or an AF/OPERATOR command you want to execute if the trap is triggered. It may be an EXEC command that executes a command file or a REXX exec. It must be a single command no more than 128 characters in length. Note that leading spaces are truncated from the second input line.

If the command is an MVS operator command and the UNDFTEXT(CMD) startup option has not been specified, the OPER keyword must prefix the quoted command string.

Altact
This field is used in conjunction with the Match limit field on panel 2. Specify here an MVS command or AF/OPERATOR command that you want to execute every nth time the trap is triggered, where n is the number specified in the Match limit field. It may be an EXEC command that executes an AF/OPERATOR command file or a REXX exec.

This entry must be a single command no more than 128 characters in length. Note that leading spaces are truncated from the second input line.

If the command is an MVS operator command and the UNDFTEXT(CMD) startup option has not been specified, the OPER keyword must prefix the quoted command string.
MSMF Support

**New SYSID** The SMF system ID of the remote system that you want to receive the triggering message. This message is sent via the Multi-System Management Facility (MSMF).

*Note:* If you specified Y at the SUPPRESS field in panel 1, the message is not a candidate for MSMF and will not be sent to the remote system; it will only be suppressed on the local system.

Usage Notes for the Message Processing Options

- A WTO/WTOR triggers a WTO trap only if the trap is enabled at the time the WTO/WTOR is issued. This means, for example, that a WTO trap enabled at noon does not see any WTOs or WTORs that were issued in the morning.

- If a WTOR is sent with a route code of 9, and the reply is returned in a full reply form (such as `R nn, text;` not `nntext` or `nn, text`), the reply is suppressed. That is, when the reply is entered at the keyboard it is not echoed to the screen, it will be replaced by the word `SUPPRESSED` in SYSLOG and RKOGLOGM.

  Therefore, if you anticipate a response that is security sensitive or private (a password, for example), specify 9 in the New Route Codes field in panel 1 to prevent the response from going to any system activity logs.

- The Aotrap field in panel 1 allows you to trap messages issued by AF/OPERATOR itself. This can be useful. However, be careful that AF/OPERATOR does not reissue the same message it traps, since this will cause a nonterminating loop.

- The New SYSID field in panel 3 enables you to consolidate automation in a network to a single system or console.

- The Wait field in panel 1 allows time to set traps for subsequent messages or commands that will be issued by the address space. If the trap is designed to protect the system against some damaging action, specifying Y in the Wait field will stop the address space from doing any more damage before the Automation Facility can correct the problem.

### Important

- Never specify Y in the Wait field for messages from CONSOLE or multi-user address spaces such as ACF2, CICS, IMS, JES, or VTAM. This would suspend the address space.

- Never specify Y in the Wait field together with Y for the Aotrap field! This could suspend the Automation Facility.
Table Generator Panels

The Table Generator panels are very similar to the Message Processing Options panels described in “Message Processing Options Panels” on page 41, and their functions overlap. Consisting of two fill-in-the-blanks panels, they contain a subset of the Message Processing Options fields. They provide a way for you to globally specify certain processing options for every message in a sublist.

In addition to allowing you to globally specify immediate actions and triggering conditions (which are duplicated in the Message Processing Options panels) you use the Table Generator panels to name your sublists and specify shift start and end times during which the sublist will be active.

You can globally specify these processing options for every message in a sublist by using the change (C) option of the Message Table Resource List (see “Changing Global Sublist Parameters” on page 32).

There are two Table Generator panels. To scroll between them, use PF7 and PF8. To fill out each panel, enter the following information at each field. Note that each field is followed by a blank line. The length of this line determines the number of characters you can enter in that field. Also, context sensitive help is available for every field; press F1 with the cursor on the field (see “Using Help” on page 67.)

Note: Most fields are optional; at a minimum you need to fill in only the table name field.

Panel 1

FIGURE 13. Message Manager Table Generator Panel 1

<table>
<thead>
<tr>
<th>!Candle</th>
<th>AF/OPERATOR - MESSAGE MANAGER</th>
<th>Version Vnnn</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND ====&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MESSAGE MANAGER TABLE GENERATOR</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Enter new table name below.

NEW TABLE NAME ====> JESRMT__
SYSSID ====> SYSB START TIME ====> 0800 STOP TIME ====> 1900
SUPPRESS ====> Y (Y or N)

IF SUPPRESS IS NO
1. FOR HIGHLIGHTING, ENTER NEW OR ADDITIONAL DESCRIPTOR CODES.
   NEW: ====>
   ADD: ====>
2. FOR NEW OR ADDITIONAL DESTINATIONS, ENTER:
   NEW: ====>
   ADD: ====>

PF1 =Help PF3 =Exit
NEW TABLE NAME
A name to identify this sublist in the Message Table Resource List panel.

SYSID
An SMF system ID pattern that you want to trigger this trap. The AF/OPERATOR wildcards ? and # are all allowed (see AF/OPERATOR Command Reference Manual for details about wildcards). Messages with system IDs that do not match this pattern are ignored.
Leave this field blank to set the system ID to the local system SMF ID. Use the keyword ALL to allow messages from any SMF system to trigger the trap.

START TIME
The shift start time during which you want the command file associated with this sublist to be active. The command file will be shut down by the service subroutines during times that fall outside the defined shift. Use the format HHMM (military format).

STOP TIME
The shift end time during which you want the command file associated with this sublist to be active. The command file will be shut down by the service subroutines during times that fall outside the defined shift. Use the format HHMM (military format).

SUPPRESS
Specify Y if you want to prevent the trapped message from being displayed. The issuing address space continues (unless the WAIT option is specified) as if the message had been displayed. The message always appears in SYSLOG. Specify N if you want the message displayed normally.

NEW DESCRIPTOR CODES
A descriptor code or set of codes that you want to replace the message’s existing descriptor codes. This field affects only WTOs, not WTORs. You can specify from 1–16 replacement descriptor codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field. This field and the Add Descriptor Codes field are mutually exclusive.

ADD DESCRIPTOR CODES
A descriptor code or set of codes that you want to append to the message’s existing descriptor codes. This field affects only WTOs, not WTORs. You can specify from 1–16 new descriptor codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field. This field and the New Descriptor Codes field are mutually exclusive.

NEW DESTINATIONS
A route code or set of codes which you want to replace the message’s existing route codes. You can create a list of up to 16 replacement route codes; each member in this list must be in the 1–16 range. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field.

ADD DESTINATIONS
A route code or set of codes you want to append to the message’s existing route codes. Use commas or blanks to separate each code. This field takes effect only if you specify N in the Suppress field. You can create a list of up to 16 replacement route codes; each member in this list must be in the 1–16 range.
### Panel 2

#### FIGURE 14. Message Manager Table Generator Panel 2

<table>
<thead>
<tr>
<th>!Candle</th>
<th>AF/OPERATOR - MESSAGE MANAGER</th>
<th>Version Vnnn</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMAND ====&gt;</td>
<td>MESSAGE MANAGER TABLE GENERATOR</td>
<td></td>
</tr>
</tbody>
</table>

Input common information for all traps in this group.
Press ENTER to select from master message list.

- **Job Name**: A job name pattern, system task name pattern, or TSO user ID pattern that you want to trigger this trap. The AF/OPERATOR wildcards ?, #, and * are all allowed. Messages with job names, task names, or user IDs that do not match this pattern are ignored.
  - Leave this field blank to allow any job name, system task name, or TSO user ID to trigger the trap.

- **Job Type**: The task types that you want to trigger this trap. Messages that are not issued from one of these job types are ignored. The options are:
  - JOB for batch jobs
  - STC for system-started tasks
  - TSU for TSO users
  - Leave this field blank to allow any job type to trigger the trap.

- **Job Classes**: The job classes that you want to trigger this trap. Messages that do not have at least one of these job classes will be ignored. You can specify 1–38 job classes. Do not use commas or blanks to separate job classes. For example, ‘ABCDE’ specifies 5 job classes. Specify a job class by a text character as follows:
  - alphanumeric (A to Z, 0 to 9)
  - @ for TSO users
  - $ for started tasks
  - Leave this field blank to allow any job class to trigger this trap.

---

**Job Name**

A job name pattern, system task name pattern, or TSO user ID pattern that you want to trigger this trap. The AF/OPERATOR wildcards ?, #, and * are all allowed. Messages with job names, task names, or user IDs that do not match this pattern are ignored.

Leave this field blank to allow any job name, system task name, or TSO user ID to trigger the trap.

**Job Type**

The task types that you want to trigger this trap. Messages that are not issued from one of these job types are ignored. The options are:

- JOB for batch jobs
- STC for system-started tasks
- TSU for TSO users

Leave this field blank to allow any job type to trigger the trap.

**Job Classes**

The job classes that you want to trigger this trap. Messages that do not have at least one of these job classes will be ignored. You can specify 1–38 job classes. Do not use commas or blanks to separate job classes. For example, ‘ABCDE’ specifies 5 job classes. Specify a job class by a text character as follows:

- alphanumeric (A to Z, 0 to 9)
- @ for TSO users
- $ for started tasks

Leave this field blank to allow any job class to trigger this trap.
**ASID**
The address space ID that you want to trigger this trap. Messages from other address spaces will be ignored.
Leave this field blank to allow messages from jobs in any address space to trigger the trap.

**Match Limit**
This field is used in conjunction with the Altact field in Figure 13 on page 49. Specify here a number $n$, where every $n$th time the trap is triggered, the Automation Facility issues the command specified in the Altact field instead of the command specified in the Action field.

**Days**
The days on which you want the trap to be triggered. The trap will be triggered only on days explicitly listed here. Use the form: MON TUE WED THU FRI SAT SUN. Note that you must enter the days in a positional manner: for example, MON — WED — FRI — —.

**Console IDs**
The console IDs that you want to trigger this trap. Messages routed to other console IDs will be ignored. You can specify 1–32 console IDs. Use commas or blanks to separate each code.
Leave this field blank to allow messages routed to any console to trigger the trap.

**Descriptor**
The descriptor codes that you want to trigger this trap. Messages that do not have at least one of these descriptor codes will be ignored. You can specify 1–16 descriptor codes. Use commas or blanks to separate each code.
Leave this field blank to allow any descriptor code to trigger the trap.

**Route**
The route codes that you want to trigger this trap. Messages that do not have at least one of these route codes will be ignored. You can specify 1–16 route codes. Use commas or blanks to separate each code.
Leave this field blank to allow any route code to trigger the trap.
Userlist Generator Panels

You use the Userlist Generator panels to create or edit your master list (USERLIST). When you are brought to the Userlist Generator, the first panel you see is a menu.

FIGURE 15. Userlist Generator Menu

The options on this menu can be grouped into three categories:

- messages from an MPF list in your system (option 1)
- predefined messages (options 2-7)
- messages extracted from your SYSLOG (option 8)

Each of these options ultimately present you with a message selection list that you can scroll through and choose which messages you want to incorporate into your master list. The predefined messages are themselves message selection lists already built for you by Candle. The MPF LIST and USER DEFINED LIST options require you to provide information about your system and even perform various actions outside of the Message Manager ISPF dialog before the message selection lists can be generated.

The following subsections describe how to use each of the options. See Predefined Lists for instructions on the MPF LIST option. “Predefined Lists” on page 56 describes how to use the predefined messages. SYSLOG analysis is covered in “User-Defined List (SYSLOG Analysis)” on page 57.

MPF List

The MPF LIST option creates a message selection panel that lists messages already defined in an MPF list in your system’s SYS1.PARMLIB.

To generate an MPF selection list, use the following procedure:

1. At the Userlist Generator menu (Figure 17), select the MPF LIST option. Message Manager displays the ISPF Table Builder panel.
2. Fill out the fields as follows:

**MPFLST SUFFIX**

The 2-character suffix for the desired MPF list in your SYS1.PARMLIB dataset

**USER CMDFILE DATASET**

The name of the command file dataset specified on the Startup Defaults panel (Figure 5 on page 35). This dataset is used as a temporary work area.

3. When you’ve finished filling out the ISPF Table Builder panel, press Enter. Message Manager briefly informs you that the selection list is being built and then displays a message selection panel containing the messages from the specified MPF list.
4. Using PF7 and PF8 to scroll through all the panels, type the letter S to the left of every message you want to include in the master list.

5. When you’ve finished choosing messages, press Enter. The message SELECTED is displayed in the Status column.

6. Press PF3 to return to the Userlist Generator menu.
Predefined Lists

There are several options on the Userlist Generator menu that display a predefined selection list. The predefined lists are grouped according to the following categories:

- JES2 Aggressive List
- JES2 Conservative List
- JES3 List
- Non-JES Aggressive List
- Non-JES Conservative List
- Candle Recommended List

To select from the predefined lists, use the following procedure:

1. At the Userlist Generator menu (Figure 17 on page 55), type the number corresponding to the desired predefined list in the command field and then press Enter. Message Manager displays the selection list.
2. Using PF7 and PF8 to scroll through all the panels, type the letter S to the left of every message you want to include in the master list.
3. When you’ve finished choosing messages, press Enter. The message SELECTED is displayed in the Status column.
4. Press PF3 to return to the Userlist Generator menu.

FIGURE 18. Typical Predefined Selection List
The User-Defined List option has two functions. Its primary purpose is to analyze up to four SYSLOG datasets for messages that are heavily used on your system, based on search criteria you supply, and create a message selection panel that you can use to add these messages to your master list.

Its second purpose is to provide you with a completely blank set of Message Processing Options panels so you can add messages from scratch. This function is duplicated in the Update (U) option of the Message Table Resource List (Figure 20 on page 61) and is thoroughly described in “Updating the Master List” on page 35. For that reason, this option of the User Defined List menu is not described in this section. Instead, this section focuses on SYSLOG analysis.

Chapter Contents

Preparing for Analysis .......................................................... 58
Creating the Output Dataset .................................................. 58
Understanding How Filters are Applied ................................... 58
Performing the Analysis ....................................................... 61
Creating the Selection List .................................................... 65
Using Help ............................................................................. 67
Preparing for Analysis

Since there are so many site-dependent variables that Message Manager cannot possibly account for, Message Manager needs some help on your part to perform a successful SYSLOG analysis. As a preliminary step, you must create a special output dataset that Message Manager will use to perform some intermediate sorting. Additionally, you need to understand the order in which Message Manager filters out unwanted messages so that you can fill out the Program JCL Generator panel properly.

Creating the Output Dataset

This output dataset must have the following characteristics:

- RECORD FORMAT = FB
- RECORD LENGTH = 20
- BLOCK SIZE should be a multiple of 20. A size of 6000 will be sufficient for most sites.
- DIRECTORY BLOCKS = 0

Important

Do not attempt to run SYSLOG analysis until you have created this output dataset. Also, if you are using a control dataset (described in “Building a Control Dataset” on page 77) that contains any SELECT or COPY instructions, you may need to change the LRECL size to match the size of all selected and copied fields. If you change the LRECL size, be sure to change the block size accordingly.

You should also review your AF/OPERATOR installation to determine the exact name of the load library (ISPLLIB) where Message Manager was installed. Refer to Configuration and Customization Guide.

Once you have this information and have created the output dataset, you are ready to proceed with generating the JCL.

Understanding How Filters are Applied

The Program JCL Generator panel (Figure 20 on page 61) allows you to specify the search criteria you want to apply to the SYSLOG being analyzed. It then generates JCL from your entries and allows you to edit and submit the JCL if desired. Using this panel properly, however, requires you to understand the way messages are extracted by the JCL.

There are two different ways that Message Manager extracts messages: with the Candle-supplied extraction routine, or with a special control dataset you create to customize extraction for your SYSLOGs. Both of these methods are somewhat limited by themselves, so there are six fields on the Program JCL Generator panel that you can use to modify and augment their action.
Candle-Supplied Extraction

When you leave the CONTROL DATASET field of the Program JCL Generator panel blank, Message Manager uses the Candle-supplied extraction routine during SYSLOG analysis. This routine processes both JES2 and JES3 SYSLOGs and performs some basic filtering designed to eliminate lines of the SYSLOG that do not contain a message ID. This narrows down the number of lines that must be examined for the message IDs specified at the MESSAGE FILTER LIST field described in “Candle-Supplied Extraction” on page 59. Briefly, this filtering works as follows:

1. The 8-character message ID column of every line is examined for the following special characters: space, plus sign (+), hyphen (-), asterisk (*), and dollar sign ($). Any of these characters found at the start of the message ID column is stripped from the message ID.

2. After the special leading characters are stripped, the remaining message ID string is searched for another set of special characters: left parentheses ((), right parentheses ()), period (.), hyphen (-), and forward slash (/). If any of these characters is found imbedded in the message ID string, the line is rejected and the message will not be included in the output dataset.

Note that this filtering provided by the Candle-supplied extraction routine is not applied if you use a control dataset. If you want to emulate the Candle-supplied routine in your control dataset, refer to the examples in “Candle-Supplied Extraction” on page 59.

Control Dataset Extraction

When you enter a name at the CONTROL DATASET field of the Program JCL Generator panel, Message Manager uses the processing instructions in the specified control dataset instead of using the Candle-supplied extraction routine. Using a control dataset frees you from the structure imposed by the Candle-supplied extraction routine. With the processing instructions described in “Control Dataset Extraction” on page 59, you can write SYSLOG extraction routines that are tailored for your installation. This is especially useful for JES3 SYSLOGs because their format can vary widely, and the Candle-supplied routine for JES3 SYSLOGs may not work as desired with your JES3 SYSLOG.

The Filtering Fields

There are six other fields on the Program JCL Generator panel that relate to SYSLOG filtering. Four of them are used to pass date/time range parameters to the Candle-supplied extraction routine or to instructions in a control dataset. The other two provide filtering mechanisms that are completely independent of the Candle-supplied routine or control datasets.

These fields can be grouped into three filter types: date/time, message ID, and message counter. The three groups are applied in this fashion:
1. DATE/TIME START and DATE/TIME END are passed as range parameters to the Candle-supplied extraction routine or to DATECHECK and TIMECHECK instructions in a control dataset. In the Candle-supplied routine, these filters are applied before everything else. Only those messages whose timestamp falls within the specified date/time range are passed for further analysis. If you leave these fields blank, every message in the SYSLOG will be passed for further analysis. If you are instead using a control dataset, these filters are applied wherever you place your DATECHECK and TIMECHECK instructions; if these instructions are not present, then values you enter at these fields will have no effect.

While the DATE START and DATE END fields specify a range of days, the TIME START and TIME END fields specify a time band within each day. For example, you could use these filters to pass only messages that occur between 0800 and 1700 on any day in the Julian date range 91115 through 91145. Note that the time band cannot span midnight (0000). For example, if you specify start and end times of 1800 to 0200, all messages from midnight to 2 AM will be rejected.

2. MESSAGE FILTER LIST is applied independently of the extraction routine used. If you enter values at this field, they are applied to every line of the SYSLOG that survives the preliminary filtering done by the Candle-supplied extraction routine or by a control dataset. Only message ID substrings that exactly match the strings you specify here will be passed for further analysis. If you leave this field blank, all messages will be passed.

3. MESSAGE COUNT is also applied independently of the extraction routine used, and works in conjunction with the MESSAGE FILTER LIST field. This filter rejects the first \( n \) occurrences of a message ID passed by the MESSAGE FILTER LIST field, where \( n \) is the number you specify at this field. After that, all additional occurrences of the message ID are written to the output dataset (DD statement AOMSGDTA), which is used to create the final message selection list. If you leave this field blank, the default is to automatically reject the first 10 instances of any message ID.
Performing the Analysis

To generate the JCL needed to analyze and extract SYSLOG data, use the following procedure:

1. At the Userlist Generator menu (Figure 15), select the USER DEFINED LIST option. Message Manager displays the User Defined List menu.

2. Select the SYSLOG ANALYSIS option. Message Manager displays the JCL Generator panel.
Performing the Analysis

3. Fill out the fields as follows:

**1ST—4TH SYSLOG DATASETS**

The dataset names of the SYSLOGs you want to analyze. These names correspond to the DD statement AOSLOGIN in Figure 21 on page 64.

**OUTPUT DATASET**

The dataset name of the output dataset you created in preparation for SYSLOG analysis. This is the dataset name you’ll use later when creating the selection list as described in “Creating the Selection List” on page 65. This name corresponds to the DD statement AOMSGDTA in Figure 21 on page 64.

**CONTROL DATASET**

An optional dataset that contains SYSLOG process control instructions to prefilter the SYSLOG. If you use a control dataset, its processing instructions will replace the default settings for SYSLOG analysis, which are specific to JES2 and JES3 SYSLOGs. By writing your own control dataset (described in See “Creating a Control Dataset” on page 78), you can create a custom prefilter for your specific needs.

**DATE (YYJJJ) START and END**

The range of dates to be searched, using Julian calendar format. Messages falling outside this range are rejected from analysis. If you omit this parameter, all dates will be analyzed. The values you enter here become the $D parameter of the PARM list shown in Figure 21 on page 64.

**TIME (HH:MM:SS) START and END**

The time band within each day to be searched, using military format. Messages falling outside this band are rejected from analysis. If you omit this parameter, all times will be analyzed. The values you enter here become the $S and $E parameters of the PARM list shown in Figure 21 on page 64.

**MESSAGE FILTER LIST**

A list of message number prefixes to search for (for example, $HASP, ACF). All other message prefixes will be ignored. Use commas to delimit the strings in the list. If you omit this parameter, all message IDs will be analyzed. The values you enter become part of the PARM list shown in Figure 21 on page 64.

**STEPLIB DATASET**

The dataset name of the APF-authorized load library where AF/OPERATOR is installed. This name corresponds to the DD statement STEPLIB in Figure 21 on page 64.

**JOBCLASS**

The job class you want the submitted JCL to run under. The value you enter here becomes the CLASS= statement in Figure 21 on page 64.
Performing the Analysis

MESSAGE COUNT

The minimum number of times a message must be found before it will be written to the DD statement AOLOGRPT in Figure 21 on page 64. If you omit this parameter, Message Manager uses a default of 10. You may specify any value from 1–99. The value you enter here becomes the $C parameter of the PARM list shown in Figure 21 on page 64.

MSGCLASS

The SYSOUT class to which the JCL log should be written. The value you enter here becomes the MSGCLASS= statement in Figure 21 on page 64.

JCL DISPOSITION

The command specifying what to do with the JCL generated by this panel (E, S, or C). Specify E to proceed to the ISPF editor where you can view, edit, and submit the JCL manually. Specify S to submit the JCL as a batch job. Specify C to create the JCL and return to the User Defined List menu; you can edit and submit the JCL later using ISPF.

4. The bottom line of the JCL Generator panel displays the name of the dataset where the JCL it generates will be stored. Make note of this dataset if you plan to edit or reuse this JCL later.

5. Press Enter to generate the JCL. Depending on your entry at the JCL DISPOSITION field, Message Manager will then either return you to the User Defined List menu or exit you to ISPF where you can edit and submit the JCL manually. If you are taken to ISPF, you must manually return to the User Defined List menu to resume SYSLOG analysis.

Once the JCL has been generated, you must submit it to produce the output dataset used by the remaining steps of SYSLOG analysis. You do this in various ways depending on your entry at the JCL DISPOSITION field of the JCL Generator panel:
If you specified **E** (Edit):

1. You are taken to an ISPF edit panel containing the Message Manager-generated JCL. Examine the JCL to make sure it is correct for your site. Edit it if necessary. A typical JCL is shown in Figure 21.

**FIGURE 21. Typical JCL**

```
EDIT ---- CANDLE.AOVnnn.CMDLIB(SYSLOG) - 01.01 --------------- COLUMNS 001 072
COMMAND ===>                                                  SCROLL ===> CSR
******** ************************************ TOP OF DATA ***********************
000001 //TDSM991 JOB ,
000002 // 'SYSLOG ANALYZER',MSGLEVEL=(1,1),
000003 // REGION=4096K,CLASS=A,MSGCLASS=X,
000004 // NOTIFY=TDSM99A
000005 //ANALYZE EXEC PGM=AOLOGANA,
000006 // PARM='$/C15 $S07:30:00 $E23 $D91100,91101 $M$HASP,ACF',
000007 // REGION=4096K
000008 //STEPLIB DD DSN=CANDLE.V150.TKANMOD,DISP=SHR
000009 //SYSPRINT DD SYSOUT=* 
000010 //SYSUDUMP DD SYSOUT=* 
000011 //AOSLOGIN DD DSN=TDSM999.SYSLOG,DISP=SHR
000012 //AOCONFIG DD DSN=TDSM999.JES2.CFG,DISP=SHR
000013 //AOMSGDTA DD DSN=TDSM999.SYSLOG.TOUTPUT,DISP=OLD
000014 //SYSOUT DD SYSOUT=* 
000015 //SYSTERM DD SYSOUT=* 
000016 //AOLOGRPT DD SYSOUT=* 
******** ************************************ BOTTOM OF DATA ***********************
```

2. Submit the JCL. When it has successfully completed, return to the User Defined List menu in Message Manager.

- If you specified **S** (Submit), the JCL is submitted as a batch job. You have no chance to edit the JCL before it is submitted, so use this option carefully. Once the JCL has been submitted, Message Manager returns you to the User Defined List menu.

- If you specified **C** (Create), the JCL is created and stored in the dataset listed in the message at the bottom of the JCL Generator panel. You must manually exit to ISPF in order to edit and submit the JCL. Note that you cannot continue with SYSLOG analysis until the JCL has been submitted, because the output dataset created by the JCL is used in subsequent steps.
Creating the Selection List

The JCL you just submitted used the special output dataset you created earlier to store data needed to create the message selection list. To create the selection list, use the following procedure:

1. At the User Defined List menu, select the CREATE TABLE option. Message Manager displays the following screen:

   ![SYSLOG Analyzer Output File Panel](image)

   2. Type the name of the special output dataset you created when preparing for SYSLOG analysis. This is the same dataset you specified at the OUTPUT DATASET field in Figure 20 on page 61.

   3. Press Enter. Message Manager briefly informs you that the selection table is being built and then displays a message selection panel containing the results of the SYSLOG analysis.
Creating the Selection List

4. Using PF7 and PF8 to scroll through all the panels, type the letter S to the left of every message you want to include in the master list.

5. When you’ve finished choosing messages, press Enter. The message SELECTED is displayed in the Status column.

6. Press PF3 to return to the User-Defined List menu.

7. At the User-Defined List menu, select option X to return to the Userlist Generator panel.
Using Help

Message Manager contains context-sensitive online Help. To obtain Help about any panel, press PF1 while viewing the panel. To obtain Help for any field displayed on the panel, move the cursor into the field and press PF1. The Help provides a definition of the selected field and includes the input format and an example.

All Message Manager panels display a + or - in the More: field (located on the upper right portion of the panel) when additional information is available.

FIGURE 24. The More: Field

Use PF7 and PF8 to scroll forward (+) and backward (-) through these screens. Message Manager uses the following PF keys:

Table 2. Message Manager PF Keys

<table>
<thead>
<tr>
<th>PF</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF1</td>
<td>Displays context-sensitive help information</td>
</tr>
<tr>
<td>PF3</td>
<td>Exits Message Manager</td>
</tr>
<tr>
<td>PF7</td>
<td>Pages backward</td>
</tr>
<tr>
<td>PF8</td>
<td>Pages forward</td>
</tr>
</tbody>
</table>

Note: Other PF keys are not defined by Message Manager.
The ISPF dialog component of Message Manager only generates message list command files—it does not activate them. To initiate the message list command files and control the traps they produce, you must use the service subroutines.

Chapter Contents

Starting the Service Subroutines ................................................. 70
Monitoring Message Manager Message Lists ................................. 71
Starting the Service Subroutines

The message list command files, the traps they produce, and the service subroutines that manage the traps are all initiated by starting the control subroutine @MSTART (prefix START; see “Viewing/Editing Startup Defaults” on page 30). This command file, in conjunction with other service subroutines, initializes the Message Manager environment and starts all associated message list command files. In addition, it sets up a special trap that allows you to control groups of Message Manager traps with the command MCF.

Candle recommends that you include the @MSTART subroutine in your site’s initialization command file for AF/OPERATOR (Candle name: $$AOINIT). You do this by adding the line:

```
EX @MSTART
```

If AF/OPERATOR is already running, you can activate @MSTART before the next AF/OPERATOR recycle by issuing

```
EX @MSTART
```

from the MVS console.

**Note**: Remember, @M is the default command file name prefix. Use the prefix that you defined at the profile definition panel as described in “Viewing/Editing Startup Defaults” on page 30.
Monitoring Message Manager Message Lists

The MCF command provides an operator interface to give you additional control over traps initiated by Message Manager. It communicates with AF/OPERATOR to display and control groups of traps from the MVS console. For example, from the MVS operator console you can type:

MCF SHOW CICSPROD

at any time to show all the traps in the group created by the command file associated with the message list CICSPROD.

FIGURE 25. MCF Command Syntax

Notes:

1. The trap groups are defined names or a partial name followed by an asterisk. An asterisk used as the last character of a group name is treated as a wildcard. For example, the command MCF STATUS CICS* will show the current status of all groups associated with message lists that begin with the letters CICS.

2. If the group name is omitted or replaced by ‘?’ a selection list is presented.

3. All keywords except REFRESH can be shortened to a unique string (for example ENA for ENABLE).
The MCF keywords are:

**REFRESH**

When you enter the command `MCF REFRESH`:

1. The old copy of @MSTART is deleted.
2. The new copy of @MSTART is executed.
3. Any added groups are initialized.
4. Any group that has a new name is re-initialized.
5. Any deleted group is removed from the dataset.
6. Groups that are the same remain unchanged even if individual traps have changed within the group.

**ADD**

Executes the specified message list command file, which adds and enables all traps in the group. This keyword has no effect if the group is already active.

**DELETE**

Deletes all traps in the specified group.

**DISABLE**

Disables all traps in the specified group but does not delete them. You reenable the group with the ENABLE keyword.

**ENABLE**

Enables all traps in the specified group. This keyword has no effect unless the group was previously disabled with the DISABLE keyword.

**INITIALIZE**

All existing traps for the group are first deleted, and then they are added and enabled. This is how you implement changes to a message list.

**SHOW**

Shows all traps in the requested group or groups. If the S option is specified, the resultant display is shortened to NAME, STATUS, and PATTERN only.

**STATUS**

Displays the status of the specified group. If no group is specified, status is displayed for all groups. Group status may be one of the following:

- **Error**
  
  The group of traps was not added. Check the RKOLOGM for error messages.

- **Enabled**
  
  All traps in the group have been enabled.

- **Disabled**
  
  All traps in the group have been disabled.

- **Deleted**
  
  All traps in the group have been deleted.
When filling in fields of the Message Processing Options panels or Table Generator panels that require a *pattern* (an interpreted string that allows wildcard specifications), there are special syntax rules for expressing quotes.

In the following discussion, the word *quote* means a single quote mark (‘). The phrase *a pair of quotes* refers to ‘ ‘. The four characters “ “ are referred to as *two pairs of quotes*.

The most important thing to remember is that any field requiring a pattern automatically puts a quote at each end of the pattern when the corresponding trap is generated. AF/OPERATOR trap syntax requires that you double the number of quotes each time you move inwards when placing a quoted string inside of another quoted string. Therefore, the very first quoted string you include in a pattern should actually be enclosed in a pair of quotes. For example, if you are filling in the Action field on panel 3 of the Message Processing Options panels, you would issue an OPER command like so:

```
OPER "__________________"
```

For example, you could write:

```
OPER "$DA"
```

When Message Manager generates the corresponding trap, this becomes:

```
ACT('OPER "$DA"')
```

If you include a quoted string inside another quoted string, double the number of quotes each time you move inwards. For visual clarity, you may put blanks between sets of quotes. To check that you have the correct number of closing quotes on the right side, follow this rule: the right side always has an even number of quotes.

Continuing the above example, if you put another quoted string inside the OPER command, put four quotes at each end of the new string, like this:

```
OPER "__________________"
SEND """"________"
```
For visual clarity, you can put blanks between the groups of quotes. In this example, the blanks are represented by b:

    OPER "SEND ""HELLO""b"

Here is another example of an OPER command:

    OPER "SEND ""HELLO"",USER=(TSOID)"" CONSOLE(1)
When examining a JES2 SYSLOG you can easily determine whether a message was suppressed by looking at the hexadecimal value of byte 4 of the User Exit/MPF Request Flags field. If the last digit of byte 4 is 1, 4, or 5, the message was suppressed.

Note that the suppression can come from sources other than Message Manager; for instance, many messages are suppressed by MPF. You can determine the exact source of suppression by looking at the value of byte 4; therefore,

- if the last digit of byte 4 is 1, the message was suppressed by MPF
- if the last digit is 4, the message was suppressed by a subsystem (such as AF/OPERATOR)
- if the last digit is 5, the message was suppressed by both MPF and a subsystem

For more information on SYSLOG suppression flags, please see the IBM manual *MVS/Extended Architecture System Messages, Volume 1, ADY-IFB.*
The optional control dataset specified at the SYSLOG Analysis Program JCL Generator panel (Figure 20 on page 61) allows you to customize the way messages are extracted from a SYSLOG during analysis. As described in “Performing the Analysis” on page 61 the SYSLOG analysis feature uses a Candle-supplied extraction routine devised to exclude lines of JES2 and JES3 SYSLOGS that don’t contain valid message IDs. If you use a control dataset, then the Candle-supplied routine is completely replaced by the processing instructions in your control dataset.

Chapter Contents

Creating a Control Dataset ................................................................. 78
Two Examples of Control Dataset Use .................................................... 79
    A JES2 Example ................................................................. 79
    A JES3 Example ................................................................. 84
Control Dataset Processing Instructions ............................................... 86
Creating a Control Dataset

A control dataset must have the following characteristics:

- RECORD FORMAT = FB
- RECORD LENGTH = 80
- DIRECTORY BLOCKS = 0

You edit the control dataset using ISPF edit just the same as you would for any JCL. Make sure that the control dataset contains only the syntax described in “Control Dataset Processing Instructions” on page 86.
Two Examples of Control Dataset Use

Figure 26 on page 79 and Figure 29 on page 84 show two sample control dataset scripts: one that processes a JES2 SYSLOG and one that processes a JES3 SYSLOG. These two examples, if taken together, simulate the two parts of the Candle-supplied extraction routine that is replaced if you supply your own control dataset. Each example is followed by commentary explaining the purpose of every line in the example; you may find it helpful to refer to “Control Dataset Processing Instructions” on page 86 when reading these examples. While reading the commentary, be aware that control datasets are compiled at run time; they are not interpreted. Detailed syntax information about the control dataset processing instructions is given in “Control Dataset Processing Instructions” on page 86.

A JES2 Example

FIGURE 26. Sample Control Dataset to Process JES2 SYSLOGs

/* Default fields and lists
FIELD JES2DATEFLD 20 5
FIELD JES2TIMEFLD 26 8

LIST JES2DATEFORMAT YYJJJ
LIST JES2TIMEFORMAT HH&gml.MM&gml.SS

/* JES2 PROGRAM
LIST J2_WTO "N " "M 
LIST J2_WTOR "W 
COLUMN1 2
FIELD J2_WTO_MSG 57 8
FIELD J2_WTOR_MSG 60 8
FIELD J2_REC_TYPE 1 2
LIST J2_SELECT +-*$ {}./-
FIELD J2_SUP 54 1
LIST J2_SUP_LIST 1 4 5
FIELD J2_SYS_ID 38 8

MATCH J2_REC_TYPE J2_WTO
  DATECHECK JES2DATEFLD JES2DATEFORMAT
  TIMECHECK JES2TIMEFLD JES2TIMEFORMAT
  SELECT J2_WTO_MSG J2_SELECT
  COUNT J2_SUP J2_SUP_LIST
  COPY J2_SYS_ID FIRST
  COPY J2_SYS_ID LAST
  DONE

MATCH J2_REC_TYPE J2_WTOR
  DATECHECK JES2DATEFLD JES2DATEFORMAT
  TIMECHECK JES2TIMEFLD JES2TIMEFORMAT
  SELECT J2_WTOR_MSG J2_SELECT
  COUNT J2_SUP J2_SUP_LIST
  COPY J2_SYS_ID FIRST
  COPY J2_SYS_ID LAST
  DONE
Figure 29 contains instructions that simulate the first half of the Candle-supplied extraction routine. These instructions process a JES2 SYSLOG. Let’s examine the instructions one by one:

/* Default fields and lists

The characters /* mark this first line as a comment. Comments must always start in the first column.

FIELD JES2DATEFLD 20 5
FIELD JES2TIMEFLD 26 8

These two FIELD instructions define the columns of a JES2 SYSLOG that contain the date and time stamps for each line of the SYSLOG. The first instruction assigns a field called JES2DATEFLD and initializes it to column 20 with a length of 5 columns. The second instruction initializes the field JES2TIMEFLD to column 26 with a length of 8 columns.

LIST JES2DATEFORMAT YYJJJ
LIST JES2TIMEFORMAT HH:MM:SS

These two LIST instructions define the format in which date and time values appear in the SYSLOG. Since the Program JCL Generator panel requires users to enter the date in Julian format, and to enter the time in HH:MM:SS format, these lists tell subsequent DATECHECK and TIMECHECK instructions how to translate the panel input into the format actually used in the SYSLOG. Since this example processes a JES2 SYSLOG, the date format uses Julian notation, and the time format uses colons between the HH, MM, and SS values.

The first instruction initializes a list called JES2DATEFORMAT to the string YYJJJ, and the second instruction initializes a list called JES2TIMEFORMAT to the string HH:MM:SS.

LIST J2_WTO "N " "M 
LIST J2_WTOR "W 

These two LIST instructions define strings that will be used in a subsequent MATCH instruction. The first instruction initializes a list called J2_WTO to the strings N(space) and M(space). These signify single-line and multi-line WTOs, respectively. The second instruction initializes the list J2_WTOR to W(space), which signifies a WTOR. Note that since these strings include a space, the strings must be enclosed by double quote characters.

COLUMN1 2

This COLUMN1 instruction defines column 2 of the SYSLOG as relative column 1. All subsequent FIELD instructions will treat column 2 as column 1.

FIELD J2_WTO_MSG 57 8
FIELD J2_WTOR_MSG 60 8
FIELD J2_REC_TYPE 1 2
By now you should be getting familiar with the way FIELD instructions work, so without going into excessive detail, these three statements are initializing some more fields to column definitions that will be used by later instructions. They specify which columns contain the WTO and WTOR message IDs, and which columns contain the WTO type indicator (single- or multi-line).

\[ \text{LIST J2_SELECT} \quad +*-$.()/-] \]

This LIST instruction is initializing a list to two different strings that are used by the subsequent SELECT instructions. Note that since neither string contains blank spaces, there is no need to enclose them in quotes.

\[ \text{FIELD J2_SUP} \quad 54 \ 1 \]

\[ \text{FIELD J2_SYS_ID} \quad 38 \ 8 \]

Yet more FIELD and LIST assignments. The first FIELD instruction defines the column that contains message suppression bytes. The other FIELD instruction defines the columns that contain the SYSID of the originating system. The LIST instruction initializes a list to strings that indicate whether a message was suppressed or not. Note that the LIST instruction contains 3 different single-character strings.

\[ \text{MATCH J2_REC_TYPE J2_WTO} \]

Now that all the FIELD, LIST, and COLUMN1 assignments have been taken care of, we're ready to start processing the SYSLOG. MATCH or NOMATCH instructions are usually the first filter applied to the SYSLOG, because they are the only instruction that can alter program flow. There are no looping mechanisms in control datasets, but MATCH instructions can jump to a subsequent DONE instruction if the MATCH is false.

This particular instruction determines whether the line being examined is a WTO. It does this by checking for the strings N(space) or M(space) in the 2-column field starting at relative column 1. (Remember the earlier COLUMN1 instruction?) If neither of these strings are found, then processing jumps to the instruction immediately following the next DONE instruction, which in this case happens to be a similar MATCH instruction that determines whether the line being examined is a WTOR. If the line in question contains none of the strings being checked for by these two MATCH instructions, then processing starts over with the next line of the SYSLOG.

The statements following each MATCH instruction are very similar; one group is written for WTOs, while the other is written for WTORs. The remaining commentary applies to both groups.

\[ \text{DATECHECK JES2DATEFLD JES2DATEFORMAT} \]

\[ \text{TIMECHECK JES2TIMEFLD JES2TIMEFORMAT} \]

If the SYSLOG line being examined is identified by the MATCH statements as being a WTO or WTOR, then the remaining instructions perform some further filtering. The first of these, DATECHECK and TIMECHECK, determine whether the line’s date and time stamps fall within the range specified by the DATE START/END and TIME START/END fields of the Program JCL Generator panel (Figure 20 on page 61). If so, processing moves on to the next instruction; otherwise, processing jumps to the next DONE instruction.
SELECT J2_WTO_MSG J2_SELECT

This SELECT instruction attempts to identify whether the line being examined contains a valid message ID. If so, it extracts the message ID to an internal table (specified by the SYSOUT statements in Figure 21 on page 64) that will be used to print the report when the JCL is run, and to create the message selection list shown in Figure 23 on page 66.

It first goes to the field specified by J2_WTO_MSG and then compares the first character of that field against the first string specified in the list J2_SELECT. If any of the characters specified in the first string are found in position 1 of that field, then the SELECT instruction strips the matching character from the field. The new first character is compared in the same way, and this process continues until no more matches against the first string are found. Then, the remaining contents of the field are compared against the second string. If any one of the characters in the second string are found anywhere in the remaining field, the line is discarded and processing immediately jumps to the next DONE instruction.

Note that the list parameter used in this SELECT instruction has only two strings; you could have a third string which performs yet another kind of filtering. See “Control Dataset Processing Instructions” on page 86 for details.

COUNT J2_SUP J2_SUP_LIST

This COUNT instruction checks the column containing the User Exit/MPF Request Flags field. If it contains the digits 1, 4, or 5, it presumes the message was suppressed and creates (or increments, if already created) an internal counter associated with the message ID extracted in the previous SELECT instruction.

Note that the last page of the report generated by the JCL (DD statement AOLOGRPT, shown in Figure 28 on page 83) contains columns labeled SUPPRESSED. The value of this counter is what ends up in that column. Note that even if you use the COUNT instruction to count something other than the number of suppressed messages, this report column will still be labeled SUPPRESSED.

COPY J2_SYS_ID FIRST
COPY J2_SYS_ID LAST

These two COPY statements extract the first and last SYSIDs associated with the message ID extracted by the previous SELECT instruction. Any data extracted by a COPY instruction appears only in the JCL report, not the message selection list.
**FIGURE 27. JCL Report (AOLOGRPT) Part 1, a Partial Sample**

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>COUNTED</th>
<th>SUPPRESSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>!AOP0000</td>
<td>203</td>
<td>203</td>
</tr>
<tr>
<td>ARC0229I</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>IEF196I</td>
<td>432</td>
<td>432</td>
</tr>
</tbody>
</table>

**FIGURE 28. JCL Report (AOLOGRPT) Part 2, a Partial Sample**

<table>
<thead>
<tr>
<th>MESSAGE</th>
<th>COUNTED</th>
<th>SUPPRESSED</th>
</tr>
</thead>
<tbody>
<tr>
<td>!AOP0154</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>!AOP0000</td>
<td>203</td>
<td>203</td>
</tr>
<tr>
<td>ARC0229I</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>HASP250</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>IEF196I</td>
<td>432</td>
<td>432</td>
</tr>
</tbody>
</table>

SYSLOG: Configuration Input File: Internal Default
SYSLOG: Processing: DDN&colon.AOSLOGIN
SYSLOG: 8449 records processed 264 message numbers found
!AOP0000 S 00000203 STC00057 STC00057
!AOP0154 S 00000043 STC00057 STC00057
ACFJ207 S 00000001
ACF7995S S 00000006
ARC0026E 00000001 STC00017 STC00017
ARC0229I S 00000011 STC00017 STC00017
CSV011I S 00000001 TSU00073 TSU00073
HASP250 S 00000036 STC00008 TSU00049
HASP317 S 00000001
IEF196I S 00000432
A JES3 Example

The instructions in Figure 29 are very similar to those in the previous example. The differences address the fact that this control dataset is designed to process JES3 SYSLOGs instead of JES2 SYSLOGs. To avoid going into needless detail, the commentary for this example highlights only the differences from the previous example.
The important differences are contained in the NOMATCH and SELECT instructions. Let’s take a closer look.

```plaintext
NOMATCH J3_WTOR_MARK J3_ASTERISK
NOMATCH J3_WTOR_MARK J3_SPACE
```

Since JES3 WTORs and WTOs are both identified with an R= in columns 35 and 36 of the SYSLOG, these NOMATCH instructions provide a way to determine whether the message is a WTO or a WTOR.

```plaintext
LIST J3_EXCLUDE  +-* ()/- CLOSE
LIST J3_EXCLUDE  VIRTUAL ADDRESS BACKLOG TSONBRE INACTIVE INERROR
```

The SELECT instructions use the list J3_EXCLUDE, which differs substantially from the lists used by the SELECT instructions in the previous example. Here, J3_EXCLUDE contains 83 different strings. (Note how the multiple LIST statements are concatenated into one giant list; see Two Examples of Control Dataset Use for details.) The first two strings are used in the same manner as the previous example. All remaining strings are compared against whatever is left in the field when the first string has done its work. If any one of these strings are found anywhere in the field, then processing immediately jumps to the next DONE instruction.
Control Dataset Processing Instructions

This section describes the processing instructions you can use in a control dataset. These instructions are used only in control datasets; they are not part of the AF/OPERATOR command or automation languages. A close examination of the examples and commentary in “Two Examples of Control Dataset Use” on page 79 will aid you in coding your own control datasets.

Comments

Use a forward slash followed by an asterisk in the first two columns of each line to identify comments.

Syntax

```
/* comment-text
```

Examples

```
/*
/* This is a comment
/*
```

LIST

A data definition instruction that names and defines a set of strings, called a list, that are processed by subsequent MATCH, NOMATCH, DATECHECK, TIMECHECK, SELECT, COUNT, and COPY instructions.

Each string in the list must be separated by a space. If any string contains an imbedded space, the string must be enclosed by a pair of double quote characters ("abc def"). If the string contains a double quote, then each imbedded double quote must be represented by a pair of double quote characters ("abd""def").

There is no limit to the number of strings that can be included in a list. Since there are no line continuation symbols in the syntax for control dataset instructions, you cannot make any LIST instruction longer than one line. You can, however, use multiple LIST statements to concatenate strings to a list. For instance, the three examples below result in a single list called J2_EXCLUDE that contains 5 strings.

Syntax

```
LIST listname string/s
```

Examples

```
LIST J2_EXCLUDE PRINT STOP START
LIST J2_EXCLUDE “STRING WITH EMBEDDED SPACES”
LIST J2_EXCLUDE “STRING WITH EMBEDDED ““ “
```
FIELD

A data definition instruction that defines a range of columns within the SYSLOG, called a field, that are processed by subsequent MATCH, NOMATCH, DATECHECK, TIMECHECK, SELECT, COPY, and COUNT instructions. If the fieldname already exists, then the <startcol> and <length> values are updated.

Syntax

FIELD fieldname start-column length

Examples

FIELD J2_RECORD_TYPE 1 2
FIELD J2_MESSAGE_ID 47 8

COLUMN1

A data definition instruction that defines which column of the SYSLOG shall be considered column 1 by the FIELD instruction; that is, the <firstcol> value becomes relative column 1 for any subsequent FIELD instructions. This lets you code one control dataset that can be used for different SYSLOGs that have different start column data; all you have to do is change the first-column value.

Syntax

COLUMN1 first-column

Examples

COLUMN1 2
COLUMN1 8

MATCH

A flow control instruction that compares the contents of a field against the strings defined in a list, using an anchored substring search. If any substring of the field, starting from the first position, match any string in the list, processing continues at the next instruction following the MATCH statement. If no match is found, processing jumps to the next DONE instruction.
Syntax

MATCH fieldname listname

Examples

FIELD J2_RECORD_TYPE 1 2
LIST J2_WTO_RECORD “N” “M”
MATCH J2_RECORD_TYPE J2_WTO_RECORD

NOMATCH

A flow control instruction that works like MATCH, except if a match is found, processing jumps to the next DONE instruction. If no match is found, processing continues with the next instruction after the NOMATCH statement.

Syntax

NOMATCH fieldname listname

Examples

FIELD J2_RECORD_TYPE 1 2
LIST J2_WTO_RECORD “N” “M”
NOMATCH J2_RECORD_TYPE J2_WTO_RECORD

DATECHECK

A range selection instruction that, for every line of the SYSLOG, compares the contents of a field against the start and end dates specified on the SYSLOG Analysis Program JCL Generator panel (Figure 20 on page 61). If the field contents fall outside the range (which is inclusive), processing jumps to the next DONE instruction.

Note that DATECHECK relies on parameters passed to it from the Program JCL Generator panel. If no parameters are passed, then this instruction is not processed: processing continues with the next instruction.

Also, the panel requires users to enter the date in Julian format (YYJJJ). The list specified by listname allows you to translate the user’s Julian input into some other format such as MM/DD/YY. The list used in a DATECHECK instruction can specify any numeric date format with any special separator character; some examples are YYMMDD, YY/MM/DD, MM: DD:YY, and so forth.
Syntax

| DATECHECK fieldname listname |

Examples

FIELD J2_DATE 10 5
LIST J2_DATE_FORMAT YYJJJ
DATECHECK J2_DATE J2_DATE_FORMAT

| TIMECHECK fieldname listname |

Examples

FIELD J2_TIME 19 8
LIST J2_TIME_FORMAT HH:MM:SS
TIMECHECK J2_TIME J2_TIME_FORMAT

**TIMECHECK**

A range selection instruction that, for every line of the SYSLOG, compares the contents of a field against the start and end times specified on the SYSLOG Analysis Program JCL Generator panel (Figure 20 on page 61). If the field contents fall outside the specified time band, processing jumps to the next DONE instruction.

Like DATECHECK, TIMECHECK relies on parameters passed to it from the JCL Generator panel. If no parameters are passed, this instruction is not processed: processing continues with the next instruction.
**SELECT**

An extraction instruction that parses the contents of a field against a list. The list used in a SELECT instruction must contain at least three strings; the first two strings in the list serve a special purpose, as follows:

1. The first string in the list contains a set of characters that are compared against the character in the first column of the field. If a match is found, the character is discarded from the field. The new first character is again compared to the string, and the process continues until there are no more matches. When there are no matches, processing continues to the second string. If this process strips all characters from the defined field, then processing jumps to the next DONE instruction.

   To bypass this first level of processing, enter a null string using 2 double quote characters with no space in between ("").

2. The second string in the list contains a set of characters that are compared, one character at a time, against all of the remaining characters of the field. If any one of those characters are found in the field, processing jumps to the next DONE instruction.

   To bypass this second level of processing, enter a null string ("").

3. All remaining strings in the list are then compared against the remaining field. If any of these strings are found in the field, processing jumps to the next DONE instruction. To bypass this level of processing, don’t specify any additional strings beyond the first two described above.

Any field that survives these three operations is then written to the output dataset (AOMSGDTA) and to the JCL report (AOLOGRPT).

**Syntax**

```
SELECT fieldname listname
```

**Examples**

```
FIELD J2_WTO_ID 47 10
LIST J2_WTO_SELECT +-* .() TEST CONSOLE PRINTER
SELECT J2_WTO_ID J2_WTO_SELECT
```

**COUNT**

A counter-incrementing instruction that works in conjunction with the SELECT instruction. It compares the contents of a field against the strings defined in a list. If the contents of the field match any string in the list, a counter associated with the string extracted by the preceeding SELECT statement is incremented by a value of one.

There should be only one COUNT instruction per SELECT instruction.
Syntax

| COUNT fieldname listname |

Examples

FIELD J2_SUPPRESS 60 1
LIST J2_SUPPRESS_LIST 1 2 3 4 5 6 7 8 9 a b c d e f
LIST J2_SUPPRESS_LIST A B C D E F
SELECT J2_WTO_ID J2_WTO_SELECT
COUNT J2_SUPPRESS J2_SUPPRESS_LIST

COPY

An extraction instruction that works in conjunction with the SELECT instruction. COPY allows you to extract additional information from lines that pass the tests applied by a SELECT instruction and add this data to the JCL report (AOLGRPT). Data extracted by COPY is not written to the output dataset (AOMSGDTA).

Unlike the SELECT instruction, data extracted by the COPY instruction does not show up in the final message selection list created by Message Manager—it appears only on reports generated by the SYSOUT statements in your JCL.

The second parameter of the instruction must be one of the keywords FIRST, LAST, or ALL where:

<table>
<thead>
<tr>
<th>FIRST</th>
<th>Copy the field contents only the first time the string extracted by the preceeding SELECT instruction is encountered.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAST</td>
<td>Copy the field contents each time the string extracted by the preceeding SELECT instruction is encountered, replacing the current value with the new value. This has the effect of saving only the last value.</td>
</tr>
<tr>
<td>ALL</td>
<td>Copy the field contents each time the string extracted by the preceeding SELECT instruction is encountered.</td>
</tr>
</tbody>
</table>
Syntax

COPY \texttt{fieldname} \begin{tabular}{l} FIRST \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ LAST \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ ALL \end{tabular} \ <

Examples

\begin{verbatim}
FIELD J2_WTO_ISSUER 55 8
FIELD J2_WTO_ID 47 10
LIST J2_WTO_SELECT +-* .() TEST CONSOLE PRINTER
SELECT J2_WTO_ID J2_WTO_SELECT
COPY J2_WTO_ISSUER FIRST
COPY J2_WTO_ISSUER LAST

FIELD J2_WTO_ISSUER 55 8
FIELD J2_WTO_ID 47 10
LIST J2_WTO_SELECT +-* .() TEST CONSOLE PRINTER
SELECT J2_WTO_ID J2_WTO_SELECT
COPY J2_WTO_ISSUER ALL
\end{verbatim}

\begin{tabular}{|l|l|}
\hline
\textbf{DONE} & A flow control instruction that acts as a target point for all preceeding MATCH, NOMATCH, DATECHECK, TIMECHECK, and SELECT instructions. When the last DONE instruction of the control dataset is encountered, processing starts over again with the next line of the SYSLOG. A DONE is implied at the end of a control dataset. \\
\hline
\end{tabular}

Syntax

\begin{verbatim}
DONE
\end{verbatim}
Introduction

Candle Corporation is committed to producing top-quality software products and services. To assist you with making effective use of our products in your business environment, Candle is also committed to providing easy-to-use, responsive customer support.

Precision, speed, availability, predictability—these terms describe our products and Customer Support services.

Included in this Guide to Candle Customer Support is information about the following:

Base Maintenance Plan .......................................................... 94
  – Telephone Support
  – eSupport
  – Description of Severity Levels
  – Service-level objectives
  – Recording and monitoring calls for quality purposes
  – Customer Support Escalations
  – Above and Beyond

Enhanced Support Services .................................................. 98
  – Assigned Support Center Representative (ASCR)
  – Maintenance Assessment Services (MAS)
  – Multi-Services Manager (MSM)

Customer Support Contact Information ................................. 99
  – Link to Worldwide Support Telephone and E-mail information
Base Maintenance Plan

Overview

Candle offers a comprehensive Base Maintenance Plan to ensure that you realize the greatest value possible from your Candle software investments. We have more than 200 technicians providing support worldwide, committed to being responsive and to providing expedient resolutions to support requests. Technicians are available worldwide at all times during the local business day. In the event of an after-hours or weekend emergency, our computerized call management and forwarding system will ensure that a technician responds to Severity One situations within one hour. For customers outside of North America, after-hours and weekend support is provided in English language only by Candle Customer Support technicians located in the United States.

Telephone support

Candle provides consistently reliable levels of service—thanks to our worldwide support network of dedicated experts trained for specific products and operating systems. You will always work with a professional who truly understands your problem.

We use an online interactive problem management system to log and track all customer-reported support requests. We give your support request immediate attention by routing the issue to the appropriate technical resource, regardless of geographic location.

**Level 0 Support** is where your call to Candle Customer Support is first handled. Your support request is recorded in our problem management system, then transferred to the appropriate Level 1 support team. We provide Level 0 manual interaction with our customers because we support more than 170 products. We feel our customers would prefer personal interaction to a complex VRU or IVR selection menu.

**Level 1 Support** is the service provided for initial support requests. Our Level 1 team offers problem determination assistance, problem analysis, problem resolutions, installation assistance, and preventative and corrective service information. They also provide product usage assistance.

**Level 2 Support** is engaged if Level 1 cannot provide a resolution to your problem. Our Level 2 technicians are equipped to analyze and reproduce errors or to determine that an error is not reproducible. Problems that cannot be resolved by Level 2 are escalated to Candle’s Level 3 R&D support team.

**Level 3 Support** is engaged if a problem is identified in Candle product code. At Level 3, efforts are made to provide error correction, circumvention or notification that a correction or circumvention is not available. Level 3 support provides available maintenance modifications and maintenance delivery to correct appropriate documentation or product code errors.
eSupport

In order to facilitate the support process, Candle also provides eSupport, an electronic full-service information and customer support facility, using the World Wide Web at www.candle.com/support/. eSupport allows you to open a new service request and update existing service requests, as well as update information in your customer profile. New and updated service requests are queued to a support technician for immediate action. And we can respond to your request electronically or by telephone—it is your choice.

eSupport also contains a continually expanding knowledge base that customers can tap into at any time for self-service access to product and maintenance information.

The Candle Web Site and eSupport can be accessed 24 hours a day, 7 days a week by using your authorized Candle user ID and password.

Description of Candle severity levels

Responses to customer-reported product issues and usage questions are prioritized within Candle according to Severity Code assignment. Customers set their own Severity Levels when contacting a support center. This ensures that we respond according to your individual business requirements.

Severity 1
Crisis
A crisis affects your ability to conduct business, and no procedural workaround exists. The system or application may be down.

Severity 2
High
A high-impact problem indicates significant business effect to you. The program is usable but severely limited.

Severity 3
Moderate
A moderate-impact problem involves partial, non-critical functionality loss or a reasonable workaround to the problem. A “fix” may be provided in a future release.

Severity 4
Low
A low-impact problem is a “how-to” or an advisory question.

Severity 5
Enhancement Request
This is a request for software or documentation enhancement. Our business units review all requests for possible incorporation into a future release of the product.
Candle has established the following service-level objectives:

<table>
<thead>
<tr>
<th>Call Status</th>
<th>Severity 1 Goal</th>
<th>Severity 2 Goal</th>
<th>Severity 3 Goal</th>
<th>Severity 4 Goal</th>
<th>Severity 5 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Call Time to</td>
<td>90% within one minute</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Answer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 1 Response</td>
<td>90% within 5 minutes</td>
<td>90% within one hour</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Normal Business</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2 Response</td>
<td>Warm Transfer</td>
<td>90% within two hours</td>
<td>90% within eight hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Normal Business</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scheduled</td>
<td>Hourly or as agreed</td>
<td>Daily or as agreed</td>
<td>Weekly or as agreed</td>
<td>Notification is made when an enhancement is incorporated into a generally available product.</td>
<td></td>
</tr>
<tr>
<td>follow-up (status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>update)</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The above information is for guideline purposes only. Candle does not guarantee or warrant the above service levels. This information is valid as of October 1999 and is subject to change without prior notice.

Recording and Monitoring Calls for Quality Purposes

Candle is committed to customer satisfaction. To ensure that our customers receive high levels of service, quality and professionalism, we’ll monitor and possibly record incoming and outgoing Customer Support calls. The information gleaned from these calls will help us serve you better. If you prefer that your telephone call with Candle Customer Support in North America not be monitored or recorded, please advise the representative when you call us at **(800) 328-1811** or **(310) 535-3636**.

Customer Support Escalations

Candle Customer Support is committed to achieving high satisfaction ratings from our customers. However, we realize that you may occasionally have support issues that need to be escalated to Candle management. In those instances, we offer the following simple escalation procedure:

If you experience dissatisfaction with Candle Customer Support at any time, please escalate your concern by calling the Candle support location closest to you. Ask to speak to a Customer Support manager. During standard business hours, a Customer Support manager will be available to talk with you or will return your call. If you elect to hold for a manager, you will be connected with someone as soon as possible. If you wish a return call, please tell the Candle representative coordinating your call when you will be available. After contacting you, the Customer Support manager will develop an action plan to resolve your issue. All escalations or complaints received about support issues are logged and tracked to ensure responsiveness and closure.
Above and Beyond

What differentiates Candle’s support services from our competitors? We go the extra mile by offering the following as part of our Base Maintenance Plan:

- Unlimited multi-language defect, installation and operations support
- eSupport using the World Wide Web
- Regularly scheduled product updates and maintenance provided at no additional charge
- Over 200 specialized technicians providing expert support for your Candle products
Enhanced Support Services

Overview

Our Base Maintenance Plan provides a high level of software support in a packaged offering. However, in addition to this plan, we have additional fee-based support services to meet unique customer needs.

The following are some examples of our added-value support services:

- **Assigned Support Center Representative Services (ASCR)**
  - An assigned focal point for managing support escalation needs
  - Proactive notification of available software fixes
  - Proactive notification of product version updates
  - Weekly conference calls with your ASCR to review active problem records
  - Monthly performance reviews of Candle Customer Support service levels
  - Optional on-site visits (extra charges may apply)

- **Maintenance Assessment Service (MAS)**
  - On-site assessment services
  - Advice about product maintenance and implementation
  - Training your staff to develop efficient and focused procedures to reduce overall cost of ownership of your Candle software products
  - Analysis of your Candle product environment: versions, updates, code correction history, incident history and product configurations
  - Reviews to ensure that purchased Candle products and solutions are used effectively

- **Multi-Services Manager (MSM)**
  Multi-Services Manager provides highly valued services to customers requiring on-site full time expertise to complement their technical resources.
  - Dedicated on-site Candle resource (6 months or one year) at your site to help ensure maximum use and effectiveness of your Candle products
  - Liaison for all Candle product support activities, coordination and assistance with implementation of all product updates and maintenance releases
  - Works with your staff to understand business needs and systems requirements
  - Possesses technical and systems management skills to enhance your staff’s knowledge and expertise
  - Other projects as defined in Statement of Work for MSM services
Customer Support Contact Information

Link to Worldwide Support Telephone and E-mail information

To contact Customer Support, the current list of telephone numbers and e-mail addresses can be found on the Candle Web site, www.candle.com/support/.

Select Support Contacts from the list on the left of the page.
Symbols

@M 70
@MCNTL subroutine 20
@MSTART subroutine 20, 70

A
action (extended) 47
activating command files 69
adding sublists 28
address space ID
  global trigger for sublist 52
  trigger for a single message 45
Adobe portable document format 9
AF/OPERATOR language 18
ALTABL 22
alternate action 47
AOSTSO 22
AOTRAP/NOAOTRAP parameter 43
ASCR
  assigned support center representative 98
  See address space ID trigger
  assigned support center representative
    ASID 98
  automation language 18

B
blanks, used in a pattern 43
browsing message lists 39

C
Candlerecommended list 56
Candle-supplied extraction routine 59
cfile
  See command file
changing
  master list 35
  sublists 36
COLUMN1 instruction 87
command file 19, 31, 40, 69, 72
  defined 18
command file dataset 31
command, MCF
  See MCF command components
  ISPF dialog 19
managing
  difference from standard command files 19
message list command file 19
service subroutines 20
configuring startup defaults 25
initializing startup defaults 30
console ID
  global trigger for sublist 52
  trigger for a single message 45
control dataset 86, 87, 88, 89, 90, 91, 92
  building 77
  difference from Candle-supplied extraction
    routine 59
  examples 79
  processing instructions 86
  requirements 78
COUNT instruction 90
creating sublists 28
customer support
  base maintenance plan 94
  contact information 99
  enhanced support services 98
eSupport 95
  severity levels 95
telephone support 94
datasets SYSLOG 62
DATECHECK instruction 88
day of week
  global trigger for sublist 52
  trigger for a single message 45
Days 45
defaults
defined
defined terms
  command file 18
  ISPF dialog 19
  master list
    USERLIST
  operational overview 18
output dataset 58
service subroutines
startup defaults
sublists
deleting
sublists

Index
master list 33
descriptor codes
append for a single message 44
global append for sublist 50
global replacement for sublist 50
global trigger for sublist 52
replacement for a single message 44
trigger for a single message 45
dialog
defined 19
dialog component
See ISPF dialog
disabling/enabling 43
DONE instruction 92

E
ENABLE/DISABLE parameter 43
environment, test 22
eSupport
customer support 95
extended action 47
extended actions 21
disabling/enabling 43

F
FIELD instruction 87
filters
Candle-supplied extraction routine 59
filters on JCL Generator panel 59
how applied 58
flags, suppression 75

G
generating JCL for SYSLOG analysis 61
generating message list command files 40
global 50
address space ID trigger for sublist 52
changing parameters for a sublist 32
console ID trigger for sublist 52
day of week trigger for sublist 52
descriptor code append for sublist 50
descriptor code trigger for sublist 52
job class trigger for sublist 51
job name trigger for sublist 51
job type trigger for sublist 51
match limit for sublist 52
message suppression for sublist 50
route code append for sublist 50
route code replacement for sublist 50
route code trigger for sublist 52
start time for sublist 50
stop time for sublist 50
system ID trigger for sublist 50

H
help panels, using 67

I
IHAHCLOG 75
immediate actions 21, 43
for a single message
extended actions 43
global for sublist
initialization 70
initializing 72
initializing startup defaults 25
ISPF dialog
first time use 25
overview
navigation 24
ISPF tables 22
ISPTLIB 22
ALTABL 22

J
JCL, generating for SYSLOG analysis 61
JES2 aggressive list 56
JES2 conservative list 56
JES2 SYSLOG suppression flags 75
JES3 list 56
job class
global trigger for sublist 51
trigger for a single message 46
job name
global trigger for sublist 51
trigger for a single message 46
job type
global trigger for sublist 51
trigger for a single message 46

L
language
REXX
AF/OPERATOR 18
LIST instruction 86
LOG/NOLOG parameter 43

M
maintenance assessment service
MAS 98
MAS
maintenance assessment service 98
master list
deleting 33
master list
  browsing 39
  defined 21
  generating for first time use 25
  updating 35
MATCH instruction 87
match limit
  for a single message 46
  global for sublist 52
MCF command 20
  ADD keyword 72
  DELETE keyword 72
  DISABLE keyword 72
  ENABLE keyword 72
  INITIALIZE keyword 72
  REFRESH keyword 72
  See MCF command
  SHOW keyword 72
  STATUS keyword 72
message list
  See master list
  See sublist
     defined
  See sublists
message list command file
  activating 69
  controlling
     managing 69
     defined
     creating 19
     deleting 72
  disabling 72
  displaying all traps 72
  enabling 72
  executing 72
  generating 40
  initializing 72
  prefix 31
  refreshing 72
  See command file
  showing status 72
message log 43
message processing options 43, 48, 51
  changing 41
  description 21
  generated traps 41
  global application 21
  global options for a list 49
  immediate actions
     extended actions 21
  multi-system management facility (MSMF) 21
options for a single message 41
predefined lists 56
trap control 43
trap identification 42
WTO Pattern
  triggering conditions 21
message processing options panels 41
message suppression 75
  See suppression
message table name 31
message table resource list
  See resource list
messages
  adding to master list 35
  adding to sublists 36
  modifying 36
  master list 35
  monitoring sublists
MPF list option 53
MSM
  multi-services manager 98
  multi-services manager
     MSM 98
  multi-system management facility (MSMF) 21
N
naming sublists 50
navigation, ISPF dialog 24
NOMATCH instruction 88
Non-JES aggressive list 56
Non-JES conservative list 56
O
output dataset, defined 58
P
patterns
  blanks in a pattern 43
  rules for quotes 73
  wildcard characters 43
predefined lists 56
prefix, trap, variable, and command file 31
printing problems 9
processing instructions
  COLUMN1 87
  comments 86
  COPY 91
  COUNT 90
  DATECHECK 88
  DONE 92
  FIELD 87
  LIST 86
  MATCH 87
  NOMATCH 88
SELECT 90
TIMECHECK 89
profile definition
See startup defaults

Q
quoted string 73
quotes

definition 73
rules for traps 73

R
REFRESH 72
resource list
accessing
using 26
panel options
functions 26
RETAIN*VIEW facility 43
RETAIN/NORETAIN parameter 43
REXX language 18
RKOGLOGM 43
route codes
append for a single message 44
global append for sublist 50
global replacement for sublist 52
replacement for a single message 44
trigger for a single message 46
rules for quotes in patterns 73

S
SELECT instruction 90
service subroutines
defined
@MSTART
@MCNTL 20
starting
@MSTART 70
using 69
severity levels
customer support 95
start time for sublist 50
Starting 70
startup defaults
command file dataset 31
defined
functions 30
message table name 31
See startup defaults
configuring
steplib dataset 58
stop time for sublist 50
strings, quoted 73
sublists 21
adding 28
browsing 39
changing global parameters 32
deleting 33
global address space ID trigger 52
global console ID trigger 52
global day of week trigger 52
global descriptor code append 50
global descriptor code replacement 50
global descriptor code triggers 52
global job class trigger 51
global job name trigger 51
global job type trigger 51
global match limit 52
global route code append 50
global route code replacement 50
global route code trigger 52
global start time 50
global stop time 50
global suppression 50
global system ID trigger 50
monitoring 71
naming 50
updating 36
submitting JCL for SYSLOG analysis 63
subroutines
See service subroutines
suppression
for a single message 44
global for sublist 50
SYSID 46
See system ID
SYSLOG analysis
Candle-supplied extraction routine 59
creating the selection list 65
generating the JCL 61
how filters are applied 58
output dataset 58
purpose 57
steplib dataset 58
submitting the JCL 63
using a control dataset 59
SYSLOG datasets 62
syslog datasets 75
SYSLOG suppression flags 75
system ID
global trigger for sublist 50
trigger for a single message 46
T

table name, message 31
table resource list
  See resource list
telephone support
customer support 94
test environment 22
TEST/NOTEST parameter 43
TIMECHECK instruction 89
traps 72
  action (extended) 47
  adding 72
  address space ID trigger 45
  alternate action 47
AOTRAP/NOAOTRAP parameter 43
capabilities and restrictions 41
console ID trigger 45
controlling 43, 69
day of week trigger 45
deleting 72
description 42
descriptor code append 44
descriptor code replacement 44
descriptor code trigger 45
disabling 72
displaying 72
ENABLE/DISABLE parameter 43
enabling 72
extended action 47
identification 42
job class trigger 46
job name trigger 46
job type trigger 46
LOG/NOLOG parameter 43
match limit 46
message ID 42
message suppression 44
prefix 31
refreshing 72
RETAIN/NORETAIN parameter 43
route code append 44
route code replacement 44
route code trigger 46
showing status 72
specifying response
  rules for quotes 73
system ID trigger 46
TEST/NOTEST parameter 43
WAIT/NOWAIT parameter 43
WTO pattern 43
triggering conditions 21
  global for sublist 51

TSO interface 22

U

updating
  master list 35
  sublists 36
usage notes 48
user-defined list 57
USERLIST
  See master list
userlist generator panels
  MPF list option 53
  purpose 53
  user-defined list option
    SYSLOG analysis 57

V

variable prefix 31

W

WAIT/NOWAIT parameter 43
warn mode 43
wildcard characters 43
WTO pattern 43