ROPES

Remote Online Print Executive System
Version 17.0

Administrator's Guide

PREFACE

This publication contains information necessary for the installation, maintenance and operation of the Remote Online Print Executive System (ROPES), a proprietary program product used to manage a network of printers in the CICS interactive environment. It provides data processing managers, system programmers, application programmers and operating personnel with the information required to effectively use this product.

Information in this publication is subject to significant change.

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Contents

Introduction

What This Manual Contains

This manual is intended to guide the ROPES installer and administrator through the steps required to:

- install ROPES
- customize ROPES for your installation
- establish and maintain the ROPES control files
- archive report data
- audit ROPES activities
- account for ROPES usage
- secure ROPES, and
- tailor and use the ROPES exits.

Each chapter in the manual addresses one or more of these subjects.

Other ROPES related activities are documented in the other ROPES manuals. The Related Publications lists those manuals and summarizes their contents.

Just a brief note on a notation used in this manual. Wherever you see <hlq> in a data set name we are referring to the **h**igh **l**evel **q**ualifier you choose to use when installing the ROPES data sets. You should always substitute that value when you actually refer to the data sets in JCL, and you will need to make this information available to any programmers or users that might need this information in the course of their work.

Related Publications

In addition to this manual, there are five other ROPES publications. Your installation was supplied with at least one copy of each of these manuals in Adobe Acrobat (PDF) format. You may print any copies you require for your company's use, but remember that this material is licensed to your company and may not be distributed outside of your organization.

General Information Manual

This manual contains an introduction to ROPES with an overview of the functionality ROPES provides.

User's Guide

This manual is intended for end-users of ROPES. It explains the various ROPES status displays, the ROPES commands and transactions used to control ROPES, the JES transfer facility used to retrieve output from JES for printing by ROPES, and it documents the report browsing transaction.

Programmer's Guide

This manual is intended for programmers that will be interfacing application programs to ROPES through the ROPES Application Programming Interface. The ROPES sample programs are also documented here.

Utilities Guide

This manual is intended for programmers that will be using the ROPES utility programs. The ROPES sample programs are also documented here.

Messages and Codes

This manual is intended for administrators, programmers and end users that will be using the various functions of ROPES. It contains a complete list of the ROPES messages and codes with descriptions and suggested user actions when appropriate.

Installation

This section provides you with the instructions necessary to plan for and install the ROPES software provided in the distribution materials. It contains the step by step instructions necessary to unload the distribution materials, create the ROPES libraries, install the ROPES starter system and incorporate ROPES into your CICS system.

ROPES installation consists of the following steps:

- Planning the ROPES installation.

- Load the ROPES Starter System Files and Distribution Libraries onto disk.

- Add the required CICS table entries.

- Add the JCL statements to the CICS execution step.

- Bring up and test ROPES.

Planning The Installation

Planning for ROPES is easy.

You have only to review a few sections of this manual, perform the simple steps to load the ROPES software and Starter System onto your system, and configure the ROPES Control Information using the Maintenance Transactions.

You should also review your CICS system definition to insure that the few specific requirements ROPES places on your system are met. Those specific requirements are defined here.

The planning steps you should follow are:

1. Review the installation steps. Be sure that you have the necessary disk space available to load the ROPES Libraries and Starter System Files. The figures given in the installation instructions will provide adequate space for the libraries and provide room for expansion to accommodate maintenance and enhancements that may be released in the future.

2. Review the Maintenance section of this manual. Examine the various parameters for System Control, Report Definition and Printer Definition. Some of the decisions you make regarding transaction identifiers in the CICS PCT may require changes to this control information.

3. Review the Auditability and Accounting section of the manual. If you elect to use the ROPES Message Log Queue, you must create or select a CICS Transient Data Destination to receive the messages that are logged by ROPES. The destination must be capable of processing records that are 133 bytes long. If you elect to use the ROPES Accounting Destination you must create or select a CICS Transient Data Destination to receive the accounting records that are written by ROPES. The destination must be capable of processing records that are 100 bytes long. You may change these parameters at a later time .

4. Review the Archiving section of the manual. If you elect to use the ROPES Archiving Facility you must create or select a CICS Transient Data Destination to receive the archived data. The destination must be capable of processing variable length records up to 4096 bytes in length.

5. Review the Security section of the manual. You should be aware of the exits provided that will permit you to enforce the security policies of your organization. In addition, you should decide on the level of security to be applied to those functions of ROPES that do not have security exits. These functions can be secured at the Transaction Security level through the CICS PCT and SNT.

6. The ROPES Spool Transfer Facility allows you to retrieve data stored on the JES spool. In the MVS environment, this facility requires the use of an SVC and an MVS subtask. Review the installation steps for this facility later in this section. If you elect to install this facility in an MVS environment you must select an SVC and install the ROPES SVC module as indicated.

7. Review the Report Distribution Utility in the ROPES Utilities Manual. This utility may require the creation of one or more extrapartition transient data destinations.

8. Review the Job Submission Utility in the section "Job Submission Facility Installation" and in the ROPES Utilities Guide. This facility of ROPES requires an extra-partition transient data destination. A sample of this extra-partition transient data destination can be found in the ROPES distribution source library in member ROPESDCT.

9. Review the JES Printer Support description later in this chapter. If you elect to use this facility, one or more intrapartition transient data definitions will be required.

10. Review the information regarding the Alternate Facility later in this chapter. Data set definitions and other considerations apply to the use of this feature.

11. Review the Programmer's Guide for information on the "ROPES E-mail Interface" for information on customizing this feature. Initial installation is carried out by the Installation steps described in the next section. If you wish to implement the E-mail facility, you will have to customize the sample DCB (RO$DSMTP), or create a new one. An SMTP type printer definition will have to be created pointing to your new DCB. New or existing applications may have to be changed if you wish to provide any of the e-mail controls through the report data.

12. Review the Programmer's Guide for information on the creation of PDF and HTML files and e-mail attachments. Sample ROPES Forms Control Blocks (FCB) are provided that illustrate both of these features (RO$FPDFM and RO$FHTML).

13. Review the Programmer's Guide under the section on "The TCPIP/LPR Remote Print Feature" if you have a need to submit output to IP printers. This feature supports printing reports over the Internet or Intranet using TCPIP defined printers. This feature is installed by the primary installation process, but will require some customization described in the Programmer's Guide and Administrator's Guide. A sample DCB is provided in the source

library with the name RO$DLPRD. Please consult the section on customizing the ROPES Device Characteristics Block for more information about the relevant LPR parameter(s). Please consult the sections in this guide on the use of the "LPR Options Index Screen, and the "LPR Options Definition Screen" for more information on the parameters that control the LPR interface.

14. Finally, the following features of CICS are used by ROPES and must, therefore, be available:
   - VSAM data sets
   - Temporary Storage for Interval Control Task initiation
   - BMS and BMS message routing and cumulative page building
   - Transient Data as described in this manual
   - The DFHINQUI group is required in the CICS tables to define the Inquire and Set functions.
   - TCP/IP and CICS Sockets is required if you intend to use the ROPES E-mail delivery features and/or the LPR Printing features.

Installation Steps

STEP 1. Load the ROPES Distribution Libraries and Files onto Disk

Introduction

You have received your ROPES shipment in one of the following ways:
   - in an E-mail, in the form of a .zip file
   - as a download from our web site, in the form of a .zip files
   - on a CD, in the form of an .xmi file (TSO Transmit)

Space Requirements

Figure 1 on page 20 shows you the space requirements for the files to be installed on your system. If you are installing from CD or E-mal, the files ROPES.DISTMAST.PDS.XMI will be uploaded by you and ROPES.DISTMAST.PDS will be built by

you from the .xmi file. Both of these files can be removed after the execution of job stream RECEIVE when required, below. The other files are extracted from the PDS file with the FULLINST job.

Procedure

For e-mail or web site downloads:

1. Unzip the zip file into a new, empty directory. You will find four text files in the directory where you unzipped the zip file. These files will help you with the next steps. These files are:

   - SENDROPES.CMD which will execute the standard FTP program using the commands in the file SENDROPES.TXT.

   - SENDROPES.TXT, which contains the FTP commands.   Edit this file to your installation's requirements, then execute the SENDROPES.CMD file. This will place the ROPES .xmi version of the distribution PDS file on your host, as well as the RECEIVE.JCL file which is used in the following step.

   - RECEIVE.JCL, which will perform the RECEIVE process to convert the .xmi file to the distribution PDS.

2. Transfer the distribution file (it has the .xmi extension), and the job stream to your host, using the SENDROPES.CMD and SENDROPES.TXT files.

3. Next, edit and run the RECEIVE.JCL job stream to convert ("RECEIVE") the .xmi file to its normal mainframe format. This job runs on your host.

4. Next, edit and run the FULLINST job stream, in the newly created distribution PDS, to restore the ROPES distribution files. This job also runs on your host.

5. After you have run this job, pick up the installation process at the point below called "All Users Resume Here."

For distributions on CD:

1. You will find four text files in the software directory of the CD. These files will help you with the next steps. These files are:

   - SENDROPES.CMD which will execute the standard FTP program using the commands in the file SENDROPES.TXT.

   - SENDROPES.TXT, which contains the FTP commands.   Edit this file to your installation's requirements, then execute the SENDROPES.CMD file. This will place the ROPES .xmi version of the distribution PDS file on your host, as well as the RECEIVE.JCL file, which is used in the following step.

   - RECEIVE.JCL, which will perform the RECEIVE process to convert the .xmi file to the distribution PDS.

2. Transfer the installation file (it has the .xmi extension, located in the subdirectory "Software"), and the RECEIVE.JCL job stream to your host, using the SENDROPES.CMD and SENDROPES.TXT files.

3. Next, edit and run the RECEIVE.JCL job stream to convert ("RECEIVE") the .xmi file to its normal mainframe format. This job runs on your host.

4. Next, edit and run the FULLINST job stream, in the newly created distribution PDS, to restore the ROPES distribution files. This job also runs on your host.

All Users Resume Here

Create the Load Module Library

Now, allocate the Load Module Library and link-edit the members of the object library to produce the load modules. Edit member LINKCNTL in the ROPES Source library. Please note that we have already specified the AMODE and RMODE values necessary to put as many ROPES modules above the line as possible.   You may change RMODE(ANY) to RMODE(24) if you wish, but, and this is very important, **you must not change any RMODE(24) to RMODE(ANY)!!**.   If you wish to change the program prefix names for the Report Distribution Facility programs, please consult Step 2 for information about the RUNBUILD job and the program prefix parameter option before proceeding with the link-edit.

After you have edited the job stream, run the job to create the ROPES Load Module library.

Most of the modules will be link-edited with the RENT option, as they are reentrant. Please do not change this setting. The modules that are not linked with the RENT option must not be marked as reentrant. To do so will create problems during execution later.

The ROPES Batch Application Interface programs have been assembled with AMODE(31). These programs may be link-edited with RMODE(24) or RMODE(ANY), at the user's discretion.

The following guidelines should be observed regarding the batch application interface modules used with COBOL applications:

User Application RMODE	Application Compile Options	ROPES Linkage Option
24	NORES,NODYNAM	RMODE(ANY)
31	NORES,NODYNAM	RMODE(ANY)
24	RES,DYNAM	RMODE(24)
31	RES,DYNAM	RMODE(ANY)

If your shop runs a mix of RMODE 24 and RMODE ANY ROPES batch applications, and uses dynamic subroutine linkage, you must link the ROPES service routines with RMODE(24) to insure full compatibility. If you wish to take advantage of ROPES's ability to support RMODE(ANY) programs, you must create a separate library with the three modules and link-edit them with RMODE(ANY).

The batch application programming interface modules should be re-link-edited with RMODE(24). Extract the linkage editor controls from source library member LINKCNTL for modules ROPEADDR, ROPEBIP and ROPEBSRV. Change the RMODE value to 24 and rerun the link-edit.

Test ROPES V16 and above for Compatibility With Your Machine

Starting with ROPES V16.0, ROPES requires a z/Architecture environment. To be sure that your system will support ROPES, you must edit and execute the job stream in ROPES.SOURCE library member RUNOPCC. The job should end with a condition code of 0, and this message should appear in the job's ROPELST SYSOUT data:

** ROPEOPCC found all opcodes valid on this system.

If you do not get this message or condition code, please preserve the output and contact Technical Support. Do not go any further in the installation until this issue is resolved.

STEP 2. Complete the installation of the ROPES Starter System Data Sets

The distribution materials contain demonstration data for the ROPES data sets. We call this the Starter System. The Starter System files were restored along with the libraries in the first installation step. In order to plan for a permanent ROPES installation, we have included a detailed description of each of the ROPES data sets in this manual. Please refer to the heading "File Sizing and Tuning" on page 37 for the detailed information you will need to adequately allocate space for the ROPES data sets in a permanent configuration. You can always copy (REPRO) or restore the starter system files into newly allocated ROPES data sets later, so replacing the starter system files, even after you have used them, will be very easy.

The Starter System files are provided in a flat file format (built by the IDCAMS REPRO command). The FULLINST job extracted the TRANSMITted versions of these files to sequential data sets.

You first define the ROPES Starter System data sets using the member AMSCNTL in the ROPES.SOURCE library. Edit the data set names for your installation standard, and either edit the VOLUME(vvvvvv) parameter to specify the desired volume or replace the VOLUME(vvvvvv) parameter with another option, such as DATACLAS(cccccccc) to select the desired Data Class and allow your DFSMS configuration to determine the allocation. You can use your estimated file sizes to create your data sets or you can use the provided sizes, which are adequate for the Starter System but may not be adequate in a production environment. If you are migrating from an older release of ROPES, use the data set sizing from the older release as a guide.

Once the data sets have been defined, you load the starter system data sets with the REPROJCL member in the ROPES.SOURCE library.

Edit the JCL member RUNBUILD in the ROPES distribution source data set. This JCL member contains two steps which initializes certain parameter

options for ROPES. Both steps execute batch utility functions which can be found in the "Utilities" section of this manual. Please examine this section of the manual while you set the parameter options for ROPES.

The first step of the RUNBUILD JCL executes the utility function REGISTER. This function registers your company name and address to ROPES. Edit the utility parameters with your company name and address information, and it activates ROPES for four days on any CPU. After your company is registered, and the rest of ROPES is completely installed, you must install the ROPES security string using transaction **ROIA**. This will enable ROPES access for the CPU(s) which will be running ROPES. This step is also the primary tool for Disaster Recovery, so please save the member for possible future use.

The second step of the RUNBUILD JCL executes the CONTROLS utility function. This utility function permits various system wide ROPES options to be set. Please consult the "Utilities" section of this manual for the instructions on setting these parameters. Unless you have site requirements which will force the changing of the program and/or transaction prefixes, you can accept most of the default settings for these system parameters. If you change the program prefix, you must run the link-edit step again (if you already ran it) changing all the program prefix values to the new value. The default program prefix value is "R51". The corresponding PPT definitions must also change. If you change the transaction prefix you must also change the transaction prefix for all corresponding transaction definitions in the PCT. Note: *the transaction prefix, and program prefix parameter option values only affect the definitions for the Report Distribution, and System Status display facilities at this time.*

Finally, edit and run the job stream RUNRPIB to initialize the ROPES Report To Printer Index file.

STEP 3. Add the Required Entries into the CICS Resource Definitions

In order to make ROPES available under CICS, entries must be included in the CICS Program Control Table (PCT), Processing Program Table (PPT), File Control Table (FCT), and Destination Control Table (DCT). The distribution ROPES.SOURCE library contains source members

that may be included in these tables by using the assembler COPY statement. There are also members that may be assembled to create a PPT and a PCT that may be migrated to the CICS RDO data set. The members you will want to copy into your tables are:

ROPESPCT
    contains the ROPES table entries for the PCT

ROPESPPT
    contains the ROPES table entries for the PPT

ROPESFCT
    contains the ROPES table entries for the FCT

ROPESDCT
    contains the ROPES table entries for the DCT. These are sample or prototype entries that you should use if you are installing or planning to use the related functions.

    ROPES writes 133 byte messages to the log destinations. Accounting records are 100 bytes in length. Please be sure that the logical record length and record format defined for the destination(s) you use are compatible. Do not forget to allow for the 4 byte record descriptor word if the record format is variable. In CICS/MVS and above all log messages that violate the destination length are truncated. In CICS/ESA all log messages that violate the destination length are discarded.

The members that you can use to assemble a PPT and PCT for migration to RDO are R51PPT and R51PCT. It is your responsibility to inspect and modify any parameters which to not meet your installation's standards. Certain restrictions regarding the renaming of the transaction codes are noted in the ROPESPCT member.

For CICS/ESA and above, there are members in the source library for use with the DFHCSDUP batch utility. Look for xxxCSD members. A job stream has been provided in the ROPES.SOURCE library, in member RUNCSDUP, to install these members. Note that the PPT comes in two versions: PPTCSD defines the ROPES programs for non-threadsafe environments, while PPTCSDTS defines the programs for use in a Threadsafe environment. Choose the version appropriate for your installation. Threadsafe considerations for ROPES are further discussed in the Programmer's Guide. If you are just updating from the previous release, member ADDCSDxx and job stream RUNADCSD will help

you to apply only the new and changed CDS entries.

The transaction security values for the following transaction codes must not be altered by your installation:

R#On   where n is a digit from 1 to 9. This transaction is used to control the remote printers. Since the terminal is not signed on, the security code must be 1. Do not change this value.

Certain ROPES features will require additional table entries. The requirements for these entries, primarily Destination Control Table entries, are discussed in detail in the appropriate sections of this manual.

STEP 4. Make the ROPES Programs Available Online

The ROPES programs in the program library must be available to CICS. If your CICS version supports the LIBRARY object, you can define the ROPES load library using that facility instead. If it does not, or if your installation chooses not to use this method, then either add the library <hlq>.LOADLIB to your CICS DFHRPL data set concatenation or move the programs in the library into some other load module library that is already a part of the DFHRPL data set concatenation.

STEP 5. Add the appropriate JCL statements to CICS

The following Job Control statements are required to run the complete set of ROPES functions under CICS. They must be included with the JCL statements for the CICS execution step or in the resource definitions for the ROPES files. If the data set names do not match those specified when the data sets were defined, substitute the correct names here.

```
//ROPERIB   DD   DSN=<hlq>.RIBFILE.BASE,DISP=SHR
//ROPEPCR   DD   DSN=<hlq>.PCRFILE.BASE,DISP=SHR
//ROPEQBR   DD   DSN=<hlq>.QBRFILE.BASE,DISP=SHR
//ROPEALR   DD   DSN=<hlq>.RIBALTF.BASE,DISP=SHR
//ROPEALQ   DD   DSN=<hlq>.QBRALTF.BASE,DISP=SHR
//ROPERPI   DD   DSN=<hlq>.RPIFILE.BASE.DISP=SHR
//ROPEMSG   DD   DSN=<hlq>.MSGFILE.BASE,DISP=SHR
//ROPEPRM   DD   DSN=<hlq>.PRMFILE.BASE,DISP=SHR
//ROPEJTB   DD   DSN=<hlq>.JTBFILE.BASE,DISP=SHR
//ROPERDDD  DD   DSN=<hlq>.RDDDFILE.BASE,DISP=SHR
//ROPERDTD  DD   DSN=<hlq>.RDTDFILE.BASE,DISP=SHR
//ROPELPRO  DD   DSN=<hlq>.LPROFILE.BASE,DISP=SHR
```

You may also install the files through the batch RDO facility. There is a member in the <hlq>.SOURCE

library called FCTCSD which contains the necessary control statements. You can edit the data set names in those entries before you install them.

An additional DD statement may be required to define the data sets used by the BQTX utility transaction.

Additional DD statements may be required to define any extrapartition transient data destinations you define for ROPES.

STEP 6. Review the RSTU Overview in this section and perform the installation steps there if you will be using RSTU

This section contains a detailed description of the Spool Transfer Utility included with ROPES. If you intend to use RSTU at your installation, review this material now, and perform the installation steps listed there.

STEP 7. Bring up ROPES and test the facilities

You are now ready to bring up ROPES. Shut down CICS, or wait until the next time CICS is started. When that has occurred, use the ROPES Maintenance Transaction (see the Maintenance section of this manual) ROMT to set the System Control Information for your installation.

Use the Operator Displays to examine the contents of the Starter System. Try every display in that section.

Since the Starter System comes with data stored on the ROPES queue, use the Maintenance Transaction to define one or more printers in your network to ROPES. When this is done, assign one or more of the Starter System reports to that printer, again using the Maintenance Transaction.

Start the printer you have just defined for the classes that correspond to the reports you have assigned. The reports should begin printing.

Authorized CPUs

ROPES is licensed to specific processors or processor complexes. The authorized CPUs are encoded in your copy of the product, and ROPES will not provide full functionality if run on an unauthorized system.

You can determine the processors for which your system is authorized by running the RUNLSEC job stream in batch or by invoking the ROSS transaction. This display will show the authorized CPU numbers. Note that ROPES only checks the low-order 4 digits, so all CPUs in a multiprocessor, and all PR/SM LPARs on the same processor complex are authorized.

If you need to run ROPES on a processor that is not currently authorized, you must call your Sales Representative for a "password string" to add, change or remove processor authorizations. The string can be applied with the ROIA transaction in CICS or with the RUNASEC job stream in batch.

Disaster Recovery (DR)

When you are testing at, or running at, your disaster recovery sites, you will still need to authorize the ROPES product. You do not need to contact us in these cases for an authorization code, because you can authorize the Disaster Recovery site system for a four day period yourself. Run the RUNBUILD job stream you used when installing ROPES. This job will automatically authorize your copy of ROPES on the DR system for a period of four days. If you are running an extensive test or you are going to be running on the DR system for an extended period, please contact us for a durable authorization code.

ROPES is installed!

```
  Sequential or Partitioned Data Sets:

  Data Set Name                         ORG   RECFM   LRECL   BLKSZ   TRKS
  ------------------------------------------------------------------------
  ROPES.DISTMAST.XMI                    PS    FB        80    3120    107
  ROPES.DISTMAST.PDS                    PO    FB        80   27920    105
  ROPES.VER17L00.COBLIB                 PO    FB        80   27920     10
  ROPES.VER17L00.HLPTEXT                PS    FB        78   27924      3
  ROPES.VER17L00.MSGTEXT                PS    FB        86   27950      2
  ROPES.VER17L00.OBJECT                 PO    FB        80   27920     44
  ROPES.VER17L00.PL1LIB                 PO    FB        80   27920      3
  ROPES.VER17L00.SOURCE                 PO    FB        80   27920     44
     Subtotal                                                        318


  VSAM Data Sets:

  Data Set Name                         ORG   RECFM   LRECL   BLKSZ   TRKS
  ------------------------------------------------------------------------
  ROPES.VER17L00.HLPFILE.FLAT           PS    VBS      101   27998      4
  ROPES.VER17L00.JCLFILE.FLAT           PS    VBS       90   27998      1
  ROPES.VER17L00.JTBFILE.FLAT           PS    VBS      132   27998      1
  ROPES.VER17L00.LPROFILE.FLAT          PS    VBS      644   27998      1
  ROPES.VER17L00.MSGFILE.FLAT           PS    VBS       90   27998      2
  ROPES.VER17L00.PCRFILE.FLAT           PS    VBS    31664   27998      1
  ROPES.VER17L00.PRMFILE.FLAT           PS    VBS      260   27998      1
  ROPES.VER17L00.QBRALTF.FLAT           PS    VBS     4092   27998      1
  ROPES.VER17L00.QBRFILE.FLAT           PS    VBS     4092   27998      1
  ROPES.VER17L00.RDDDFILE.FLAT          PS    VBS      516   27998      1
  ROPES.VER17L00.RDTDFILE.FLAT          PS    VBS      124   27998      1
  ROPES.VER17L00.RIBALTF.FLAT           PS    VBS      134   27998      1
  ROPES.VER17L00.RIBFILE.FLAT           PS    VBS      134   27998      1
  ROPES.VER17L00.HLPFILE.BASE           VS                              46
  ROPES.VER17L00.JCLFILE.BASE           VS                               5
  ROPES.VER17L00.JTBFILE.BASE           VS                              36
  ROPES.VER17L00.LPROFILE.BASE          VS                              36
  ROPES.VER17L00.MSGFILE.BASE           VS                               3
  ROPES.VER17L00.PCRFILE.BASE           VS                              76
  ROPES.VER17L00.PRMFILE.BASE           VS                               2
  ROPES.VER17L00.QBRALTF.BASE           VS                              17
  ROPES.VER17L00.QBRFILE.BASE           VS                              53
  ROPES.VER17L00.RDDDFILE.BASE          VS                               9
  ROPES.VER17L00.RDTDFILE.BASE          VS                              13
  ROPES.VER17L00.RIBALTF.BASE           VS                              10
  ROPES.VER17L00.RIBFILE.BASE           VS                              10
     Subtotal                                                        333

     Total                                                           651
```

Figure 1 Installation Files Space Requirements

RSTU System Overview

RSTU System Components

RSTU consists of two components and a table: the Control and Inquiry component processes operator requests to start, stop, and query the status of the transfer processors; the Transfer Component copies the data transfer from the operating system spool to ROPES; the Transfer Control table holds RSTU control information.

Control and Inquiry Component

The Control and Inquiry Component is the interface between you and RSTU. This component manages the CICS displays with which you start, stop, and control transfer processors. You communicate with this component through display screens, choosing functions and parameters from a menu. This component collects the required information and invokes the Transfer Component to perform the requested functions.

Transfer Component

The Transfer Component performs the actual transfer of print data between the operating system spool queue and ROPES. This component operates as a number of independent "transfer processors" each of which transfers only print data meeting the selection criteria defined when the processor was started. Be aware that parts of a job's print data may be transferred to different ROPES reports, and the print data from many jobs may be transferred to a single ROPES report, depending on the selection criteria chosen for a particular processor. Transferred data is preceded and followed by a banner page which identifies it. If the operator requested a one-time transfer, the processor associated with that class of output terminates when all available data has been sent to ROPES. If the operator requested an ongoing transfer, the associated processor is suspended at the end of its available work, and is periodically reactivated to search for more work. In ongoing mode, a processor will continue to run until an RSTU or ROPES shutdown is performed, or until it is terminated by the operator.

Transfer Control Table

The Transfer Control Table (XCT) is used by RSTU as a central control for its operation. The XCT is composed of four parts: the Default Table, the Active Table, the Message Table, and the System Table. The Default Table holds values to initialize the "TRANSFER STARTUP" display and to automatically start transfer processors. The Active Table holds control and status information for active transfer processors. The Message Table holds log messages until they are sent to their destination. The System Table holds parameter values used by all transfer processors.

Planning a ROPES Spool Transfer Utility System

While it is possible to install and operate a ROPES Spool Transfer Utility system with a minimum of planning, more effective use of the system can be made if informed decisions regarding its use in specific environments are made. It is our goal to provide managers and planners with enough information to allow them to design an optimal RSTU configuration.

In the following discussion of the ROPES Spool Transfer Utility, certain features are not available in some releases of JES. These features are:

> Retrieval by Output Destination (or Remote Destination)

> Retrieval by Class

When planning your RSTU installation, please contact our technical support staff for planning assistance if retrieval by Destination only or Class only is required.

SPOOL Output Queues

The spool subsystem manages all print-destined output sent to it by using output queues. These queues may be viewed as groups of data sets (see "Spool Data Sets") which share certain attributes. By means of these attributes, data which is to be printed in similar ways (same location, same printer, same form) can be dealt with as a set. RSTU uses these

attributes to select data for transfer to ROPES, so their use is significant. The spool attributes used by RSTU to
select data are output destination, output class, output form, and hold status.

Output destination refers to the location of the printer pool where the data will print. Printing may be done locally, or at a remote destination. Local printers are those connected directly to the host computer system via a channel; they are usually high-speed printers, and usually print most of the system output. Remote printers are connected via communication lines (Remote Job Entry stations, for example), and print shorter documents for local users. Note that this discussion does not include CICS printers, which are managed by ROPES.

Output classes are used to separate output according to installation requirements. Different printers at the same location (output destination) may be assigned different output classes, or short printouts may be grouped into a separate class.

Output form is used to separate output according to the type of paper stock required.

Hold status refers to data that is placed on a spool queue that is not to be printed until specific action is taken to release that data. Hold status is required by default for output to be processed by RSTU to ensure that the data will not be selected for processing by the spool subsystem while it is being transferred by RSTU. You may change this default to process un-held output by specifying the HELDOUT parameter in the Transfer Control Table to **NO**.

Specifically, the JES user must place the output either in a "held" SYSOUT class or specify the HOLD=YES parameter on the SYSOUT DD statement. Remember that if you do not use a "held" SYSOUT class in the MSGCLASS parameter on your JOB card the output you place in "held" classes is not held or available to RSTU.

Transfer processors may have very broad selection sets defined for them. It is suggested that the narrowest selection set which will result in transfer of all desired data be used to minimize unwanted transfers (and possible deletions).

It is important for smooth operation of the system that operators know what they are selecting for transfer. Application programmers should also understand what they must do to enable transfers to occur. It is

possible for the system programmer to specify that data assigned to certain spool output queues be automatically held. Otherwise it will be the responsibility of the application programmer to explicitly "hold" data to be transferred.

Spool Data Sets

To understand just what is to be selected when a processor selection set is defined requires some understanding of spool data sets. When a job is run, several parts of the operating system process the job before and during execution. The JCL scanner examines JCL (Job Control Language) for syntax errors, the allocation routines decide what resources are required by the job, the spool subsystem interacts with the system operator on behalf of the job, etc. Each of these pieces of the operating system writes messages for the operator's and for the programmer's use. These messages are placed on some spool queue.

In addition to these implicit uses of the spool subsystem, most programs also make use of it explicitly by routing data to various spool queues for later printing. Thus, a job sends many types of data to the spool subsystem; each of these logical sets of data is referred to as a "spool data set," and each spool data set is handled separately by the spool subsystem. RSTU only separates data sets for a job on the basis of destination, class, and form number. Implicit spool data sets have form number assigned by the system programmer; the application programmer selects class and destination. For explicit spool data sets, the application programmer has full control: destination, class, form and hold status are completely controllable. It is important that the RSTU terminal operator realize that more spool data sets may exist for a job than are explicitly requested through JCL, and be aware of the various destinations, classes, and forms to which spool data sets may be sent explicitly or implicitly.

For example, a possible source of confusion may be a job which sends print data to some spool queue, but whose implicit output (e.g., JCL) is queued to another queue. An operator may start a processor to transfer and delete output from this job, and leave some part(s) on the spool queue. When this partial output gets printed, confusion may result.

ROPES Reports

Effective use of RSTU requires some understanding of ROPES reports. The factor to be covered here is that of report names. It must be borne in mind that any processor which attempts to transfer data to a nonexistent ROPES   report will terminate immediately. Planning for an RSTU system must therefore include defining ROPES reports if necessary. This will be even more important if use will be made of the RSTU symbolic report name feature.

Symbolic Report Names

Every transfer processor must have, when it is started, an entry in the "REPORT" field specifying the ROPES report to which print data will be transferred. If a terminal operator specifies a ROPES report name in the "REPORT" field, or the Transfer Control Table entry contains a ROPES report name, that report becomes the destination of all text transferred to ROPES by the transfer processor. If the "REPORT" field contains either of two special values, the report name will be constructed by RSTU.

If the "REPORT" field contains "$JOBNAME", the name of the job which placed the print data on the spool queue will be used as the report name. If print data from several jobs is transferred by a processor then print data from each job will be transferred to a separate report. This mode of operation requires that ROPES reports exist whose names match the names of every job to be transferred.

If the "REPORT" field contains "$DCFNAME",the ROPES report name is constructed according to the values of three selection set parameters:

> * Destination;
>
> * Class;
>
> * Forms number.

RSTU attempts to transfer the data to a report whose name is the concatenation of the values of the "DEST", "CLASS", and "FORM" parameters in that order.

If no such report exists, the "DEST" and "CLASS" are concatenated in that order; if a report is still not found to match this name, the "DEST" value is used as the name. If no match occurs, the transfer processor will write a diagnostic message to the log and terminate. For example, a job with destination of "R01", output class "C", and forms number "1234",

the report name constructed would be "R01C1234". If this report name is not usable at transfer time, it is truncated to "R01C". If this second name cannot be used, it is further truncated to "R01". If this third variation cannot be used, the transfer processor will write a message to the Activity Log, if one exists, and terminate.

Note: If the transfer processor selects data for a destination between 100 and 255 inclusive, the generated report name will contain the full destination number and the leading "R" or "U" will be omitted. For example, class A reports destined for U127 will be transferred to ROPES report 127A.

If the "REPORT" field contains "$XWRITER", the name of the external writer program specified in the JCL when the output was created will be used as the report name. This mode of operation requires that ROPES reports exist whose names match the names of every external writer name used.

You specify the external writer name on the DD statement that defines the output data set. The usual form of this DD statement is:

```
//ddname DD SYSOUT=(c,xwriter)
```

where "c" is the output class and "xwriter" is the ROPES report name to be used.

Processor Pre-definition

One of the most powerful features of RSTU is the ability it gives the programmer in charge of RSTU to predefine model transfer processors for use by system operators. These model processors will be displayed on the screen whenever the "TRANSFER STARTUP" transaction is invoked, and may be used to guide the operator during the processor definition process. These models need not contain every field value required to start the processor. The processor will not start until the operator has keyed acceptable values into the remaining fields. It is important to realize that the operator may key any desired value into any field and thereby override its preselected value. It should also be noted that the value so changed has not been permanently altered. Invocation of the transaction will cause the predefined values to appear.

Processors may be predefined to start automatically. These processors may not be changed by the system

operator (see "Auto Start/Termination Processing" on page 24).

Processors may be predefined during system tailoring (see "Tailoring RSTU" on page 49) and may be redefined at anytime.

Banner Processing

Banner pages are used by RSTU to separate transferred data. Banner processing in RSTU has four aspects important when planning a system: what types of banners may be produced; when are they produced; what formats do they have; and how may they be modified.

There are three standard banner types produced by RSTU: "TRANSFER STARTED"; "TRANSFER ENDED"; and "TRANSFER INTERRUPTED". In general the first precedes transferred data sets, the second follows all transferred data sets, and the third follows data sets which have been interrupted during transfer (interrupted data sets will be followed by "TRANSFER INTERRUPTED" and "TRANSFER ENDED" banners).

To completely understand when banners of various types are produced, the concept of spool data sets (see "Spool Data Sets" on page 22) must be expanded. Assume two or more spool data sets have exactly the same attributes: destination; class; form; jobname; and job number. They will be treated by RSTU as a "selection group", and a starting and ending banner will precede and follow the group as a whole. In every other case each transferred spool data set will have its own set of banners. It must be remembered that for purposes of transfer each spool data set is still treated individually. If a transfer is terminated in interrupt mode (see "Interrupt Mode" on page 48), any data sets in the selection group of the interrupted data set which had been transferred prior to the interrupt will be printed.

An RSTU banner is composed of from one to sixty identical lines (see "Tailoring RSTU" on page 49 for information on specifying the number of lines desired. The format of a banner line is given in that section as well).

To provide RSTU users with maximum flexibility in using the system, the installation may elect to modify the standard banner lines. This is done by replacing the load module "ROPEBNR" distributed as part of RSTU with a locally written exit. The exit is given

control immediately before the first line of each banner is produced. The standard banner line is passed to the exit, which may modify it in any way provided no more than 133 characters are used and return it to the caller. If the ROPES report name field (label STSLRP in the DSECT) is changed by the exit it will become the current ROPES report name, overriding the REPORT specified at transfer start time. All facilities of CICS and the operating system are available to the exit, which may be as complex as required. Refer to the ROPEBNR exit source code supplied on the distribution tape.

Auto Start/Termination Processing

It is up to the installation to decide whether to install the RSTU automatic start and automatic termination exit routines. These exits are supplied with RSTU and make use of the ROPES start and termination exits.

The automatic start exit allows predefined transfer processors with "AUTO=Y" (see "Tailoring RSTU" on page 49) to be started without operator intervention when ROPES is started. The automatic termination exit causes all active processors to terminate in interrupt mode when ROPES is stopped (see "Interrupt Mode" on page 48).

While inclusion of the automatic start exit is entirely at the user's discretion, it is urged that the automatic termination exit be installed, especially if the automatic ROPES shutdown facility is in use.

Note: If the automatic termination facility is not installed or if CICS is shut down using the "immediate" option of the shut down command, the RSTU/JES interface subtask will abend with system code A03 in the MVS environment (this does not apply to the DOS environment).

Activity Log

Events which occur during execution of RSTU may optionally be logged to an Activity Log. During installation, a CICS Temporary Storage Queue, a Transient Data Destination, and/or a ROPES Report may be specified as the destination for log messages. The log records transfer processor initiation and termination, data transfer initiation and termination, and exceptional conditions detected by RSTU. Errors which are detected prior to initiation of a transfer

processor and which can be corrected by the operator are not logged; the operator is prompted to enter acceptable values. Refer to the ROPES Programmer's Guide for a list of Activity Log messages.

The choices are to use no log at all (not recommended), to select one of the three logs, or to use more than one log. It must also be decided how many log message should be blocked in main storage between writes to the selected log(s). A higher blocking factor promotes efficiency, while a lower one promotes integrity in case of system failure.

RSTU Installation Steps

Installing RSTU is a simple process. If the decisions outlined above have been made, and if the steps outlined in the following sections are carefully followed, installation should present no problems.

STEP 1.   Install SVC

Member LINKSVC, found in the ROPES source library, contains the JCL necessary to link-edit the ROPES SVC into your system. Please review, edit and run this JCL to create the SVC. Please note that the ROPES SVC must be a type 3 or 4 SVC and that the SVC table entry must not specify any locks.

Note: If you are installing this product as a maintenance release you need not reinstall the SVC. No changes to this routine were made since Release 7.0. Be sure that the SVC you have chosen is available for use and is defined in your SVC Table.

If you prefer, you can dynamically install the ROPES SVC during system IPL. To do so, please review, assemble and link-edit the module SVCUPDTE, which is found, with the necessary JCL, in your ROPES.SOURCE library. The member includes a suggestion for integrating the execution of this module in your IPL procedure, but you can use whatever is customary in your shop.

STEP 2.   Install Subsystem Interface Module

```
//RSTUIN2   JOB  FIX ACCORDING TO LOCAL CUSTOM
//*
//*  JOB TO INSTALL THE RSTU SUBSYSTEM INTERFACE
//*
//*  THE SUBSYSTEM INTERFACE MUST BE INSTALLED INTO
//*  A LIBRARY THAT IS IN THE CICS EXECUTION STEP
//*  STEPLIB CONCATENATION.
```

```
//*
//*
//RSTUINTF PROC RSTUIN='<hlq>LOADLIB',
//           CICSLIB=      CICS STEP LIBRARY
//INTF     EXEC PGM=IEBCOPY
//SYSPRINT DD   SYSOUT=*
//SYSUT3   DD   UNIT=SYSDA,SPACE=(TRK,2)
//SYSUT4   DD   UNIT=SYSDA,SPACE=(TRK,2)
//INPUT    DD   DSN=&RSTUIN,DISP=SHR
//CICSLIB  DD   DSN=&CICSLIB,DISP=OLD
//         PEND
//DOIT     EXEC RSTUINTF   *FILL IN THE PARAMETERS
//SYSIN    DD   *
    C I=INPUT,O=CICSLIB
    S M=ROPEINTF
/*
```

STEP 3.   Tailor RSTU If Necessary (All Users)

Review the default values for RSTU. These values control the way that the Spool Transfer facility will work in your system. Follow the instructions in Section 14 (Customizing ROPES For Your Installation) to tailor the ROPES Spool Transfer Utility for your environment. The default SVC number is 248. If you have installed the RSTU SVC under a different number, you must change the Transfer Control Table (ROPEXCTM) SVC= value as documented in the Customization Section of this manual.

ROPES Print Support for JES Output

Description

The ROPES Printer Service program, ROPEDRVR, supports ROPES printing to JES RJE devices and/or interchange with remote systems. This program will run as a task under the control of CICS and will use the CICS SPOOL interface commands to effect the interface to JES. A user exit is required to supply the NODE, USERID and CLASS values used by this interface.

The activities of the Printer Driver in support of this function will correspond closely to the behavior of the service supplied for the CICS attached printers.

Printer and Report Configuration

The printers will be defined to ROPES using the ROMT transaction. **Figure 5** on page 29 and **Figure 6** on page 29 illustrate the user responses to the ROMT transaction screens required to define the printer.

ROPES printers normally run as terminal oriented tasks attached to the printer. This printer task will run as a non-terminal oriented task in CICS. No Terminal Control Table Terminal Entry is needed, but you must either create a Destination Control Table entry for each JES printer or use a version of the Device Characteristics Block that specifies SIGNAL=TS to use a temporary storage queue to communicate with the printer task. The TS Queue name used will be ROPExxxx where xxxx is the ROPES Printer ID.

The printer report configuration is the same as for any other ROPES printer. All facilities and functions of ROPES are supported for all printer and report options. You assign ROPES reports to the JES printers using the ROMT transaction, the SOOP or PROP transactions or the RCMS or RCMP command menu transactions.

Printer Control and Operation

You control the printer using the SOOP or PROP transactions or the RCMS or RCMP command menu transactions. All commands are supported, but the behavior of several commands will be different for JES printers.

All commands affect the processing of the reports under ROPES within CICS. This processing consists of transferring the data in the report from the ROPES queue to JES using the CICS SPOOL interface commands. These controls cannot affect the printing of the report in real time, since this will be done under the control of the JES subsystem and the remote station operator.

The positioning commands, A(bsolute), B(ackspace) and F(orward space) will be processed at the time they are entered. If the report is not being sent to JES at the time, the report will be positioned according to the command options, and will be printed from the chosen location when the printer is started and the report is selected by its class and priority. If the report is being transferred to JES at the time the command is entered, the positioning request will change the data sent to JES as determined by the command options. The use of the ROPES printer control commands affects the task which is spooling the output to JES; it does not affect the report as it is being printed by JES at the destination device. To reposition the report when being printed by JES, JES RJE printer control commands must be entered from a suitable JES console.

The Hold, Cancel and Release commands do not affect the printing of the report after the data has been sent to JES. Likewise, the Interrupt and Drain commands will not affect printing after the data has been sent.

The length of each printed line will be determined at printing time. Trailing blank characters will not be sent. Unless translation is suppressed, the characters in the data being sent to JES will be translated to characters considered by ROPES to be printable. All characters lower in value than X'40', any characters in the range of X'40' to X'F9' which do not have a defined EBCDIC graphic, and all characters above X'F9' will be translated to question marks (?, X'6F').

The ROPES Device Characteristics Block associated with the ROPES Printer Definition will be used. Module RO$DJESP has been provided to supply the desired device type, attributes and carriage control translations for the JES printer, and must be specified in the ROPES Printer Definition. This DCB specifies SIGNAL=TD and uses a Transient Data queue to communicate with the printer task.

User Exit Program

The User Exit program described here is a required component of this Printer Service program implementation. The CICS SPOOL commands to output data require four pieces of identification for the generated output. These are:

NODE

the 8 character destination node which the system spooler will use to route the report. You may specify "*" to use the local (default) node. The node identifies a system, not a remote destination. To route output to a remote destination, code "*" for the node and use the OUTDESC value DEST(RMTxxxxx).

USERID

the identifier of the eventual writer program or user who will process the report. You may specify "*" to use the current CICS job name (default).

CLASS

the class designation, a 1 character field declaring the output class of the generated report.

OUTDESC

the Output Description string. This string contains data corresponding to the parameters on the OUTPUT job control statement and is used to convey AFP related printing controls to the spool subsystem.

The user exit is invoked every time a report is selected for printing or a test message is requested for printing. The user exit will be passed a Communication Area described in **Figure 2** on page 27. The exit is entered by Command Level Link command as shown in **Figure 3** on page 27.

The user exit will receive as input the ROPES Printer Identifier and either the ROPES Report Name or the ROPES FCB name (in the case of a test message). The request type field will be either R(eport) or T(est Message). The user will supply the three values, NODE, USERID and CLASS and set the Return Code Field as indicated in **Figure 4** on page 27.

A sample exit program in assembler language is provided for the client to use as a basis for developing a site-specific exit program.

```
Assembler:

COMMAREA DS    0D
PRINTER    DC    CL4      PRINTER ID
REPORT     DC    CL8      REPORT NAME OR FCB
NODE       DC    CL8      NODE IDENTIFIER
USERID     DC    CL8      USER IDENTIFIER
CLASS      DC    CL1      CLASS CODE
REQTYPE DC       CL1      REQUEST TYPE
*             R = REPORT IS A REPORT NAME
*             T = REPORT IS AN FCB NAME
RETCODE DC       H        RETURN CODE


COBOL:

01   COMMAREA
     05   PRINTER      PIC X(8).
     05   REPORT       PIC X(8).
     05   NODE         PIC X(8).
     05   USERID       PIC X(8).
     05   CLASS        PIC X(1).
     05   REQTYPE      PIC X(1).
     05   RETCODE      PIC S9(4) COMP.
```

Figure 2 COMMAREA

```
EXEC        CICS  L    I    N    K
PROGRAM(ROPEJESX)

        COMMAREA(COMMAREA)
             LENGTH(32).
```

Figure 3 Exit Invocation

Return Code Values

0 Print the report using the values returned for NODE, USERID and CLASS

4 Do not print the report. Put the report on hold and look for more work.

8 Do not print the report. Cancel the report and look for more work.

12 Do not print the report. Purge the report data and look for more work.

Figure 4 Return Code Values

Error Handling

A variety of error conditions are possible when using the CICS SPOOL interface. In addition to the normal

messages issued by ROPES Printer Service program, this program will issue diagnostic messages indicating the contents of the EIBRCODE, RESP and RESP2 fields after any SPOOL operation that does not produce a normal result. Based on the type of error, ROPES will take an appropriate recovery action. The recovery actions and the error conditions causing them are:

A. Printer placed in HOLD status:

> NOTFND
> NOSTG
> NOSPOOL
> STRELERR
> OPENERR
> SPOLBUSY
> SPOLERR
> INVREQ when RESP2 is 4-12, 24 or greater.

B. Report placed on HOLD status:

> NODEIDERR
> INVREQ when RESP2 is 16 or 20.

Installation Information

Distributed Software

The following source code is provided:

RO$DJESP
  the device control block required by the JES Printer Service program.

ROPEJCOM
  the communication area used to pass data between the JES Printer Service program and the JES Information User Exit program.

ROPEJESX
  the JES Information User Exit program.

ROPESDCT
  an example of the DCT entry required for each JES Printer is included in this member. Refer to destination id JESP.

Installation Steps

To install this software, please perform the following steps:

Prepare the User Exit program.

You must modify the ROPEJESX User Exit program for your installation's requirements. Edit the source member ROPEJESX and change the default action when the printer and report name combination is not known to the exit. It has been set to 4 - hold the report. If you wish to change this option, comment out the MVC instruction and remove the comment from the MVC that you do wish to use.

When you have prepared the module source code, the program must be pre-processed, assembled and link-edited.

Create The ROPES JES Options

The ROPES JES Options are accessed by the user exit program to obtain the CICS SPOOL parameters required for each report and printer defined in this facility. This information is managed using the CICS transaction RJTB, which is described in the Maintenance section of this manual.

Update the CICS tables.

If you choose to use the TD Queue signaling method you must create a Destination Control Table entry for each ROPES supported JES printer. This destination is used as the conduit for messages between the various ROPES programs that create, manage and print report data or control printer operations. An example of the DCT entry is included in the source library, in member ROPESDCT. The Destination ID must be the same as the ROPES Printer ID. All other settings must be exactly as shown in the sample member.

No additional FCT or PCT entries are required.

You must install the CICS SPOOL interface by specifying SPOOL=YES on the DFHSIT macro instruction.

Create the ROPES Printer Definitions.

Bring up CICS and create the ROPES Printer definitions. Use **Figure 5** on page 29 and **Figure 6** on page 29 as examples of how to define the ROPES printers. Remember to define the Printer IDs to match the Destination IDs you created.

```
ROPES SYSTEM MAINTENANCE

FUNCTIONS ARE:

SYSTEM:
        1 - REORGANIZE ROPES QUEUE
        2 - CHANGE TRANSACTION CODES

REPORTS:
        3 - ADD REPORTS
        4 - CHANGE REPORT DEFINITION (ENTER NAME BELOW)
        5 - DELETE REPORT (ENTER NAME BELOW)

PRINTERS:
        6 - ADD PRINTERS
        7 - CHANGE PRINTER DEFINITION (ENTER ID BELOW)
        8 - DELETE PRINTER (ENTER ID BELOW)
        9 - ASSIGN REPORTS TO A PRINTER (ENTER ID BELOW)


ENTER FUNCTION ==> 6

ENTER REPORT NAME OR PRINTER ID ==> JESP
ROPES VERSION 12.0                    (C) COPYRIGHT 2006  AXIOS PRODUCTS, INC.
```

Figure 5 ROMT Menu

```
 PRINTER CONTROL RECORD MAINTENANCE
 REQUESTED FUNCTION: CHANGE   CHANGE DATA FIELDS AS REQUIRED.  PRESS ENTER.


          PRINTER ID: JESP        1-4 CHARACTERS. MUST BE UNIQUE.
DEVICE BLOCK SUFFIX: JESP        0-4 CHARACTER DEVICE BLOCK SUFFIX.

   CONTROL TERMINAL:             0-4 CHARACTERS
 COLD START CLASSES:             UP TO 8 VALUES, A-Z, 0-9 OR BLANK
 HOLD ON WARM START: N           START ONLY BY OPERATOR COMMAND (Y OR N)
     HOLD WHEN IDLE: N           PUT PRINTER ON HOLD WHEN IDLE (Y OR N)
  RELEASE WHEN IDLE: Y           END PRINTING TASK WHEN IDLE (Y OR N)
 EJECT PAGE IF IDLE: N           EJECT THE LAST PAGE WHEN IDLE (Y OR N)
   MAX # OF REPORTS: 010         0 - 300






 ROPES VERSION 12.0                    (C) COPYRIGHT 2006  AXIOS PRODUCTS, INC.
```

Figure 6 Printer Definition

The ROPES Alternate Facility

Description

The ROPES Alternate Facility provides a method by which user applications written to store data on the ROPES Queue may run while the ROPES data sets are in use by the online system. This facility does not require the use of SVC's, SRB's or cross memory services to maintain data set integrity.

The Alternate Facility consists of two data sets, the Alternate RIB file (ROPEALR) and the Alternate QBR file (ROPEALQ). These data sets are organized and structured just like the primary ROPES data sets. The contents of the ROPEALR data set are managed by the ROMT transaction automatically.

The Alternate Facility Monitor program, ROPEALTM, is started using the ASTA transaction or the ROPEALTF PLT program. It is terminated using the ASTP transaction or the ROPEALTL PLT program. The program, once started, manages the contents of the Alternate Facility queue automatically. It examines the queue to identify new data, moves that data to the on line system, and reschedules itself for execution. This "sleep" interval is defined under Miscellaneous Control parameters in the Maintenance Section of this manual.

Alternate Facility Setup

If you decide to use the Alternate Facility, please review the following items and take the appropriate actions.

1. Be sure that the FCT entries for the Alternate Facility files specify enabled status and deferred open. The Alternate Facility programs will use the CICS SET DATASET commands to open and close these data sets as needed.

2. Be sure that the CICS JCL includes definitions for ROPEALR and ROPEALQ, or that the FCT contains OBJ() parameters defining the data set names.

3. Be very sure that the ROPERIB and ROPEALR data sets are different VSAM clusters. Do the same for ROPEQBR and ROPEALQ. If you do not do so, you will probably destroy the primary ROPES data sets.

4. To have the Alternate Facility operate automatically, place the ROPEALTF program in the CICS start-up PLT, and place the ROPEALTL program in the CICS shut-down PLT.

5. Because the data sets will be opened and closed dynamically, insure that there is sufficient OS Core available to support the open and close functions.

6. The batch jobs that use the Alternate Facility must identify the data sets correctly. The ROPERIB DD statement must name the Alternate Facility RIB file; the ROPEQBR DD statement must name the Alternate Facility QBR file. If you have more than one set of ROPES primary and alternate files, be sure that the batch and on line programs run only on systems that share resources and on which an ENQ that specifies a scope of SYSTEMS will protect the data sets from simultaneous access for output.

The ROPES Stand-By Facility

Description

The ROPES Standby Facility provides a place for CICS transactions that store data in ROPES to work seamlessly even if the ROPES Primary Facility data sets are unavailable. This is similar to the ROPES Alternate Facility, but is only available in the CICS environment. This facility does not require the use of SVC's, SRB's or cross memory services to maintain data set integrity.

The Stand-By Facility consists of two data sets, the Stand-By RIB file (ROPESBR) and the Stand-By QBR file (ROPaESBQ). There is one such pair of data sets defined in each Application Region where ROPES data may be created when the primary facility might not be available. These data sets are organized and structured just like the primary ROPES data sets. The contents of each ROPESBR data set is managed by the Stand-By facility automatically.

The Stand-By Facility Monitor program, ROPESBYM, is started using the SSTA transaction or the ROPESSTA PLT program. It is terminated using the SSTP transaction or the ROPESSTP PLT program. The program, once started, manages the contents of the Stand-By Facility queue automatically. It examines the queue to identify new data, moves that data to the on line system, and reschedules itself for execution. This "sleep" interval is defined by the CYCLE value specified when the Stand-By Facility Utility is run to create the necessary control records in the ROPES Primary Facility ROPEPRM data set. The Stand-By Facility Utility is documented in Utilities Guide.

How The Stand-By Facility Works

The user transactions that stores data in ROPES do so as always. The ROPES Interface program, ROPEOSRV, which is invoked by EXEC CICS LINK from the application program, will detect that the ROPES Primary Facility is unavailable, either because ROPES was stopped (the System Control Record is so flagged in the ROPERIB data set) or because the ROPERIB data set is unavailable to the application.

The ROPEOSRV module will then determine if there is a Standby Facility available by checking for the presence of the ROPESBR data set and that the data set is open, or can be opened. If the Standby Facility is available, ROPEOSRV will hand the request off to the Standby Interface Program, ROPEOSBY, for processing. It is anticipated that each region that needs this support will have its own set of Standby Facility data sets (ROPESBR and ROPESBQ).

If there is no Standby Facility available, or if the application performs any ROPES function that implies or requires that existing report data be retrieved, the application will receive the ROPES NOT AVAILABLE return code ("5") and no Standby Facility processing will occur. This facility is provided for the sole purpose of allowing user on line applications to create report data when the ROPES Primary Facility is not available.

The data stored in each local region's Standby Facility data sets will be processed by the ROPES Primary Facility region once ROPES is available. The Standby Facility Processor will be started, either by command (SSTA) or by running the ROPESSTA program in the regions startup PLT.

ROPEOSRV will LINK to ROPEOSBY passing the COMMAREA that it received from the user application program. The COMMAREA will be mapped as "In Standby Processing" to insure that subsequent calls in the same transaction are routed in the same way.

ROPEOSBY will then mimic the processing of ROPEOSRV. It will attempt to locate the Report Definition in the ROPESBR data set, a new VSAM KSDS. If the report is not defined, however, ROPEOSBY will create a temporary definition for the report, so no maintenance will be required on this data set. The data will then be processed and stored in the ROPESBQ data set and the pointers will be maintained in the ROPESBR record.

At some point in time, the ROPES Primary Facility will become available. A background task, the Standby Facility Processor, will be started. It will transfer the data from the Standby Facility data sets to the ROPES Primary Facility and purge the data from the Standby Facility. It will then terminate or reschedule itself, according to the user's settings in the Standby Facility ROPEPRM Control Records.

As designed, there will be a set of ROPESBR and ROPESBQ data sets available to each CICS AOR where ROPES data is created. The system identifiers of each of these AORs will all be defined to ROPES

in the Standby Facility Control records in the ROPES Primary Facility. The ROPES Standby Facility will, when started, attempt to process all such data sets. This will permit the Standby Facility to support as many CICS AORs as the client wishes.

Stand-By Facility Setup

If you decide to use the Stand-By Facility, please review the following items and take the appropriate actions.

1. Identify the participating AORs. Every region which will store data in a Standby Facility data set pair must be identified. You need to note the 4 character region identifier which is defined by the CICS SIT or Startup SYSIN override parameter "SYSIDENT=". Each system will need a local set of ROPESBR and ROPESBQ data sets. In theory, several regions may share this data set, but that was not the original intent. If you do choose to share the data sets among several AORs, only the SYSIDENT of the data set owning region will be required for the Standby Facility control records, and the shared data sets must be appropriately defined in the owning and sharing regions FCT.

2. Each participating region must have a ROPESBR and ROPESBQ data set defined. The installation package will have added a job stream, SBYCNTL, to the ROPES.SOURCE library. This job stream, in conjunction with ROPES.SOURCE library member SBRINIT, should be used to define and initialize the ROPESBR and ROPESBQ data sets in each region. Remember to tailor the job to create unique data sets

3. The programs, transactions and files must be defined to the primary ROPES region and to the participating AORs. The ROPES.SOURCE member ADDCSD14 contains the DFHCSDUP utility statements to install these definitions if you are upgrading from an earlier release. If you are installing ROPES then the PPTCSD and PCTCSD members contain the necessary entries. Edit the member for your local requirements and install the members. You can edit ROPES.SOURCE member RUNADCSD or use your own JCL. Remember that you will probably need to edit the File Entries for each AOR, since the DSNAME values for the ROPESBR and ROPESBQ data sets will be different in each region.

4. Using the supplied ROPES.SOURCE member RUNSBYU, define the SYSIDENT values and sleep

time to be used by the Standby Facility. This must be run against the ROPES Primary facility ROPEPRM data set (the ROPEPRM data set used by the region in which the Standby Facility processor will run, usually the region which owns the ROPES data sets).

Once these installation steps have been completed, your applications can run in regions in which ROPES is stopped, or in which the ROPERIB data set cannot be accessed. The application ROPES reports will automatically be shunted into the Standby Facility ROPESBR and ROPESBQ data sets. The first time this is done (and in every subsequent use of the facility), the user interface program ROPEOSBY will automatically create the necessary ROPESBR control record for any report that it has not previously been processed.

These report definitions will remain in the file for future use. Each time the data is transferred from the Standby Facility data sets to the ROPES Primary Facility, the data records (in ROPESBQ) will be deleted and the ROPESBR entry will be updated to reflect this. No user maintenance, other than occasional physical space reorganization (REPRO out and back) will be required for the ROPESBR or ROPESBQ data sets.

Job Submission Facility Installation

Description

The Job Submission Facility requires access to a JES Internal Reader. This access allows the facility to write the submitted member to the JES input processor.

This facility has been implemented to use an extra-partition transient data destination to interface with JES. The required DCT entries are supplied in the ROPES Source Library, in member ROPESDCT. The SDSCI entry bears the name ROPERDR. The Destination is named JESR. You may change the SDSCI entry and the corresponding operand in the JESR entry, but you may not change the destination id.

To connect the destination JESR to the internal reader, you must add the following DD statement to your CICS start-up JCL:

```
//ROPERDR DD SYSOUT=(A,INTRDR),
//        DCB=(RECFM=FB,LRECL=80,BLKSIZE=80)
```

Please refer to your MVS JCL reference manual for additional information.

Installation of the Job Submission Facility, also requires that a change be made to the INTRDRQ parameter in the RUNBUILD job (CONTRLS Step) to specify the name of the transient data queue assigned to the JES internal reader. By default, the TD queue name specified for INTRDRQ is JESR. Please consult the ROPES Utilities Manual for more information on the CONTROLS utility, and the INTRDRQ parameter.

If you are upgrading from a prior release of ROPES, and the Job Submission Facility was in use, then it will be necessary to convert the old job file (ROPEJOB) to the new format. For purposes of upgrading easily, the old version of the Job Submission Facility has been left in place, and the new version has been added. The old job file is allocated by DD statement ROPEJOB, and the new job or JCL file is allocated by DD statement ROPEJOBF.

To convert the old file, please access member RUNJBCNV in the SOURCE distribution data set. This member contains sample JCL to perform the conversion of the JOB file to the new format. Please consult the ROPES Utilities Manual for more information on the CONVERT utility function.

If you did not use the Job Submission Facility in the prior release, then it will not be necessary to convert the old job file to the new format. Since the new file is allocated and initialized by the AMSCNTL and REPROJCL members during the install process, it will only be necessary to add new JCL members to the file using either the LOADJCL utility function, or by simply editing a new JCL member using the online transaction ROJB.

In the next release of ROPES, the old Job Submission Facility will not longer be included in the distribution material.

ROPES Web Interface

Introduction

The ROPES Web Interface is a basic working example of how ROPES might be presented to the end-user through a Web Browser interface. It can be used as is or tailored to accommodate your installation's needs or preferences. A sample security exit is also provided. It is expected that your installation will modify this exit to meet your own security requirements.

The current implementation does not permit an end user to edit or alter any ROPES information. This is planned for a future release. However, you should note that unless otherwise restricted, the end user can view any report contents in the system.

The ROPES Web Interface uses the ROPES Business Logic and Business Transaction Services Container Services modules previously released, and one new module of each type that is being released concurrent with the introduction of the interface (see above). We have released this version of the web interface in source code as well as object code format so that you may use the programs as examples of how this can be done, and it does not require you to directly interface with the internal ROPES controls or require you to process the ROPES data sets directly.

Installation

The two programs that constitute the ROPES Web Interface are delivered in both object and source form. They are automatically link edited into the ROPES Load Library during product installation, version upgrade, or fix installation. A third service module is provided only in object format, as it's function is not subject to user modification.

You will need to define various CICS CSD entries to use the ROPES Web Interface. These are presented in the order you should follow to build up to the complete installation. A source library member, WEBCSD, is provided, and all the following entries are defined in that member. Use what you need, and tailor them for your requirements. These entries all use a group name ROPEWEB. If you are creating a new group (ROPEWEB is new to ROPES), remember to add the group to one of your LIST entries.

Program Entries

You will need three Program entries for the programs. ROPEWEB is the interface program. ROPEWEBX is the installation security exit. ROPEDO64 is used by ROPEWEBX to do base 64 conversion of the user identification and password.

Transaction Entry

You will need one Transaction entry for the ROPES Web Interface Transaction. We have chosen ROPW, but any name is fine, as long as you remember to change the URI entry as well. The software does not have any internal dependancy on the transaction name.

Business Services Modules

The web interface program uses the ROPES Business Services programs. These are automatically installed in ROPES. The Business Services modules use the ROPECOMM Process and Container files. The CICS table entries for these objects are automatically installed, but the ROPECOMM container file is not automatically created. You must create this file. The job BTSCNTL has been provided in the ROPES.SOURCE library to do this. Edit and run the job to create the container.

URI Entry

You will need one URI entry to allow the incoming ROPES Web Interface requests to be associated with the ROPES Web Interface Transaction.

TCPIPSERVICE Entry

You will need one TCPIPSERVICE entry to establish the port that the ROPES Web Interface is listening on. You can use an existing TCPIPSERVICE definition if you choose, or create one for ROPES alone. Remember that the service should have it's own port definition, and you may wish to associate that port with your CICS address space(s) in the TCPIP PROFILE. You can use AUTHENTICATE(BASIC) or AUTHENTICATE(NO) for security processing. You can also modify the security exit, ROPEWEBX, for your own needs.

DOCTEMPLATE Entries

There are 14 DOCTEMPLATE entries required to define the CICS Document Templates that we use in the ROPES Web Interface. These names are mandatory unless you make coding changes in the ROPEWEB program. We have chosen to define our templates as members of a PDS. You can revise this if needed, but you will have to make code changes to

ROPEWEB in order to use templates from another location.

Document Template File

There is one PDS required for the ROPES Web Interface. If you want to use this facility, edit and run the ROPES.SOURCE library member WEBINST to extract the template file. This file is not defined in the CSD. It must be added to the CICS JCL. The DOCTEMPLATE entries are coded to expect the DD name ROPEHTML to be available to the CICS address spaces that are servicing the ROPES Web Interface. Add a DD statement to CICS that looks something like:

```
//ROPEHTML DD DSN=ROPES.VER17L00.ROPEHTML,
//      DISP=SHR
```

You can use any DSNAME that you like.

Loading the Document Template File

A job has been provided in the ROPES Source Library named WEBINST. Edit and run this job to load the ROPES Web Interface Document Templates into the data set of your choice.

You will have to recycle the CICS regions in order to add the data set and new CSD entries. Once this is done, you should be ready to use the ROPES Web Interface, and all future changes to the configuration can be made dynamically.

Tailoring the ROPES Web Interface

The ROPES Web Interface Document Template PAGETOP0 refers to pages on our public web site. One reference is to the Help document. The other reference is to the current ROPES Product Documentation. You can alter these references if you choose to do so. It also refers to the graphic image of the ROPES Logo. You can change this, as well.

The Document Template PAGEBOT0 refers to a graphic image of the Axios Products, Inc. company name. You may wish to change this reference.

The Web Interface Security Exit may be tailored to your needs. Because you are running inside of CICS, our sample uses the RACROUTE macro REQUEST=VERIFY in ENVIR=VERIFY mode, which requires an installation SAF exit to process the request. If you do not have such an exit, the request

will return a return code of 4, and the web interface will interpret this to mean that there is no security required (but you will receive a warning). The exit also uses the RACROUTE macro REQUEST=AUTH to determine if the function requested is authorized. You can limit access to each of the functions. Our example assumes that you are using RACF, but because it uses the SAF router, any compatible security package can be accommodated.

Using the ROPES Web Interface

Your end user connects to the ROPES Web Interface by specifying the URL to which the browser should connect. This can be provided in several different ways, and depends on how you have defined the TCPIPSERVICE and the URIMAP. It will also depend on whether or not your CICS TCPIPSERVICE is defined to an available DNS server. Our implementation did not use a DNS entry, and was dedicated to a particular port. The URL we use is (not our real IP):

  http://10.0.1.10:3000/ropeweb.html

which matches the PORTNUMBER value on our TCPIPSERVICE and the PATH value on our URI.

Once the connection is made, the end user is presented with the Sign On panel. If you have implemented the security exit with real checking, your user should enter the user id and password that has been assigned to them. Otherwise, any values can be entered. If the security exit permits access, the user next presented with the ROPES Web Interface Menu. From this point on the user can select menu entries or navigation bar entries, as they choose. Each function will present an appropriate web page if the security exit permits the function.

File Sizing and Tuning

Introduction

The ROPES file sizes set in the installation job streams are only meant as examples, and are sufficient to contain the starter system data as we distribute it. They will probably not be large enough for your system when you go live. We will try to give you some guidelines for allocating space in these data sets, and, we hope, some idea of the rate at which these data sets are likely to grow. We will also give you a brief description of the purpose, format and content of these data sets.

We will also try to give you some tuning guidelines as we go along, but you must remember that this information is highly subject to variation based on the way your installation uses ROPES. As with any VSAM data set, the ROPES files are tuned by observing the Control Interval and Control Area splits, the string and file waits that occur during the execution of CICS, the number of index levels and the number of index and data I/Os, and then adjusting the various parameters to meet your performance and resource allocation requirements.

VSAM space allocation in units of Tracks or Cylinders can be tricky, since this is device dependent, data and index CI size dependent, index location dependent, varies with various other VSAM parameters such as FREESPACE, and does not give you an easy way to estimate needs when a) migrating from one device to another or b) allocating space for a cluster across different device types. To try and standardize our size estimates for all devices and configurations, we will assume that you can allocate the space in RECORDS, and our estimates are derived accordingly. Since it is possible that you may be required to allocate in other units, we also provide a method for estimating the gross file size in bytes. You will then have to use your CI size and device track and cylinder capacities to derive the space allocation units you need to use. In all cases, however, we recommend that you sub-allocate the space for the ROPES clusters from a data space and allow secondary allocations to occur so that the ROPES data sets can expand dynamically, if needed, rather than just running out of space at an inconvenient time and forcing a CICS shut-down.

VSAM will determine the physical record size to use automatically. If you run the data set defines once as a test, you can get the physical record size from the catalog. You can use this value to fine-tune your estimate for each cluster's data component.

We have also assumed that you periodically review your file sizes and allocations to consolidate multiple extents, reapportion free space and to otherwise be sure that your primary and secondary allocation factors are still valid. The frequency with which you do this is what we will refer to as the time "between file size reviews." So, if you do this every six months, estimate your growth for the next six months where appropriate. If you do the review only as often as you have space problems, try to do your best.

The following pages contain detailed information about each of the ROPES data sets. These listings are arranged alphabetically by the FCT data set name in the form ROPExxxx.

ROPEALQ

The ROPEALQ data set contains the Queue Buffer Records, or report text records for the Alternate Facility. These records contain the actual report text stored in ROPES. They contain the data stored by your batch application programs. They also contain control information about the data for the report that is in the record, including the lines and pages stored, the method by which the data was created and the date and time the data was queued.

Zero or more ROPEALQ records exists for each defined report. These records are variable length records. Each record contains a header which is 52 bytes long, and a variable portion containing the text, which is 0 to 4000 bytes long.

Estimating the size of this cluster can be difficult. ROPES packs as much data into a ROPEALQ record as possible during report creation. It does not "splice" records together, so a short record that ends the creation of a report or document is not later "filled out" if more data is added to the report. The new data starts a new block. A block is always written whenever your application issues an

ENDLINES request or a SENDLINEGROUP request with the ENDLINES flag on. If you have selected the appropriate option, ROPES will also start a new record whenever your text contains a skip to channel 1 carriage control character.

You will need to make an estimate of the amount of text you will be storing on the queue between cycles of the Alternate Facility on line program. Each cycle of the Alternate Facility on line program transfers the data from the Alternate QBR to the ROPES QBR file and then removes the records from the Alternate Queue. There are several components to this estimate and you may have to make educated guesses for one or more of these items.

First, you need to know the average length of your report lines. For this purpose, we are only interested in the length of the lines up to the right-most non-blank character. ROPES always truncates trailing blanks when storing a line. They are restored, if needed, at print time. The carriage control character is always retained, even if it is blank. The shortest line you can have, therefore, is one byte. ROPES adds two bytes to each line you store for control information. These bytes are placed one before and one after each line. The byte value is the number of characters in the line. Be sure to include these two bytes in your average.

Second, you will need to estimate the number of lines of print per block. A rough approximation will be:

$$LPB = 4000 / ALL$$

where:
  LPB = Lines Per Block
  ALL = Average Line Length

Discard the remainder, as ROPES never spans a line across two blocks. If a line will not fit in the space remaining, the block is written at it's current length and a new block is started. The average block length can then be computed as:

$$ABL = 52 + (ALL * ALPB).$$

where:
  ABL = Average Block Length
  ALL = Average Line Length
  ALPB = Average Lines Per Block

Third, you will need to estimate the largest number of lines of print to be retained on the queue at any given time. To do this, you will have to determine the number of lines in your average report or document, the number of such documents generated between cycles of the Alternate Facility, and the "safety factor" you wish to build in to your space allocation.

  Lines To Queue = best guess.

We wish we could help more, but you may just have to wait and see. If you are stuck for an estimate, try to allocate your cluster with a Control Area size (secondary allocation factor) large enough to hold a typical report or document, and suballocate the cluster from a large data space. If you must use unique allocations, be sure the volume(s) assigned have substantial free space for allocation of new extents.

To estimate the number of records to allocate, perform this calculation:

$$TBR = LTQ / ALPB$$

where:
  TBR = Total Blocks Required
  LTQ = Lines To Queue
  ALPB = Average Lines Per Block

The Total Blocks Required value is the first factor in the VSAM RECORDS() parameter. You will need to do the same evaluation of future growth (expansion of existing applications or end users, new applications and the design of their printed output, and increases in current system activity). With this cluster it is wise to allow yourself some breathing room.

To estimate the size of the cluster, perform this calculation:

$$FS = TBR * ABL$$

where:
  FS = File Size (in bytes)
  TBR = Total Blocks Required
  ABL = Average Block Length

The ROPEALQ file is a Key Sequenced VSAM data set. The key is twelve bytes long and is made up of the report name and a four byte binary sequence number. The number of Control Intervals (CIs) required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the

ROPEALQ records are rarely held for update by ROPES tasks, but data records are frequently deleted on line and added in batch. Free space allocations in the Control Areas will help reduce the number of Control Area splits.

ROPEALR

The ROPEALR data set contains the Report Information Blocks, or report control records for the Alternate Facility. These records define the report names known to ROPES. They contain the control information you specify on the Report Maintenance panels, such as the Forms Block Suffix, the class and the priority. They also contain information about the data for the report that is on the Alternate Facility queue, including the lines and pages queued and the first and last key sequence number in the ROPEALQ record keys for the report.

One ROPEALR record exists for each report defined in the ROPERIB data set. Please refer to the discussion about the ROPERIB data set.

These records are 96 byte fixed length records. In addition to the RIB records, there are six control records in the file. They are each 256 bytes long.

To estimate the size of the cluster, perform this calculation:

$$FS = (NR * 96) + 1536$$

where:
  FS = File Size (in bytes)
  NR = Number of Reports

The ROPEALR file is a Key Sequenced VSAM data set. The key length is 8 bytes and is the report name. The number of Control Intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEALR records are held for update by the ROPES Alternate Facility and Maintenance tasks. As a result, the entire Control Interval containing the record will be locked for update by VSAM. Smaller control intervals prevent large numbers of ROPEALR records from being held by the ROPES tasks accessing the cluster, but may require more buffers and strings to support the number of tasks active at

any one time.

ROPEHLP

The ROPEHLP data set contains the text and controls for the ROPES on-line help.

A ROPEHLP record exists for each entry in the table of contents, for each line of text, and for each field reference tag. There is also one control record in the file. The distributed file size is adequate for the help text in the distributed system. To determine if the file will be large enough to contain the text installed during PTF application, determine the number of records in the PTF help text file. These records will completely replace the content of the help text file, and so the help text file must have enough space for all of them. These records are either 27 byte, 95 byte or 97 byte records and the file is defined as variable length records. The control record is 77 bytes.

To estimate the size of the cluster, perform this calculation:

$$FS = (LT*95)+(LC*97)+(LR*27)+77$$

where:
  FS = File Size (in bytes)
  LT = Number of text lines
  LC = Number of contents lines
  LR = Number of reference tags

To simplify this calculation and insure an adequate file size, you can use the following formula:

$$FS = TR * 95$$

where:
  FS = File Size (in bytes)
  TR = Records in the source file

The ROPEHLP file is a Key Sequenced VSAM data set. The key length is 17 bytes and consists of the record type, chapter number, and 4 heading level numbers. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEHLP records are never held for update by ROPES tasks. This file is altered only during PTF application or new release installation.

ROPEJOBF

The ROPEJOBF data set contains heading and detail records used by the Job Submission facility. These records contain the control information and Job Stream source statements you create using the Job Submission editor transaction ROJB.

One ROPEJOBF records exist for each defined job stream, and one record exists for each statement in those job streams. The number of records you will need is determined by the formula:

$$Records = NJS * (1 + AS)$$

where:
  NJS = Number of Job Streams
  ANS = Average Statements

These records are fixed length records of 86 bytes. The record consists of key information and either control data such as date of last update, the user who last updated the member, and the number of statements in the job stream, or it contains a job stream statement. You will need to know the average number of statements in your job streams, and the approximate number of job streams you wish to store in the data set.

To estimate the size of the cluster, perform this calculation:

$$FS = NJS * ((1 + ANS) * 101)$$

where:
  FS = File Size (in bytes)
  NJS = Number of Job Streams
  ANS = Average Statements

The ROPEJOBF file is a Key Sequenced VSAM data set. The key length is 14 bytes. The left-most bytes of the key contain the member name and a record type indicator. The next 5 bytes contain the statement sequence number. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating the cluster and setting the ControlIntervalSize, please keep in mind that the ROPEJOBF records are rarely held for update by ROPES tasks, but data records may be frequently read. Free space allocations must be set according to the frequency and magnitude of the editing you

expect to occur. This will vary widely between installations, depending on how you decide to use this facility. If you choose not to use this facility you need not define this data set.

ROPEJTB

The ROPEJTB data set contains the controls used by the ROPES JES Printer support to determine the CICS SPOOL command parameters to be used when sending data to JES.

One ROPEJTB record exists for each defined Report/Printer combination, and for each defined OUTDESCR (Output Description) string.

To estimate the size of the cluster, perform this calculation:

$$FS = (NR + NO) * 128$$

where:
  FS = File Size (in bytes)
  NR = Number of report/printer records
  NO = Number of OUTDESCR records

The ROPEJTB file is a Key Sequenced VSAM data set. The key length is 13 bytes and consists of a one byte record type followed by a report name for 8 bytes and a printer id for four bytes, or by an OUTDESCR name for 8 bytes and 4 blanks. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEJTB records are rarely held for update.

ROPELPRO

The ROPELPRO data set contains the LPR options definition records. These records contain the definition information for each LPR printer/report you have defined. One ROPELPRO record exists for each LPR Option definition. These records are defined essentially one time, and will not see a high degree of add/delete/update activity. This file is also used to provide host information for Direct Socket printing.

You must allocate one record for each LPR printer

definition you plan to define. This value is the first factor in the VSAM RECORDS parameter. You will need to estimate your future use of this facility to determine the secondary allocation factor. The ROPELPRO records are variable length with a maximum record size of 640. The following computation uses the maximum record size since the number of records expected to be contained in this file should be relatively small.

To estimate the size of the cluster, perform this calculation:

$$FS = LPRD * 640$$

where:
  FS = File Size (in bytes)
  LPRD = Total LPR Option Record definitions

The ROPELPRO file is a Key Sequenced VSAM data set. The key is 12 bytes long and is the LPR option record name. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

ROPEMSG

The ROPEMSG data set contains the text of many of the Messages issued by ROPES programs. These records define the message text to ROPES. They contain information to indicate the message content, the message language and the text of the message.

One ROPEMSG record exists for each defined message. The distributed file size is adequate for the number of messages in the distributed system. To determine if the file will be large enough to contain the messages installed during PTF application, determine the number of messages in the PTF message file. These records will completely replace the content of the message file, and so the message file must have enough space for all of them. These records are 86 byte fixed length records.

To estimate the size of the cluster, perform this calculation:

$$FS = NM * 86$$

where:
  FS = File Size (in bytes)
  NM = Number of messages

The ROPEMSG file is a Key Sequenced VSAM data set. The key length is 8 bytes and consists of the language code and the message number. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEMSG records are never held for update by ROPES tasks. This file is altered only during PTF application or new release installation.

ROPEPCR

The ROPEPCR data set contains the Printer Control Records. These records define the printers serviced by ROPES. They contain the control information you specify on the Printer Maintenance panels, such as the Device Block Suffix, the control terminal and the start-up classes. They also contain information about the reports that are assigned to the printer, including the lines and pages printed and the first and last key sequence number in the ROPEQBR record keys for the report when processed by the printer.

One ROPEPCR record exists for each defined printer, so to estimate the file size you need to know how many printers you have on your network, and what percentage of them will be serviced by ROPES. Code the RECORDS(x y) parameter with x as your estimate of the number of printers required, and y as your estimate of the number of new printers or locations you will be serving between file size reviews.

These are variable length records. Each record contains a header of 164 bytes. The variable portion consist of 0 to 525 report entries, each of which is 60 bytes long.

To estimate the size of the cluster, perform this calculation:

$$FS = NP * (164 + (ANR * 60).$$

where:
  FS = File Size (in bytes)
  NP = Number of Printers
  ANR = Average Reports

The ROPEPCR file is a Key Sequenced VSAM data set. The key length is 4 bytes and is the printer

name. The number of control intervals required can be estimated by the following formula:

 CIs = FS / CISIZE

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEPCR records are often held for update by various ROPES tasks. As a result, the entire Control Interval containing the record will be locked for update by VSAM. Smaller control intervals prevent large numbers of ROPEPCR records from being held by the ROPES tasks accessing the cluster, but may require more buffers and strings to support the number of tasks active at any one time.

In some CICS releases you may not browse clusters with spanned records. This means that each ROPEPCR record must be fully contained in its Control Interval. Since the largest ROPEPCR record is 32,264 bytes, you may be required to specify a Control Interval Size of 32,264. By default, the ROPEPCR cluster size is 18,164 which provides room for up to 300 reports per record.

ROPEPRM

The ROPEPRM data set contains internal program Parameters for many of the ROPES programs. These records define control information used by these programs.

One ROPEPRM record exists for each defined program or logical function. This file is altered only during PTF application or new release installation. The distributed file size is adequate for the number of records in the distributed system. To determine if the file will be large enough to contain the records installed during PTF application, determine the number of records in the PTF parameter file. These records will completely replace the content of the parameter file, and so the parameter file must have enough space for all of them.

These records are variable length with a maximum record size of 256 bytes. You have no control over the content or number of these records.

To estimate the size of the cluster, perform this calculation:

 FS = NR * 256

where:

FS = File Size (in bytes)
NR = Number of Records

The ROPEPRM file is a Key Sequenced VSAM data set. The key length is 20 bytes. The number of control intervals required can be estimated by the following formula:

 CIs = FS / CISIZE

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEPRM records are never held for update by ROPES tasks.

ROPEQBR

The ROPEQBR data set contains the Queue Buffer Records, or report text records. These records contain the actual report text stored in ROPES. They contain the data stored by your application programs or the ROPES functions, such as Spool Transfer or Screen Print. They also contain control information about the data for the report that is in the record, including the lines and pages stored, the method by which the data was created and the date and time the data was queued.

Zero or more ROPEQBR records exists for each defined report. These are variable length records. Each record contains a header which is 52 bytes long, and a variable portion containing the text, which is 0 to 4000 bytes long.

Estimating the size of this cluster can be difficult. ROPES packs as much data into a ROPEQBR record as possible during report creation. It does not "splice" records together, so a short record that ends the creation of a report or document is not later "filled out" if more data is added to the report. The new data starts a new block. A block is always written whenever your application issues an ENDLINES request or a SENDLINEGROUP request with the ENDLINES flag on. If you have selected the appropriate option, ROPES will also start a new record whenever your text contains a skip to channel 1 carriage control character.

You will need to make an estimate of the amount of text you will be storing and retaining on the queue. There are several components to this estimate and you may have to make educated guesses for one or more of these items.

First, you need to know the average length of your report lines. For this purpose, we are only interested in the length of the lines up to the right-most non-blank character. ROPES always truncates trailing blanks when storing a line. They are restored, if needed, at print time. The carriage control character is always retained, even if it is blank. The shortest line you can have, therefore, is one byte. ROPES adds two bytes to each line you store for control information. These bytes are placed one before and one after each line. The byte value is the number of characters in the line. Be sure to include these two bytes in your average.

Second, you will need to estimate the number of lines of print per block. A rough approximation will be:

$$LPB = 4000 / ALL$$

where:
  LPB = Lines Per Block
  ALL = Average Line Length

Discard the remainder, as ROPES never spans a line across two blocks. If a line will not fit in the space remaining, the block is written at it's current length and a new block is started. The average block length can then be computed as:

$$ABL = 52 + (ALL * ALPB).$$

where:
  ABL = Average Block Length
  ALL = Average Line Length
  ALPB = Average Lines Per Block

Third, you will need to estimate the largest number of lines of print to be retained on the queue at any given time. To do this, you will have to determine the number of lines in your average report or document, the number of such documents generated per day, the number of days each document is likely to remain on the queue, and the number of days of "safety factor" you wish to build in to your space allocation.

  Lines To Queue = best guess.

We wish we could help more, but you may just have to wait and see. If you are stuck for an estimate, try to allocate your cluster with a Control Area size (secondary allocation factor) large enough to hold a typical report or document, and suballocate the cluster from a large data space. If you must use unique allocations, be sure the volume(s) assigned have substantial free space for allocation of new extents.

To estimate the number of records to allocate, perform this calculation:

$$TBR = LTQ / ALPB$$

where:
  TBR = Total Blocks Required
  LTQ = Lines To Queue
  ALPB = Average Lines Per Block

The Total Blocks Required value is the first factor in the VSAM RECORDS() parameter. You will need to do the same evaluation of future growth (expansion of existing applications or end users, new applications and the design of their printed output, and increases in current system activity). With this cluster, more than any other, you will be wise to allow yourself some breathing room.

To estimate the size of the cluster, perform this calculation:

$$FS = TBR * ABL$$

where:
  FS = File Size (in bytes)
  TBR = Total Blocks Required
  ABL = Average Block Length

The ROPEQBR file is a Key Sequenced VSAM data set. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPEQBR records are rarely held for update by ROPES tasks, but data records are frequently inserted. Free space allocations in the Control Areas will help reduce the number of Control Area splits.

ROPERDDD

The ROPERDDD data set contains the Report Distribution Facility Distribution Definition records. These records contain the definition information for each Report Distribution request you have defined.

One ROPERDDD record exists for each report distribution. These records are fixed length 512 byte records.

You must allocate one record for each Report Distribution Request you plan to define. This value is the first factor in the VSAM RECORDS parameter. You will need to estimate your future use of this facility to determine the secondary allocation factor.

To estimate the size of the cluster, perform this calculation:

$$FS = TRDD * 512$$

where:
FS = File Size (in bytes)
TRDD = Total Report Distribution Definitions

The ROPERDDD file is a Key Sequenced VSAM data set. The key is 12 bytes long and is the distribution name. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

ROPERDTD

The ROPERDTD data set contains the Report Distribution Facility Translation Definition records. These records contain the definition information for each Report Distribution Translation Table entry that you have defined. There is one record for each such Translation Table entry.

One or more ROPERDTD record exists for each report distribution translation table definition. These records are fixed length 120 byte records.

You must allocate one record for each Report Distribution Translate Table entry you plan to define. This value is the first factor in the VSAM RECORDS() parameter. You will need to estimate your future use of this facility to determine the secondary allocation factor.

In estimating the size of the cluster you should perform the following calculation:

$$FS = TRDTE * 120$$

where:
FS = File Size (in bytes)
TRDTE = Total Report Distribution Translation Entries

The ROPERDTD file is a Key Sequenced VSAM data set. The key is 51 bytes long, and includes control

information, the translate table name, and the input or search string. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

ROPERIB

The ROPERIB data set contains the Report Information Blocks, or report control records. These records define the report names known to ROPES. They contain the control information you specify on the Report Maintenance panels, such as the Forms Block Suffix, the class and the priority. They also contain information about the data for the report that is on the queue, including the lines and pages queued and the first and last key sequence number in the ROPEQBR record keys for the report.

One ROPERIB record exists for each defined report, so to estimate the file size you need to know how you will be naming reports, and how many reports you will need to satisfy your application's requirements. Code the RECORDS(x y) parameter with x as your estimate of the number of reports required, and y as your estimate of the growth rate between file size reviews.

These records are 96 byte fixed length records. In addition to the RIB records, there are six control records in the file. They are each 256 bytes long.

In estimating the size of the cluster you should perform the following calculation:

$$FS = ((NR) * 96) + 1536$$

where:
FS = File Size (in bytes)
NR = Number of Reports

The ROPERIB file is a Key Sequenced VSAM data set. The key length is 8 bytes and is the report name. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating this cluster and setting the ControlIntervalSize, please keep in mind that the ROPERIB records are often held for update by various ROPES tasks. As a result, the entire Control Interval containing the record will be locked for update by VSAM. Smaller control intervals prevent

large numbers of ROPERIB records from being held by the ROPES tasks accessing the cluster, but may require more buffers and strings to support the number of tasks active at any one time.

ROPERPI

The ROPERPI data set contains cross-reference information that allows it to serve as a Report to Printer Index. These records allow ROPES to determine the printer(s) that are assigned to print a specific report, eliminating the need to scan (browse) every printer record to locate those printers.

One or more ROPERPI records exist for each defined report. You can estimate the record count by determining the likelihood of reports being assigned to more than 100 printers. If this is low, then allocate one ROPERPI record for every ROPERIB record. If this is high, try the following calculation:

$$R = ((NA / 100) + 1) * NR$$

where:
  R = Number of Records
  NA = Number of Assignments
  NR = Number of Reports

These records are variable length records. Each record contains a header of 48 bytes. The variable portion consists of 0 to 100 printer entries, each of which is 4 bytes long. If a report is assigned to more than one hundred printers, additional records are created. You will need to know the average number of assignments for each report (To how many printers is the report assigned?).

To estimate the size of the cluster, perform this calculation:

$$FS = (1 + (AA / 100)) * (NR * (48 + (AA * 4)))$$

where:
  FS = File Size (in bytes)
  AA = Average Assignments
  NR = Number of Reports

The ROPERPI file is a Key Sequenced VSAM data set. The key length is 12 bytes. The left-most 8 bytes of the key is the report name. The low-order 4 bytes of the key is the record sequence number, in binary. The number of control intervals required can be estimated by the following formula:

$$CIs = FS / CISIZE$$

When allocating the cluster and setting the ControlIntervalSize, please keep in mind that the ROPERPI records are rarely held for update by ROPES tasks, but data records are frequently read. Free space allocations may be kept to a minimum. Although this file is maintained on line as a by-product of ROPERIB and ROPEPCR file maintenance, it may also be recreated using the ROPERPIB batch utility program.

ROPES Data Set Attributes For Remote Systems

File Name	Key Length	Key Position	DISP	Record Length
ROPEALQ	12	0	SHR	52-4096
ROPEALR	8	0	SHR	96-256
ROPEHLP	17	0	OLD	27-97
ROPEJOBF	14	0	OLD	86
ROPEJTB	13	0	OLD	128
ROPELPRO	12	0	OLD	540-640
ROPEMSG	8	0	OLD	86
ROPEPCR	4	0	OLD	164-32264
ROPEPRM	20	0	OLD	256
ROPEQBR	12	0	OLD	52-4052
ROPERDDD	12	0	OLD	512
ROPERDTD	51	0	OLD	120
ROPERIB	8	0	OLD	96-256
ROPERPI	12	0	OLD	48-448

Troubleshooting

Some third-party terminal data stream optimizer programs reformat the print data stream after ROPES has passed it to CICS. This reformatting can, in some cases, adversely affect the printed results. Often, lines greater than 132 characters are split somewhere at or near position 132. The output will look correct when browsed. When the printing process is monitored the outgoing text (ROPES to CICS) is correctly formatted.

If you are having trouble getting ROPES to print a document properly, try the following steps.

Monitor the printing process to determine if the problem exists in the data ROPES sends to CICS or if the problem is introduced later. To monitor the process at printer PRT1, do the following:

Start EDF for the printer: CEDF PRT1

Start printing the report through ROPES (reset it to the beginning, start the printer, create new data, etc.).

At the first EDF display select STOP CONDITIONS (PF9) and fill in the first field to read "EXEC CICS SEND". Set STOP ON ALL ERRORS to NO. Press PF4 to suppress all displays except the EXEC CICS SEND FROM() commands.

When stopped at the ABOUT TO EXECUTE SEND commands, press PF2 and obtain the address of the FROM() area (on the right side of the screen). Press PF5 to get the WORKING STORAGE display and enter the FROM() address. Browse the text. Find the point were the text is being mis-formatted and see if there are any formatting codes (X'15' for example) at that point.

If there are no formatting codes, and the printed output looks correct at this point, the problem may be with your data stream compression product. Try setting it to exclude this printer or all printers, and try the output again.

Customizing ROPES For Your Installation

Although ROPES is distributed as a complete package and is ready to run just as it is, many of the features of ROPES are enhanced by the careful tailoring of certain system parameters to a customer's precise needs.

This section provides the instructions you will need to tailor your ROPES installation to your exact requirements. The subjects covered include:

- Tailoring RSTU

- ROPES Automatic Startup and Termination

- Forms Control Blocks

- Device Characteristics Blocks

- MRO Considerations

- JES Printer Exit Program Macro

- Online Copy Books

- EXCI Parameters Table

Tailoring RSTU

You can tailor RSTU to your installation's specific environment and needs by specifying and constructing the Transfer Control Table (XCT). This table is constructed by assembling macro instructions which specify System Table parameter values and define transfer processors. System Table parameter values must be specified. Processor definitions are optional. Processors are defined during XCT construction for two reasons: they may be defined to appear on the "TRANSFER STARTUP" display menu to serve as prototypes for transfer processors the operator explicitly starts; or they may be defined to start automatically during RSTU initiation. The only way for either of these events to occur is to define the processor in the Default Table section of the XCT. You do not have to define processors during installation; the operator can dynamically define transfer processors on the "TRANSFER START" menu as needed.

After the Transfer Control Table is defined, ROPEXCT macro instructions must be coded by the user to build the table.   The macros must be assembled and the resulting object module linkage-edited into a CICS load library for use by RSTU.

The distributed source code contains a sample table definition in member ROPEXCTM in the <hlq>.SOURCE library.

XCT Structure

The Transfer Control Table is built from user-coded ROPEXCT macro instructions. A default table is provided with ROPES. It may be redefined at any time. The general format of the table is:

```
ROPEXCT  TYPE=INITIAL,...     Establish system-wide defaults
ROPEXCT  TYPE=ENTRY, ...      Define a transfer processor
       .  (code one per processor)
ROPEXCT  TYPE=FINAL           Complete the table definition.
END
```

RSTU Macro Instruction

There are three types of ROPEXCT macro instructions:

ROPEXCT TYPE=INITIAL
   This must be the first macro coded in a Transfer Control Table definition. There must be one and only one "TYPE=INITIAL" macro. It defines default values for the entire system.

ROPEXCT TYPE=ENTRY
   Code one for each default transfer processor desired. If no default processors are desired, none need be coded. They can be coded in any order, so long as they follow a "TYPE=INITIAL", and are followed by a "TYPE=FINAL".

ROPEXCT TYPE=FINAL
   There is exactly one of this type. It must be coded, and must be the last macro in the Transfer Control Table definition. It may be followed only by an assembler "END" instruction.

TYPE=INITIAL

```
ROPEXCT  TYPE=INITIAL,
     CNAME=use current name in log,
     CTRN=xfer transaction id,
     DCFLIM=limit $DCFNAME,
     HELDOUT=held output selection,
     KILLRC1=continue after RC=1,
     LOGRPT=ROPES report log,
     MAXACTV=active transfer limit,
     NMSGBUF=message blocking,
     REFRESH=time interval,
     REQHOLD=requeue to hold class,
     RETRY=retry on duplicate job,
     SEPLEN=length of separator line,
     SEPLNCT=separator line count,
     SLEEP=time interval,
     SUBSYS=subsystem id,
     SVC=supervisor call id,
     TDDEST=transient data log,
     TSQUEUE=temporary storage log,
     XTRN=internal transaction id,
     XCTCTR1=user exit routine,
     XCTXFR1=user exit routine
```

CNAME=use current name in log
> This parameter can be set to Y or N. When set to Y, the log header for DATA SELECTED and DATA TRANSFERRED messages will contain the name of the report that receives the data. When set to N, the log header for those messages will contain the name of the report specified in the transfer definition.
>
> Default: N, the report name from the transfer definition is used.

CTRN=xfer transaction id
> Specifies the four character transaction code used by terminal operators (and the automatic startup exit, if used) to invoke the "TRANSFER STARTUP", "TRANSFER CONTROL", "TRANSFER MONITOR" and "TRANSFER MONITOR TERMINATE" transactions (referred to as the "xfer/S", "xfer/C", "xfer/M", and "xfer/T" transactions in this publication).
>
> This parameter must be specified and must match the TRANSID parameter of the PCT entry for this transaction.
>
> Default: the distributed system uses transaction code R$TC.

DCFLIM=limit $DCFNAME
> This parameter allows you to limit the processing of $DCFNAME to include destination and form

only. The class value will be ignored. This parameter must be set to Y or N, with Y enabling the limitation to destination and form.

> Default: N, no limit on the use of class in $DCFNAME.

HELDOUT=held output selection
> This parameter determines whether the Spool Transfer facility will search the held output or unheld output queues. The default value is '**Y**,' and causes the Spool Transfer facility to search the held SYSOUT queues only. You may set this parameter to '**N**' to have the normal (not held) SYSOUT queues searched instead. This option must be set to '**Y**' if you will be using Destination and Class searching.

KILLRC1=continue after RC=1
> This parameter can be set to Y or N. When set to **Y**, the transfer task will not terminate if a ROPES return code of 1 is encountered (return code value 1). Instead, the input data set is deleted. When set to N, the transfer task logs a message including the missing report name and terminates.
>
> Default: N, the transfer task terminates and the data set is kept.

LOGRPT=ROPES report log
> Specifies the name of the ROPES report to which Activity Log messages will be written. The report specified may not be used as the destination report for transfers. See the "TDDEST" and "TSQUEUE" parameters.
>
> Default: no ROPES Activity Log will be kept.

MAXACTV=active transfer limit
> defines the number of transfer processors that may concurrently be active.
>
> This value may not exceed 200, and may not be less than the number of "TYPE=ENTRY" macros specifying "AUTO=Y". This limit can be changed by editing the ROPEXCT macro instruction.
>
> Default: MAXACTV=10.

NMSGBUF=message buffer blocking
> specifies the number of messages saved in main storage between writes to the Activity Log (see "Activity Log" on page 24).

If specified, this parameter must be between 1 and 250, inclusive.

Default: NMSGBUF=1.

REFRESH=time interval
specifies the interval of time that is to elapse before RSTU will refresh the display of the TRANSFER MONITOR Transaction.

If entered, the value must be coded in the form HHMMSS, where HH represents hours from 00 to 99, MM represents minutes from 00 to 59, and SS represents seconds from 00 to 59.

Default: REFRESH=000100 (one minute).

REQHOLD=requeue to hold class
When set to Y, the transfer task is permitted to requeue a processed output to the same (held) queue but in released status. When set to N, the output will be deleted if no new class is specified with the Requeue disposition.

RETRY=retry on duplicate job
This parameter determines how the transfer task will process the Duplicate Job return code. When set to N, the transfer task issues a message and terminates. When set to Y, the transfer task will continue to try and transfer the job until the duplicate job condition clears (usually by outside intervention)

Default: N, do not retry the transfer.

SEPLEN=separator line length
specifies the length of the banner line. You may shorten or lengthen the banner line. The default value is 133.

SEPLNCT=separator line count
specifies the number of separator lines per banner page (see "Banner Processing" on page).

This value must be between 0 and 60, inclusive. A value of 0 will suppress the printing of the banner lines.

Default: SEPLNCT=6.

SLEEP=time interval
specifies the interval of time that is to elapse before RSTU will request service from JES when a transfer processor is idling and waiting for work. This condition occurs when WAIT/WORK is

specified as Y or QUIT/DONE is specified as N.

If entered, the value must be coded in the form HHMMSS, where HH represents hours from 00 to 99, MM represents minutes from 00 to 59, and SS represents seconds from 00 to 59.

Default: SLEEP=000100 (one minute).

SUBSYS=subsystem id
Specifies the subsystem identifier of the subsystem to be accessed by RSTU. This allows the user to change from JES2 to JES3, or to choose a test version of the spool subsystem.

This value must be 1-4 characters if specified.

Default: SUBSYS=JES2.

SVC=nnn
Identifies the number of the type 3 or 4 SVC which will be issued by RSTU. This number must correspond to the name specified in RSTU installation Step 1 (see "Install SVC" on page 13). This parameter is not used in DOS installations.

This parameter must be specified and must be between 001 and 255, inclusive.

Default: SVC=248.

TDDEST=transient data log
Specifies the name of the CICS Transient Data Destination to which all Activity Log messages will be written. Do not use a destination that has been defined as recoverable or which is the indirect destination for a recoverable destination. See the "LOGREPT" and "TSQUEUE" parameters.

Default: no Transient Data Activity Log will be kept.

TSQUEUE=temporary storage log
Specifies the name of the CICS Temporary Storage Queue to which Activity Log messages will be written. Do not use a queue that has been defined as recoverable. See the "LOGREPT" and "TDDEST" parameters.

Default: no Temporary Storage Queue Activity Log will be kept.

XTRN=internal transaction id
Specifies the four character transaction code used internally by RSTU to start transfer processors.

This parameter must be specified and must match the TRANSID parameter of the PCT entry for this transaction.

Default: the distributed system uses transaction code R$TX.

XCTCTR1=user exit routine (control task)
Specifies the name of a user-written CICS program which will receive control immediately prior to attaching a transfer task. The user exit may be used to determine if the transfer task is to be started and can be used to implement user security processing. See "RSTU User Exits" on page 141 for detailed information about this exit.

Default: no exit processing is performed.

XCTXFR1=user exit routine (transfer task)
Specifies the name of a user-written CICS program which will receive control immediately prior to allocating a spool data set. The user exit may be used to determine if the transfer task is to continue processing and can be used to implement user security processing. See "RSTU User Exits" on page 141 for detailed information about this exit.

Default: no exit processing is performed.

TYPE=ENTRY

ROPEXCT TYPE=ENTRY
    AUTO=auto startup flag,
    CLASS=output class,
    DEST=output destination,
    DISP=requeue flag,
    FORM=output form,
    JOBNAME=job name,
    NCLASS=requeue output class,
    QUIT=deferred termination flag,
    REPORT=report name,
    WAIT=deferred start flag

AUTO=automatic startup flag
Specifies mode of initiation. "AUTO=Y" is coded if the processor should be started automatically at RSTU startup. "AUTO=N" is coded if the processor is not to be started automatically.

Default: AUTO=N.

CLASS=output class
Specifies the output class from which data is to be selected for transfer.

This parameter must be a single character if it is specified.

DEST=output destination
specifies the output destination from which data is to be selected for transfer.

If specified, this parameter must be coded as the JES2 destination identifier, Rnnn or Unnn, where nnn = 000-255, or as the 8-character JES3 destination.

DISP=requeue flag
Specifies disposition of successfully transferred data.

If specified, this parameter must be coded as "D" (delete from spool after transfer) or "R" (requeue to class specified in "NCLASS" parameter after transfer).

Default: DISP=R.

FORM=output form
Specifies the output forms queue from which data is to be selected for transfer. This parameter is valid only when specified with the JOBNAME parameter.

This parameter must be 1-4 characters if specified.

JOBNAME=job name
Specifies the name of the job to be selected for transfer.

This parameter must be 1-8 characters if specified.

NCLASS=requeue output class
Specifies the output class to which data will be re-queued after transfer.

"DISP=R" must be specified for this parameter to be significant.

This parameter must be a single character if specified.

Default: requeue to original class and release from "hold" status.

QUIT=deferred termination flag
  Specifies whether the transfer processor should terminate when all available data is transferred.

  This parameter must be "Y" or "N" if specified.

  Default: QUIT=Y.

REPORT=report name
  Specifies the name of a ROPES report which will receive the transferred data or specifies a symbolic report name. See "Symbolic Report Names" on page 23.

  This parameter must be 1-8 characters if specified.

  Default: REPORT=$DCFNAME.

WAIT=deferred start flag
  Specifies whether the transfer processor should terminate if no data is available for transfer when the processor is started.

  This parameter must be "Y" or "N" if specified.

  Default: WAIT=N.

TYPE=FINAL

ROPEXCT TYPE=FINAL

This completes the Transfer Control Table definition. This form of the ROPEXCT macro must be coded exactly as shown, without operands. It must follow a "TYPE=ENTRY" macro, if any are coded, or the "TYPE=INITIAL" macro, if no transfer processors have been defined. It must be followed by exactly one statement (other than comments): an assembler "END" instruction.

Assemble and Link-Edit the XCT

Member ASMXCT in the ROPES source library may be used to assemble and link-edit the ROPEXCTM module.

ROPES Automatic Start-Up and Termination

An installation may elect to have ROPES, the Alternate Facility, the Stand-By Facility and RSTU start and stop automatically, concurrent with CICS startup and termination. This automatic initiation and termination can improve system availability and relieve the ROPES Master Operator of these tasks. This section describes these facilities (which may be selected independently) and the steps required to implement them.

Automatic Start-Up Description

ROPES automatic start-up occurs whenever programs ROPESTAR, ROPEALTF, and ROPESSTA are initiated without an associated terminal facility. ROPES operation is the same as if it had been started by the ROPES Master Operator using the RSTA, ASTA and SSTA commands, except that all messages are sent to the ROPES Master Terminal. RSTU transfers that are defined as AUTO=Y are initiated. When this facility is implemented it is not necessary to manually start ROPES, the ROPES Alternate Facility, or RSTU unless they have been manually terminated.

For automatic start-up, add the following entries to the Program List Table (PLT) you use during CICS system start-up:

```
DFHPLT  TYPE=ENTRY,PROGRAM=ROPESTAR
DFHPLT  TYPE=ENTRY,PROGRAM=ROPEALTF
DFHPLT TYPE=ENTRY,PROGRAM=ROPESSTA
DFHPLT  TYPE=ENTRY,PROGRAM=ROPEASXM
```

For CICS/ESA, these entries should be placed after the DFHDELIM entry.

Automatic Termination Description

ROPES automatic termination occurs whenever programs ROPESTOP, ROPEALTL and ROPESSTP are initiated without an associated terminal facility. This termination operation is the same as if the ROPES Master Operator had entered the RSTP, ASTP and SSTP commands, except that all messages are directed to the ROPES Master Terminal. All active RSTU transfers are interrupted.

For automatic termination, add the following entries to the Program List Table (PLT) used by your installation during CICS system termination, in the first quiesce phase (before the DFHDELIM entry):

```
DFHPLT  TYPE=ENTRY,PROGRAM=ROPESSTP
DFHPLT  TYPE=ENTRY,PROGRAM=ROPEALTL
DFHPLT  TYPE=ENTRY,PROGRAM=ROPEATXM
DFHPLT  TYPE=ENTRY,PROGRAM=ROPESTOP
```

If you are running CICS/ESA with Storage Protection, note that module ROPEATXM may link to programs ROPELOGM, ROPEOSRV and ROPEEXTO, and ROPESTOP may link to ROPEMPUT. Since ROPEATXM and ROPESTOP will be invoked with EXECKEY(CICS) regardless of their program definitions, to avoid AEZD abends during shut-down you must alter the EXECKEY for the listed modules to EXECKEY(CICS).

In addition, the following entry must be made in the Transaction List Table (XLT) for the CICS shutdown first quiesce phase:

```
DFHXLT  TYPE=ENTRY,TRANSID=(R#O1,…)
```

Be sure to specify all versions of the R#Ox (where x is an integer in the range of 1 - 9) transaction code you are using if you are installing ROPES in an MRO environment.

Forms Control Blocks

The RO$Fxxxx modules define the ROPES forms control blocks. They are used to provide the information needed to position the print lines from a ROPES report on the printer. They also control data translation and supply the test and forms alignment messages to be transmitted in response to a printer or supervisory operator request for printer testing.

The general format of the assembler code to be used when generating a forms control block is shown below. The resultant object module must be link-edited into the ROPES load library under the name specified in the ROPESFRM TYPE=INITIAL macro for use by on line ROPES programs.

```
  TITLE '"RO$F   " -- MODEL FORMS CONTROL BLOCK'
ROPESID   MODE=ONLINE
ROPESFRM  TYPE=INITIAL
.
.
ROPESFRM  TYPE=SPACING,   BOUND FORMS PAGES
.
.
ROPESFRM  TYPE=CHANNELS,  RELATE CHANNEL TO LINE
.
.
ROPESFRM  TYPE=CONTROL,   DEFINE CONTROL CODES
.
.
ROPESFRM  TYPE=TRANSLATE, DEFINE TRANSLATE TABLE
.
.
ROPESFRM  TYPE=DEVINIT,DEFINE DEVICE INITIAL
                        CONTROLS
.
.
ROPESFRM  TYPE=DEVEXIT, DEFINE DEVICE EXIT CTLS
.
.
ROPESFRMTYPE=PDFCNTL, DEFINE PDF CONTROLS
.
.
ROPESFRM  TYPE=TESTLINE, DEFINE TEST/ALIGNMENT
.                   MESSAGE LINES
.
ROPESFRM  TYPE=FINAL    END OF DEFINITION
END
```

The distributed ROPES system contains sample forms control blocks.

Macro ROPESFRM

This macro instruction defines the boundaries of the forms pages and the line locations which each ANSI channel represents. It also allows the user to specify a test or alignment message to be associated with the forms control block. Any number of reports may be printed using the same forms control block definition if the forms layout is the same for each of the reports.

The following macro instructions may be specified, in the order shown, to define the forms control block:

ROPESFRM TYPE=INITIAL
  required to establish the control section;

ROPESFRM TYPE=SPACING
  required to define the boundaries of the forms pages;

ROPESFRM TYPE=CHANNELS
  required to state the print line location which each ANSI "skip to channel" command represents;

ROPESFRM TYPE=CONTROL
  describes attributes of the printed report and its page layout. These parameters are optional;

ROPESFRM TYPE=LSDEF
  establishes options for the Liberty/Soft ROPES interface. These parameters are optional;

ROPESFRM TYPE=PDFCTRL
  establishes options for the generation of PDF files or e-mail attachments.

ROPESFRM TYPE=HTMCTRL
  establishes options for the generation of HTML files or e-mail attachments.

ROPESFRM TYPE=PPDCTRL
  establishes options for the generation of bar codes on PPDS data stream printers.

ROPESFRM TYPE=TRANSLATE
  defines the translation table to use when translating data for printing. The translation tables are separately assembled. You may also suppress translation for all reports using a specific forms control block.

ROPESFRM TYPE=DEVINIT
  defines whether the PCL Codes associated with this matching DVCTYPE name entry in the DCB will be sent to the print device or suppressed.

ROPESFRM TYPE=DEVEXIT
  defines whether the PCL codes associated with this matching DVCTYPE name entry in the DCB will be sent to the print device or suppressed.

ROPESFRM TYPE=TESTLINE
  describes each line of the forms alignment or test message to be associated with this forms control block and all reports which use it. These

statements are optional;

ROPESFRM TYPE=FINAL
    required to conclude the forms control block
    definition.

Define Control Section

Macro ROPESFRM TYPE=INITIAL

This macro instruction defines the forms control
block module name. The format of the ROPESFRM
TYPE=INITIAL macro instruction is as follows:

ROPESFRM   TYPE=INITIAL,NAME=suffix,
           PAPER=paper

where:

TYPE=INITIAL
    establishes the control section into which the forms
    control block is to be assembled.

NAME=suffix
    specifies a one to four character alphameric suffix.
    This suffix, if specified, is appended to the string
    "RO$F" to form the name of the forms control
    module. (Default: "NAME=   ")

PAPER=paper
    specifies a one to four character alphameric paper
    code. This parameter, if specified, is used to
    determine if a paper change is required when there
    is a change in the Forms Control type being
    processed at a ROPES printer. If no paper change
    is detected, no forms mount message will be
    issued. Normal page formatting will take place.
    By default, the paper value will be set to match the
    FCB suffix value. (Default: "PAPER=suffix")

Define Page Boundaries

Macro ROPESFRM TYPE=SPACING

This macro instruction defines the boundaries of the
pages of the form described by this forms control
block.   The general format of the ROPESFRM
TYPE=SPACING macro instruction is as follows:

ROPESFRM   TYPE=SPACING,
           DEPTH=mmm,OVFLOW=nnn

where:

TYPE=SPACING
    specifies that the page boundaries are to be
    defined.

DEPTH=mmm
    mmm is a one to three digit number which
    specifies the actual number of print lines in a forms
    page.

OVFLOW=nnn
    nnn is a one to three digit number which specifies
    the last line which may be printed on a page of the
    form. Thus, a line which is printed after the line
    printed at line nnn of the page will be printed on
    the next page of the form. (Default: same value
    as DEPTH)

Relate Channel To Line Location

Macro ROPESFRM TYPE=CHANNELS

This macro instruction states the line location which
each ANSI "skip to channel" command (channels 1 to
12) represents in the pages of a report. ROPES will
use the device-dependent control characters from the
device characteristics block (RO$Dxxxx) for the
printer, if available, to advance the printer to the line
represented by the ANSI "skip to channel" command.
Therefore, the line number specified here for a "skip
to channel" command must match the hardware
spacing produced at the printer. If a particular "skip
to channel" command is not supported by the printer,
ROPES will use the single space sequence to advance
to the proper line.   The general format of the
ROPESFRM TYPE=CHANNELS macro instruction
is as follows:

ROPESFRM   TYPE=CHANNELS,
           CH1=xxx,
           CH2=xxx,
           CH3=xxx,
           CH4=xxx,
           CH5=xxx,
           CH6=xxx,
           CH7=xxx,
           CH8=xxx,
           CH9=xxx,
           CH10=xxx,
           CH11=xxx,
           CH12=xxx

where:

TYPE=CHANNELS
    specifies that the ANSI "skip to channel"
    command to print line relationship is to be defined.

CH1 through CH12
  These required parameters specify a one to three
  digit number representing the print line which the
  ANSI "skip to channel" command represents
  within the forms page (the first line is line number
  1).

  The following rules apply when coding values for
  CH1 through CH12:

  1. a value must be coded for each of the
     channels;

  2. the value specified for CH1 must be greater
     than zero. This value defines the first line
     that can be printed on the forms page;

  3. a subsequent channel specification must not
     be lower in value than the preceding channel
     specification. This means that the CH2 value
     cannot be lower than the CH1 value and must
     not be greater than the CH3 value. Thus, a
     "skip to channel 3" followed by a "skip to
     channel 1" will cause ROPES to advance to
     the channel 1 position of the page following
     the page on which the line containing the
     "skip to channel 3" was printed;

  4. no value may be specified which would
     require that a line be printed outside the
     boundaries of the page defined by the
     ROPESFRM TYPE=SPACING macro
     instruction.

Generate Device Controls

Macro ROPESFRM TYPE=CONTROL

This macro instruction is optional and may be used to
define the Device Controls for Vertical and
Horizontal Page formatting. If present, the device
control codes will be converted and sent to the printer
whenever the printing of a report using this FCB is
started. The conversion is controlled by the
DEVTYPE parameter of the Device Control Block.
Default values generated in all FCB's for these
controls will allow for the automatic switching
between reports with a resetting of all controls.
These codes are present but not used for reports when
they are printed in batch.

The general format of the ROPESFRM
TYPE=CONTROL macro instruction is as follows:

```
ROPESFRM  TYPE=CONTROL,
          CTLMODE={NORMAL|USER},
          CPI={10|12|15|16|xxxx},
          LPI={3|4|6|8|xxxx},
          PAGESIZ={nnn|xxxx},
          TMARGIN={nnn|xxxx},
          BMARGIN={nnn|xxxx},
          VTABS={(vt1,vt2,…,vtn)|xxxx},
          LINELEN={nnn|xxxx},
          LMARGIN={nnn|xxxx},
          RMARGIN={nnn|xxxx},
          HTABS={(ht1,ht2,…,htn)|xxxx},
          ORIENT={P|L|xxxx},
          RESET={xxxx}
```

where:

TYPE=CONTROL
  indicates that the device control values are to be
  specified.

CTLMODE={NORMAL|USER}
  specifies the method of device control to be used.
  If the value NORMAL is selected, then you must
  specify a value for each of the following
  parameters from the list indicated, but you may not
  choose the xxxx option. If the value USER is
  specified, you must use the xxxx option to specify
  remaining parameters. All of these parameters are
  optional. If you do not make a selection, a default
  value is assumed when CTLMODE=NORMAL
  has been specified. If CTLMODE=USER has
  been specified and you do not specify a parameter
  value, then no control codes will be sent to the
  printer for that parameter's function.

CPI={10|12|15|16|xxxx}
  specifies the horizontal print density, or characters
  per inch, to be used when printing the report.
  Choose one of the values specified or specify a
  string of 1 to 128 pairs of hexadecimal digits. The
  value 16 indicates 16.7 CPI. The default is the
  value set on the printer's operator panel.

LPI={3|4|6|8|xxxx}
  specifies the vertical print density, or lines per
  inch, to be used when printing the report. Choose
  one of the values specified or specify a string of 1
  to 128 pairs of hexadecimal digits. The default is
  the value set on the printer's operator panel.

PAGESIZ={nnn|xxxx}
  nnn is a one to three digit number which specifies
  the actual number of print lines in a forms page.
  It has the same meaning as the DEPTH parameter.
  The default value is DEPTH as specified on the
  TYPE=SPACING macro instruction. To specify
  a user-defined control string specify a string of 1 to

128 pairs of hexadecimal digits.

TMARGIN={nnn│xxxx}
    nnn is a one to three digit number which specifies
    the location of the first print line on the page. It
    must be less than or equal to PAGESIZ.
    TMARGIN is also the first vertical tab stop. The
    default value is CH1 from the
    TYPE=CHANNELS macro instruction.   To
    specify a user-defined control string specify a
    string of 1 to 128 pairs of hexadecimal digits.

BMARGIN={nnn│xxxx}
    nnn is a one to three digit number which specifies
    the last line on which printing can occur before an
    automatic skip to a new page will occur. It must
    be greater than or equal to TMARGIN and less
    than or equal to PAGESIZ.   The default value
    OVFLOW as specified on the TYPE=SPACING
    macro instruction.   To specify a user-defined
    control string specify a string of 1 to 128 pairs of
    hexadecimal digits.

VTABS={(vt1,vt2,… ,vtn)│xxxx}
    vt1,vt2,…,vtn are one to three digit numbers that
    specify the locations, in print lines measured from
    the top of the page, of the lines on which vertical
    tab stops are to be placed.   The first value
    specified must be greater that or equal to the
    TMARGIN parameter, the remaining values must
    be in ascending sequence, and the last value must
    be less than or equal to BMARGIN. The default is
    to have no vertical tab stops. To specify a user-
    defined control string specify a string of 1 to 128
    pairs of hexadecimal digits.

LINELEN={nnn│xxxx}
    nnn is a one to three digit number which defines
    the number of print positions on a print line. The
    value must be greater than or equal to 1 and should
    not exceed the physical page width, or printing on
    the platen or print head jamming on the right may
    occur. The default value is based on the CPI value
    and will be 132 at 10 CPI, 158 at 12 CPI, 198 at
    15 CPI or 220 at 16.7 CPI. The default will
    correspond to the CPI default in effect. To specify
    a user-defined control string specify a string of 1 to
    128 pairs of hexadecimal digits.

LMARGIN={nnn│xxxx}
    nnn is a one to three digit number specifying the
    left-most print position on the page and serves as
    the first horizontal tab stop. It must be less than or
    equal to the LINELEN value. The default value is
    1. To specify a user-defined control string specify

a string of 1 to 128 pairs of hexadecimal digits.

RMARGIN={nnn│xxxx}
    nnn is a one to three digit number specifying the
    right-most print position on the page. The value is
    not used at this time, and is provided for use when
    the SCS protocol supports it. The value must be
    greater than or equal to LMARGIN and less than
    or equal to LINELEN.   The default value is
    LINELEN.   To specify a user-defined control
    string specify a string of 1 to 128 pairs of
    hexadecimal digits.

HTABS={(ht1,ht2,…,htn)│xxxx}
    ht1,ht2,…,htn are one to three digit numbers that
    specify the locations, in print positions measured
    from the left edge of the page, of the positions at
    which horizontal tab stops are to be placed. The
    first value specified must be greater than or equal
    to the LMARGIN parameter, the remaining values
    must be in ascending sequence, and the last value
    must be less than or equal to LINELEN.   The
    default is to have no horizontal tab stops.   To
    specify a user-defined control string specify a
    string of 1 to 128 pairs of hexadecimal digits.

ORIENT={P│L│xxxx}
    indicates the printed page orientation for the
    report. The values P an L indicate Portrait and
    Landscape orientations, respectively.   Portrait
    mode printing orients the text lines across the short
    dimension of the page, with the lines progressing
    down the long dimension of the page. Landscape
    mode printing orients the text lines across the long
    dimension of the page, with the lines progressing
    down the short dimension of the page. This page
    is printed in portrait orientation. This parameter
    will have no effect on your printed output if the
    printer does not support print orientation changes.
    To specify a user-defined control string specify a
    string of 1 to 128 pairs of hexadecimal digits.

RESET={xxxx}
    To specify a user-defined device reset string
    specify a string of 1 to 128 pairs of hexadecimal
    digits. If no value is specified, SCS devices will
    be sent controls to reset to the operator panel
    values. All other devices will receive no reset
    instructions.

In order to use the Vertical Tabs and Horizontal Tabs,
you must place the HT and VT characters into your
print data at the appropriate locations.   The HT
character has the value "05" in hexadecimal; the VT
character has the hexadecimal value "0B".   If you

wish to use either of these controls in the text portion of the TYPE=TESTLINE macro instruction you must edit the codes into the text by using their hexadecimal values.

Additional Control Codes

The following control codes may be specified in your print data. If you use the SHF (Set Horizontal Format), SLD (Set Line Density), SPD (Set Print Density) or the SVF (Set Vertical Format) controls, they will override and replace those specified in the Forms Control Buffer, and will remain in effect until you change them, or a new report is started.

Table I Additional Control Codes

Code	Hex	Name
BS	16	Back space
BEL	27	Bell function
CR	0D	Carriage return
FF	0C	Forms Feed
HT	05	Horizontal Tab
LF	25	Line Feed
NL	15	New Line
SHF	2BC1	Set Horizontal Format
SLD	2BC6	Set Line Density
SVF	2BC2	Set Vertical Format
SPD	2BD2	Set Print Density
VCS	04xx	Vertical Channel Select
VT	0B	Vertical Tab

Generate Liberty/Soft Interface Options

This macro instruction may be used to define the Liberty/Soft ROPES interface options. If this macro statement is present, it directs ROPES to send the report output associated with this FCB to the Liberty/Soft print manager for CICS.

An example of the format for this control statement appears below:

```
ROPESFRM TYPE=LSDEF,
         LSMODE=F,
         LSPROJ=INVENTRY,
         LSPAGE=STOCKRPT,
         LSUSER=FRED1,
         LSDESC='Stock Levels Report',
```

```
         LSSTAT1=1,
         LSSTAT2=3
```

where:

TYPE=LSDEF
  specifies the Liberty/Soft interface will be used to output all reports associated with this FCB to the Liberty/Soft print manager for CICS.

LSMODE=H|R|F|U
  specifies how the page description name will be supplied to the Liberty/Soft print manager. The meanings of each mode are described below:

  H - This mode is the default, and specifies that the page description will be obtained from the Liberty/Soft **hit table**, and will not be supplied by the LSPROJ and LSPAGE parameters.

  R - Directs ROPES to use the report name as the page description name. The LSPROJ name may also be added to the page description name (lsproj.reportid).

  F - Indicates the page description name will be supplied by the LSPAGE parameter. Note that the LSPROJ name may also be added to the page description name (lsproj.lspage).

  U - Specifies that the page description name will be embedded in the report data by using the Liberty/Soft output command "#OPRT". Please consult the Liberty/Soft documentation for more information on the #OPRT command.

LSPROJ=[|name]
  Specifies the Liberty/Soft project name which prefixes the page description name to form the complete page description name or path. The LSPROJ name is optional, and if specified, must be a maximum of 8 characters in length.

LSPAGE=[|name]
  Specifies the Liberty/Soft page description name. The full page description path name may be a composite of the project name, and the page name. This parameter is required if LSMODE=F, otherwise it is optional. If specified, the name may not exceed 8 characters in length.

LSUSER=[|user id]
  Specifies the LibertySoft userid that will receive

the output of the report(s) associated with this FCB. This parameter is optional. If specified, the user id must not exceed 8 characters in length.

LSDESC=[|description]
Specifies the description that will be associated with the output that is routed to Liberty/Soft using this FCB. This parameter is optional. If specified, the description must not exceed 32 characters in length.

LSSTAT1=[1|4]
Directs Liberty/Soft to start printing, or wait for the printer to be manually started when report data arrives. The default value is 1, which instructs Liberty/Soft to wait for, and start printing the report as soon as it arrives. Parameter value 4 instructs Liberty/Soft to hold the report, and wait for a manual start command to start printing the report.

LSSTAT2=[3|4]
Instructs Liberty/Soft to purge or keep the report data after printing it. Parameter value 3 is the default, and specifies that the report must be purged after it is printed. Parameter value 4 specifies the report must be kept on the Liberty/Soft spool for possible reprinting.

Generate Translate Table

Macro ROPESFRM TYPE=TRANSLATE

This macro instruction may be used to define the translate table to be used with the associated reports. If present, the TRANTAB parameter will specify the suffix of the translate table module name, or will indicate that translation is not to be performed.

The general format of the ROPESFRM TYPE=TRANSLATE macro instruction is as follows:

```
ROPESFRM TYPE=TRANSLATE,
            TRANTAB={name|NONE}
where:
```

TYPE=TRANSLATE
indicates that the translate table name is to be specified. If this macro instruction is not specified in the forms control block, the forms control block is not used to determine the translation table to use.

TRANTAB={name|NONE}
specifies either the suffix of the translate table name or indicates that translation is not to be performed. If translation is to be performed, the translate table name is constructed by suffixing the string "RO$T" with the value specified, e.g., "RO$Tname". The module name thus formed must exist at the time that the forms control block is compiled, since the translate table is link-edited with the forms control block. Sample translate tables are included in the <hlq>.SOURCE library.

The following rules apply in determining the translate table to be used during report printing.

1. The global translation flag is examined. This flag is set on the "Special Printer Options Maintenance" panel. If this flag is set to "N", no data translation is performed, and the translate tables in the forms control block or the device control block is not used.

2. If the forms control block translate table value is "NONE", then no translation will be performed.

3. If the forms control block translate table value is specified, the translate table specified will be used.

4. If the forms control block does not specify a translate table, the device characteristics block is tested.

5. If the translate table is specified as "NONE" in the device characteristics block, then no translation will be performed.

6. The translate table in the device characteristics block is used.

7. Finally, if a print line contains the carriage control character "X", then that line will not be translated.

Generate Device Initialization Controls

Macro ROPESFRM TYPE=DEVINIT

This macro instruction can be used to enable or suppress the sending of a set of Printer Control Language codes defined by the Device Characteristics Block (DCB) during device initialization. Multiple DEVINIT statements may be coded. The DVCTYPE

parameter specifies the type name (DVCTYPE) for the device controls entry in the DCB. The DVCUSEF parameter is then used to enable or disable the transmission of the PCL codes to the device. If an FCB DEVINIT macro statement does not exist for the corresponding DEVINIT macro statement in the DCB, then the initial status (DVCSTAT) of the DEVINIT macro statement in the DCB will determine if the PCL codes will be sent to the printer. An initial status of enabled will cause the PCL codes to be sent to the printer, and an initial status of disabled will cause the PCL codes to be suppressed.

The format of the TYPE=DEVINIT macro statement is as follows:

```
ROPESFRM TYPE=DEVINIT,
   DVCTYPE=type-name,
   DVCUSEF={Y|N}
```

where:

TYPE=DEVINIT
   Indicates that this entry applies to PCL codes that will be sent during device initialization, or just prior to the transmission of the report data.

DVCTYPE=type-name
   specifies the matching type name (DVCTYPE) for the PCL codes definition statement in the DCB.

DVCUSEF={Y|N}
   specifies whether the PCL codes associated with the DVCTYPE name are to be sent to print device or suppressed.

Generate Device Exit Controls

Macro ROPESFRM TYPE=DEVEXIT

This macro instruction can be used to enable or suppress the sending of a set of Printer Control Language codes defined by the Device Characteristics Block (DCB) during device termination. Multiple DEVEXIT statements may be coded. The DVCTYPE parameter specifies the type name (DVCTYPE) for the device controls entry in the DCB. The DVCUSEF parameter is then used to enable or disable the transmission of the PCL codes sent to the device. If an FCB DEVEXIT macro statement does not exist for the corresponding DEVEXIT macro statement in the DCB, then the initial status (DVCSTAT) of the DEVEXIT macro

statement in the DCB will determine if the PCL codes are sent to the printer. An initial status of enabled will cause the PCL codes to be sent to the printer, and an initial status of disabled will cause the PCL codes to be suppressed. The DEVEXIT statement must follow all TYPE=DEVINIT statements.

The format of the TYPE=DEVEXIT macro statement is as follows:

```
ROPESFRM TYPE=DEVEXIT,
         DVCTYPE=type-name,
         DVCUSEF={Y|N}
```

where:

TYPE=DEVEXIT
   indicates that this entry applies to PCL codes that will be sent during device termination, or just after the transmission of all report data.

DVCTYPE=type-name
   specifies the matching type name (DVCTYPE) for the PCL codes definition statement in the DCB.

DVCUSEF={y|n}
   specifies whether the PCL codes associated with the DVCTYPE name are to be sent to the print device or suppressed.

Generate PDF Controls

Macro ROPESFRM TYPE=PDFCTRL

This macro instruction is optional and may be used to define the Controls to be used when generating an Adobe® Acrobat® PDF document. If present, the control codes will be converted and sent to the PDF converter whenever the report using this FCB is converted to PDF format.

The general format of the ROPESFRM TYPE=PDFCNTL macro instruction is as follows:

```
ROPESFRM  TYPE=PDFCNTL,
          FONT=nn.n,
          LPI=nn.n,
          ORIENT={P|L},
          PAGEDIM=(www,hhh),
          TMARGIN=nn.n,
          BMARGIN=nn.n,
          LMARGIN=nn.n,
          RMARGIN=nn.n
```
where:

TYPE=PDFCNTL
  indicates that the PDF control values are to be specified.

FONT=nn.n
  specifies the font size to use, in points. You can specify any desired value, to one decimal place. If you omit the parameter, a default of 8.0 is assumed.

LPI=nn.n
  specifies the vertical print density, or lines per inch, to be used when converting the report. You can specify any desired value, to one decimal place. If you omit the parameter, a default of 6.0 is assumed.

PAGEDIM=(ww.w,hh.h)
  ww.w is the size, in inches of the width of the page as it feeds into the printer. hh.h is the size, in inches, of the height of the paper as it feeds into the printer. You can specify any desired value, to one decimal place, for either option. If omitted, a width of 8.5 inches and a height of 11.0 inches is assumed. Note that this is the Portrait Mode page dimension. If you specify ORIENT=L, these values are swapped automatically.

TMARGIN=nn.n
  nn.n is the size, in inches, of the top margin to be reserved in the document. You can specify any desired value, to one decimal place, for either option. If omitted, a top margin of 1.0 inches assumed.

BMARGIN=nn.n
  nn.n is the size, in inches, of the bottom margin to be reserved in the document. You can specify any desired value, to one decimal place, for either option. If omitted, a bottom margin of 1.0 inches assumed.

LMARGIN=nn.n
  nn.n is the size, in inches, of the left margin to be reserved in the document. You can specify any desired value, to one decimal place, for either option. If omitted, a left margin of 1.0 inches assumed.

RMARGIN=nn.n
  nn.n is the size, in inches, of the right margin to be reserved in the document. You can specify any desired value, to one decimal place, for either option. If omitted, a right margin of 1.0 inches assumed.

ORIENT={P|L|xxxx}
  indicates the printed page orientation for the report. The values P an L indicate Portrait and Landscape orientations, respectively. Portrait mode printing orients the text lines across the short dimension of the page, with the lines progressing down the long dimension of the page. Landscape mode printing orients the text lines across the long dimension of the page, with the lines progressing down the short dimension of the page. This page is printed in portrait orientation. The default value is L(andscape). When set to Landscape orientation the PDF converter will automatically interchange the PAGEDIM width and height values.

Generate HTML Controls

Macro ROPESFRM TYPE=HTMCTRL

This macro instruction is optional and may be used to define the Controls to be used when generating an HTML (Hypertext Markup language) document. If present, the control codes will be converted and sent to the HTML converter whenever the report using this FCB is converted to HTML format.

The general format of the ROPESFRM TYPE=HTMCNTL macro instruction is as follows:

```
ROPESFRM  TYPE=HTMFCNTL,
          FONTSZ=n,
          FACE='fontname',
          BANNER={Y|YES|N|NO|P|PAGE},
          BANNSZ=n,
          TITLE='title text',
          FGCOLOR=colorname,
          BGCOLOR=colorname,
          IMAGE='image text'
```

where:

TYPE=HTMCNTL
  indicates that the HTML control values are to be specified.

FONTSZ=n
  specifies the font size to use as a coded value. The valid values are:
  1 - xx-small
  2 - x-small
  3 - small
  4 - medium (the default)
  5 - large
  6 - x-large
  7 - xx-large

FACE='fontname'
specifies the name of the typeface to be used to present the document. You may specify a value 1 to 15 characters in length. The default value is "Courier New'.

BANNER={Y|YES|N|NO|P|PAGE}
specifies the type of page banner to be used. N or NO prevents any banner from being presented. Y or YES produces a banner at the top of the first page of the report. P or PAGE produces a banner at the top of every page of the report. The default is NO.

BANNSZ=n
specifies the size of the text in the banner, if the banner is produced. You can specify any value that can be specified in the FONTSZ parameter. The default value is 6 = x-large.

TITLE='title text'
specifies the document title, which normally appears in the browser window title bar, and which will be used as the text for the document or page banner, if requested. Title text is a 0 to 132 character string, enclosed in single quotes.

FGCOLOR=colorname
BGCOLOR=colorname
these two options specify the foreground, or text color, and the background color, respectively. The color name value is chosen from the following list, and may be abbreviated using the capitalized letters as indicated. Choose one value for each option from this list:

Aqua	
BLAck	(Default for foreground)
BLUe	
Fuschia	
GRAy	
GREen	
Lime	
Maroon	
Navy	
Olive	
Purple	
Red	
Silver	
Teal	
Uhhhhhh	User defined color using the HTML hexadecimal color scheme, where each digit pair represents a color value from 00 to FF.
White	(Default for background)

Yellow

IMAGE='image text'
specifies the text to be included in place of the ? value in the following HTML construct: <img ? >. Code any value that will define the image you want to use in your document. For example, the sample module RO$FHTML uses the value:
src="http://www.axios.com/images/ropes_logo. gif" border=0 align=left
to define an image found on our web site, which is our ROPES product logon.

If IMAGE is coded, then the image is included in the document banner. If IMAGE is not coded, then no image is included in the banner. If IMAGE is coded when BANNER=N is coded or implied, no image is displayed.

The image text string is a 0 to 198 character text string, enclosed in single quotes. You are responsible for insuring that the result is well-formed HTML.

Generate Test Message

Macro ROPESFRM TYPE=TESTLINE

This macro instruction is optional and may be used to define the lines of a forms alignment or printer test message. Each specification of the macro instruction produces one line of a message to be sent to the printer. If no ROPESFRM TYPE=TESTLINE macro instruction is coded, a default test message will be transmitted to a printer as a result of a request to test the printer (via PROP/Q…), specifying the name of this forms control block. The general format of the ROPESFRM TYPE=TESTLINE macro instruction is as follows. This instruction may be specified as many times as necessary to define all of the message. The lines are transmitted in the order specified.

ROPESFRM   TYPE=TESTLINE,LINE='ctext'

where:

TYPE=TESTLINE
indicates that a test line is to be generated.

LINE='ctext'
c is a valid ANSI carriage control character.

text is a string of 0 to 132 characters to be used as the text of the print line.

Generate PPDS Controls

Macro ROPESFRM TYPE=PPDCTRL

This macro instruction is optional and may be used to define the controls to be used when generating a bar code on a PPDS printer. If present, the control codes will be converted and sent to the PPDS converter whenever the report using this FCB is processed.

The general format of the ROPESFRM TYPE=PPDCTRL macro instruction is as follows:

```
ROPESFRM  TYPE=PPDCTRL,
          HADJ=(+|-,nn),
          XADJ=(R|L,nn),
          YADJ=(U|D,nn)
```

where:

TYPE=PPDCTRL
  indicates that the PPDS control values are to be specified.

HADJ=(+|-,nn)
  specifies the height adjustment factor to be applied to the bar code. A "+" value indicates that the adjustment is to be added to the height. A "-" indicates that the adjustment is to be subtracted from the height. The numeric value may be any value between 0 and 11 and represents the number of twelfths of an inch (1/12") to adjust the bar code height. If you omit the parameter, a default of 0 is assumed.

XADJ=(R|L,nn)
  specifies the x-axis position adjustment to be applied to the bar code. A "R" value indicates that the shift is to be to the right. A "L" value indicates that the shift is to be to the left. The value specified is the number of 72nds (1/72") of an inch to shift the bar code. You can specify any desired value between 0 and 72. If you omit the parameter, a default of 0 is assumed.

YADJ=(U|D,nn)
  specifies the y-axis position adjustment to be applied to the bar code. A "U" value indicates that the shift is to be up, toward the top of the page. A "D" value indicates that the shift is to be down, toward the bottom of the page. The value specified is the number lines to shift the bar code. You can specify any desired value between 0 and 72. If you omit the parameter, a default of 0 is assumed.

Conclude Forms Control Block

Macro ROPESFRM TYPE=FINAL

This macro instruction is required to conclude the generation of the forms control block. The general format of the ROPESFRM TYPE=FINAL macro instruction is as follows:

```
ROPESFRM    TYPE=FINAL
```

where:

TYPE=FINAL
  indicates the end of the forms control block.

Device Characteristics Blocks

The RO$Dxxxx modules define the device dependent characteristics for a ROPES printer type (e.g., 3284, 3288, SCS, JES, etc.). They are used to provide the information necessary to accomplish buffering, data translation, spacing and forms feed for any supported printer.

The general format of the assembler code to be used when generating a device characteristics block is shown below. The resultant object module must be link-edited into the ROPES load library under the name specified in the ROPESDEV TYPE=INITIAL macro for use by online ROPES programs.

```
    TITLE '"RO$D     " -- MODEL DEVICE CHARACTERISTICS
        BLOCK'
 ROPESID MODE=ONLINE
 ROPESDEVTYPE=INITIAL ESTABLISH CSECT
        .
 ROPESDEVTYPE=SPACING,    DEFINE      SPACING      AND
                          BUFFERING CHARACTERISTICS
        .
 ROPESDEVTYPE=CHANNELS,   DEFINE   CHANNEL    CONTROL
                          CHARACTERS
        .
 ROPESDEVTYPE=CONTROLS,   DEFINE CONTROL CHARACTERS
        .
 ROPESDEVTYPE=SOCKETS,    DEFINE SOCKETS APPLICATION
                          OPTIONS
        .
 ROPESDEVTYPE=RULES,      DEFINE VALIDATION RULES FOR
                          EXTENDED    DEVICE     CODE
                          OVERRIDES
        .
 ROPESDEVTYPE=SMTPCTL,    Define SMTP mail Options'
        .
 ROPESDEVTYPE=TRANSLATE,  DEFINE DATA TRANSLATION
        .
 ROPESDEVTYPE=DEVINIT,    DEFINE      DEVICE    INITIAL
                          CONTROLS
        .
 ROPESDEVTYPE=DEVEXIT,    DEFINE DEVICE EXIT CONTROLS
        .
 ROPESDEVTYPE=FINAL       END OF DEFINITION
 END
```

The distributed ROPES system contains sample device characteristics blocks. Most installations can use these sample device characteristics blocks for production purposes. Therefore, user definition of this block is rarely required.

Macro ROPESDEV

This macro instruction defines the device-dependent characteristics to be used to control buffering, forms feed and spacing of a ROPES printer. Any number of printers may be controlled through the use of the same device characteristics block if the specification of the block is compatible with the characteristics of the printers.

The following macro instructions may be specified, in the order shown, to define the device characteristics block:

ROPESDEV TYPE=INITIAL
   required to establish the control section;

ROPESDEV TYPE=SPACING
   required to define the device buffer size, special buffer requirements and the characters to control line spacing;

ROPESDEV TYPE=CHANNELS
   optional. Used to define the control character sequences which will cause the printer to advance to the line representing a particular channel within the forms page;

ROPESDEV TYPE=CONTROLS
   optional. Used to define the printer type and device-specific control strings required to effect page layout choices.

ROPESDEV TYPE=SOCKETS
   this macro control statement is required for ROPES print devices that use TCPIP and the CICS Sockets Interface for transmitting report data. This macro control statement specifies options that apply to all ROPES components that use the CICS Sockets Interface. At the present time, the TYPE=SOCKETS macro statement is required for the LPRD and SMTP device types only. If the TYPE=SOCKETS macro statement is omitted and the DCB device type is LPRD or SMTP, then the TYPE=SOCKETS options will be generated using defaults automatically at assembly time. The TYPE=-SOCKETS macro statement must be coded after the TYPE=CONTROLS macro statement and before the TYPE=FINAL macro statement.

ROPESDEV TYPE=RULES
   this macro control statement is used in conjunction with the Extended Device Codes Override feature. The Extended Device Codes Override feature provides a mechanism for overriding a specific PCL code sequence within a PCL code module. The TYPE=RULES macro statement provides a way to validate the data that will replace the specific PCL code sequence in the PCL overlay module. The TYPE=RULES macro statement defines a list of correct values which the overriding data must match. If the overriding data does not match one of the values in the list, then the process is terminated and an error message is

issued. The TYPE=RULES macro statement is optional. Please see the DCB DEVINIT/DEVEXIT macro statements for more information on the Extended Device Codes Override feature parameters.

ROPESDEV TYPE=SMTPCTL
optional. Used to define the SMTP e-mail parameter options that enables ROPES to interface with the SMTP mail server and CICS Sockets.

ROPESDEV TYPE=TRANSLATE
defines the translation table to use when translating data for printing. The translation tables are separately assembled. You may also suppress translation for all printers using a specific device characteristics block.

ROPESDEV TYPE=DEVINIT
defines a set of PCL codes to be sent to the print device during printer initialization or setup.

ROPESDEV TYPE=DEVEXIT
defines a set of PCL codes to be sent to the print device during printer termination or reset.

ROPESDEV TYPE=FINAL
required to conclude the device characteristics block definition.

Define Control Section

Macro ROPESDEV TYPE=INITIAL

This macro instruction defines the control section into which the device characteristics block is to be assembled. The general format of the ROPESDEV TYPE=INITIAL macro instruction is as follows:

ROPESDEV TYPE=INITIAL,NAME=suffix

where:

TYPE=INITIAL
establishes the control section into which the device characteristics block is to be assembled.

NAME=suffix
specifies a one to four character alphameric suffix. This suffix, if specified, is appended to the string "RO$D" to form the name of the device characteristics module. (Default: "NAME=   ")

Spacing and Buffering Information

Macro ROPESDEV TYPE=SPACING

This macro instruction defines the device-dependent buffering and spacing control characteristics of a ROPES printer. The general format of the ROPESDEV TYPE=SPACING macro instruction is as follows:

```
ROPESDEV  TYPE=SPACING,
          BUFSIZE=nnnn,
          NOSPACE=xxxx,
          SINGLE=xxxx,
          DOUBLE=xxxx,
          TRIPLE=xxxx,
          HEADER=xxxx,
          TRAILER=xxxx
```

where:

TYPE=SPACING
specifies that buffering and spacing control characteristics are to be defined.

BUFSIZE=nnnn
nnnn is the physical buffer size of the device. This parameter must be specified.

NOSPACE=xxxx
xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the control characters that ROPES will transmit to the printer to suppress spacing. If the printer for which this device characteristics block is being generated does not support overprinting, this parameter should not be coded. (Default: one transmission of string specified for SINGLE)

SINGLE=xxxx
xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the control characters that ROPES will transmit to space one print line position. This parameter must be specified.

DOUBLE=xxxx
xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the control characters that ROPES will transmit to space two print line positions (double space). (Default: two transmissions of string specified for SINGLE)

TRIPLE=xxxx
xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the control characters that ROPES will transmit to space three print line

positions (triple space). (Default: three transmissions of string specified for SINGLE)

HEADER=xxxx
  xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will place at the beginning of every print buffer.

TRAILER=xxxx
  xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will place at the end of every print buffer.

Channel Positioning Control

Macro ROPESDEV TYPE=CHANNELS

This macro instruction defines the device-dependent control characters which are required for spacing to a predefined print line location within the forms page when an ANSI "skip to channel" command is provided in a ROPES print line. ROPES will use the forms control block (RO$Fxxxx) to calculate the line number within a forms page which was reached as a result of the "skip to channel" command. Therefore, the line number definitions for a channel in the forms control block must match the hardware spacing produced when control characters from this block are used by ROPES to obtain "skip to channel" print line positioning. If a particular "skip to channel" command is not supported by the printer, ROPES will use the single space control character sequence to advance to the proper line. The general format of the ROPESDEV TYPE=CHANNELS macro instruction is as follows:

```
ROPESDEV  TYPE=CHANNELS,
          CH1=xxxx,
          CH2=xxxx,
          CH3=xxxx,
          CH4=xxxx,
          CH5=xxxx,
          CH6=xxxx,
          CH7=xxxx,
          CH8=xxxx,
          CH9=xxxx,
          CH10=xxxx,
          CH11=xxxx,
          CH12=xxxx
```

where:

TYPE=CHANNELS
  specifies that device-dependent control characters to be used to obtain "skip to channel" print line

positioning are to be defined.

CH1=xxxx through CH12=xxxx
  xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the control characters that ROPES will transmit to accomplish spacing to a channel position within a forms page. Do not code the specification for a "skip to channel" command which is not supported by the printer.

Define Device Control Codes For Page Formatting

Macro ROPESDEV TYPE=CONTROLS

This macro defines the device handling required for the printer. You can indicate that the device is a BSC, SCS, IPDS, RJE, JES, Batch Logical Unit, video or user-defined device. If the device is user defined, you can provide the control codes required to effect various page formatting options. The general format of the ROPESDEV TYPE=CONTROLS macro instruction is as follows:

```
ROPESDEV  TYPE=CONTROLS,
          DEVTYPE={BSC|SCS|IPDS|JES|RJE
          |BATCHLU|VIDEO|SMTP|SOKT|
          |USER|LPRD},
          DSTYPE={BSC|SCS|IPDS|PPDS|JES|
          RJE|BATCHLU|VIDEO|SMTP|SOKT|
          USER|LPRD},
          SIGNAL={TD|TS},
          ALARM=xxxx,
          CPI=xxxx,
          LPI=xxxx,
          PAGESIZ=xxxx,
          TMARGIN=xxxx,
          BMARGIN=xxxx,
          VTABS=xxxx,
          LINELEN=xxxx,
          LMARGIN=xxxx,
          RMARGIN=xxxx,
          HTABS=xxxx,
          ORIENTP=xxxx,
          ORIENTL=xxxx,
          MAXLINE=nnn,
          LINEFMT={F|V},
          LFATMPP={Y|N},
          LFATEOT={Y|N},
          MODEL=xxxx,
          SCSEJECT={Y|N},
          ENDBRAKT={Y|N}
```

where:

TYPE=CONTROLS
  indicates that the device handling requirements and

user-defined formatting controls are to be specified.

DEVTYPE={BSC|SCS|IPDS|JES|RJE|VIDEO-|BATCHLU|SMTP|USER|LPRD|SOKT}

indicates the type of device handling required. Specify BSC (the default) if standard 3270 bisynchronous controls are used (also called 3270 DSC). Specify SCS if SCS (SNA Control Strings) are to be used. Specify IPDS if IPDS (Intelligent Printer Data Streams) are to be used. Specify JES if a JES printer is to be used. Specify RJE if a 2780 or similar remote job entry station is being used. Specify BATCHLU if your device requires the use of the ISSUE SEND command. Specify VIDEO if a CRT is to be used. Specify SMTP if you want this device to interface with the SMTP e-mail server and CICS/Sockets. Specify LPRD if you want this device to submit print requests to remote TCP/IP LPD servers over the Internet or within an intranet. Specify SOKT if you want to print to an IP device using Direct Socket printing. Specify USER if user-supplied control strings, taken either from the Device Characteristics Block or the Forms Control Block are to be used. Do not specify SCS or IPDS unless your printer is capable of processing those control strings and has been defined to CICS and your teleprocessing access method accordingly.

If you have indicated a device type of USER, you may specify device control strings for the various formatting options. If you have specified any other value, the device control strings coded are ignored.

DSTYPE={BSC|SCS|IPDS|PPDS|JES|RJE|VIDEO|BATCHLU|SMTP|USER|LPRD|SOKT}

indicates the type of device handling required. Specify BSC (the default) if standard 3270 bisynchronous controls are used (also called 3270 DSC). Specify SCS if SCS (SNA Control Strings) are to be used. Specify IPDS if IPDS (Intelligent Printer Data Streams) are to be used. Specify JES if a JES printer is to be used. Specify RJE if a 2780 or similar remote job entry station is being used. Specify BATCHLU if your device requires the use of the ISSUE SEND command. Specify VIDEO if a CRT is to be used. Specify SMTP if you want this device to interface with the SMTP e-mail server and CICS/Sockets. Specify LPRD if you want this device to submit print requests to remote TCP/IP LPD servers over the Internet or within an intranet. Specify SOKT if you want to print to an IP device using Direct Socket printing.

Specify PPDS if you want to send PPDS (Personal Printer Data Stream) to the printer. Specify USER if user-supplied control strings, taken either from the Device Characteristics Block or the Forms Control Block are to be used. Do not specify SCS or IPDS unless your printer is capable of processing those control strings and has been defined to CICS and your teleprocessing access method accordingly.

If you have indicated a device type of USER, you may specify device control strings for the various formatting options. If you have specified any other value, the device control strings coded are ignored.

SIGNAL={TD|TS}

indicates the method for task communication when the device type is JES. The value TD, which is the default, indicates that a Transient Data Queue is used through a DCT entry that is the same as the printer name. The value TS indicates that task communication is done through temporary storage, using a TSQUEUE name of ROPExxxx where xxxx is the printer name.

ALARM=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to activate the device audible alarm when the report option SOUND ALARM is set to Y. This option does not apply to JES or BATCHLU devices.

CPI=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the horizontal print density (Characters Per Inch).

LPI=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the vertical print density (Lines Per Inch).

PAGESIZ=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the vertical size of the printed page (Lines Per Page).

TMARGIN=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the line location of the top

margin.

BMARGIN=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These define the character string that ROPES will use to set the line location of the bottom margin.

VTABS=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These define the character string that ROPES will use to set the line locations of the vertical tab stops.

LINELEN=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These define the character string that ROPES will use to set the horizontal size of the printed page (Maximum Print Position).

LMARGIN=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the left margin character position.

RMARGIN=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the right margin character position.

HTABS=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These define the character string that ROPES will use to set the character positions of the horizontal tab stops.

ORIENTP=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These define the character string that ROPES will use to set the portrait print orientation mode if the Forms Control Block indicates that the report is printed in portrait orientation.

ORIENTL=xxxx

xxxx is 1 to 128 pairs of hexadecimal digits. These digit pairs define the character string that ROPES will use to set the landscape print orientation mode if the Forms Control Block indicates that the report is printed in landscape orientation.

MAXLINE=nnn

nnn is a value from 1 to 255 and indicates the longest line length that may be sent to the printer.

This length includes the Carriage Control Character. For printers with fixed length line formats, this value is the length of each line to be sent. If this parameter is not specified, a value of 133 is assumed.

LINEFMT={F|V}

specifies the format of the lines sent to the device. If the device accepts new line characters or variable length lines, specify a value of V. If the device must receive fixed length lines, specify the value F and provide a value for the MAXLINE parameter. If the device type (DEVTYPE=) value is "LPRD", then the LINEFMT value must be "V" (variable). Format "F" (fixed) is not valid for "LPRD" devices.

LFATMPP={Y|N}

specify Y if your device generates a new line if a printable character is present in the Maximum Print Position. If no new line is generated, specify N. The default is Y.

LFATEOT={Y|N}

specify Y if your device will generate a new line automatically at the end of a transmission to the device. If no new line will be generated, specify N. The default value is N.

MODEL=xxxx

xxxx is the four character string identifying the printer model. Examples are: 3287 (the default), 3284, 3812, 4028, 4224, etc. The model parameter is used to control the use of certain device-specific codes, principally to prevent the use of orders that are not supported by the model. At present, the following rules are applied:

Model	Rule
3287	Suppress the use of the Set Print Density SCS order and ignore the CPI= settings.
3812, 4028 1910	Suppress the use of the Set Orientation SCS order and ignore the ORIENT= parameter.

SCSEJECT={Y|N}

ROPES normally issues a page eject at the end of the printing of a report on an SCS printer in preparation for sending the SCS reset control to restore the power on state. The default is **Y** and will allow the page eject to be sent. Set this value to **N** if you want to suppress this form feed if it is automatically supplied by your terminal emulator,

LAN or local print spooler. For Liberty/Soft destined output, the SCSEJECT parameter should be set to "N" as the Liberty/Soft print manager already issues a form feed at the end of the report.

ENDBRAKT={Y|N}

ROPES normally issues a SEND LAST (End Bracket) command when it runs out of work to do. If your printer or print spooler waits for the End Bracket indicator before printing any of the transmitted data, and you are sending multiple physical and/or logical reports to the device, you should set this control to **Y** so that ROPES will terminate and restart the printer task between each logical and physical report, causing the End Bracket to be sent between each report. The default is **N** and will limit the use of the End Bracket function to the cases where the ROPES printer is idle or put on hold. Indiscriminate use of the Y setting will significantly increase the overhead in processing all printers using this DCB.

Generate Sockets Interface Options

Macro ROPESDEV TYPE=SOCKETS

This macro statement is used to define the parameter options for ROPES components that use the CICS Sockets Interface. All ROPES printer devices that transmit reports over TCPIP require this macro statement.

```
ROPESDEV TYPE=SOCKETS,
         SOKTMEO=nnnn,
         SOKRTRY={0-12},
         SOKDLAY={0-61439},
         SOKPORT={1-61439}
```

where:

TYPE=SOCKETS

specifies this macro statement will generate parameters required to interface this ROPES printer device to the CICS Sockets Interface. All ROPES printer devices that use TCPIP and the CICS Sockets Interface require this macro control statement. Currently, two device types require CICS Sockets support and these are the LPRD and SMTP device types.   If the DCB TYPE=-CONTROLS macro statement defines an LPRD or SMTP device and the TYPE=SOCKETS macro statement is omitted, then the TYPE=SOCKETS default options will be generated automatically at assembly time.

SOKTMEO=nnnn

specifies the timeout value to be applied to all Sockets read and write requests. The timeout value is used on the SELECT SOCKET call to determine if the port is ready to receive or send data. If the port is not ready, then CICS Sockets will wait until the timeout value expires.   When the timeout value expires, a ROPES message is generated indicating the device has timed out and the process is aborted. This methodology prevents "blocked" read and writes which can cause tasks to pile up in CICS.   The SOKTMEO parameters specifies the number of whole seconds to wait before the timeout expires. Accepted values range between 1 and 9999. The default value is 60 seconds.

SOKRTRY

specifies the number of times ROPES will automatically retry a print request to an LPRD ROPES printer. If the printer task should fail due to a communications failure, timeout, or some other problem ROPES will attempt to restart the print request the number of times specified by the SOKRTRY parameter. The SOKRTRY parameter is optional. If a value is specified, it must be numeric and in the range of 0 to 12. The value zero is the default and means no retries will be attempted.

SOKDLAY

specifies the number of seconds ROPES will wait before trying to restart a failed LPR print request. The SOKDLAY parameter may be specified only if the SOKRTRY parameter has also been specified. A numeric value in the range of 0 to 61439 is valid. The value zero means no delay will be used and this value is the default. Specify this parameter if you want ROPES to wait the specified amount of time before retrying the LPR print request.   This will give either automated recovery processes time to recover the device, or an operator time to reset the device.

SOKPORT

specifies the port number that the SMTP server is listening on in your environment. The default port number is 25. You will not normally need to change this value. The purpose of this option is to provide the ability to have different ROPES SMTP printer tasks communicate with different SMTP servers if you have the need to distribute your workload, and to allow you to assign a non-standard port when you have no other way, such as a firewall, to prevent the use of the server for

unintended purposes, for example, as an Open Relay mail server for use by spammers and other unsavory types.

Generate Validation Rule For EDC Overrides

Macro ROPESDEV TYPE=RULES

This macro statement is used to create a validation list for an Extended Device Codes (EDC) override. The TYPE=RULES macro statement defines a list of correct values which the overriding data must be verified against. If the overriding data passes valid-ation, then the override data is substituted at the loc-ation and for the length specified by the DEVINIT or DEVEXIT DCB macro statement. If the overriding data does not pass validation an error message is issued and the entire process is terminated.

```
ROPESDEV TYPE=RULES,
         RULENME=tttttttt,
         RULELST='n,n,n,…'
```

where:

TYPE=RULES
  specifies that a validation rule list is to be created to validate Extended Device Code (EDC) override values. Override data values will be compared against the validation list to ensure the override data is valid. If the override data is correct, the process continues and the override data is substituted at the location and for the length specified by the DEVINIT or DEVEXIT DCB macro statement. If the over-ride data fails validation, an error message is issued and the print request is terminated.

RULENME
  specifies a one to eight character rule name. The rule name is case sensitive and should match exactly the name specified by the DVCRULE parameter on the DEVINIT/DEVEXIT DCB macro statement. The name may contain alpha-numeric characters.

RULELST
  specifies a validation list containing data items separated by commas up to a maximum length of 255 characters. The validation list must be enclosed by single quotation marks. Individual data items may contain alpha or numeric characters. No spaces are permitted in or between

data items. The length of each data item is fixed and must be the same for all items in the validation list. The data item length is determined by the length value specified by the DVCOVLN parameter on the DEVINIT/DEVEXIT DCB macro statement. Each data item in the validation list may not exceed 15 characters in length, and in some cases may not exceed 4 characters in length if the target format for the override data is binary.

Generate SMTP Mail Server Options

Macro ROPESDEV TYPE=SMTPCTL

This macro statement is used to define the parameter options required to interface ROPES printers with the SMTP E-mail server, and CICS Sockets. This enables ROPES reports to be sent to e-mail destinations instead of CICS printers.

```
ROPESDEV   TYPE=SMTPCTL,
           TCPIPNM={TCPIP|xxxx},
           SMTPCMD={M|R},
           USELHST={L|N},
           MAILLOG={Y|N},
           MAILLGQ=tttt,
           SENDHST=tttt,
           MAILFRM=tttt,
           RCPTTO=tttt,
           COPYTO=tttt,
           COPYTO2=tttt,
           COPYTO3=tttt,
           COPYTO4=tttt,
           COPYTO5=tttt,
           MAXCPYE=nn,
           SUBJECT='tttt',
           ATCHTYP={REPORT|PDF},
           ATCHTST={A|M},
           ATCHTSN=tttttttt,
           ATCHFLN=ttt…ttt,
           ATCHFSL={0..12},
           ATCHFSF={Y|N},
           ATCHFXT=ttt,
           ATCHSTA={Y|N},
           ATCHDMT='ttt…ttt',
           ATCHNT1='ttt…ttt',
           ATCHNT2='ttt…ttt',
           ATCHNT3='ttt…ttt',
           ATCHNT4='ttt…ttt',
           ATCHNT5='ttt...ttt'
```

Where:

TYPE=SMTPCTL
  specifies this macro statement will generate the

parameters required to interface this ROPES printer device to the SMTP e-mail server, and CICS Sockets. This enables ROPES to transmit report data to the e-mail destination associated with this DCB. The SMTPCTL statement is optional.

TCPIPNM=ttttt

specifies the name of the TCPIP started task running on your OS/390 system. This is a required parameter, but if omitted will default to "TCPIP".

SMTPCMD={M|R}

where "M" means e-mail header addresses will be obtained from the DCB macro statement SMTPCTL, and where "R" means the e-mail header address options will be obtained from the body of the Ropes report data. E-mail header information is specified in the body of the report data by ROPES E-mail header command statements; (#SENDHST=, (#MAILFROM=, (#RCPTTO=, (#COPYTO=, and (#SUBJECT=. Please see the ROPES Programmer's Guide for more information on these e-mail header commands. SMTPCMD is a required parameter, and the values "M" or "R" are the only valid selections.

USELHST={L|N}

where the value "L" means the local host id will be used, and the value "N" means the host id will be obtained via the DNS name server using a GETHOSTBYNAME sockets call. If you do not have a DNS name server running on your system, then you must select option value "L". It is recommended that you use the "L" option for performance reasons. Using the "N" option can cause an extended wait time while the name is resolved by the DNS name server. This may negatively impact performance on your CICS system. If your e-mail applications are segregated to a specific CICS region, then the impact of using the "N" option may be less noticeable. Make sure the priority of your TCPIP, SMTP, and DNS name server tasks are above CICS so that CICS does not have to wait too long for responses. USELHST is a required parameter. Option values "L" and "N" are the only valid selections.

MAILLOG={Y|N}

where the value "Y" means e-mail diagnostic messages will be written to the **MAILLGQ** transient data destination for this printer, and the value "N" means diagnostic messages will not be produced. This is a required parameter, and the option values "Y" or "N" are the only valid selections.

MAILLGQ=tttt,

where "tttt" specifies the name of the e-mail log transient data destination. The destination commonly used is "**CSMT**" however, this can be changed to whatever is desired by the customer. The destination to be used must have the same DCB attributes as that of "CSMT". This is a required parameter.

SENDHST=tttt

where "tttt" specifies the name of the host that is sending the e-mail. The host name must not exceed 24 characters in length. The name supplied is normally the same name used by the TCPIP parameter "HOSTNAME". This is a required parameter.

MAILFROM=tttt

where "tttt" specifies the e-mail address of the sender. The e-mail address is limited to 80 characters in length. The value specified must conform to the rules and syntax of a valid e-mail address. This is a required parameter.

RCPTTO=tttt

where "tttt" specifies the e-mail address of the recipient (destination e-mail address). The e-mail address is limited to 80 characters. The value specified must conform to the rules and syntax of a valid e-mail address. This is a required parameter.

COPYTO=tttt,

where "tttt" specifies the e-mail address of one recipient to which this e-mail will be copied. The e-mail address is limited to 80 characters. The value specified must conform to the rules and syntax of a valid e-mail address. This is an optional parameter.

COPYTO2=tttt

where "tttt" specifies the e-mail address of one recipient to which this e-mail will be copied. The e-mail address is limited to 80 characters. The value specified must conform to the rules and syntax of a valid e-mail address. This is an optional parameter.

COPYTO3=tttt

where "tttt" specifies the e-mail address of one recipient to which this e-mail will be copied. The e-mail address is limited to 80 characters. The value specified must conform to the rules and

syntax of a valid e-mail address. This is an optional parameter.

COPYTO4=tttt

where "tttt" specifies the e-mail address of one recipient to which this e-mail will be copied. The e-mail address is limited to 80 characters. The value specified must conform to the rules and syntax of a valid e-mail address. This is an optional parameter.

COPYTO5=tttt

where "tttt" specifies the e-mail address of one recipient to which this e-mail will be copied. The e-mail address is limited to 80 characters. The value specified must conform to the rules and syntax of a valid e-mail address. This is an optional parameter.

MAXCPYE=nn

where "nn" specifies the maximum number of "COPYTO" e-mail addresses that can be specified dynamically when "SMTPCMD=R". This parameter limits the number of "(#COPYTO = " control records that may be generated by the user application for copying additional e-mail recipients. If the application generates more "(#COPYTO" statements than is specified by the MAXCPYE parameter, they will be ignored. The MAXCPYE parameter must be numeric, and the value must be in the range of 0 to 95. Note that the MAXCPYE parameter must not be specified if the SMTP commands are to be generated by the DCB (i.e. SMTPCMD=M).

SUBJECT='tttt'

where 'tttt' is the subject text for the e-mail. Any text up to 80 characters in length may be specified. Single quotation marks must surround the subject text. This is a required parameter.

ATCHTYP={REPORT|PDF}

This parameter is optional. The ATCHTYP parameter specifies that the ROPES report should be sent with the e-mail as an attached file. Three possible options may be specified for the ATCHTYP parameter and they are 'REPORT', HTML and 'PDF'. The 'REPORT' option specifies that the file will be attached as a plain-text file. The HTML option specifies that the report will be converted to HTML format before being attached to the e-mail. The 'PDF' option specifies that the report will be converted to PDF format before being attached to the e-mail. If the ATCHTYP parameter has been supplied, then

most of the "ATCH" type parameters will be required.

ATCHTST={A|M}

The ATCHTST parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHTST specifies the type of Temporary Storage that will be used for report data conversions. The two possible options are 'A' for Auxiliary, or 'M' for Main. Generally, the value 'M' will provide faster processing for small reports while the value 'A' will be more suitable for large reports.

ATCHTSN=tsqname

The ATCHTSN parameter is required if a value has been supplied for the ATCHTYP and ATCHTST parameters. The ATCHTSN parameter supplies the name for the Temporary Storage Queue that will be used for input to the report data conversion process. The output queue name is provided by ROPES by modifying the last character of the name supplied by ATCHTSN. The name supplied **must** be a full 8 characters in length.

ATCHFLN=filename

The ATCHFLN parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHFLN parameter specifies the file name prefix that will be used to assemble the attached file name. The attach file name is made up of the file name prefix, a time stamp, and the file extension. The ATCHFLN parameter specifies part of the first node of the file name. The size of the value may be from 1 to 50 characters in length. The total file name size should not exceed the maximum file name size for the platform that will receive the e-mail or 64 characters. Alpha and numeric characters may be used in the file name prefix value.

ATCHFSL={0..12}

The ATCHFSL parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHFSL parameter specifies the length of the file name suffix. The file name suffix is provided to make attach file names unique on the receiving system. The ROPES system generates a time stamp that contains the current date and time in the form YYMMDDHHMMSS. Either a portion or the entire time stamp may be selected for the file name suffix. Selection proceeds from right to left. The ATCHFSL parameter value must be numeric, and must be in the range of 1 to 12. For example,

if a value of 6 is coded, only the time will be used ("HHMMSS") for the file suffix. The selected time stamp value is appended to the file name prefix (the value supplied by ATCHFLN) to complete the high level node of the attached file name.

ATCHFSF={Y|N}

The ATCHFSF parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHFSF parameter specifies whether the attach file name suffix is to be used (the value supplied by ATCHFSL). Two possible values may be coded for ATCHFSF and they are 'Y' (Yes), or 'N' (No). If the value 'Y' is coded, ROPES will use the length provided by parameter ATCHFSL to generate a file name suffix as described above. If the value specified for ATCHFSF is 'N', then ROPES will not generate a file name suffix. If no file suffix is generated, then the attached file name will be constructed from the file name prefix and the file name extension (supplied by ATCHFXT) only. If more than one attached file is expected to be generated for the printer associated with this DCB, then it is recommended that a value of 'Y' be specified for the ATCHFSF parameter.

ATCHFXT=filetype

The ATCHFXT parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHFXT parameter specifies the value of the attach file name extension. If the value for ATCHTYP was 'REPORT', then the file extension should be set to 'TXT'. If the value for ATCHTYP was 'PDF' then the file extension should be set to 'PDF'. If the value for ATCHTYP was 'HTML' then the file extension should be set to 'HTML' or 'HTM' so that the file will be recognized properly. The ATCHFXT parameter supplies the last component of the attach file name. For example, if the ATCHFLN parameter was set to "RPTJOB1", the ATCHFSL parameter was set to 12, and the ATCHFXT parameter was set to "TXT" then the entire attach f i l e   n a m e   w o u l d   b e "RPTJOB1yymmddhhmmss.TXT". The ATCHFXT parameter must be 3 characters in length.

ATCHSTA={Y|N}

The ATCHSTA parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHSTA parameter specifies that status information, generated by ROPES, should be included in the pre-amble e-mail which accompanies the attached report file. The status information includes the date and time the report file was generated, the destination printer id, and the report name. If you want this status information included in the pre-amble e-mail text, please specify a value of 'Y' for the ATCHSTA parameter. If not, please code a value of 'N'.

ATCHDMT='ttt...ttt'

The ATCHDMT parameter is required if a value has been supplied for the ATCHTYP parameter. The ATCHDMT parameter specifies the text of the delivery message. The delivery message text is a required component of the pre-amble e-mail which accompanies the attached file. This is the first line of text in the pre-amble e-mail. By default this message contains "This E-mail delivered by ROPES Version 9.0.". If this message is not suitable for your installation requirements, then the message may be changed to some other desired text. The ATCHDMT parameter value may be up to 72 characters of text enclosed in single quotes.

ATCHNT1='ttt...ttt'

The ATCHNT1 parameter is optional. It permits the user to specify customized text to be included in the pre-amble e-mail which accompanies the attached file. The text specified must be 1 to 72 characters in length and must be surrounded by single quotes. The ATCHNT1 parameter corresponds to note line 1, and should be used before parameter ATCHNT2.

ATCHNT2='ttt...ttt'

The ATCHNT2 parameter is optional. It permits the user to specify customized text to be included in the pre-amble e-mail which accompanies the attached file. The text specified must be 1 to 72 characters in length and must be surrounded by single quotes. The ATCHNT2 parameter corresponds to note line 2, and should be used before parameter ATCHNT3.

ATCHNT3='ttt...ttt'

The ATCHNT3 parameter is optional. It permits the user to specify customized text to be included in the pre-amble e-mail which accompanies the attached file. The text specified must be 1 to 72 characters in length and must be surrounded by single quotes. The ATCHNT3 parameter corresponds to note line 3, and should be used before parameter ATCHNT4.

ATCHNT4='ttt...ttt'

The ATCHNT4 parameter is optional. It permits the user to specify customized text to be included in the pre-amble e-mail which accompanies the attached file. The text specified must be 1 to 72 characters in length and must be surrounded by single quotes. The ATCHNT4 parameter corresponds to note line 4, and should be used before parameter ATCHNT5.

ATCHNT5='ttt…ttt'

The ATCHNT5 parameter is optional. It permits the user to specify customized text to be included in the pre-amble e-mail which accompanies the attached file. The text specified must be 1 to 72 characters in length and must be surrounded by single quotes. The ATCHNT5 parameter corresponds to note line 5, and should be used as the last line of notes.

Generate Translate Table

Macro ROPESDEV TYPE=TRANSLATE

This macro instruction may be used to define the translate table to be used with the associated printer. If present, the TRANTAB parameter will specify the suffix of the translate table module name, or will indicate that translation is not to be performed.

The general format of the ROPESDEV TYPE=TRANSLATE macro instruction is as follows:

ROPESDEV TYPE=TRANSLATE,
             TRANTAB={name|NONE}
where:

TYPE=TRANSLATE

indicates that the translate table name is to be specified. If this macro instruction is not specified in the device characteristics block, the default value of "RO$T   " is used to specify the translation table to use.

TRANTAB={name|NONE}

specifies either the suffix of the translate table name or indicates that translation is not to be performed. If translation is to be performed, the translate table name is constructed by suffixing the string "RO$T" with the value specified, e.g., "RO$Tname". The module name thus formed must exist at the time that the device characteristics block is compiled, since the translate table is link-edited with the device

characteristics block. Sample translate tables are included in the <hlq>.SOURCE library.

The following rules apply in determining the translate table to be used during report printing.

1. The global translation flag is examined. This flag is set on the "Special Printer Options Maintenance" panel. If this flag is set to "N", no data translation is performed, and the translate tables in the forms control block or the device control block is not used.

2. If the forms control block translate table value is "NONE", then no translation will be performed.

3. If the forms control block translate table value is specified, the translate table specified will be used.

4. If the forms control block does not specify a translate table, the device characteristics block is tested.

5. If the translate table is specified as "NONE" in the device characteristics block, then no translation will be performed.

6. The translate table in the device characteristics block is used.

7. Finally, if a print line contains the carriage control character "X", then that line will not be translated.

Generate Device Initialization Controls

Macro ROPESDEV TYPE=DEVINIT

This macro instruction may be used to define a set of Printer Control Codes to be sent to the print device during print initialization or just before report data is sent to the printer. PCL codes are stored in a PCL code table or file, and the parameters of this statement define the table or file to be used. One or more DEVINIT macro statements may be coded. Translation tables specified by the TYPE=TRANSLATE macro statement are now supported with the Extended Device Codes feature (i.e. DEVINIT/DEVEXIT).

The format of the ROPESDEV TYPE=DEVINIT macro statement is as follows:

```
ROPESDEV TYPE=DEVINIT,
         DVCNAME=name,
         DVCKEYN=key-name,
         DVCSRCE={M|F},
         DVCTYPE=type-name,
         DVCRTRN={Y|N},
         DVCBUFS=nnnn,
         DVCSTAT={Y|N},
         DVCOVRD=override-type,
         DVCOVOF=nnnnn,
         DVCOVLN=nnnnn,
         DVCOVDF={C|B|Z},
         DVCRULE=rule-name
```

where:

TYPE=DEVINIT
   specifies that this macro statement defines a set of
   PCL codes, which is to be sent during device
   initialization, or before the first report data is sent
   to the printer.

DVCNAME=name
   specifies the 8 character name of a CICS module
   or file, which contains the PCL codes to be sent to
   the printer. Note that the file option is not yet
   available in this release, but will be made available
   in a future release of ROPES.

DVCKEYN=key-name
   this parameter is valid only when the PCL code set
   resides in a PCL code file.   This parameter
   specifies a 20 character key name, which identifies
   the record that contains the PCL code set in the
   PCL code file named by DVCNAME. The actual
   key also contains a 4-byte binary record number,
   which permits 1-n PCL code records to be
   associated with the key name. This parameter is
   reserved for future use, and will be made available
   when PCL code files are enabled. For now, this
   parameter may be omitted.

DVCSRCE=M|F
   specifies what type media is used to contain the
   PCL code data. Only two possible values may be
   coded, "M" or "F". The value "M" means the
   PCL code data will reside in a module. The value
   "F" means the PCL code data will reside in a file.
   Since PCL code files are not yet enabled in this
   release, please code the value "M".

DVCTYPE=type-name
   specifies the "type" name to be associated with
   this PCL code definition. The value "type-name"
   may be 20 characters in length, and should be

descriptive of the functional type of PCL code data
being used.   For example, if the PCL code
sequence defined modifies the print orientation to
landscape, then the type-name value might be
"LANDSCAPE" or "HPLANDSCAPE". It is
recommended that some thought be given to the
naming conventions used in this field so that
duplicate type-names are not used for different
printer models. Note that values coded for this
parameter are case sensitive.

DVCRTRN=Y|N
   specifies whether the PCL code data is to be
   translated to ASCII before it is transmitted to the
   print device. If the PCL code data is already in
   ASCII format, then the value must be set to "N".
   If the PCL code data is in EBCDIC format, then
   the parameter value must be set to "Y". This
   parameter modifies translation requirements for
   TCPIP/LPR printers only.

DVCBUFS=nnnn
   specifies a buffer size to be used by the device
   controls service module for transporting the PCL
   code data to the printer driver module. The value
   of this parameter must be larger than 256 but less
   than the DCB parameter value for BUFSIZE minus
   4. If the BUFSIZE parameter has been omitted,
   then a BUFSIZE parameter value must be coded.
   The value for DVCBUFS must also not exceed
   32768. For large PCL code sequences, increasing
   the size of this parameter will reduce the number
   of times the device control service module must be
   called to transport the PCL code data.

DVCSTAT=Y|N
   This parameter specifies the default initial status of
   this device controls definition. Two parameter
   values are possible. The value 'Y' indicates that
   the device controls definition will be active or
   enabled by default, and will not require an FCB
   usage override to make it active. The value 'N'
   indicates that the device controls definition will be
   inactive or disabled by default, and will require
   and FCB usage override to activate it. If you do
   not code the DVCSTAT parameter, the default
   value will be 'Y', and the device controls entry is
   enabled.

DVCOVRD
   specifies the type of override data that will re-place
   the PCL code in the PCL Overlay module defined
   by this DEVINIT macro statement. The override
   data types are limited in number, but will increase

in time. At the present time, only five types of override are possible. They are:

PrinterCopies
or PrtCopies   Printer Control Record (PCR) copies value contains 2 bytes of binary data.

ReportCopies
or RptCopies   Report Information Block (RIB) copies value - 2 bytes of binary data.

FCBLinesPerInch
or FCBLPI   FCB Lines Per Inch (LPI) value - 1 byte of numeric data.

FCBCharactersPerInch
or FCBCPI   FCB Characters Per Inch (CPI) value - 2 bytes of numeric data.

FCBOrientation
or FCBOrient   FCB Orientation value - 1 byte character data.

The possible values shown in the left column above are case sensitive. The values are case sensitive to provide maximum naming flexibility. They must be specified exactly as shown or assembly errors will result. The maximum length for a DVCOVRD value is 24 bytes. Only one DVCOVRD parameter can be coded on the DEVINIT macro statement.

All override values obtained from the FCB must be specified on the TYPE=CONTROL macro statement with the parameter CTLMODE set to NORMAL. If the parameter CTLMODE is set to USER, then the override(s) will not be executed. This will result in the PCL overlay module being sent to the device without any override.

If the DVCOVRD parameter is specified, it then becomes necessary to specify the DVCOVOF, DVCOVLN, and DVCOVDF parameters on the DEVINIT macro statement.

DVCOVOF

specifies the offset into the PCL overlay module where the override will be placed. The PCL overlay module name is specified by the DVC-NAME parameter. The PCL overlay module contains a contiguous stream of PCL code. The overlay offset can be anywhere in the PCL code stream. The value specified by DVCOVOF is relative to zero. Therefor, if you start counting with 1 and end up on byte/character 27, then the offset value 26 must be specified for DVCOVOF. The value specified by DVCOVOF must be numeric, and must be in the range of 1 to 2,147,483,647. Note that byte zero (0) would never be overridden as it always starts a PCL code sequence (escape character).

It is up to the user to make sure the offset value is correct. *If the offset value is not correct, it can result in bad PCL data being sent to the device. Please test your override in a test environment before implementing it in production.*

DVCOVLN

specifies the length of the data that will modify PCL code in the PCL overlay module. The length value must be numeric, and must be in the range of 1 to 15. The DVCOVLN para-meter length value will normally be small. This can be explained by the fact that most substitution values in a PCL code sequence are small in size.

For example, if the DVCOVRD parameter is set to 'FCBCPI', then the override feature will substitute the CPI value from the ROPES FCB over a PCL code sequence which sets the CPI value. The offset into the PCL overlay module of this CPI PCL code sequence must be determined in advance. It is likely that the CPI PCL code sequence will contain something close to the following PCL code:

1B2873 31302E3030 48

In the example above, there are two spaces on either side of the portion of PCL code that can be modified by the override. The spaces are not part of the PCL code sequence but are shown here to highlight the area of the PCL code sequence that can be modified. The bytes that can be modified are in ASCII and convert to the value '10.00'. This is a CPI value of 10.00 or 10. The EBCDIC equivalent of this PCL code sequence would be:

Esc(s 10.00 H   (spaces not included in actual
                                         code)

To change the CPI value from '10.00' to '16.67' would require changing 5 bytes at the location where '10.00' starts. The new PCL code sequence would contain the following:

1B2873 31362E3637 48
    or
Esc(s 16.67 H   (spaces are not included in
                          actual code)

The DVCOVLN parameter value would have to be set to a value of 5 in order to modify 5 bytes of the PCL code sequence shown in the example above.

All of the EDC (Extended Device Code) override types have a minimum acceptable length.   These lengths are not enforced, but are required in order for the overrides to work correctly. In the case of the 'FCBCPI' override type, the minimum length value for parameter DVCOVLN would be 5. This means the CPI PCL code sequence would have to contain a PCL value that is a minimum of 5 characters in length.   The minimum length is required because the override feature does a conversion from the FCB CPI value to what is ultimately used in the override. The FCB CPI values are only two digits long, and the values that may be specified in the FCB are '10', '12', '15', and '16'. However, the FCB CPI value of '16' really means '16.67'. The EDC override feature makes all FCB CPI values a uniform length of 4 (minus the decimal), converts the character values to binary, and then converts the binary values back to EBCDIC. This is done to permit leading zeros in the override value if necessary. Finally, a decimal is inserted after the second digit counting from the right.

If a DVCOVLN parameter length of 4 were used with the FCBCPI override type, and the FCB CPI value was '16', the resulting override would be '6.67'. This override value is of course missing the leading '1' and would be incorrect. However, if the DVCOVLN parameter length were set to six (6) using the same FCBCPI override type and FCB CPI value, then the resulting override value would be '016.67' which might be correct if the PCL code sequence being overridden could accommodate the value. Therefor, the following may be said about the DVCOVLN parameter value:

The DVCOVLN parameter should be set to a value that is consistent with the number of bytes that

must be changed in the PCL code sequence. However, the PCL code sequence must also conform to the minimum size requirements for each EDC Override Type (i.e. DVCOVRD value).

Please see the following table, which provides the minimum lengths required for each EDC override type.

DVCOVRD Override Type	DVCOVLN Minimum Length / Format	
PrinterCopies		
PrtCopies	1	n
ReportCopies		
RptCopies	1	n
FCBCharactersPerInch		
FCBCPI	5	nn.nn
FCBLinesPerInch		
FCBLPI	1	n
FCBOrientation		
FCBOrient	1	n

Maximum lengths are really dependent on the PCL code sequence being used, and the rules for coding PCL command values. It is left up to the user to determine the appropriate maximum length.

DVCOVDF
specifies the format of the data to be overridden. Three possible values can be selected. The three possible values are:

'C' = Alpha-Numeric character data (left
          justified).
'B' = Binary data (right justified).
'Z' = Numeric data in zoned decimal format
          (right justified).

At the present time, no EDC override types use the 'B'inary format.   This format may be used as future override types are added. Please see the following table of the EDC override types and the appropriate target data formats that **must** be coded for each override type.

DVCOVRD Override Type	Data Format Conversion Process Rules	
PrinterCopies		
PrtCopies	Z	Binary printer copies field converted to zoned decimal.
ReportCopies		
RptCopies	Z	Binary report copies field converted to zoned decimal.

FCBCharactersPerInch		
FCBCPI	Z	Numeric character data converted to binary and back to zoned decimal.
FCBLinesPerInch		
FCBLPI	Z	Numeric character data converted to binary and back to zoned decimal.
FCBOrientation		
FCBOrient	C	FCB orientation values 'P' and 'L' internally converted to numeric values '0' and '1'.

DVCRULE
  specifies an eight character rule name that matches the RULENME parameter value of a previously defined ROPESDEV TYPE=RULES macro control statement. If the ROPESDEV TYPE=RULES macro statement does not exist, then an error will be produced during assembly of the DCB module. The DVCRULE parameter directs the EDC override feature to compare the final override value to a list of values specified by the ROPESDEV TYPE=RULES RULELST parameter. If the final override value matches one of the entries in the list, then the override value is applied. If the override value does not match one of the entries in the validation list, then the override value is not applied and the print process/request is terminated with errors.

Generate Device Exit Controls

Macro ROPESDEV TYPE=DEVEXIT

This macro instruction may be used to define a set of Printer Control Codes to be sent to the print device during print termination or just after all report data is sent to the printer. PCL codes are stored in a PCL code table or file, and the parameters of this statement define the table or file to be used. One or more DEVEXIT macro statements may be coded. If the DEVEXIT macro instruction is used, then the TYPE=TRANSLATE macro statement must also be used to turn off unprintable character translation for this print device (i.e. ROPESDEV TYPE=TRANS-LATE,TRANTAB=NONE).

The format of the ROPESDEV TYPE=DEVEXIT macro statement is as follows:

ROPESDEV TYPE=DEVEXIT,
         DVCNAME=name,

```
         DVCKEYN=key-name,
         DVCSRCE={M|F},
         DVCTYPE=type-name,
         DVCRTRN={Y|N},
         DVCBUFS=nnnn,
         DVCSTAT={Y|N},
         DVCOVRD=override-type,
         DVCOVOF=nnnnn,
         DVCOVLN=nnnnn,
         DVCOVDF={C|B|Z},
         DVCRULE=rule-name
```

where:

TYPE=DEVEXIT
  specifies that this macro statement defines a set of PCL codes, which is to be sent during device termination, or after the last report data is sent to the printer.

DVCNAME=name
  specifies the 8-character name of a CICS module or file, which contains the PCL codes to be sent to the printer. Note that the file option is not yet available in this release, but will be made available in a future release of ROPES.

DVCKEYN=key-name
  this parameter is valid only when the PCL code set resides in a PCL code file. This parameter specifies a 20 character key name, which identifies the record that contains the PCL code set in the PCL code file named by DVCNAME. The actual key also contains a 4-byte binary record number, which permits 1-n PCL code records to be associated with the key name. This parameter is reserved for future use, and will be made available when PCL code files are enabled. For now, this parameter may be omitted.

DVCSRCE=M|F
  specifies what type media is used to contain the PCL code data. Only two possible values may be coded, "M" or "F". The value "M" means the PCL code data will reside in a module. The value "F" means the PCL code data will reside in a file. Since PCL code files are not yet enabled in this release, please code the value "M".

DVCTYPE=typename
  specifies the "type" name to be associated with this PCL code definition. The value "typename" may be 20 characters in length, and should be descriptive of the functional type of PCL code data

being used. For example, if the PCL code sequence defined modifies the print orientation to landscape, then the type-name value might be "LANDSCAPE" or "HPLANDSCAPE". It is recommended that some thought be given to the naming conventions used in this field so that duplicate type-names are not used for different printer models. Note that values coded for this parameter are case sensitive.

DVCRTRN=Y|N

specifies whether the PCL code data is to be translated to ASCII before it is transmitted to the print device. If the PCL code data is already in ASCII format, then the value must be set to "N". If the PCL code data is in EBCDIC format, then the parameter value must be set to "Y". This parameter modifies translation requirements for TCPIP/LPR printers only.

DVCBUFS=nnnn

specifies a buffer size to be used by the device controls service module for transporting the PCL code data to the printer driver module. The value of this parameter must be larger than 256 but less than the DCB parameter value for BUFSIZE minus 4. If the BUFSIZE parameter has been omitted, then a BUFSIZE parameter value must be coded. The value for DVCBUFS must also not exceed 32768. For large PCL code sequences, increasing the size of this parameter will reduce the number of times the device control service module must be called to transport the PCL code data.

DVCSTAT=Y|N

specifies the default initial status of this device controls definition. Two parameter values are possible. The value 'Y' indicates that the device controls definition will be active or enabled by default, and will not require an FCB usage override to make it active. The value 'N' indicates that the device controls definition will be inactive or disabled by default, and will require and FCB usage override to activate it. If you do not code the DVCSTAT parameter, the default value will be 'Y', and the device controls entry is enabled.

DVCOVRD

specifies the type of override data that will re-place the PCL code in the PCL Overlay module defined by this DEVINIT macro statement. The override data types are limited in number, but will increase in time. At the present time, only five types of override are possible. They are:

PrinterCopies
or PrtCopies   Printer Control Record (PCR) copies value contains 2 bytes of binary data.

ReportCopies
or RptCopies   Report Information Block (RIB) copies value - 2 bytes of binary data.

FCBLinesPerInch
or FCBLPI   FCB Lines Per Inch (LPI) value - 1 byte of numeric data.

FCBCharactersPerInch
or FCBCPI   FCB Characters Per Inch (CPI) value - 2 bytes of numeric data.

FCBOrientation
or FCBOrient   FCB Orientation value - 1 byte character data.

The possible values shown in the left column above are case sensitive. The values are case sensitive to provide maximum naming flexibility. They must be specified exactly as shown or assembly errors will result. The maximum length for a DVCOVRD value is 24 bytes. Only one DVCOVRD parameter can be coded on the DEVINIT macro statement.

All override values obtained from the FCB must be specified on the TYPE=CONTROL macro statement with the parameter CTLMODE set to NORMAL. If the parameter CTLMODE is set to USER, then the override(s) will not be executed. This will result in the PCL overlay module being sent to the device without any override.

If the DVCOVRD parameter is specified, it then becomes necessary to specify the DVCOVOF, DVCOVLN, and DVCOVDF parameters on the DEVINIT macro statement.

DVCOVOF

specifies the offset into the PCL overlay module where the override will be placed. The PCL overlay module name is specified by the DVC-NAME parameter. The PCL overlay module contains a contiguous stream of PCL code. The overlay offset can be anywhere in the PCL code stream. The value specified by DVCOVOF is

relative to zero. Therefor, if you start counting with 1 and end up on byte/character 27, then the offset value 26 must be specified for DVCOVOF. The value specified by DVCOVOF must be numeric, and must be in the range of 1 to 2,147,483,647. Note that byte zero (0) would never be overridden as it always starts a PCL code sequence (escape character).

It is up to the user to make sure the offset value is correct. *If the offset value is not correct, it can result in bad PCL data being sent to the device. Please test your override in a test environment before implementing it in production.*

DVCOVLN

specifies the length of the data that will modify PCL code in the PCL overlay module. The length value must be numeric, and must be in the range of 1 to 15. The DVCOVLN para-meter length value will normally be small. This can be explained by the fact that most substitution values in a PCL code sequence are small in size.

For example, if the DVCOVRD parameter is set to 'FCBCPI', then the override feature will substitute the CPI value from the ROPES FCB over a PCL code sequence which sets the CPI value. The offset into the PCL overlay module of this CPI PCL code sequence must be deter-mined in advance. It is likely that the CPI PCL code sequence will contain something close to the following PCL code:

1B2873 31302E3030 48

In the example above, there are two spaces on either side of the portion of PCL code that can be modified by the override. The spaces are not part of the PCL code sequence but are shown here to highlight the area of the PCL code sequence that can be modified. The bytes that can be modified are in ASCII and convert to the value '10.00'. This is a CPI value of 10.00 or 10. The EBCDIC equivalent of this PCL code sequence would be:

Esc(s 10.00 H   (spaces not included in actual code)

To change the CPI value from '10.00' to '16.67' would require changing 5 bytes at the location where '10.00' starts. The new PCL code sequence would contain the following:

1B2873 31362E3637 48

or

Esc(s 16.67 H   (spaces are not included in actual code)

The DVCOVLN parameter value would have to be set to a value of 5 in order to modify 5 bytes of the PCL code sequence shown in the example above.

All of the EDC (Extended Device Code) override types have a minimum acceptable length.   These lengths are not enforced, but are required in order for the overrides to work correctly. In the case of the 'FCBCPI' override type, the minimum length value for parameter DVCOVLN would be 5. This means the CPI PCL code sequence would have to contain a PCL value that is a minimum of 5 characters in length.   The minimum length is required because the override feature does a conversion from the FCB CPI value to what is ultimately used in the override.   The FCB CPI values are only two digits long, and the values that may be specified in the FCB are '10', '12', '15', and '16'. However, the FCB CPI value of '16' really means '16.67'. The EDC override feat-ure makes all FCB CPI values a uniform length of 4 (minus the decimal), converts the character values to binary, and then converts the binary values back to EBCDIC. This is done to permit leading zeros in the override value if necessary. Finally, a decimal is inserted after the second digit counting from the right.

If a DVCOVLN parameter length of 4 were used with the FCBCPI override type, and the FCB CPI value was '16', the resulting override would be '6.67'. This override value is of course missing the leading '1' and would be incorrect. However, if the DVCOVLN parameter length were set to six (6) using the same FCBCPI override type and FCB CPI value, then the resulting override value would be '016.67' which might be correct if the PCL code sequence being overridden could accommodate the value. Therefor, the following may be said about the DVCOVLN parameter value:

The DVCOVLN parameter should be set to a value that is consistent with the number of bytes that must be changed in the PCL code sequence. However, the PCL code sequence must also conform to the minimum size requirements for each EDC Override Type (i.e. DVCOVRD value).

Please see the following table, which provides the minimum lengths required for each EDC override type.

DVCOVRD Override Type	DVCOVLN Minimum Length / Format	
PrinterCopies		
PrtCopies	1	n
ReportCopies		
RptCopies	1	n
FCBCharactersPerInch		
FCBCPI	5	nn.nn
FCBLinesPerInch		
FCBLPI	1	n
FCBOrientation		
FCBOrient	1	n

Maximum lengths are really dependent on the PCL code sequence being used, and the rules for coding PCL command values. It is left up to the user to determine the appropriate maximum length.

DVCOVDF
specifies the format of the data to be overridden. Three possible values can be selected. The three possible values are:

'C' = Alpha-Numeric character data (left justified).
'B' = Binary data (right justified).
'Z' = Numeric data in zoned decimal format (right justified).

At the present time, no EDC override types use the 'B'inary format. This format may be used as future override types are added. Please see the following table of the EDC override types and the appropriate target data formats that **must** be coded for each override type.

DVCOVRD Override Type	Data Format Conversion Process Rules	
PrinterCopies		
PrtCopies	Z	Binary printer copies field converted to zoned decimal.
ReportCopies		
RptCopies	Z	Binary report copies field converted to zoned decimal.
FCBCharactersPerInch		
FCBCPI	Z	Numeric character data converted to binary and back to zoned decimal.

FCBLinesPerInch		
FCBLPI	Z	Numeric character data converted to binary and back to zoned decimal.
FCBOrientation		
FCBOrient	C	FCB orientation values 'P' and 'L' internally converted to numeric values '0' and '1'.

DVCRULE
specifies an eight character rule name that matches the RULENME parameter value of a previously defined ROPESDEV TYPE=RULES macro control statement. If the ROPESDEV TYPE=RULES macro statement does not exist, then an error will be produced during assembly of the DCB module. The DVCRULE paramet-er directs the EDC override feature to compare the final override value to a list of values specified by the ROPESDEV TYPE=RULES RULELST parameter. If the final override value matches one of the entries in the list, then the override value is applied. If the override value does not match one of the entries in the validation list, then the override value is not applied and the print process/request is terminated with errors.

Conclude Device Characteristics Block

Macro ROPESDEV TYPE=FINAL

This macro instruction is required to conclude the generation of the device characteristics block. The general format of the ROPESDEV TYPE=FINAL macro instruction is as follows:

ROPESDEV TYPE=FINAL

where:

TYPE=FINAL
indicates the end of the device characteristics block.

MRO and ISC Considerations

ROPES is fully compatible with all forms of MRO and ISC installation. For proper operation, be sure to define the files, terminals and transactions as local or remote where necessary.

For example, if you want to have a ROPES Printing region (CICSA) in which the terminals are local, an application region in which the ROPES applications and commands are executed (CICSB) and a database region in which all the file activity will be concentrated (CICSC), you would define your TCT entries for the ROPES printers so that in the TCT for CICSA, the terminals are local, but for CICSB and CICSC, the terminals are remote. You will define the ROPES transactions as local in the PCT for CICSB and remote in CICSA and CICSC. Finally, you would define the FCT entries for ROPES as local in CICSC and remote in CICSA and CICSB. Refer to the appropriate CICS manuals for a more complete discussion of these options.

In addition, to operate printers in more than one region, you must define the printer region for each printer on the Printer Control Record Maintenance menu. These regions are numbered 1 through 9. For each MRO region you specify in a Printer Control Record you must also specify a printer driver transaction code. The default region (1) uses the transaction code R#O1. Region 2 requires the transaction code R#O2 and so on.

The distributed PCT definitions contain the parameters you will need to code on these transactions, except the local or remote indications.

Online Copy Books

The Online Copy Books used to implement the ROPES Application Programming Interface have been pre-processed for CICS TS 2.3. If you are running CICS TS 2.3, you do not need to change these copy books. The pre-processed COBOL copy books were done using the COBOL3 (Enterprise COBOL) standards.

If you are running another level of CICS, or a different version of the COBOL compiler, you will have to reprocess these copy books for the level of CICS (and possibly the intended language level) in order for them to work in your system. If you are supporting multiple levels of CICS or languages, you may also need to create <hlq>.SOURCE, <hlq>.COBLIB and <hlq>.PL1LIB libraries to support these updated members.

Each of the above libraries contains a member named **OBOOKSIN** that contains the JCL and instructions you must follow to accomplish this update. Please refer to those members for additional information and instructions. In the case of the COBOL and PL1 libraries, you may also need to specify the target language level. This can usually be done through the PARM field of the EXEC statement for the translator, as in PARM='COBOL2' (for COBOL II) or PARM ='COBOL3' (for Language Environment).

The EXCI Options Table

You should tailor the CICS External Call Interface (EXCI) Options Table to your installation's specific environment if you will be using the ROPES EXCI based utilities and services. These include the File Server Program, the External Call Interface program or the IP Printer Controls maintenance utility.

This table is constructed by assembling macro instructions which specify the EXCI values that your system uses to communicate between the ROPES batch functions and one or more CICS regions via ISC. The table created always named ROPEXPLD.

The distributed source code contains a sample table definition in member ROPEXPLD in the <hlq>.SOURCE library.

XPLD Structure

The EXCI Option Table is built from user-coded ROPEXPLM macro instructions. A default table is provided with ROPES. It may be redefined at any time. The general format of the table is:

```
ROPEXPLD CSECT
ROPEXPLD AMODE 31
ROPEXPLD RMODE ANY
   ROPEXPLM TYPE=GENENTRY  ... Create an entry
   ROPEXPLM TYPE=FINAL   ... End the table
   END    ROPEXPLD
```

ROPEXPLM Macro Instruction

There are two types of ROPEXCT macro instructions:

ROPEXPLM TYPE=GENENTRY
   Code one for each user entry required and one for the default entry.

ROPEXPLM TYPE=FINAL
   There is exactly one of this type. It must be coded, and must be the last macro in the EXCI Option Table definition. It may be followed only by an assembler END instruction.

TYPE=GENENTRY

ROPEXPLM TYPE=GENENTRY,
   P=logical transaction id,
   CICSID=CICS target system SYSID,
   MIRTRAN=target system mirror transaction,
   SERVPGM=batch server program,

CLIENT=batch client program,
   USER=user id for security verification

If the TYPE parameter is omitted, GENENTRY is the default.

P=logical transaction id
   Specifies the logical transaction id. The programs using the EXCI interface with this table will first search for an entry with this name, and if none is present, will search for an entry with the name DFLT.

   You should code (but are not required to do so) an entry with P=DFLT and the parameters corresponding to the connection to use in the absence of a specific definition for the function being performed.

   Default: P=XPLD

CICSID=CICS target system SYSID
   This parameter specifies the SYSID of the CICS system that is to process the EXCI operations.

   This parameter must be a one to eight character string. The value coded must match the APPLID= parameter in the CICS startup definition.

   Default: CICSID=CICSTS32

MIRTRAN=target system mirror transaction id
   This parameter specifies the mirror one to four byte transaction id defined on the target CICS region for which this application is designated.

   A CICS PCT definition is required for this transaction.

   ROPES provides a transaction id for this purpose. You can use it or create your own.

   Default: MIRTRAN=ROXP

SERVPGM=server program name
   This parameter specifies the program that is to provide the EXCI services to the batch client program.

   The value specified is a one to eight character program name. You should use the default SERVPGM program for all ROPES supplied utilities.

   Default: SERVPGM=ROPEXPLS

CLIENT=batch client program
  This parameter specifies the batch client program
  that will be providing the interface between the
  user batch or ROPES utility program and the EXCI
  services (through the SERVPGM program).

  This parameter must be one to eight characters if |
  specified. This parameter is used to tell CICS |
  which CONNECTION definition to use.   The |
  value is matched to the CONNECTION definition |
  NETNAME setting. You should code your own |
  value if you are using a different "specific" |
  connection. If you prefer to use a "generic" |
  connection, code "*GENERIC" as the CLIENT= |
  value. |

  Default: CLIENT=ROPEXPLR

USER=user id for security validation
  This parameter specifies the user id for security
  validation if your system requires one.

  This parameter must be one to eight characters if
  specified.

  Default: USER=, (none)

TYPE=FINAL

ROPEXPLM   TYPE=FINAL

This completes the EXCI Options Table definition.
This form of the ROPEXPLM must follow a the last
TYPE=GENENTRY macro. It must be followed
by exactly one statement (other than comments): an
assembler END instruction.

The TYPE=FINAL statement generates an end of
table indicator entry and must be present. If it is
missing, the assembly of the table will fail.

Assemble and Link-edit the EXCI Options Table

Member ASMXPLD in the ROPES source library
may be used to assemble and link„edit the
ROPEXPLD module.

The ROPES Maintenance Transactions provide the means for defining and changing ROPES data elements.

The command functions are as follows:

- **ROMT** ROPES Online Maintenance

- **R#OR** One-time Queue Reorganization

Function Key Usage

The ROPES Maintenance Transactions support function keys as follows:

CLEAR returns to the next level up without processing the current menu or terminates the transaction.

ENTER causes the current screen to be processed.

PF1 causes a Delete function to be canceled.

PF3 returns to the next level up without processing the current menu or terminates the transaction.

PF12 prints a screen image to report COPYterm using the ROPECPYG program.

PF13 causes a Delete function to be canceled.

PF15 returns to the next level up without processing the current menu or terminates the transaction.

PF24 prints a screen image to report COPYterm using the ROPECPYG program.

```
 ROPES SYSTEM MAINTENANCE

 FUNCTIONS ARE:

 SYSTEM:
         1 - UPDATE SYSTEM CONTROL INFORMATION
         2 - REORGANIZE ROPES QUEUE

 REPORTS:
         3 - ADD REPORTS
         4 - CHANGE REPORT DEFINITION (ENTER NAME BELOW)
         5 - DELETE REPORT (ENTER NAME BELOW)

 PRINTERS:
         6 - ADD PRINTERS
         7 - CHANGE PRINTER DEFINITION (ENTER ID BELOW)
         8 - DELETE PRINTER (ENTER ID BELOW)
         9 - ASSIGN REPORTS TO A PRINTER (ENTER ID BELOW)


 ENTER FUNCTION ==>

 ENTER REPORT NAME OR PRINTER ID ==>          Applid=CICSTS41 Sysid=S650
 ROPES Version 17.0           (C) Copyright 1991-2011 Axios Products, Inc.
```

Figure 7 ROPES System Maintenance Menu

FUNCTION: On Line Maintenance
COMMAND: ROMT

This transaction starts the ROPES Online maintenance function. The maintenance function consists of three categories of operation: System Control Information maintenance, Report Information Maintenance and Printer information maintenance. The categories are further described by functions, all of which are displayed on the ROPES System Maintenance menu.

FUNCTION
   the function to be performed. Select one of the values (1 - 9) from the menu.

REPORT NAME OR PRINTER ID
   for functions 4 and 5, enter the name of the report you wish to change or delete. Report names are one to eight characters. Lower case alpha characters are translated to upper case.

   For functions 7, 8 and 9, enter the name of the printer you wish to change or delete. Printer IDS are one to four characters long. Lower case alpha characters are translated to upper case.

```
 ROPES SYSTEM PARAMETERS

 FUNCTIONS ARE:

         1 - COMMON PARAMETERS
         2 - SPECIAL REPORT OPTIONS
         3 - SPECIAL PRINTER OPTIONS
         4 - AUTOSTART OPTIONS
         5 - BROWSE TRANSACTION AND OTHER DISPLAY OPTIONS
         6 - MISCELLANEOUS OPTIONS




 ENTER FUNCTION ==>

                                         Applid=CICSTS41 Sysid=S650
 ROPES Version 17.0              (C) Copyright 1991-2011 Axios Products, Inc.
```

Figure 8 ROPES System Control Information Maintenance Menu

FUNCTION: System Control Information
COMMAND: Choice 1 on the Maintenance
             Transaction Menu

This option presents a second menu which allows you
to update the various parts of the ROPES system
control information. Six groups of controls may be
modified. Each of these groups is discussed below.

FUNCTION
   the function to be performed. Select one of the
   values (1 - 6) from the menu.

```
   ROPES SYSTEM CONTROL INFORMATION MAINTENANCE

   OPERATOR COMMAND SETTINGS
       PROP FUNCTIONS ARE: ABCEFGHIKMPQRSTWX        ENTER THE FUNCTIONS THAT ARE
       SOOP FUNCTIONS ARE: ABCEFGHIKMPQRSTWXZ        VALID FOR SOOP AND PROP

   SYSTEM CONTROL PARAMETERS
      MRO PRINTER SUPPORT: 1                   ENTER THE NUMBER OF REGIONS
        MESSAGE LOG QUEUE: CSMT                TD DESTINATION FOR LOGGING
         TRAN. CODE PREFIX: R#                 INTERNAL TRANSACTION CODE PREFIX
        MASTER TERMINAL ID:                    MESSAGE TERMINAL ID (OPTIONAL)
       ACCOUNTING DEST ID: CSMT                TD DESTINATION FOR ACCOUNTING
      COMMANDS IF STOPPED: N                   HONOR COMMANDS IF ROPES IS STOPPED
              IPv6 SUPPORT: Y                  ENABLE IPV6 SUPPORT

   REORGANIZATION CONTROLS
          REORG REQUEST ID:                    REQUEST ID FOR AUTOMATIC REORG
      REORGANIZATION TIME: 0000                TIME OF DAY FOR AUTOMATIC REORG
      REORGANIZATION DEST:                     DESTINATION FOR PURGED RECORDS
               REPORT TYPE: F                  N(O), F(ULL), OR S(HORT) FORM
               REPORT DEST: CSSL               DESTINATION FOR REPORT

                                                   Applid=CICSTS41 Sysid=S650
   ROPES Version 17.1                 (C) Copyright 1991-2011 Axios Products, Inc.
```

Figure 9 ROPES System Parameters Maintenance Menu

FUNCTION: Update System Control Information
COMMAND: Choice 1 on the System Maintenance
Menu

This menu allows you to update the ROPES system
control information. Three groups of controls may be
modified. You may set the Operator Command
functions that are to be valid, the system control
parameters, and the reorganization controls.

PROP FUNCTIONS ARE
You may choose to limit the commands available
to your printer operators. To do so, list only those
commands you wish your printer operators to use.
Type the single letter command codes, without
embedded blank spaces. Any command code
omitted from this list will not be accepted by the
command processor. The command codes are
listed in the Operator Commands section of this
manual.

SOOP FUNCTIONS ARE
You may choose to limit the commands available
to your supervisory operators. To do so, list only
those commands you wish your supervisory
operators to use. Type the single letter command
codes, without embedded blank spaces. Any
command code omitted from this list will not be
accepted by the command processor. The
command codes are listed in the Operator

Commands section of this manual. If you omit a
command code from both this list and the PROP
functions list, the command will be invalid for all
users.

MRO PRINTER SUPPORT
You may run ROPES in any number of MRO
supported regions. If you wish to have printers
running in multiple regions, you must specify the
maximum number of such regions. Enter a
number from 1 to 9.

MESSAGE LOG QUEUE
You may keep an audit trail of ROPES activities.
To do so, you must define a Transient Data
destination to receive the audit trail messages.
Enter the four character destination id here if you
want the audit trail produced. To suppress the
audit trail function, clear or blank this field.

TRAN. CODE PREFIX
Some internal ROPES transactions must be known
to the system. In order to permit you to change
transaction codes to conform to your installation's
standards, we have prefixed these transaction
codes. To set the prefix value, enter the value in
this field. Remember that the prefix here must
match the prefix you used when modifying the
PCT entries that we sent with the system.

MASTER TERMINAL ID

You may define a master terminal to receive certain ROPES messages. The messages sent to the Master Terminal are usually messages from internal transactions, but other messages will be routed there as well. All the messages are logged, if the Message Log Queue feature is selected. If the Master Terminal is a CONSOLE device, the messages are sent using the EXEC CICS WRITE OPERATOR command, otherwise, the messages are sent to the Master Terminal using BMS Routing and can be retrieved and purged using the CICS paging commands. To define a Master Terminal, enter the four character terminal id in this field.

ACCOUNTING DEST ID

You may have ROPES record accounting data as reports are printed online. To do so, enter the four character destination id of the Transient Data destination that is to receive the accounting records in this field.

COMMANDS IF STOPPED

This option controls the ROPES Command Processor action when commands are entered with ROPES in stopped status. If set to 'Y' (the default), the Command Processor will process commands whether ROPES is stopped or started. If this parameter is set to 'N,' the ROPES Command Processor will reject all commands if ROPES is stopped, issuing message ROPES4001I. The status of ROPES can be checked with the ROSS transaction.

IPv6 SUPPORT

This option controls the ROPES TCP/IP printing support's use of IPv6 functions. By default, this value is set to 'N' and no IPv6 functions will be performed and no IPv6 addresses specified or implied by DNS lookup will be used, with the exception of IPv6-mapped IPv4 addresses.

REORG REQUEST ID

You may have ROPES schedule a queue reorganization task every time the Automatic Startup program is executed. To do so, you must enter a value in this and the next field. The eight character request identifier entered in this field may be used to later cancel the reorganization if it has not started. This is done through the ROPES Queue Reorganization Menu.

REORGANIZATION TIME

You may have ROPES schedule a queue reorganization task every time the Automatic Startup program is executed. To do so, you must enter a value in this and the previous field. This field specifies the time of day you want the reorganization task to start. Enter the time of day in the format HHMM (24-hour format).

REORGANIZATION DEST

You may have ROPES archive the data purged from the report queue during online printing or queue reorganization. To do so, you must specify the four character Transient Data destination id of the archive data set in this field.

REPORT TYPE

This flag indicates the type of reorganization report, if any, is to be written to the REPORT DEST TD queue. You can specify "N" if no report is to be generated, "S" if a short report (only reports with activity) is to be generated or "F" if a full report (all reports regardless of activity) is to be generated. The format of the report, both short and long, mimics the output of the batch queue reorganization utility (ROPEBQOR).

REPORT DEST

This is the name of the Transient Data destination queue to receive the reorganization report if a report is selected (REPORT TYPE = S or F). The destination chosen must support a user data record length of 128 bytes, so the RECORDSIZE value in the destination definition must be at least 128 for fixed length records or 132 for variable length records.

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
 ROPES SPECIAL REPORT OPTIONS MAINTENANCE

          HOLD AFTER PRINT:  N HOLD REPORTS AFTER PRINTING (Y/N)
          HOLD AFTER REORG:  N HOLD REPORTS AFTER QUEUE REORG (Y/N)
       HOLD AFTER CLEARING:  N HOLD REPORTS AFTER SOOP/Z COMMAND (Y/N)
       NEW BUFFER EACH PAGE: N START A NEW BUFFER FOR EACH PAGE BREAK (Y/N)
            USE MASSINSERT:  N USE MASS INSERTION LOGIC (Y/N)
       ROMT DEFAULT DISCARD: 2 DEFAULT DISCARD OPTION FOR REPORT DEFINITION
          DISCARD 7 METHOD:  O DISCARD OPTION 7 IS AND OR OR (A/O)
          USE ENQ/DEQ LOGIC: N ENQ ON REPORT ID AROUND UPDATE (Y/N)




                                              Applid=CICSTS41 Sysid=S650
     ROPES Version 17.0            (C) Copyright 1991-2011 Axios Products, Inc.
```

Figure 10 ROPES Report Options Maintenance Menu

FUNCTION: Update Report Options Information
COMMAND: Choice 2 on the System Control Parameters Maintenance Menu

This menu allows you to update the ROPES Report Options control information.

HOLD AFTER PRINT

This option instructs the printing task to invoke the Report Disposition User Exit (see section 9) to determine the disposition of the report after printing. Enter a value of **Y** to have the exit invoked, or **N** to bypass exit execution.

HOLD AFTER REORG

This option instructs the on line and batch queue reorganization programs to mark reports held after they are reorganized. Enter a value of **Y** to have the reports held. Enter a value of **N** to leave the report status unchanged.

HOLD AFTER CLEARING

This option instructs the command processor program to place a report on hold after completion of the Z command to clear the data from the report. Enter a value of **Y** to have the command processor hold the report. Enter a value of **N** to leave the report hold status unchanged.

NEW BUFFER EACH PAGE

This option instructs the ROPES Interface programs to start a new queue record whenever a skip to channel 1 carriage control character is encountered. This value should be set to **Y** if you expect to use the absolute positioning command (A). Enter a **Y** to have a new queue record started at each page break. Enter a **N** to have the pages packed into the queue records to conserve space.

USE MASSINSERT

This option instructs the on line application interface program to use VSAM mass insertion logic when storing report data. This option should produce improved performance and space utilization if your installation generates large reports, either from on line user application transactions, transfer from batch through the alternate facility, by retrieval from the system SPOOL using RSTU, or through the Report Distribution Facility. No benefit is likely to be had if mostly short reports are created. Enter a value of **Y** to have ROPES use mass insertion logic. Enter a value of **N** to use standard insertion logic.

ROMT DEFAULT DISCARD

This option sets the default report discard option on the Report Maintenance Menu. Enter a value from 1 through 9.

DISCARD 7 METHOD

This parameter controls how the queue reorganization programs process reports with discard option 7. The normal meaning of option 7 is that data is purged if it is expired and has been printed. This parameter allows you to change this to be expired or printed. Enter a value of **A** if the expired and printed logic is to be used. Enter **O** if expired or printed logic is to be used.

USE ENQ/DEQ LOGIC

This parameter tells the on line application interface to serialize access to reports being updated by issuing a CICS ENQ specifying the report name. A DEQ is issued when update access ends.

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
 ROPES SPECIAL PRINTER OPTIONS MAINTENANCE

 SUPPRESS FORMS MESSAGE: N     DO NOT ISSUE MOUNT FORMS MESSAGE (Y/N)
     USE DEFRESP LOGIC: Y     USE DEFINITE RESPONSE I/O LOGIC (Y/N)
   GENERIC CONTROL TERM: N     CONTROL TERMINALS ARE GENERIC (Y/N)
      SUPPRESS MESSAGES: N     SUPPRESS CONTROL TERMINAL MESSAGES (Y/N)
         TRANSLATE DATA: Y     TRANSLATE UNPRINTABLE CHARACTERS TO "?" (Y/N)
        PRINT DELAY TIME: 0000 DELAY FOR X SECONDS BETWEEN EACH PRINTER I/O
       MAX REPORT COUNT: 300   MAXIMUM REPORTS PER PRINTER (0-525)
            FCB TO LOAD: *     USE THIS FCB (* = USE REPORT FCB)
   DISCONNECT FROM CICS: Y     USE ISSUE DISCONNECT AT END OF TASK
HONOR INITIAL FORM FEED: N     TRANSMIT 1ST FORM FEED AFTER START
 ESCAPE CHARACTER VALUE: 5F    ESCAPE CHARACTER AS 2 HEX DIGITS
    USE SCS ALARM FORMAT: N    ALWAYS USE SCS STRING FOR ALARM CODE
    USE OLD START LOGIC: N     ALWAYS USE OLD START LOGIC TO POSITION




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```

Figure 11 ROPES Printer Options Maintenance Menu

FUNCTION: Update Printer Options Control Information
COMMAND: Choice 3 on the ROPES System Control Parameters Maintenance Menu

This menu allows you to update the ROPES Printer Options control information.

SUPPRESS FORMS MESSAGE
   This parameter instructs the printer tasks to suppress issuing the MOUNT FORMS message when a change in Forms Control Block is detected. Printing continues as if the new form has been mounted and the operator has acknowledged the forms change. Enter a value of **Y** if you want the forms mount messages suppressed. Enter a value of **N** to have the printer stop at each forms change and wait for remote printer operator intervention.

USE DEFRESP LOGIC
   ROPES Printer Tasks normally use the Definite Response (DEFRESP) option on all send requests to 3270 type printers. You can suppress the use of DEFRESP if you wish to do so. Enter a value of **Y** to use DEFRESP on all terminal send commands. Enter a value of **N** to suppress the use of DEFRESP.

GENERIC CONTROL TERM
   This option enables the use of generic control terminal identifiers. When using generic control terminals, any terminal whose terminal id matches the control terminal generic identifier string will be considered to be an authorized printer operator for that printer. For more information, please refer to the Control Terminal parameter of the printer definition on page . Enter a value of **Y** if generic control terminals are permitted. Enter a value of **N** if generic control terminal identifiers are not valid.

SUPPRESS MESSAGES
   This option allows you to suppress the issuance of printer control terminal operator messages to the control terminals. The messages will still be logged to the ROPES message log if one exits. If you intend to use the Printer Task Message Exit this parameter must be set to **N** or the exit will not be invoked. To suppress all messages, enter a value of **Y**. To send the messages, or to allow your own exit to control the sending of these messages, enter a value of **N**.

TRANSLATE DATA
   ROPES translates unprintable characters (characters with a value less than X'40', or not assigned an EBCDIC graphic). If you intend to send these characters to the printer to use special capabilities of the printer, you must suppress translation. Enter a value of **N** to suppress translation. To have translation performed, enter a value of **Y**.

   Translation can also be controlled by the use of the **"X"** carriage control character, the Device

Characteristics Block and the Forms Control Block. Refer to the Customization section of this manual for more information.

This flag controls all translation during printing and overrides all other data translation controls.

PRINT DELAY TIME

If you wish to reduce the traffic on lines with ROPES printers you may ask ROPES to delay between each send command. Normally, ROPES sends the data as fast as it can. To specify a delay time, enter a value of 0001 through 9999, indicating the number of seconds of delay to insert. A value of 0 indicates that no delay is desired.

MAX REPORT COUNT

ROPES normally allows you to configure 300 reports on a printer. This requires a VSAM Control Interval size on the ROPEPCR data set of about 18K. If you wish to reduce this CI size and do not expect to configure 300 reports, you may reduce this maximum value. Each report removed reduces the CI size requirement by 60 bytes. To set a new upper limit, enter a value from 001 to 525.

FCB TO LOAD

Normally, ROPES uses the Forms Control Block (FCB) specified in the report definition when a report is printed. If you wish to define special forms control blocks for different reports so that ROPES can stop for forms changes, but do not need different control values otherwise, you may specify the suffix of the RO$F module to use for the printing of all reports. Specify a value of ***** to indicate that the report's FCB is to be used.

DISCONNECT FROM CICS

This parameter controls the use of the Issue Disconnect command. The normal action is to use the command and release the printer from CICS. If you want the device held in the region when the task ends, specify **N** for this parameter. This parameter also controls the use of the Printer Task Issue Disconnect User Exit program.

HONOR INITIAL FORM FEED

ROPES will usually suppress the Skip To Channel 1 (Form Feed) on the first line of a report, if present, when the printer is already at the top of the page. This usually prevents an unnecessary page eject. In some environments that share printers among applications, not all of which are consistent about leaving the printer at the top of

form, it is possible that printing will either waste a page or not start on a new page when it should. This flag, when set to '**Y**,' will force ROPES to perform every form feed it encounters in the report, insuring that your ROPES reports always start at the top of the page. The default value, '**N**,' will retain the normal process of suppressing the form feed when the ROPES controls indicate that the printer was left at the top of form. The default value should be used if ROPES is the only task using the printer or if all printing tasks are consistent about the printer's ending status.

ESCAPE CHARACTER VALUE

This parameter defines the special printer functions escape character. The escape character is used to signal the start of a special printing control string (currently only IPDS Bar Code Printing is offered). The default value for this character is the '¬' (hexadecimal value 5F) character. If you use this character in your own reports, then you must set a new escape value or the text of your report will not be printed properly.

You may specify any escape character value you want to use. To do so, replace the 5F value with the two hexadecimal digits that represent the desired escape character. You can suppress escape character processing entirely by specifying the value '00' (two zeroes) in this field.

USE SCS ALARM FORMAT

The audible alarm request which may be specified on a report's definition is implemented by the printer task according to the printer's definition. The method for SCS and non-SCS devices is different, and, although SCS devices can be run in non-SCS mode, they will not sound the alarm unless the SCS alarm code is transmitted in the data. If you have SCS printers that are not defined to CICS or ROPES as SCS devices, then you cannot sound the alarm automatically unless you set this parameter to '**Y**.' The default value is '**N**.'

USE OLD START LOGIC

Effective with ROPES Version 5.1 PTF #4, an error in the way ROPES positions reports at the start of printing has been corrected. Some application programs may have been designed to work around this error, and, as a result, the correction will cause the reports they generate to be printed incorrectly. This will occur in reports that do not start with a skip to channel one carriage control character. To force ROPES to and use the

old logic, set this parameter to '**Y**.' The default value is '**N**.'

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
ROPES AUTOMATIC START-UP OPTIONS MAINTENANCE

        USE COLD CLASSES: N    SET ACTIVE CLASSES TO COLD CLASSES (Y/N)
      START ALL PRINTERS: N    START PRINTERS THAT WERE HELD (Y/N)
       HOLD AT START-UP: N    HOLD ALL PRINTERS AT START-UP (Y/N)
     HOLD AT SHUT-DOWN: N    HOLD ALL PRINTERS AT SHUT-DOWN (Y/N)
           START-UP FCB: *    USE THIS FCB AT START-UP (* = USE PCR VALUE)
     START AFTER ERRORS: N    START PRINTERS THAT HAD ERRORS (Y/N)
        START KCRQ EXIT: Y    START THE ROPES SCREEN PRINT EXIT (Y/N)








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```

Figure 12 ROPES Automatic Processing Controls Maintenance Menu

FUNCTION: Update Automatic Start-Up and Shut-Down Control Information
COMMAND: Choice 4 on the System Controls Maintenance Menu

This menu allows you to update the ROPES automatic start-up and shut-down control information. This information is used by the ROPESTAR and ROPESTOP programs (RSTA and RSTP transactions) during ROPES Automatic Start-Up and Shut-Down.

USE COLD CLASSES
During automatic start-up, the report classes last in use at a printer are put into use again. If you wish to have the printer's cold start classes used instead, enter the value **Y**. A value of **N** will cause the cold start classes to be ignored.

START ALL PRINTERS
Printers that were held at the time of the last shut-down are left in hold status at start-up. If you wish to have these printers started, enter a value of **Y** in this field. A value of **N** will leave held printers in stopped status.

HOLD AT START-UP
If you wish to decide whether to start a printer during automatic start-up operations, enter a value of **Y** in this field and your Automatic Start-Up exit

program will receive control for each printer. A value of **N** will suppress the execution of this exit.

HOLD AT SHUT-DOWN
A value of **Y** in this field will cause ROPES to put all printers on hold at shut-down time. A value of **N** will cause active or idle printers to remain active or idle and be started during the next CICS session.

START-UP FCB
You can automatically reset the form in use at a printer at start-up time to a standard form. To do so, enter the FCB suffix in this field. To leave the id of the last form used at the printer, enter a value of *****.

START AFTER ERRORS
If a printer stops printing due to an I/O error or a task abend, the automatic Start-up process does not normally start the printer the next day. This option will allow you to specify that these printers should be started. By setting this parameter to '**Y**,' ROPES will start printers that were stopped due to an ATNI or AKC3 termination. The default value is '**N**,' and will leave these printers in HOLD status.

START KCRQ EXIT
The ROPEKCRQ exit program (CICS 1.7 or 2.1.x), the ROPEZCRQ exit program (CICS 3.x),

or the ROPEZC41 exit program (CICS 4.1 and up) used with the ROPESPRT Screen Print utility, can be enabled and started automatically. Enter a **Y** in this field to have ROPES enable this exit during automatic start-up processing. A value of **N** will instruct ROPES to bypass this processing, and you will have to enable the exit some other way if you wish to use it.

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
 ROPES BROWSE AND DISPLAY OPTIONS MAINTENANCE

    SHOW EMPTY REPORTS: Y    SHOW EMPTY REPORTS ON ROPO/ROPS (Y/N)
     SORT REPORT NAMES: Y    SORT THE REPORTS IN THE PCR? (Y/N)
         SORT SEQUENCE: 1    1=CLASS/NAME, 2=CLASS/PRIO, 3=CLASS/PRIO/NAME
  BROWSE FIRST COLUMN: 002   START BROWSE DISPLAY AT THIS COLUMN
   BROWSE LAST COLUMN: 255   STOP BROWSE DISPLAY AT THIS COLUMN
         TS QUEUE SIZE: 4096 TEMPORARY STORAGE QUEUE SIZE FOR BROWSE
  DATA ENTRY KEYBOARD: N     USE DATA ENTRY PF KEY ARRANGEMENT
  AUTO MESSAGE SCROLL: N     AUTOMATICALLY WRAP COMMAND RESPONSE MESSAGES




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```

Figure 13 ROPES Browse and Display Options Maintenance Menu

FUNCTION: Update Browse and Display Control Information

COMMAND: Choice 5 on the System Options Maintenance Menu

This menu allows you to update the ROPES Browse and Display control information.

SHOW EMPTY REPORTS

The RORL, ROAL, ROPO and ROPS displays usually show all reports. If you have many reports, or if you wish to use these displays to show only the work to be done, enter a value of **Y** in this field and the empty reports will not be displayed. A value of **N** will cause all reports to be shown

SORT REPORT NAMES

The reports displayed on the ROPO and ROPS displays are shown in the order in which they were assigned to the printer. To sort these entries into another order, enter a **Y** in this field. A value of **N** will suppress this sorting. The desired sort order is set in the next parameter.

SORT SEQUENCE

This parameter is used in conjunction with the preceding parameter to determine the sort order.

Three sort orders are available. Set this field to '**1**' to direct ROPES to sort the reports in ascending class order, and by report name within class. Set this field to '**2**' to sort the reports into ascending class order and descending priority order within class. Set this value to '**3**' to sort the entries into ascending order by class, descending order by priority within class, and ascending order of report name within class/priority groupings. The setting here is a system-wide setting. It can be overridden by specifying a different sort order on the Printer Control Record screen for those printers which require different sort orders.   See "REPORT SORT ORDER" on page 108.

BROWSE FIRST COLUMN

This specifies the first column to be displayed by the Browse transaction. Enter a value from 1 to 255.

BROWSE LAST COLUMN

This specifies the last column to be displayed by the Browse transaction. Enter a value from 1 to 255, and greater than the Browse First Column value.

TS QUEUE SIZE

This field specifies the size of the CICS TS records used by the Browse PRINT command to stage the data to be copied. Enter a value from 255 to 4096.

DATA ENTRY KEYBOARD

Enter a **Y** if you are using the Browse transaction on terminals with Data Entry keyboards. Browse will use function key assignments compatible with this keyboard. An **N** in this field will select the standard PF keys.

AUTO MESSAGE SCROLL

Normally, when the ROPES Command Processor fills the output area of the screen with messages, the last message indicates that the user should press enter when ready to read more messages. When using the Command Menu, the message display area is small, and a large Transfer request can require many repetitions of this process before the messages are all seen. If you wish to have ROPES automatically scroll the messages without user-intervention, set this option to '**Y**' and the messages will wrap around the display area automatically and the MORE MESSAGES prompt will be suppressed. The default value is '**N**' and will direct ROPES to stop each time the message area fills.

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
  ROPES MISCELLANEOUS OPTIONS MAINTENANCE

          PROP Z COMMAND OK: N    ALLOW PROP/Z IF ON THE AUTHORIZED LIST (Y/N)
             PROP T LIMITS: Y    LIMIT PROP/T TO PRINTER OWNER (Y/N)
           BQTX TABLE SIZE: 0100 ROPEBQTX TRANSFER PROGRAM TABLE SIZE
          SINGLE CYCLE ALT: N    ALTERNATE FACILITY SINGLE CYCLE ONLY (Y/N)
          STOP ALT IF BUSY: N    ALTERNATE FACILITY STOPS IF FILE BUSY (Y/N)
     ALT. FAC. SLEEP TIME: 0001 ALTERNATE FACILITY SLEEP TIME (MINUTES)
         BATCH ENQ RETRIES: 010  BATCH INTERFACE ENQ RETRY COUNT
           ALT. FAC. ENQ ID: ROPESV51 ALTERNATE FACILITY ENQ MAJOR ID

  ROPES TRANSACTION CODE DEFINITIONS

  DIRECT OPERATOR COMMANDS
    SUPERVISORY OPERATORS:   SOOP SUPERVISORY OPERATOR COMMAND CODE
        PRINTER OPERATORS:   PROP PRINTER OPERATOR COMMAND CODE
  MENU OPERATOR COMMANDS
    SUPERVISORY OPERATORS:   RCMS SUPERVISORY OPERATOR MENU COMMAND CODE
        PRINTER OPERATORS:   RCMP PRINTER OPERATOR MENU COMMAND CODE
            CONTINUATIONS:   RCMX MENU TRANSACTION CONTINUATION



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```

Figure 14 ROPES Miscellaneous Control Information Maintenance Menu

FUNCTION: Update Miscellaneous Control Information

COMMAND: Choice 6 on the System Options Maintenance Menu

This menu allows you to update the ROPES miscellaneous control information.

PROP Z COMMAND OK

This option causes ROPES to honor the Supervisor Z (Clear Report) command even if entered by a printer operator. The Z command code must appear in the PROP command list (see page 90). To allow this processing, enter a **Y** in this field. A value of **N** will prevent the Z command from being executed by printer operators.

PROP T LIMITS

The Transfer command requires that the operator be the control terminal operator for both the sending and receiving printers. Otherwise, the transfer must be performed by a supervisor. To maintain this logic, enter a **Y** in this field. To allow printer operators to transfer reports to printers that they do not control, enter the value **N** in this field.

BQTX TABLE SIZE

This parameter sets the size of the report table in the BQTX transaction. Enter a value from 1 to 9999. See the BQTX transaction description in the ROPES Utilities Manual.

SINGLE CYCLE ALT

Set this field to **Y** to have the Alternate Facility to stop processing after one cycle. If you select this value you must start the Alternate Facility whenever you want the data stored in it to be transferred. The data will not transfer automatically. A value of **N** in this field will let the Alternate Facility start and stop itself automatically according to the Sleep Time value below.

STOP ALT IF BUSY

Set this parameter to **Y** if you want the Alternate Facility to stop processing if it finds its files in use. A value of **N** in this field will allow the Alternate Facility to keep trying until its files are available.

ALT. FAC. SLEEP TIME

Set the amount of time the Alternate Facility is to sleep between service cycles. Enter a value from 1 to 9999 to specify the time, in minutes.

BATCH ENQ RETRIES

When the ROPES Batch Application Interface program attempts to reserve the Alternate Facility data sets and finds them busy, it will wait for one minute and try again. The number of retries is controlled by the value in this field. Enter a value from 1 to 999. The smaller this value the more likely the batch job is to be unable to get control of the data sets it needs.

ALT. FAC. ENQ ID

This field contains the major queue name used by the Alternate Facility and the Batch Application interface program to control access to the Alternate Facility data sets. This value must be different in each set of ROPES data sets so that they (test, production, etc.) do not interfere with each other.

ROPES TRANSACTION CODE DEFINITIONS
DIRECT OPERATOR COMMANDS
SUPERVISORY OPERATORS

You may change the identifier used to initiate the SOOP transaction. Enter the transaction code to be used by your supervisory operators.

PRINTER OPERATORS

You may change the identifier used to initiate the PROP transaction. Enter the transaction code to be used by your printer operators.

MENU OPERATOR COMMANDS
SUPERVISORY OPERATORS

You may change the identifier used to initiate the Operator Menu transaction by supervisory operators (RCMS). Enter the transaction code to be used by your supervisory operators.

PRINTER OPERATORS

You may change the identifier used to initiate the Operator Menu transaction by printer operators (RCMP). Enter the transaction code to be used by your printer operators.

CONTINUATIONS

You may change the identifier used by the Operator Menu transaction to cause transaction continuation after the operator has completed data entry on the menu. Enter the transaction code to be used by the transaction.

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
ROPES QUEUE REORGANIZATION

SCHEDULE REORG TASK:
TIME TO START:          TIME OF DAY (HHMM) TO START REORG TASK
   REQUEST ID:          1-8 CHARACTER ID FOR THIS REQUEST

CANCEL SCHEDULED REORG:
   REQUEST ID:          1-8 CHARACTER ID OF REORG TO CANCEL




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```

Figure 15 ROPES Queue Reorganization Menu

FUNCTION: Queue Reorganization
COMMAND: Choice 2 on the Maintenance Transaction Menu

This menu allows you to schedule a queue reorganization run and/or cancel a previously scheduled queue reorganization.

SCHEDULE REORG TASK

This heading identifies the start of the controls used to schedule a queue reorganization.

TIME TO START

You must enter the time of day at which you want the queue reorganization to run. The time is entered in the format HHMM (24-hour time). "0000" is treated as if the field was not entered. The reorganization task will start at the specified time if CICS is still up, or may start immediately if the specified time occurred within the last six hours. The following field must also be entered to schedule the reorganization run.

REQUEST ID

You must enter the one- to eight-character request identifier to schedule the reorganization run. This request identifier may be used to later cancel the reorganization request.

CANCEL SCHEDULED REORG

This heading identifies the start of the controls used to cancel a scheduled queue reorganization.

REQUEST ID

You must enter the one- to eight-character request identifier used to schedule the reorganization you wish to cancel.

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
 REPORT INFORMATION BLOCK MAINTENANCE
 REQUESTED FUNCTION: CHANGE    Change data fields as required.  Press enter.

   REPORT NAME: REPORT01     1-8 CHARACTERS. MUST BE UNIQUE.
         CLASS: 1            A-Z, 0-9.
      PRIORITY: 127          0(LOW) - 255(HIGH)
           FCB:              0-4 CHARACTER FCB SUFFIX
 PRINT BUFFER #: N SIZE: 05  PRINT # ON CH1 LINE (Y/N), AND LENGTH (1-10).
    APPENDABLE: N            Y OR N
       DISCARD: 2            1=PRINTED PAGES  2=IF COMPLETELY PRINTED
                             3=UNCONDITIONALLY  4=BY OPERATOR  5=AS PRINTED
                             6=WHEN EXPIRED  7=IF EXPIRED AND/OR PRINTED
                             8=5 OR 6  9=PURGE, DO NOT PRINT
 ALT. FAC. XFER: Y           CAN ALTERNATE FACILITY TRANSFER REPORT(Y OR N)?
 SKIP WHEN IDLE: N           EJECT PAGE IF PRINTER IS IDLE (Y OR N)?
 RETENTION TIME: 0000        DATA RETENTION PERIOD (IN HOURS). 0=FOREVER.
   SOUND ALARM: N            SOUND ALARM WITH EACH PAGE (Y OR N)
   HOLD PRINTER: N           HOLD PRINTER AFTER EACH PAGE (Y OR N)
        COPIES: 001          DEFAULT NUMBER OF COPIES TO BE PRINTED
  INTERRUPTIBLE: N           INTERRUPT FOR HIGHER PRIORITY REPORTS
  USE LINE EXIT: N           USE LINE EXIT FOR THIS REPORT


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```

Figure 16 Report Information Block Maintenance

FUNCTION: Report Maintenance
COMMAND: Choices 3, 4 and 5 on the Maintenance Transaction Menu

This menu allows you to add, change or delete report definitions. The report definitions of the Alternate Facility are automatically maintained in parallel with the principal ROPES reports.

REQUESTED FUNCTION

This field will indicate the choice you made on the ROPES System Maintenance Menu. The field will specify "ADD", "CHANGE" or "DELETE".

The field will be followed by a brief reminder of the actions you should take with this menu.

REPORT NAME

The one- to eight-character report name. This field will be blank for "ADD" processing. You must enter a unique name (composed from the letters A-Z and the numbers 0-9) for the report you are adding. In "CHANGE" and "DELETE" processing, the name of the report being processed will be displayed; it cannot be modified.

CLASS

The class of the report. Enter a single character, either a letter (A-Z) or a number (0-9). In order to change the class of a report you must first remove the report from each printer to which is assigned. Then use this menu to change the class of the

report. Finally, reassign the report to the printers as required.

PRIORITY

Enter the priority of the report. The priority values are 0 - 255 (low - high).

FCB

Enter the one- to four-character Forms Control Block suffix. This suffix will be appended to the string "RO$F" to construct the Forms Control Block Module name. This module will be used when printing the report. The field may be completely blank if you wish to use the default module, "RO$F   ".

PRINT BUFFER #

This Yes/No flag determines whether or not the buffer number is to be printed in the first five print positions of every top-of-form line in the report. A value of "Y" will cause buffer number printing; "N" will suppress buffer number printing. The SIZE field will accept a value in the range of 01-10 and specifies the number of digits to be printed.

APPENDABLE

This Yes/No flag determines whether or not the report may be extended after data has been stored. A value of "Y" will allow more data to be added to the report; "N" will prevent data from being added to the report until the previous data has been deleted.

DISCARD

This field controls the disposition of the print data on queue during printing and queue reorganization runs. The values are defined as follows:

1   Discard all pages that have been printed at all printers to which the report is assigned. Unprinted data will remain on queue.

2   Discard all pages if the report has been completely printed at at least one printer to which it is assigned.

3   Discard all pages.

4   Discard pages only by operator command (SOOP/Z).

5   Discard all pages immediately after they have been completely printed at at least one of the printers to which the report is assigned.

6   Discard all pages that have expired. Expired pages are pages which were created more than "RETENTION TIME" hours ago.

7   Discard all pages that have expired and/or have been printed. Expired pages are pages which were created more than "RETENTION TIME" hours ago. Under control of the AND/OR option from the Report Options menu, the processing of this option may be altered to discard all pages that have expired or have been printed.

8   Discard all pages immediately after they have been completely printed at at least one of the printers to which the report is assigned. If not purged prior to the execution of the Queue Reorganization program, then discard all pages that have expired. This option is a combination of the effects of options 5 and 6.

9   Discard all pages as soon as the report is selected for printing. Do not print the report. If not purged prior to the execution of the Queue Reorganization program then discard all pages.

ALT. FAC. XFER

This Yes/No flag is used to control the transfer of reports from the Alternate Facility. The value "Y" indicates that the report may be transferred from the Alternate Facility; "N" indicates that it may not be transferred.

SKIP WHEN IDLE

This Yes/No flag is used to control page ejection processing during report printing. When set to "Y", a page eject will be performed after printing the last available page of the report; "N" will suppress this final page eject.

RETENTION TIME

This four digit field indicates the retention period for data placed in the report. It is used in conjunction with the "DISCARD" parameter to determine if data is purgeable during queue reorganization. The value specified indicates the number of hours the data is to be kept on queue after creation before it is eligible for purging. This field only has meaning if the "DISCARD" parameter specifies "6" or "7".

SOUND ALARM

This Yes/No flag is used to control the sounding of the printer's audible alarm at the start of each new page of data. "Y" indicates that the alarm is to be sounded; "N" suppresses the sounding of the alarm. The alarm will sound on the transmission of each line that begins with a top-of-form carriage control character.

HOLD PRINTER

This Yes/No flag is used to control the status of the printer during the printing of this report. If set to "Y", the printer will be placed on hold at the end of each page (just before the transmission of the next top-of-form). To resume printing, a start command must be issued. "N" suppresses this function, allowing the report to print without interruptions.

COPIES

This three digit field indicates the number of copies of the report to be printed at each printer to which it is assigned, unless overridden for the printer on the Report Assignment Menu.

INTERRUPTIBLE

This Yes/No flag is used to control the interruption of report printing for the selection of reports of higher priority. When set to "Y", the report will be interrupted at the end of each page, and printing of any higher priority report with data available will be started. This feature is ignored for printers which are defined with DEVTYPE=LPRD and the report will not be interruptible on those printers. This feature is disabled with the value "N". This feature should be used only on large reports.

USE LINE EXIT

This Yes/No flag is used to control the invocation of the user-written Line Editing Exit program. When set to "Y", the exit will be invoked once for each line that is being added to a ROPES report. The exit will be invoked for both online and batch user applications. This feature has the potential to increase overhead significantly and should be used with care. The default value for this parameter is "N".

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
 PRINTER CONTROL RECORD MAINTENANCE
 REQUESTED FUNCTION: CHANGE   CHANGE DATA FIELDS AS REQUIRED.  PRESS ENTER.

          PRINTER ID: AX01       1-4 CHARACTERS. MUST BE UNIQUE.
 DEVICE BLOCK SUFFIX:            0-4 CHARACTER DEVICE BLOCK SUFFIX.

    CONTROL TERMINAL: *          0-4 CHARACTERS
  COLD START CLASSES: A          UP TO 8 VALUES, A-Z, 0-9 OR BLANK
 HOLD ON WARM START: N           START ONLY BY OPERATOR COMMAND (Y OR N)
     HOLD WHEN IDLE: N           PUT PRINTER ON HOLD WHEN IDLE (Y OR N)
  RELEASE WHEN IDLE: Y           END PRINTING TASK WHEN IDLE (Y OR N)
  EJECT PAGE IF IDLE: Y          EJECT THE LAST PAGE WHEN IDLE (Y OR N)
    MAX # OF REPORTS: 015        0 - 300
       PRINTER GROUP: 1          REGION ASSIGNED FOR PRINTER
  REPORT SORT ORDER: 2           REPORT SORT ORDER 1/CR, 2/CP, 3/CPR




                                             Applid=CICSTS41 Sysid=S650
  ROPES Version 17.0             (C) Copyright 1991-2011 Axios Products, Inc.
```

Figure 17 Printer Control Record Maintenance Menu

FUNCTION: Printer Control Record Maintenance
COMMAND: Choices 6, 7 and 8 on the System
Maintenance Menu

This menu allows you to add, change or delete printer definitions.

REQUESTED FUNCTION
This field will indicate the choice you made on the ROPES System Maintenance Menu. The field will specify "ADD", "CHANGE" or "DELETE".

The field will be followed by a brief reminder of the actions you should take with this menu.

PRINTER ID
The one- to four-character printer identifier is entered in this field for "ADD" processing. The printer id must be unique. In "CHANGE" and "DELETE" processing, the printer id of the printer being processed is displayed. It may not be changed. For printer devices attached to CICS, this must be the four character terminal identifier of the printer as found in the CICS TCTTE. For JES and RJE printers, this field must match the queue identifier of an intra-partition transient data destination.

DEVICE BLOCK SUFFIX
The one- to four-character Device Control Block suffix is entered here. The suffix will be appended to the string "RO$D" to create the module name of the Device Control Block used with the operation of this printer. The value may be blank if you

wish to use the default Device Control Block "RO$D   ". The Device Control Block supplies information to the ROPES Printer Tasks regarding the operation of the printer task. Use care in selecting the control block you use. We supply several different control blocks for your use, and you can create any additional control blocks you may require. Please refer to the Device Control Block discussion in the Customization section of this manual.

CONTROL TERMINAL
The terminal id of the printer's control terminal may be entered here. If no value is specified, the control terminal will be assigned during normal operations by the PROP/G command or by default to the first terminal issuing a PROP command for the printer. Run-time messages are directed to the control terminal. These messages may be suppressed by coding an "*" or a "$" as the control terminal id. When "*" is coded, no control terminal will be assigned, and all PROP commands issued to the printer will be processed. When "$" is coded, no control terminal will be assigned, but only SOOP commands will be honored for the printer.

Generic definition of control terminals is supported by ROPES. To define a generic control terminal, enter the one, two or three constant characters in the control terminal identifier. Enter a ? in the positions on the right side of the control terminal identifier that are variable. For example, if a printer is to be controlled by all terminals with a

terminal identifier that begins with the characters HL, enter HL?? as the control terminal identifier.

Control terminals may be authorized dynamically and interactively. This is done through a user exit which is described in the Security section of this manual.

COLD START CLASSES

You may enter one to eight class codes in this field to indicate the report classes to be used when starting this printer for the very first time during ROPES start-up. This class list will be used if the printer has no active class list and is not held on start-up. Enter any letters (A-Z) or numbers (0-9) you wish. The list is terminated by the first blank character.

If you wish to use these classes every time ROPES starts these printers during daily automatic start-up, you must select the appropriate option from the Printer Options screen of the System Parameters Maintenance menu.

HOLD ON WARM START

This Yes/No flag controls automatic start-up processing for this printer. The value "Y" indicates that the printer is to be held during ROPES start-up and must be started by an operator command. The value "N" indicates that the printer is eligible for automatic start-up if it has active classes or "COLD START CLASSES" have been specified.

HOLD WHEN IDLE

This Yes/No flag controls the status of the printer when all available report data has been printed. The value "Y" causes the printer to be placed in hold status when all available data has been printed. The value "N" causes the printer to be placed in the idle state when all data has been printed.

RELEASE WHEN IDLE

This Yes/No flag controls the status of the printing task when all available report data has been printed. The value "Y" causes the printing task to be terminated. The value "N" causes the printing task to wait for more data or other commands. This field is meaningless when the "HOLD WHEN IDLE" flag is "Y"; in this case, the printer will be released.

EJECT PAGE IF IDLE

This Yes/No flag controls the positioning of the last page printed before the printer task goes into the idle or stopped state. If set to **Y**, the last printed page will be ejected. A value of **N** causes the last page to remain in the printer.

MAX # OF REPORTS

This field indicates the maximum number of reports that may be assigned to the printer by operators using the Operator Command Menu or the SOOP or PROP commands. Once this number of reports is assigned to the printer, no new reports may be assigned until the value is raised or some reports are removed. The value entered must be less than or equal to the smaller of 525 or the limit set on the Printer Options Menu.

PRINTER GROUP

This field is used to enter the MRO region number of the region in which this printer is to be serviced. This field is used to create that suffix of the transaction code that starts the printer service task. This field is displayed only if more than one printer region was specified on the ROPES System Control Information Maintenance Menu.

REPORT SORT ORDER

This parameter is used in conjunction with the system-wide SORT REPORTS parameter to determine the sort order for this particular printer. This value overrides the system-wide sort sequence.

Three sort orders are available. Set this field to '**1**' to direct ROPES to sort the reports in ascending class order, and by report name within class. Set this field to '**2**' to sort the reports into ascending class order and descending priority order within class. Set this value to '**3**' to sort the entries into ascending order by class, descending order by priority within class, and ascending order of report name within class/priority groupings. The setting here is a system-wide setting. It can be overridden by specifying a different sort order on the Printer Control Record screen for those printers which require different sort orders. See SORT SEQUENCE" on page .

(MESSAGES)

Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

```
 PRINTER REPORT ASSIGNMENTS                              Applid=CICSTS41 Sysid=S650
 REQUESTED FUNCTION: CHANGE   Change data fields as required.  Press enter.
 PRINTER ID: AX01      CURRENT REPORTS: 009     MAXIMUM REPORTS: 015
 REPORT  PRTY COPY    REPORT  PRTY COPY    REPORT  PRTY COPY   REPORT PRTY COPY
 202R0022 080 001    TESTDIST     001    REPORT04     001    REPORT02     001
 COPYAT09     001    COPYAT04     001    BADDATA      001    REPORT01     001
 REPORT03     000




                                                          PAGE 1 OF 1
 ROPES Version 17.0                   (C) Copyright 1991-2011 Axios Products, Inc.
```

Figure 18 Printer Report Assignment Menu

FUNCTION: Printer Report Assignments
COMMAND: Choice 9 on the System Maintenance
                Menu

This menu allows you to add, change or delete report assignments for a printer.

REQUESTED FUNCTION
This field will indicate the choice you made on the ROPES System Maintenance Menu. The field will specify "ADD", "CHANGE" or "DELETE". The field will be followed by a brief reminder of the actions you should take with this menu.

PRINTER ID
The printer identifier of the printer being processed is displayed.

CURRENT REPORTS
The number of reports assigned to the printer is displayed.

MAXIMUM REPORTS
The maximum number of reports that may be assigned to the printer is displayed. This number will automatically be adjusted upward if more reports are assigned using this menu.

REPORT
This column heading identifies the four columns in which report names may be entered. The menu supports the definition of 75 reports at one time. If the last report entry on the screen is used (not

blank) an additional page (up to 4 pages) will be displayed to allow more reports to be assigned to the printer. To assign a report, type the report id in any available field under this column heading. To change a report, over-type the report name to be changed. To delete a report, erase or blank out its name. A report may not be assigned to the same printer more than once.

PRTY
This column heading identifies the four columns in which report priority overrides may be entered. The three digit value entered here becomes the report's priority at the printer being processed.

COPY
This column heading identifies the four columns in which report copy overrides may be entered. The three digit value entered here becomes the report's copy count at the printer being processed.

(MESSAGES)
Error messages resulting from the use of this menu will be displayed on line 24, replacing the copyright notice. The messages will be strung out, one for each field in error. The messages are separated by the "*" character.

JES Options Maintenance

Introduction

JES Options Maintenance is used to create and manage the parameters used by the ROPES Print Support for JES Output facility, discussed in the Administrator's Guide.

JES Options Maintenance Screens

The first line of the screen contains the date, time, title, panel type, and panel name. The two last significant lines of the screen contain the ROPES message line, and the program function key definitions. All screens in the JES Options Maintenance Facility have this format.

The JES Options Maintenance Facility uses Basic Mapping Support maps with extended attributes. To achieve the best screen appearance, it is recommended that you use these screens on terminals defined with extended attributes and color.

JES Options Maintenance screens employ an additional data transmission saving feature. If the same screen is displayed more than one time, the screen will not be cleared and re-displayed in its entirety. The DATAONLY option is used to send the data, and not the entire map.

All JES Options Maintenance transactions are pseudo-conversational. Although this is beneficial from a performance standpoint, you should be aware that these transactions may be interrupted by programs that send messages to CICS terminals.

Function Key Definitions

The following function keys are supported in this version of the JES Options Maintenance Facility.

PF3 = EXIT This key will save the last update and exit, or just exit from the current screen to the previous screen level.

PF4 = RETN This key will cause a return to the highest screen level. For the JES Options Maintenance Facility, that is the Primary Menu screen.

PF7 = PREV This key will display the previous page of data items in a **LIST** screen, or the previous record definition in a data entry type screen.

PF8 = NEXT This key will display the next page of data items in a **LIST** screen, or the next record definition for a data entry type screen.

PF9 = CNCL This key will cancel an outstanding update, add, or delete request. When responding to a confirmation message, the CNCL key may be used to abort the current operation. The cancel key does not cause a return to the previous screen level.

Other function keys are not supported at this time. Function key assignments may be changed, however, during the installation of ROPES.

The Primary Menu Screen

The Primary Menu screen is initiated by entering the **RJTB** transaction at a CICS terminal. This can be accomplished by clearing the screen, entering "**RJTB**" and pressing the ENTER key. JES Options Maintenance will respond by displaying the Primary Menu shown in **Figure 19** on page 114.

The Primary Menu offers two selections. The first, **Update JES Printer/Report Parameters,** allows the JES Options entries to be created, updated, or deleted. The last, **Update JES OUTDESC Parameters,** allows OUTDESC strings to be created, updated, or deleted. The selections are made by entering the number of the selection near the bottom of the screen after the " = = = > " literal. If you enter an invalid selection number, a message will ask you to re-enter the selection.

When using the Primary Menu, pressing the **END** key causes a return to CICS. Pressing the **RETN** key displays the primary menu again.

JES Option Table Index Screen

The Option Table Index screen presents a list of option table definitions to the user. At the top line of the screen, the panel type field shows the word **LIST**. All list screens have a similar format. A sample of the Option Table Index screen appears in **Figure 20** on page 115.

Command Input Field

Below the title line appears the **Command** input field. The Command input field is not functional in this version of ROPES. It is present however, to facilitate future enhancement.

The Option Field

On the extreme left side of the screen, an **OPTION** field (OPT) will be present for every record. The option field allows you to perform various operations on the record being displayed. Normally, these operations will be add, change, delete, or locate. An information line at the top of the screen displays the available options. If an invalid option is selected, a message will appear on the message line indicating the error. This message will appear in red for terminals which display in color.

The JES Option Table Index screen will allow the **(L)**ocate, **(A)**dd, **(C)**hange, and **(D)**elete options.

The Locate Option

The locate option allows a JES Option Table entry to be located. This is accomplished by entering an "**L**" in the option field of any definition display line, and over-typing the **Report** and, optionally, **Prtr** fields with a complete or partial name. The locate function will reposition the list starting with the entry most closely matching the name you requested. For example, to reposition the list to all entries starting with the letter "**D**", enter the locate option (**L**) under the **Opt** heading, enter the letter "**D**" in the first column of the **Report** field, erase the rest of the report name, and then press ENTER.

The Add Option

The add option works in a similar manner as the locate option. However, when entering the name, the full **Report** and **Prtr** fields must be entered. The combination of report and printer values you enter will become the name of the definition added. When using the add option, the cursor does not have to be positioned at an empty distribution definition line. You can over-type an existing definition with the name you wish to add. Multiple add requests may also be made at the same time. Once the add request is entered, a data entry screen is presented allowing you to enter the fields of the definition. If you requested multiple additions, a blank data entry screen will appear in sequence for each definition you requested. Messages will appear in the message area requesting you to confirm the addition of every record, and to indicate the completion of all additions.

Once the add requests are completed, you may use the scroll keys to scroll forward and backward through the recently added definitions. Note however, the scroll keys are not active until all requested records have been added. To return to the index, you must press the END key.

The Delete Option

The delete option allows existing definitions to be deleted. For the delete option, you would not over-type the **Report** or **Prtr** fields. Simply locate the entry you wish to delete, and then place a "**D**" under the **Opt** heading for that line. When you press ENTER, the data entry screen for that definition will be presented. A message will appear in the message area asking you to press ENTER to confirm the delete. If you decide not to delete the definition, press the CNCL key. This will cancel the delete.

You may delete more than one definition at a time. If you select multiple definitions for deletion, each definition will be displayed in sequence by a data entry screen. You must either press the ENTER key to confirm the delete, or press the CNCL key to cancel the delete. When all requested deletes are processed, a message will appear in the message line confirming this. You must press the END key to return to the index screen.

The Change Option

The change option allows existing definitions to be modified. You can select the definition to be updated by locating it first, and then entering a "**C**" under the **Opt** heading next to the located definition. After you press enter, a data entry screen will present the definition to you for update. You may now modify fields, and press enter to update the record. If you wish to cancel the update you must press the CNCL key in response to the confirmation message.

If you selected more than one definition for update, each definition will be presented to you in sequence. When all updates are completed, a message will appear in the message line confirming this. When the updates are completed,

you may either scroll forward or backward using the NEXT and PREV keys, or return to the index screen by pressing the END key.

Initially, the JES Option Table Index Screen will have two sample entries in it. After you have tested with these entries, and added more of your own, you may delete these entries.

The JES Option Table Entry Screen

The JES Option Table Screen is the data entry screen that is displayed after the index item is selected for update, add, or delete. A sample of this screen is shown in **Figure 21** on page <u>115</u>.

Field Definitions

Each field is described below proceeding from left to right, and starting at the line below the title line of the screen.

Report Name

The Report Name field identifies the ROPES report associated with this record. This field may contain up to 8 alphanumeric characters. Together with the Printer Name, these two fields name the entry.

Printer Name

The Printer Name field identifies the ROPES printer associated with this record. This field may contain up to 4 alphanumeric characters. Together with the Report Name, these two fields name the entry.

Description

The Description field allows a short description to be entered about this distribution definition. This field may contain up to 28 characters.

Date/Time Updated

This field is automatically filled in when a definition is added or changed. This field contains the date the definition was added or changed.

Node Name

The Node Name field defines the JES Node Name to be associated with the output spooled for the Report/Prtr combination. You may enter from 1 to 8 characters in this field. A value is required. You may use the value "*" to have the current

node name adopted at the time the report is spooled.

User Id

This field defines the User Id to be associated with the output spooled for the Report/Prtr combination. You may enter from 1 to 8 characters in this field. A value is required. You may use the value "*" to have the CICS region's User Id adopted at the time the report is spooled.

Output Class

This field defines the JES output class to be associated with the output spooled for the Report/Prtr combination. You may enter any alphanumeric character in this field.

Descr. Name

This field defines the name of an OUTDESC entry to be used when spooling output for the Report/Prtr combination. The value entered will be used to access an entry defined using the Update JES OUTDESC Parameters function of this transaction. You may enter a 1 to 8 character value in this field.

Program Function Keys

The Program Function key assignments are displayed at the bottom of the screen. Please refer to the section **Function Key Definitions** for an explanation of their use.

JES OUTDESC Data Index Screen

The OUTDESC Data Index screen is a **LIST** type screen. The OUTDESC Data Index screen is provided to display and maintain the OUTDESC Data strings.

JES OUTDESC Data Index Options

The options available to you on the Index screen are; **L**(ocate), **A**(dd), **C**(hange), and **D**(elete). Any of these options may be entered under the **Opt** heading, to the left of the **Dscr/Nme**.

Locate Option

The **Locate** option allows you to position the index list to the OUTDESC entry entered in the **Dscr/Nme** field. The **Dscr/Nme** entered may be partial or complete. If you enter a partial name,

the index list will be positioned to the name most closely matching the name you entered. For example, if you enter "**D**" in the **Dscr/Nme** field, the list will be repositioned to the first OUTDESC beginning with the letter "D". One locate request should be made at a time.

Add Option

OUTDESC entries can be added using the add option. To add an entry, enter the **A** option under the **Opt** heading next to any **Dscr/Nme** entry in the list. Over-type the **Dscr/Nme** field with the name of the OUTDESC entry you wish to add. The name may be up to 8 characters in length. Press the ENTER key. The JES OUTDESC Data Options screen will be presented.

Delete Option

To delete one or more OUTDESC entries, simply enter the "**D**" option next to the desired name(s). After you press the enter key, the OUTDESC Data Options screen will be presented and a message will ask you to **confirm** the delete request. If you wish to delete the selected table(s), press the ENTER key. If you wish to abort the delete(s), press the **CNCL** key. A confirmation message will be issued. If a message returns indicating an error deleting one or more entries, check your request and try again.

Change Option

To **Change** an OUTDESC entry, enter the "**C**" option next to the desired name(s). After you press the enter key, the OUTDESC Data Options screen will be presented. Once you have performed all necessary maintenance on the entries from the OUTDESC Data Options Index screen, you must press **END** key to return to the Index screen.

While in this and other **LIST** screens, you may press the **PREV** and **NEXT** keys to scroll back and forth through the index list. Please refer to the section on **Function Key Definitions** for more information on the use of program function keys.

Field Definitions

Each field is described below proceeding from left to right, and starting at the line below the title line of the screen.

Dscr/Nme

The OUTDESC Name field identifies the OUTDESC string associated with this record. This field may contain up to 8 alphanumeric characters.

Date/Time Updated

This field is automatically filled in when a definition is added or changed. This field contains the date the definition was added or changed.

Description

The Description field allows a short description to be entered about this distribution definition. This field may contain up to 28 characters.

Program Function Keys

The Program Function key assignments are displayed at the bottom of the screen. Please refer to the section **Function Key Definitions** for an explanation of their use.

JES OUTDESC Data Options

The JES OUTDESC Data Options screen is provided to maintain OUTDESC entries.

The JES OUTDESC Data Options screen displays a single OUTDESC entry which can be updated, added or deleted. A sample of this screen is shown in .

JES OUTDESC Data Options Screen Fields

This screen contains fields displaying information about the OUTDESC entry. These fields are **Descriptive Data Name**, **Date/Time Updated** (date), **Description**, and **Descriptive Data Text**. These fields describe the entry which was created under the **Index** screen.

Field Definitions

Each field is described below proceeding from left to right, and starting at the line below the title line of the screen.

Descriptive Data Name

The Descriptive Data Name field identifies the name associated with this record. This field may contain up to 8 alphanumeric characters.

Description

The Description field allows a short description to be entered about this distribution definition. This field may contain up to 28 characters.

Date/Time Updated

This field is automatically filled in when a definition is added or changed. This field contains the date the definition was added or changed.

Descriptive Data Text

The actual contents of the OUTDESC string are to be entered here. You may enter up to 74 characters. The contents of this string must conform to the rules for the EXEC CICS SPOOLOPEN command's OUTDESCR option.

Program Function Keys

The Program Function key assignments are displayed at the bottom of the screen. Please refer to the section **Function Key Definitions** for an explanation of their use.

```
 Jun 07, 2005 02:27pm     ROPES JES Option Maintenance Menu     MENU     R51JM01
 -------------------------------------------------------------------------------



                     1.   Update JES Printer/Report Parameters.

                     2.   Update JES OUTDESC Parameters.






   Please select menu option number ===>


 ROPES JES OUTDESC Data index processing complete.
 -------------------------------------------------------------------------------
 03 EXIT 04 RETN
```

Figure 19 The Primary Menu Screen

```
 Jun 07, 2005 02:27pm     ROPES JES Option Table Index Screen    LIST      R51JM02
 --------------------------------------------------------------------------------

 Options:  (A)dd, (C)hange, (D)elete, and (L)ocate.
 Opt   Report    Prtr    Date/Upd    Time/Upd          Description
 ---   --------  ----    ---------   --------    ----------------------------
       REPORT01  JESP    03/27/1998  15:02:00    JES TEST PRINTER CLASS X.
       REPORT03  JESP    01/02/1999  16:34:18    JES TEST PRINTER CLASS 1.












 ROPES09068 - Bottom of list reached.
 --------------------------------------------------------------------------------
 03 EXIT 04 RETN 07 PREV 08 NEXT 09 CNCL
```

Figure 20 JES Option Table Index Screen

```
 Jun 07, 2005 02:28pm     ROPES JES Option Table Entry Screen    DISPLAY  R51JM03
 --------------------------------------------------------------------------------


 Report Name:  REPORT01              Description: JES TEST PRINTER CLASS X.
 Printer Name:    JESP               Date/Time Updated: 03/27/1998 - 15:02:00

 Node Name:    *
 User Id:      *
 Output Class:      X
 Descr. Name:  OUTDESC2









 ROPES09043 - Please press the ENTER key to MODIFY the current record.
 --------------------------------------------------------------------------------
 03 EXIT 04 RETN 09 CNCL
```

Figure 21 JES Option Table Entry Screen

```
 Jun 07, 2005 02:29pm       ROPES JES OUTDESC Data Index      LIST    R51JM04
-------------------------------------------------------------------------------

 Options:  (A)dd, (C)hange, (D)elete, and (L)ocate.
 Opt  Dscr/Nme    Date/Upd    Time/Upd           Description
 ---  --------    ----------  --------  ----------------------------
      OUTDESC1    03/27/1998  15:33:58  COPIES IS 1.
      OUTDESC2    01/02/1999  17:53:40  COPIES IS 2.




 ROPES09068 - Bottom of list reached.
-------------------------------------------------------------------------------
 03 EXIT 04 RETN 07 PREV 08 NEXT 09 CNCL
```

Figure 22 JES OUTDESC Data Index Screen

```
 Jun 07, 2005 02:30pm       ROPES JES OUTDESC Data Options    DISPLAY  R51JM05
-------------------------------------------------------------------------------


 Descriptive Data Name:  OUTDESC1
 Description:            COPIES IS 1.
 Date/Time Updated:      03/27/1998 - 15:33:58

 Descriptive Data Text:

   COPIES(1)




 ROPES09043 - Please press the ENTER key to MODIFY the current record.
-------------------------------------------------------------------------------
 03 EXIT 04 RETN 09 CNCL
```

Figure 23 JES OUTDESC Data Options Screen

LPR Options Index Screen

The LPR Options Index Screen is used to update and maintain the LPR option records for your remote TCPIP printers. This include the printers supported as LPR devices as well as those supported with Direct Socket printing. This index screen is a LIST type of screen presenting one or more LPR option records to be updated. Each LPR printer option record defines the options that will be used to establish a connection with a Line Printer Daemon server, and set certain LPD printing options. An example of this screen appears below, in **Figure 24** on page 122.

One or more LPR option records can exist for a single ROPES printer. A default LPR options record can be created and used in the event all options are the same for every given report at the printer. The default record is created by adding an LPR options record using the ROPES printer id and the word "DEFAULT" in the report id. ROPES will first check to see if a record exists for the printer with the report id, if one does not then ROPES will use the default LPR options record.

Options listed and available on the LPR Options Index Screen are listed along side the heading "Options:". A single letter, enclosed in parenthesis, is the option command associated with the index process function. So if you wish to create an LPR options record, you must enter an "A/a" under the "Opt" heading on an empty line. All option commands are entered under the "Opt" heading on the left side of the screen. Read on for a detailed explanation of each command option.

Locate Option

The locate option can be entered on any line under the "Opt" heading. Lines containing existing entries may even be over typed with the value of the LPR key you are searching for. The location option will reposition the list of LPR option records so that the record matching closest to the name you entered will be positioned at the top line. To use the locate command enter an "L/l" in the line under the "Opt" heading, and then enter the printer and report ids for the record you are looking for. The LPR Options index screen will position the list to the closest matching entry. Partial printer ids can also be entered, but partial report ids will only be effective if the printer id is complete.

Add Option

Similarly to the locate option, the add option is entered under the "Opt" heading and can be entered on any line even if an entry occupies the line. If the line is filled, simply over type the existing entry with the printer and report id you wish to add. The add option causes the LPR Options Definition Screen to be displayed. This screen permits the entry of all LPR option values. If you wish to quickly create a default LPR option record for a printer, you can enter the "A" (add) command under the "Opt" heading, and just enter the printer id leaving the report field blank. When you receive the LPR Options Definition Screen it will be filled with the "DEFAULT" value in the report name automatically. The printer id is however always required when doing an add function.

Delete Option

The delete option can also be entered on any line, and an existing entry can be over typed with the printer/report of the entry you wish to delete. If you happen to be at the entry to be deleted, then the delete command option can be entered under the "Opt" heading to the left of the LPR options record entry line. The delete command option requires confirmation. When you enter the delete command a message will be displayed asking you confirm your delete. Simply press the Enter key to delete the record. If you wish to cancel the delete, then press the CNCL key (usually PF9). The delete command removes the LPR options record and all of its field values from the list.

Change Option

The change option command selects one of the LPR option records from the list and displays the LPR Options Definition Screen to enable all option values to be changed. The LPR option record can be selected for change by entering the change command next to the desired LPR option record in the list. If the LPR Option record is known but not shown in the list, then the change command can be entered on any line of the screen and the printer/report id can be entered over the existing record in the list. The locate command option can also be used to position the list to the desired record. Please read on for details about changing the LPR option record values.

Function Keys

The program function keys assignments are displayed at the bottom of the screen. They indicate the function that will be invoked for each function key. For more details please refer to the section on FUNCTION KEY DEFINITIONS for an explanation of their use.

LPR Options Definition Screen

The LPR Options Definition Screen is invoked automatically when doing an add or change function from the LPR Options Index Screen. During an add function the key fields "Printer:" and "Report:" may be entered or modified. During a modify or change command, whatever is entered in these fields will be ignored. To the right of the key fields are several display only fields showing the date, time, and user id to last change the record. Please find below a detailed explanation of the fields that can be modified. An example of the panel appears below in **Figure 25** on page .

Printer

The printer id is the first segment of the LPR options record key. This is a required field, and must contain the printer id of the TCPIP/LPR printer defined by the ROMT maintenance transaction. A printer is designated as being an LPR printer when its definition specifies the Device Characteristic Block suffix (name) of a DCB that contains a DEVTYPE (device type) value equal to "LPRD". The DCB (Device Characteristics Block) is a load module/table that will have the name "RO$D" plus a 4 digit name suffix. In the case of an LPR type printer this is likely to be "RO$DLPRD" or some other name created by your installation.

Report

The report field is the second segment of the LPR options record key. This field must contain the value "DEFAULT" or the name of the ROPES report that will be processed by this LPR options record. If an LPR options record does not exist for the report being processed, then the "DEFAULT" options record will be used to process the request. If there is no default LPR options record for a printer, and no LPR options record for the report, then an error will be issued and written to the transient data queue defined for ROPES error messages and the print request will be aborted.

Updated

This field is for display purposes only, and shows the date and time this LPR options record was last updated. If an error occurs when entering data on the screen, it is normal for these fields not to be filled in until the error is resolved.

By

This field is for display purposes, and contains the name of the last user to update the LPR options record.

Description

This field can be used to describe the LPR options record and its purpose. This field is limited to 32 characters in length.

Flag Opts:

This heading indicates a number of flag option type fields follow. Many of these flag option fields will require simply a "Y/N" (yes/no) designation.

Quick Port Release

This flag option tells ROPES to set the socket options so that the port used can be reused immediately. This feature will tend to help with delays associated with TCPIP holding ports for unsolicited input or stale packets. Values for this option can be either "Y" or "N".

Send CF First

This option flag controls whether the control file portion of the transmission will be sent first. For all LPR requests, a control file and data file are sent to the Line Printer Daemon (LPD). Most LPD servers are supposed to be able to accept the control file first. In some rare cases, the data file must be sent first. The possible options for this flag are "Y" or "N". If you set the value to "Y", the control file will be sent first. This is the recommended setting.

Delete Source File

This flag option determines whether the print data file will be retained or deleted by the LPD server once the printer request is complete. Possible values for this flag are "Y" or "N". The "Y" setting will cause the LPD server to delete the data file when completed.

Print Banner

The print banner flag option controls whether a banner page should be printed for your output.

The banner page will contain the information specified by the "Banner Class", "Job Name" and the "Req. User" fields. Possible values for this field are "Y" or "N". If you select "Y" (yes), then a banner will be printed by the LPD.

Mail Response

The mail response flag option specifies that a confirmation e-mail must be sent to the requesting user at the sending host system to convey that the print request has been completed. Possible values for this option are "Y" or "N". If you select "Y" (yes), then the LPD will send a response e-mail to the requesting user when the print request is completed.

Log Xmits To TDQ

This option flag specifies whether transmission to and from the LPD server should be logged to the extra-partition transient data queue specified by field "Log TD Queue". Possible flag options values are "Y" or "N". If you select "Y" (yes), then transmissions will be logged to the transient data queue named by the "Log TD Queue" field.

Type Of Print Request

The type of print request flag option specifies the type of print that will be performed by the LPD. The flag option values are defined as follows:

"f" - LPD will print a formatted text file that contains ASCII control characters HT, CR, FF, LF, and BS. Any other ASCII control characters will be discarded. This is a ROPES supported print option.

"l" - LPD will print a formatted text file but will leave all control characters alone, and will not filter them out. This is a ROPES support print option.

"p" - LPD will print a formatted text file but will include a heading, page numbers, and pagination. The heading should include the date and time the printing was started, the title, and a page number identifier followed by the page number. There is no way to specify the length of a page. This is a ROPES support print option.

"o" - LPD will print a Postscript file treating the data as a standard Postscript file. This option is not supported by ROPES at this time.

"r" - LPD will print a formatted text file with Fortran carriage control. This is a ROPES supported print option.

The recommended print option is "f/F" and should be selected for use with ROPES unless there is a specific reason for using one of the other options.

Banner Class

Specifies a class that will be printed on the banner if the option "Print Banner" was also selected. This field may contain any class type information up to 31 characters in length.

TCPIP Task

This option value must contain the name of the TCPIP task running on your MVS host system. This field will accept a name value up to 8 characters in length.

LPD Port

This option value specifies the port number that the LPD server listens on to accept print requests. This option value must contain port number 515 unless there is a specific reason to change it. The value entered into this field must be numeric. If this entry defines a printer using Direct Socket printing, the port number must be 9100.

Log TD Queue

This option value contains the extra-partition transient data queue name that will be used to log trans-missions. Logging ROPES LPR transmissions is controlled by the flag option "Log Xmits To TDQ". The transient data queue name is generally set to the same name used by CICS terminal messages or "CSMT". A special extra partition destination can be established with similar attributes as CSMT to write the messages to a separate file. This option value must specify the name of a valid extra-partition transient data queue which cannot exceed 4 characters in length.

Max Print Width

The max print width option tells LPD the maximum print width to use for processing the print request. The default value is 132. A numeric value generally ranging from 132 to 255 is acceptable. If this option is not specified (left blank), then LPD will default to using a print width of 132. Data that is longer than the maximum print width will be truncated. Print width is only valid for print options "f", "l", and "p".

Sending Host

Specify the name of the sending host. This name must match the name used as the host by TCPIP on your MVS system. The host name is limited to 39 characters.

Type

Specify the type of data in the Sending Host field. The value may be '4', '6', 'N' or ' ', indicating an IPv4 address, an IPv6 address, a Domain Name or unspecified. If '6' is specified or if the DNS resolution returns an IPv6 address, the ROPES IPv6 setting (ROMT Option 1|1) must be set to 'Y'. If the value is left blank, ROPES will attempt to determine the correct type by trying it as an IPv6 address if IPv6 support is 'Y', as an IPv4 address and finally as a Domain Name. This testing is done at print time, not at ROLI validation time.

LPD Host At

Specifies the IP or the name of the remote host running the LPD server. The name is limited to 39 characters in length and should abide by the standard naming conventions for a Universal Resource Locator field. If an IP address is used, it must conform to the standards for this form of addressing.

Type

Specify the type of data in the Sending Host field. The value may be '4', '6', 'N' or ' ', indicating an IPv4 address, an IPv6 address, a Domain Name or unspecified. If '6' is specified or if the DNS resolution returns an IPv6 address, the ROPES IPv6 setting (ROMT Option 1|1) must be set to 'Y'. If the value is left blank, ROPES will attempt to determine the correct type by trying it as an IPv6 address if IPv6 support is 'Y', as an IPv4 address and finally as a Domain Name. This testing is done at print time, not at ROLI validation time.

Printer Queue

This option specifies the printer queue name used by the LPD server to satisfy this print request. The printer queue name is limited to a length of 20, and must specify the name of a valid LPD server print queue.

Job

This option is used with the "Print Banner" option. If the Print Banner option has been selected (option is set to yes), then the Job value entered in this field will be printed on the banner. The job name is limited to 72 characters, and may contain any descriptive text.

Title

This option is used with the "p" print type option. If the "p" print type is requested then the title specified here will be printed at the top of each page. The title can contain any descriptive text and must not exceed 72 positions.

Source File

This option specifies the source file name of the file from which the data file was constructed. This file name is returned when performing an LPD/LPR query, and used in printing with the 'p' type print command. The recommended value for this option is "(stdin)". Please consult with your Unix administrator, or the technician responsible for establishing the LPD server options to obtain the correct value for this parameter. The source file name is passed to the LPD server using the "N" LPD control file command (as documented by RFC1179).

Times Roman Font Type

This option specifies the Times Roman Font number/file to be used for this print request. Possible values for this option are 1,2,3,4 or blank. The Times Roman Font number values specify the following fonts: 1 = Default Times Roman Font, 2 = Times Roman Italic Font, 3 = Times Roman Bold Font, 4 = Times Roman Special Mathematical Font. This option value must be used with the font "File Name" immediately following this parameter.

File Name

This parameter is used with the "Times Roman Font Type" option above, and specifies the font file name to be loaded for this print request. If the Times Roman Font type has not been selected, then this parameter must be left blank. The file name must specify a valid TR Font file name, and cannot exceed 64 characters in length. The file name is passed to the LPD server via the control file commands "1", "2", "3", or "4". Please see RFC1179 for more information.

Translate Options

Output

The last three characters of the translate routine or Entry Point to use for output data translation. The default is C04, corresponding to EZACIC04.

Input

The last three characters of the translate routine or Entry Point to use for input data translation. The default is C04, corresponding to EZACIC04.

Translate Table Names

Output

The translate table name to be used for output data translation when the Translate Output: option is E2A or CTR. When using the entry point E2A, the named table must be coded in the EZACICTR module, and the EZACICTR module must have been prepared with the Multiple mode option. When using the entry point CTR, the named table must be an externally defined and loadable translate table built along the same lines as ROPES module RO$T. The first 256 bytes of the table must be the actual translate table data. Any data beyond the first 256 bytes are ignored by ROPES and may be used as you please.

Input

The translate table name to be used for output data translation when the Translate Output: option is A2E or CTR. When using the entry point A2E, the named table must be coded in the EZACICTR module, and the EZACICTR module must have been prepared with the Multiple mode option. When using the entry point CTR, the named table must be an externally defined and loadable translate table built along the same lines as ROPES module RO$T. The first 256 bytes of the table must be the actual translate table data. Any data beyond the first 256 bytes are ignored by ROPES and may be used as you please.

EZACICTR Mode

This flag indicates whether or not EZACICTR was assembled in Singe or Multiple mode (see the comments in the source code for EZACICTR).

Program Function Keys

The program function key assignments for the LPR Options Definition Screen are shown at the bottom of the screen. Each key is associated with a specific function. The functions are reasonably self-explanatory. However, please consult the section on FUNCTION KEY DEFINITIONS to see a detailed explanation of the functions associated with each function key.

```
 Jul 10, 2004 11:51pm       ROPES LPR Options Index Screen      LIST  R51LPI0
 ------------------------------------------------------------------------------

 Options: (L)ocate, (A)dd, (C)hange, (D)elete.
 Opt  Prtid  Report    Updated   By User           Description
 ---  -----  --------  --------  --------  --------------------------------
      LPRP   DEFAULT   07/10/01  BOB        ROPES LPR DEFAULT OPTIONS DEF.




 ROPES09066 - Bottom of list reached. (f)
 ------------------------------------------------------------------------------
 01 HELP 03 EXIT 04 RETN 07 PREV 08 NEXT 09 CNCL
```

Figure 24 LPR Options Index Screen

```
 Jun 02, 2011 11:53am    ROPES LPR Options Definition Screen   DISPLAY  R51LPM0
 ------------------------------------------------------------------------------
 Printer: IPV6  Report: DEFAULT    Updated: 05/19/2011 15:33:17  By: GARY
 Description: Test panel with proper file fmt

 Flags Opts:  Quick Port Rel.- Y  Send CF First- Y  Delete Source File- Y
              Print Banner- N  Mail Response- N  Log Xmits To TDQ  - Y
      Type Of Print Request- F (f/l/o/p/r)
 Banner Class:                              TCPIP Task: TCPIP
 LPD Port:   515  Log TD Queue: CSMT  Max Print Width: 132
 Sending Host: ::ffff:192.86.32.39                   Type: 6 (4,6,N)
  LPD Host At: ::ffff:192.86.32.39                   Type: 6 (4,6,N)
 Printer Queue: os390prt            Req. User: GARY
 Job:
 Title:
 Source File:
 Times Roman Font   Type:    (1/2/3/4)
 File Name:
 Translate Output: C04 C04,C14,E2A,CTR   Input: C05 C05,C15,A2E,CTR
 Xlate Table Names Output:     Input:        Used for E2A, A2E and CTR
         EZACICTR Mode:   (Single or Multiple)
 ROPES09043 - Please press the ENTER key to MODIFY the current record.
 ------------------------------------------------------------------------------
 01 HELP 03 EXIT 04 RETN 07 PREV 08 NEXT 09 CNCL
```

Figure 25 LPR Options Definition Screen

Queue Reorganization

Online Queue Reorganization

FUNCTION: Report Reorganization Transaction
COMMAND: R#OR/reportid

where:

reportid   is the report identifier of the report to
                          be reorganized.

This transaction allows you to reorganize a single
report.   The reorganization criteria are applied
immediately.

Batch Queue Reorganization

A batch version of the Queue Reorganization program
is also available.   It offers additional features and
reporting capabilities, but must be run when CICS is
down, or when the ROPES data sets are closed and
de-allocated from all CICS regions.   For more
information about this batch function, please refer to
the ROPEBQOR program in the ROPES Utilities
Manual.

Queue   Reorganization
Scheduler Program

A facility to provide the automatic scheduling of the
Online Queue Reorganization transaction is available.

This function uses the scheduled reorganization time
and request id from the ROMT Option 2 panel to first
cancel any pending Queue Reorganization and then
schedule the Queue Reorganization for the specified
time. This function will then schedule itself to run
again in 24 hours at which point it will do the same
thing. This will cause the reorganization task to run
once every 24 hours for as long as CICS is up.

To use this facility, you must arrange to have the
function started each time CICS comes up. There are
a number of ways to do this.

1. If you have a facility to start a transaction during
or right after CICS starts, add the transaction code
R#SC (use the transaction prefix you have defined
for your installation).

2. Add an invocation of transaction R#SC to the
CRLP input stream after any other ROPES entries.

3. You can add the following entry to your CICS
startup PLT:
```
  DFHPLT TYPE=ENTRY,PROGRAM=ROPESCHD
```

4. You can have the R#SC transaction entered by an
operator once at the start of the CICS session.

 DO ONLY ONE OF THE ABOVE.

Before you implement this facility, please review the
reorganization criteria (DISCARD OPTIONS) for
your reports to be sure that you will retain data long
enough during each CICS cycle.

Periodic Queue Reorganization

The ROPES data sets are VSAM Key Sequenced
clusters. As such, they will require periodic physical
space reorganization to reestablish a proper balance
between free space and used data space.

The nature of VSAM space management makes it
possible for the queue data set to be "full" even
though space has been freed by the Queue
Reorganization program. This will occur when the
record to be inserted causes a CI split and there is no
available Control Area, or a Control Area split when
there are no available extents.

The frequency of this reorganization will depend on
the volume of activity at your installation.   To
determine the correct frequency for your system, you
should monitor the Control Area and Control Interval
splits that occur in the data sets, especially the
ROPEQBR and ROPEALQ data sets.

To reorganize the ROPES data sets, schedule a time
when they can all be closed and de-allocated from all
CICS and batch tasks in your system. Then, using
the IDCAMS REPRO function (or its equivalent),

copy each cluster to a sequential data set. Then, reload the clusters from the sequential copies, either by using the "REUSE" parameter of the REPRO command, or by deleting and redefining the clusters.

The following sample job step will accomplish this task for the ROPES Queue data set.

```
//   JOB   (code to local standards)
//UNLOAD  EXEC  PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//BACKUP   DD   DSN=<hlq>QBRFILE.COPY,UNIT=CART,
//              DISP=(NEW,PASS)
//SYSIN    DD   *
  REPRO INDATASET('<hlq>QBRFILE.BASE') -
        OUTFILE(BACKUP)
  REPRO INFILE(BACKUP) -
        OUTDATASET('<hlq>QBRFILE.BASE') REUSE
/*
```

In addition, the Alternate Facility Resynchronization Utility, described in the ROPES Utilities Manual, should be run periodically to insure that the ROPERIB and ROPEALR files remain synchronized. If you add reports frequently, do this weekly. Otherwise, monthly execution should be sufficient, or as needed if errors occur.

Reorganizing The Other ROPES Data Sets

The other ROPES VSAM data sets may need periodic physical reorganization. This can be accomplished by copying the cluster to a sequential file and then reloading it (with the REUSE option). Here are our suggestions in this regard.

The ROPEPRM, ROPEHLP and ROPEMSG files should not be (or very rarely be) changed by you and so do not need to be reorganized at all.

The ROPERIB and ROPEPCR files are frequently read. The ROPEPCR file is frequently updated. Neither should be frequently added to or deleted from unless your environment is subject to frequent and constant change. Weekly or monthly reorganization should be adequate.

The ROPERPI file is built by a batch utility and can be updated online as new reports are created (in the ROMT transaction) and assigned to printers. The file should be rebuilt periodically, either weekly or monthly, depending on the frequency of report additions and deletions, and no other reorganization is required.

The ROPEJOB file is only used by the Job Submission Facility. The ROPEJTB file is only used by the JES Printing facility. The ROPERDDD and ROPERDTD files are only used by the Report Distribution Facility. The ROPELPRO file is only used by ROPES TCPIP Printing. If you use any of these facilities, you should consider periodic (monthly) reorganization.

Archiving Report Data

Creating An Archive

You may archive report data in two ways.

The Queue Reorganization program can make a copy of each report buffer that it deletes during processing. To select this feature, you must define a Transient Data destination on the System Control Information Maintenance menu. This Transient Data destination must be a sequential tape or disk extra-partition data set that is open when the Queue Reorganization program executes. If this method of archiving data is selected, the printer driver routines will also log all report data that they delete when processing reports defined for deletion after printing.

The Transient Data data set must be a variable length data set with a minimum logical record size (LRECL) of 4056. The data may be blocked.

You may also create an archive by unloading the Queue data set to tape or disk. Since it is necessary to perform this unload function periodically to reorganize the VSAM cluster (unload followed by a reload), this copy of the unloaded Queue file may also serve as your archive.

Using the Archived Data

Data that has been archived, as described above, can be processed by programs you write. ROPES also includes an Archive Processing program, ROPELRPT, described in this section. The archive data is in ROPES buffer format. The data record format is mapped by the assembler DSECT generated by the ROPEQBR macro instruction.

Archive Processing Program

The ROPERELO program has been withdrawn and replace with the ROPELRPT program.

ROPELRPT can be used to perform the following functions:

- print a complete/partial directory listing of an Archive data set;

- retrieve specific reports from the batch maintenance generated Archive data set and restore them to either the ROPES queue or the ROPES Alternate Facility Queue;

- restore one or more reports to a new report id;

- produce messages indicating the restoration results;

- print specific reports from the Archive data set on batch printers.

Program ROPELRPT is invoked by the standard ROPES utility driver program ROPEUTIL. The utility command statement that invokes ROPELRPT is **LOADRPT**.

Input and Output

The LOADRPT utility function uses the following inputs:

- a ROPES Archive data set, containing report data;

- a sequential data set, containing control statements to invoke the program functions and to control the processing of data.

The LOADRPT utility function may produce the following outputs:

- a report data set, containing a directory listing of the Archive data set (Directory Report), or the printed output of selected ROPES reports;

- a message data set, containing information about reports that have been restored, and possible error messages ;

- the restored report data on the ROPES primary or Alternate Queue.

Control

The Load Report utility function is controlled by job control statements and utility control statements. The job control statements are required to execute program ROPEUTIL, and to define the data sets that are used and produced by the utility. The utility control statements select the utility function to be invoked (LOADRPT), and specify the options that will be used by the load report utility.

Job Control Statements

Table **Table II**, **1** shows the job control statements necessary for using the LOADRPT utility function.

Table II LOADRPT JCL

Statement	Use
JOB	Initiates the job.
EXEC	Specifies the program name, or a procedure name.
ROPELST	Defines a sequential output message data set containing fixed length records.
ROPERPT	Defines the sequential output data set that will contain the Directory Report, or printed output of selected reports.
ROPEIPT	Defines a sequential input control data set which contains the utility control statements.

(continued)

Table II LOADRPT JCL

ROPEARC	Defines the input Archive data set data set. It can define a sequential data set on a tape or a disk.
ROPERIB	Defines the ROPES report control data set.
ROPEQBR	Defines the ROPES Queue data set.

Restrictions

- The ROPELST data set is required for each use of the LOADRPT utility function.

- The ROPEIPT control data set contains 80-byte fixed length records.

- The report output data set (ROPERPT) has 133-byte fixed length records, and contains ANSI control characters. This file is required by the PRINT and INDEX options.

- The ROPELST data set has a logical record length of 133 bytes, and contains fixed length records with ANSI carriage control characters.

Utility Control Statements

The Load Report (LOADRPT) utility function now conforms to the standard established by the ROPES utility driver program (ROPEUTIL). Syntax and utility control statement rules are the same for all ROPES utility functions that use ROPEUTIL. For more information on ROPEUTIL and its syntax conventions, please see the 'ROPES Programmer's Guide'.

The Load Report utility function is invoked by starting the utility control statement with the '**LOADRPT**' utility command. The abbreviated, LDRPT command, may also be used to invoke the utility.

The LOADRPT control statement uses 7 possible keyword parameters. These parameters are; REPORTS, EXCLUDE, INDEX, PRINT, DATE, TIME, and NEWNAME. They are described in detail below. Abbreviations for REPORTS, and EXCLUDE are REP and EXCL.

REPORTS
Specifies one or more report names to be processed by the LOADRPT utility function. Possible values may be, a list of report names, a single report name, or the value "ALL". The value "ALL" specifies all reports in the archive file are to be selected for processing. Report names must not exceed 8 characters in length. Report names may also be entered using generic names or "wild-card" characters asterisk (*), and question mark (?).

EXCLUDE

Specifies one or more report ids that are to be excluded from LOADRPT processing. Report names must not exceed 8 characters in length. Generic names are permitted using asterisk (*) and question mark(?) as wild cards.

PRINT

Specifies that one or more selected reports are to be printed to output file ROPERPT. Possible values for 'PRINT' are 'YES', or 'NO'. NO is the default if the PRINT option is not coded.

INDEX

Specifies that an index directory report must be generated to the ROPERPT output data set. The directory list is limited by the reports selected or excluded via the 'REPORTS', 'EXCLUDE', 'DATE', and 'TIME' parameters. To obtain a directory of all reports in the archive, the parameter value "ALL" must be used with the 'REPORTS' keyword parameter, and no other keywords parameters should be coded except 'INDEX'. Possible values for this parameter are 'YES', or 'NO'. The default is 'NO' when the INDEX parameter is not coded.

DATE

Specifies a starting date, or a date range which will be used as criteria for selecting report queue records. The DATE parameter limits report record selection for PRINT, INDEX, and reload processing. Date values are entered using the format "MM/DD/YYYY". A date range is coded with a start date first, a hyphen, and then the end date. Example: 'MM/DD/YYYY-MM/DD/YYYY'. DATE is an optional parameter.

TIME

Specifies a starting time, or a time range which will be used as criteria for selecting report queue records. The TIME parameter limits report record selection for PRINT, INDEX, and reload processing. The TIME parameter is invalid without using the DATE parameter. TIME values are entered in the format 'HH.MM'. A time range specifies a start time, a hyphen, and an end time. Example: 'HH.MM-HH.MM'. Hours and minutes are separated by a period. The start time qualifies the start date, and the end time qualifies the end date. TIME is an optional parameter.

NEWNAME

Specifies a target report name to which one or more selected reports will be reloaded. The report name must be a valid ROPES report id.

Control Statement Examples

Example 1.

In this example, the LOADRPT utility will produce a complete directory list of all reports in the archive file.

LOADRPT REPORTS(ALL),INDEX(YES).

Example 2.

In this example, the LOADRPT utility will produce a limited directory list of reports requested by the 'REPORTS' keyword parameter. A directory listing containing only those report names beginning with "CPY" and having "X" in the fifth position is produced.

LOADRPT REPORTS(CPY?X*),INDEX(YES).

Example 3.

In this example, the LOADRPT utility will reload two reports back to their original report names.

LOADRPT REPORTS(INVEN1,INVEN2).

Example 4.

In this example, the LOADRPT utility will print all reports in the archive that have names beginning with "DEP01".

LOADRPT REPORTS(DEP01*),PRINT(YES).

Example 5.

In this example, the LOADRPT utility will reload all report records that were created on or after 12/15/1999 at 8:09 AM, but before 12/17/1999 at 16:04 PM. Report records will be reloaded to their original report ids.

LOADRPT REPORTS(ALL),
  DATE(12/15/1999-12/17/1999),
  TIME(08.09-16.04).

Example 6.

In this example, the LOADRPT utility will reload all reports beginning with the name "PART", but will EXCLUDE report names that begin with "PART" and have an "X" in the seventh (7th) position.

     LOADRPT REPORTS(PART*),
          EXCLUDE(PART??X?).

Example 7.

In this example, the LOADRPT utility will reload reports beginning with the names "DEP1" and "INV1", and restore them to a new report id named "TEMPRPT" specified by the NEWNAME parameter.

     LOADRPT REPORTS(DEP1*,INV1*),
          NEWNAME(TEMPRPT).

Sample JCL to execute the LOADRPT utility can be found in the ROPES source distribution library under member name **RUNLDRPT**. A sample of the Index Directory report and the output messages can be seen in the figures below.

```
//LOADREPT EXEC  PGM=ROPEUTIL,REGION=2M,TIME=5
//STEPLIB  DD DSN=ROPES.LOADLIB,DISP=SHR
//ROPELST  DD SYSOUT=*
//ROPERPT  DD SYSOUT=*
//SYSUDUMP DD SYSOUT=*
//ROPEARC  DD DSN=YOUR.ARCHIVE.FILE,DISP=SHR
//ROPEQBR  DD DSN=ROPES.QBRALTF.BASE,DISP=SHR
//ROPERIB  DD DSN=ROPES.RIBALTF.BASE,DISP=SHR
//ROPEIPT  DD *
 LOADRPT REPORTS(ALL),INDEX(YES).
/*
//
```

Figure 26 LOADRPT Sample Execution JCL

```
Feb 11, 2000                    -*- R O P E S -*-                  PAGE      1
14:48:08
*******************************************************************************
* REPORT   DATE      TIME   DATE      TIME        BLOCK         LINE       *
*  ID      START     START  END       END         COUNT         COUNT      *
*******************************************************************************

  COPYBR01 10/14/1999 15:35  10/15/1999 10:28          8            74
  COPYGD02 11/17/1999 15:11  11/17/1999 15:11          4            37
  CPTEST06 10/24/1995 14:47  10/24/1995 14:47         92         8,174
  CPTEST07 10/25/1995 12:12  10/25/1995 12:12         57         8,074
  FISHER   07/07/1993  9:31  07/07/1993  9:32         39         2,624
  IDMSJ406 04/26/1994 10:41  04/21/1994 15:38         34         1,163
  IDMSJ411 04/26/1994 10:41  04/26/1994 10:41         29           962
```

Figure 27 LOADRPT Archive Directory Listing

```
Feb 17, 2000                    -*- R O P E S -*-                  PAGE      1
18:57:21
*******************************************************************************
* REPORT   RECEIVING DATE      TIME    DATE      TIME    BLOCK      LINE  *
*  ID         ID     START     START   END       END     COUNT      COUNT *
*******************************************************************************

  COPYAT04 REPORT05  06/23/1999 16:09  09/01/1999  16:23    168     2,284
  COPYAT08 REPORT05  06/24/1999 10:55  06/24/1999  10:57     22       605
  COPYAT09 REPORT05  02/27/1998  9:59  02/27/1998  10:16    120       112
  COPYAX03 REPORT05  05/24/1994 11:28  09/21/1995  10:32      4       112
  COPYAX04 REPORT05  03/24/2000 11:52  03/24/2000  11:52      1        28
  COPYBR01 REPORT05  10/14/1999 15:35  10/15/1999  10:28      8        74
  COPYGD02 REPORT05  11/17/1999 15:11  11/17/1999  15:11      4        37
```

Figure 28 LOADRPT Sample Report Load Messages

Auditing and Accounting

Audit Trails

ROPES provides a complete audit trail of all commands issued, all response messages from the command processor, all on line maintenance activities and all control operator and master terminal operator messages generated, even if they are not displayed.

The log facility of the Spool Transfer Utility records all JES transfer activities. You may define the ROPES and the Spool Transfer facility logs so that all audit trail data is written to one place.

The audit trail is defined on the System Control Information Maintenance menu. It is a Transient Data destination which you may specify as an intra- or extra-partition data set. When you specify the DCT entries for the data set, you must specify a record length of at least 132 bytes, and the destination must be open before ROPES activities begin. Member ROPESDCT in the distribution source library contains a sample DCT entry. The Spool Transfer message log is defined in the Transfer Control Table. See the Tailoring section of this manual for details on the specification of this log. To consolidate the ROPES and Spool Transfer message logs, specify the same Transient Data destination for both features.

The ROPES messages in the audit trail have a common header which includes the date, time of day, the terminal identification from the task's EIB, and the operator id of the current operator. The message text follows the header. Some processors produce multiple line messages. The Spool Transfer messages are described in detail in the Messages section of this manual.

Accounting Data

Accounting data is generated to a user-defined Transient Data destination. This destination may be the same as the audit trail destination if you wish, but you may define it as a separate destination instead. You define the destination on the ROMT Maintenance Transaction System Parameters option. Member ROPESDCT in the distribution source library contains a sample DCT entry. The field is identified by the heading "Accounting Dest ID." If you do not specify an accounting destination, the accounting records will not be written and the user accounting exit will not be invoked.

The data captured includes the name of the report, the printer at which it was printed, the start and end time and date of the printing operation, the number of lines printed, the page count, and a count of the write requests issued. User data may also be added to the record. The data is provided as EBCDIC card images and can be either machine or manually processed.

If you wish to process the accounting data programmatically, we have provided source language layouts of the record in the ROPES Source libraries. Please refer to member ROPEACTR.

The Accounting Data destination is defined on the System Control Information Maintenance menu. The destination must have a logical record length of at least 100 bytes.

Accounting User Exit

A user exit is provided to allow your installation to modify the ROPES-generated accounting data. You may alter the contents of the record in any way you wish, and you can suppress the writing of the record entirely, but you may not alter the length of the record. The user exit will not be invoked if the ROPES Accounting Destination is blank. The user exit is invoked as described in **Figure 29** on page 132. The Assembler, COBOL and PL1 definitions of the Communications Area are presented in **Figure 30** on page 132, **Figure 31** on page 132 and **Figure 32** on page 132.

The Communication Area fields are defined as follows:

ACTRRECD
> This is the ROPES accounting record as defined by member ROPEACTR.

ACTRCODE
> This field is optional and is set from the data being printed. This will allow you to associate specific

printed output with the user or application that generates it. Your application programs that generate ROPES reports supply this value in a special data line that must be the first line sent to ROPES when the report is generated. This print line must have a the value "Z" in the carriage control position (byte 1 of the line), and your accounting identification code must be placed in positions 2 - 9 of that line. The rest of the line will be ignored.

During printing, ROPES generates a new accounting record every time the accounting code changes, either within a report or across reports. An accounting record will also be generated when the last page of the report has been printed. If you do not wish to use the accounting code, you may omit it.

The accounting code is placed in the first eight bytes of the RACTUSER field of the accounting record by the default exit routine, ROPEACTX.

ACTRRETN

This is a two byte binary return code value that you set before returning to ROPES. If you want ROPES to write the record to the Accounting Destination you must set this field to zero. To suppress the writing of the record, just set the field to any non-zero value.

A sample user exit is supplied with the system. The source for the sample exit is contained in the source libraries, in the member ROPEACTX. You may use these members as the basis of or as a model for your own accounting exit.

```
EXEC CICS LINK PROGRAM(ROPEACTX)
               COMMAREA(ACTRCOMM)
               LENGTH(ACTRCALN).

ACTRCALN  is  110  when  this  command  is
executed.
```

Figure 29 User Exit Invocation

```
ACTRCOMM   DS   0D
ACTRRECD   DS   0CL100
           COPY ROPEACTR
ACTRCODE   DS   CL8
ACTRRETN   DS   AL2
```

Figure 30 COMMAREA: Assembler

```
01  ACTRCOMM.
    05  ACTRRECD       C      O      P      Y
    ROPEACTR.
    05  ACTRCODE       PIC X(8).
    05  ACTRRETN       PIC S9(4) COMP.
```

Figure 31 COMMAREA: COBOL

```
DECLARE
1  ACTRCOMM,
    2   ACTRRECD
        %INCLUDE  ROPEACTR,
    2   ACTRCODE  CHAR(8),
    2   ACTRRETN  BIN(4);
```

Figure 32 COMMAREA: PL/1

Security and User Exits

ROPES provides many levels of security for the data under its control.

Your installation can control access to the ROPES facilities by using the standard CICS transaction security mechanisms. ROPES transactions can be categorized by the level of security required. Thus, you can restrict access to functions such as Queue Reorganization and Control Information maintenance as you would access to other sensitive processes.

ROPES is compatible with most proprietary security packages.

Within many of the ROPES functions, additional security control is provided, either through the restriction of command functions (see the System Control Information Maintenance menu in the Maintenance section of this manual) or through the use of user-exits, described here.

The Installation Security Transaction

Access to ROPES is protected by CPU serial number authorization. ROPES will not run on a CPU that is not authorized for use by ROPES.

The installation security transaction enables ROPES to be accessed on one or more licensed CPUs. This is accomplished by entering an Axios provided security string on the installation security transaction screen. The default name of the installation security transaction is **ROIA**. The transaction is entered from a clear CICS screen. No parameters are entered with the transaction code ROIA.

When you enter the ROIA transaction code, ROPES responds with the installation security update screen. One field can be entered on this screen, which is designed to accept the security string provided by Axios. Security strings can only be entered once.

Application of the security string is required. If the string is not applied within four days of installing the ROPES product, access to ROPES will expire.

It is possible to enter the ROIA transaction even if access has been denied to the rest of ROPES.

CPU authorization access can be verified by using the ROSS display transaction. This transaction is discussed in detail in the "Operator Displays" chapter of this manual.

Alternate Facility Exits

Two user exits are provided in the Alternate Facility processor program.

Undefined Report Exit

The first exit is invoked when the Alternate Facility detects the Report Not Found condition when attempting to transfer data from the Alternate Facility queue to the ROPES queue. Your exit will determine how the Alternate Facility is to proceed.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM("ROPEALT1")
          COMMAREA(COMMAREA)
          LENGTH(4)
```

Figure 33 Alternate Facility Missing Report Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA      DS     0D
RIBADDR       DS     AL4    ADDRESS   OF
                            THE  REPORT
                            C O N T R O L
                            RECORD
```

Figure 34 Alternate Facility Missing Report Exit COMMAREA

The address of the Alternate Facility Report Control record, mapped by ROPERIB, is passed to your exit. You may create a definition for this report in the ROPERIB data set and have the Alternate Facility restart the data transfer, or you can have the Alternate Facility perform it's standard error processing (bypass

the report and leave it on the Alternate queue). To have the Alternate Facility retry the transfer, set the first byte of the field named RIBFLAGS to the value "Y"; any other value will cause the standard error processing to be performed.

If you do not provide an exit program, ROPES will use its standard logic for processing the report.

Non-Appendable Report Exit

The second exit is invoked when the Alternate Facility detects the Report Not Appendable condition when attempting to transfer data from the Alternate Facility queue to the ROPES queue. Your exit will determine how the Alternate Facility is to proceed.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM("ROPEALT4")
          COMMAREA(COMMAREA)
          LENGTH(4)
```

Figure 35 Alternate Facility Non-Appendable Report Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA       DS      0D
RIBADDR        DS      AL4     ADDRESS   OF
                               THE   REPORT
                               C O N T R O L
                               RECORD
```

Figure 36 Alternate Facility Non-Appendable Report Exit COMMAREA

The address of the Alternate Facility Report Control record, mapped by ROPERIB, is passed to your exit. You may clear this report in the ROPERIB data set by executing a SOOP/Z command through the Command Processor Front-End mechanism described later in this section, on page 143, and have the Alternate Facility restart the data transfer, or you can have the Alternate Facility perform it's standard error processing (bypass the report and leave it on the Alternate queue). To have the Alternate Facility retry the transfer, set the first byte of the field named RIBFLAGS to the value "Y"; any other value will cause the standard error processing to be performed.

If you do not provide an exit program, ROPES will use its standard logic for processing the report.

Automatic Start Up Exit

An exit is provided in the Automatic Start Up program (ROPESTAR) to permit you to determine the initial status of the reports on each printer and to suppress the starting of printers. The exit is called once for each printer in the ROPEPCR control file.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPESTX1')
          COMMAREA(COMMAREA)
          LENGTH(8)
```

Figure 37 Automatic Start Up Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA       DS      0D
PCRADDR        DS      AL4     ADDRESS   OF
                               THE   PRINTER
                               C O N T R O L
                               RECORD
RETCODE        DS      AL4     RETURN CODE
```

Figure 38 Automatic Start Up Exit COMMAREA

The address of the Printer Control record, mapped by ROPEPCR (assembler) or ROPEPCR and ROPEPCRE (COBOL), is passed to your exit. You may modify the individual report entry hold and cancel flags. To have the Automatic Start Up program bypass starting the printer, set the return code field to any non-zero value. If set to binary zero, the printer will be started.

If you do not provide an exit program, ROPES will use its standard logic for processing the printer.

Browse User Exits

Two user exits are provided for ROPES Report Browse.

Browse Security Exit

The first exit program is invoked at the start of the Browse transaction, and is the security exit. Your exit browse transaction, and is the security exit. Your exit program determines whether the user may view the report data. The exit is invoked using the CICS Link command as follows:

```
EXEC CICS LINK PROGRAM(ROPEBRE1)
            COMMAREA(COMMAREA)
            LENGTH(16)
```

Figure 39 Browse Security Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS   0D      START OF COMMAREA
CALLTYPE   DS   CL4     USER EXIT CALL TYPE
REPORTID   DS   CL8     REPORT NAME
TARGET     DS   CL8     TARGET REPORT NAME
RESPCODE   DS   H       USER RETURN CODE
           DS   H       RESERVED
```

Figure 40 Browse Security Exit COMMAREA

The CALLTYPE parameter is set to the value "INQ1". The REPORTID is the ROPES report name. The RESPCDE is the 2 byte response code. A response code of binary zeros means that the report can be viewed. Any non-zero value will prevent the report from being viewed and the message "Request Denied By Installation Security" will be displayed.

Browse Print Command Exit

The second exit program is invoked during the processing of the Browse Print command. Your exit program determines whether the user can copy data from the report being viewed to the named target report. The exit is invoked using the CICS Link command as follows:

```
EXEC CICS LINK PROGRAM(ROPEBRE1)
            COMMAREA(COMMAREA)
            LENGTH(22)
```

Figure 41 Browse Print Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS   0D      START OF COMMAREA
CALLTYPE   DS   CL4     USER EXIT CALL TYPE
REPORTID   DS   CL8     SOURCE REPORT
TARGET     DS   CL8     TARGET REPORT
RESPCODE   DS   H       USER RETURN CODE
           DS   H       RESERVED
```

Figure 42 Browse Print Exit COMMAREA

The CALLTYPE field is given the value "PRIN". The TARGET field is the name of the ROPES report to receive the data. The REPORTID field is the name of the ROPES report being viewed. The RESPCODE field is the 2 byte response code.

A response code of binary zeros means that the print operation may continue. Any non-zero value will prevent the report data from being copied and the message "Request Denied By Installation Security" will be displayed.

Command Menu User Exit

A user exit is provided for the ROPES Command Menu (RCMP or RCMS transactions).

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPECME1")
            COMMAREA(COMMAREA)
            LENGTH(32)
```

Figure 43 Command Menu Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS   0D
COMMIDNT   DS   CL4     CALL IDENTIFIER CMD1
COMMXMND   DS   CL26    COMMAND STRING
COMMRSPC   DS   H       RESPONSE CODE
COMMEND    EQU          *END OF COMM-AREA
```

Figure 44 Command Menu Exit COMMAREA

When the exit program receives control, the COMMIDNT field will contain the value "CMD1" and the COMMXMND field will contain the formatted PROP/SOOP command string, left justified and blank padded.

After your exit has examined the command and decided whether or not to allow its execution, the exit must set the COMMRSPC field. The field is to be set to zero if you want the command to be executed. To suppress execution of the command, set the COMMRSPC field to any non-zero value. If you set the COMMRSPC field to a non-zero value, the user will receive the message "ROPES4105* Request Denied By Installation Security." at his terminal.

Command Processor Control Terminal Exit

A user exit is provided in the ROPES Command Processor program ROPEPROP. This program performs operator command functions in response to the PROP, SOOP, RCMP and RCMS transactions.

This exit is invoked whenever a PROP or RCMP command is being serviced.

Your exit program will determine if the user requesting the command function may act as the control terminal for the printer.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEPRE1')
            COMMAREA(COMMAREA)
            LENGTH(8)
```

Figure 45 Command Processor Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
PCRADDR    DS  AL4   ADDRESS   OF   PRINTER
                     CONTROL RECORD
COMMRSPC   DS  XL4   RESPONSE CODE
```

Figure 46 Command Processor Exit COMMAREA

Set the return code to binary zero to permit the user to enter commands to control the printer. A non-zero value will cause the command to be rejected with the message ROPES4004I - **YOU ARE NOT CONTROL TERMINAL**

If you do not provide an exit program, ROPES will use its standard logic for determining whether or not the user may act as the control terminal for the affected printer.

Printer Task Exits

There are several user exits in the ROPES Printer Task (R#Ox). These exits provide you with the opportunity to affect the processing of the ROPES printer tasks, to log information or communicate with other systems or processes.

Print Task Abend Exit

The first exit, called the abend exit, is invoked if the Printer Task abnormally terminates. Your exit program is invoked with the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEOAE1')
```

Figure 47 Printer Task Abend Exit Invocation

There is no COMMAREA and no data is passed to your transaction. The printer id and the abend code are found in the EIB.

Print Task Message Exit

The second exit, called the messages exit, is invoked whenever the Printer Task is going to send a message to the control terminal. The exit gives you the opportunity to selectively screen and suppress messages. The exit is not invoked if the messages are being suppressed through the Printer Options control record.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEOMSX')
            COMMAREA(COMMAREA)
            LENGTH(8)
```

Figure 48 Printer Task Message Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
MSGID      DS  AL4    ADDRESS OF MESSAGE
COMMRSPC   DS  AL4    RESPONSE CODE
```

Figure 49 Printer Task Message Exit COMMAREA

The message pointer contains the address of the message about to be issued. Each message has a unique message identifier number, in the range of ROPES0001 through ROPES0018. A detailed description of these messages is provided in section 15.

The return code field is used to instruct ROPES regarding the disposition of the message. If you set the field to zero, the message will be sent to the control terminal. If you set the field to any non-zero value, the message will be suppressed. The message is logged to the ROPES Message Log if one is defined.

Print Task Report Disposition Exit

The third exit, the Report Disposition exit, is invoked after a report is printed. This exit is only invoked if the Hold Reports After Printing flag in the Report Options record is set to yes.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEOHE1')
          COMMAREA(COMMAREA)
          LENGTH(12)
```

Figure 50 Printer Task Report Disposition Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
PCRADDR    DS  AL4    ADDRESS  OF  PRINTER
                     RECORD
RPTADDR    DS  AL4    ADDRESS  OF  REPORT
                     RECORD
COMMRSPC   DS  XL4    RESPONSE CODE
```

Figure 51 Printer Task Report Disposition Exit COMMAREA

The name of the report just processed is provided in the first argument. The printer identifier can be found in the EIB.

You can specify one of four dispositions for the report:

0	Normal ROPES processing;
4	Place the report on hold;
8	Cancel the report; and
12	Purge the report data.

Printer Task Report Printing Exit

The fourth exit, the Report Printing exit, is invoked twice for each report. The first invocation occurs when a report starts printing. The second invocation occurs when the report has been printed.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEOUE1')
          COMMAREA(COMMAREA)
          LENGTH(12)
```

Figure 52 Print Task Report Printing Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
REPORTID   DS  CL8    REPORT NAME
FUNCTION   DS  X      FUNCTION CODE:
                     X"FF" - START
*                    X"00" - END
           DS  XL3    RESERVED
```

Figure 53 Printer Task Report Printing Exit COMMAREA

The function code indicates the reason for the call; X'FF' indicates that report printing is starting; X'00' indicates that the report has been printed.

Printer Task TCAM Exits

The next two exits are designed to assist TCAM users manage report printing when the data is being spooled to TCAM message queues. The first of them is invoked just before each terminal write (EXEC CICS SEND) command is issued. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPETCE1')
          COMMAREA(COMMAREA)
          LENGTH(8)
```

Figure 54 Printer Task TCAM Exit 1 Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
PCRADDR    DS  AL4    ADDRESS  OF  PRINTER
                     RECORD
DATAADDR   DS  AL4    ADDRESS OF THE DATA
                     TO BE SENT
```

Figure 55 Printer Task TCAM Exit 1 Exit COMMAREA

The second of these TCAM exits is invoked in two circumstances; the end of a report, and the end of work for the printer. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPETCE2')
          COMMAREA(COMMAREA)
          LENGTH(8)
```

Figure 56 Printer Task TCAM Exit 2 Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS   0D
FLAG       DS   CL1     REASON CODE
           DS   CL7     RESERVED
```

Figure 57 Printer Task TCAM Exit 2 Exit COMMAREA

The flag value indicates the reason why the exit was invoked. The flag is set to X'00' when the exit is invoked at the end of a report. The value is set to X'FF' when the exit is invoked when the printer is out of work.

Printer Task Start Of Report Printing Exit

This exit is invoked at the start of printing for a report. The purpose of this exit is to allow you to do any special processing associated with the printing of the report. Possible uses might be to prefix the report data with control information for the printer or for other software that might process the printer's data stream. An example of this might be to prefix the data with the control information used by Levi, Ray & Shoup's VPS product's DRS/STI (Smart Tag Interface) facility. The sample program ROPEDRSX illustrates how this might be done.

This exit is invoked just before data is sent to the printer. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPESRP1')
               COMMAREA(COMMAREA)
               LENGTH(42)
```

Figure 58 Printer Task Start Report Printing Exit Invocation

The COMMAREA is defined as follows:

```
ROPEJCOM   DS   0D
PRINTER    DC   CL4' ' *PRINTER ID.
REPORT     DC   CL8' ' *REPORT NAME
NODE       DC   CL8' ' *NODE NAME
USERID     DC   CL8' ' *USER ID.
CLASS      DC   CL1' ' *REPORT CLASS
REQTYPE    DC   CL1' ' *REQUEST TYPE
           EQU  C'R'   *REPORT IS A REPORT
                        NAME.
           EQU  C'T'   *REPORT  IS  AN  FCB
                        NAME.
RETCODE    DC   AL2(0) *RETURN CODE.
*          DC   AL2(0) *PRINT   RPT   USING
                        SUPPLIED VALUES.
*          DC   AL2(4) * DO NOT PRINT. HOLD
                        REPORT.
*          DC   AL2(8) *DO NOT PRINT. PURGE
                        REPORT.
DESCRPTR   DC   AL4(0) *POINTER   TO   THE
                        OUTDESCR STRING
JESCALEN   EQU  *-ROPEJCOM *LENGTH OF THE
                        COMMAREA.
```

Figure 59 Printer Task Start Report Printing Exit COMMAREA

Printer Task Start Of Document Printing Exit

This exit is invoked at the start of printing for a logical document in a report. A logical document represents the text from the start of a report generation sequence until the end of the sequence. In Application Programming terms, the First SENDLINE command until the ENDLINES command. The purpose of this exit is to allow you to do any special processing associated with the printing of the document. Possible uses might be to prefix the report data with control information for the printer or special heading information for the report.

This exit is invoked just before data is sent to the printer. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPELUR1')
               COMMAREA(COMMAREA)
               LENGTH(8)
```

Figure 60 Printer Task Start Logical Document In Report Printing Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS   0D
PCRADDR    DS   AL4     ADDRESS  OF  PRINTER
                        RECORD
DATAADDR   DS   AL4     ADDRESS OF THE DATA
                        TO BE SENT
```

Figure 61 Printer Task Start Logical Document In Report Printing Exit COMMAREA

Printer Task Start Of Page Printing Exit

This exit is invoked at the start of printing for a page of a report. A page represents the text beginning with a Skip To Channel 1 carriage control character. The purpose of this exit is to allow you to do any special processing associated with the printing of the document. Possible uses might be to prefix each report page with control information for the printer or special heading information.

This exit is invoked just before data is sent to the printer. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEPAG1')
           COMMAREA(COMMAREA)
           LENGTH(8)
```

Figure 62 Printer Task Start Of Page Printing Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA    DS   0D
PCRADDR     DS   AL4      PRINTER      RECORD
                         ADDRESS
DATAADDR    DS   AL4      ADDRESS  OF  DATA  TO
                         SEND
```

Figure 63 Printer Task Start Of Page Printing Exit COMMAREA

Issue Disconnect Control Exit

This exit is invoked just before the printer task performs an ISSUE DISCONNECT command prior to task termination. The exit is invoked if the global Issue Disconnect control flag is set to 'Y,' allowing the use of the command in general.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEIDEX')
           COMMAREA(COMMAREA)
           LENGTH(10)
```

Figure 64 Printer Task Issue Disconnect Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA    DS   0D
FLAG        DS   CL8      REPORT NAME
            DS   AL2      RETURN CODE
```

Figure 65 Printer Task Issue Disconnect Exit COMMAREA

The report name field will contain the name of the last report printed. If no report was selected for printing, the field will contain binary zeros.

The return code field is used to indicate the desired processing. A value of binary zero will allow the Issue Disconnect command to be executed. Any other value will result in the suppression of the command.

If you suppress the execution of the Issue Disconnect command, you might not be able to share the printer with other address spaces.

Queue Reorganization Program Exits

Two exits are provided in the On Line Queue Reorganization program.

The first exit is invoked at the start of the Queue Reorganization transaction, and is the security exit. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEQOR1')
           COMMAREA(COMMAREA)
           LENGTH(16)
```

Figure 66 Queue Reorganization Security Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA    DS   0D
INPUTSTR    DS   CL14     INPUT COMMAND STRING
COMMRSPC    DS   H        RESPONSE CODE
            DS   H        RESERVED
```

Figure 67 Queue Reorganization Security Exit COMMAREA

The input command string will contain blanks if the reorganization program was time-initiated from the ROMT transaction menu or will contain the string "R#OR/reportid" if the program was invoked from a terminal.

Set the return code to binary zero to permit the reorganization to continue. A non-zero value will cause reorganization to end with the message ROPES2099* REQUEST DENIED BY INSTALLATION SECURITY. This message will be logged to the ROPES message log if the log has been defined.

The second exit is invoked at the end of the reorganization process. The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEQOR2')
            COMMAREA(COMMAREA)
            LENGTH(160)
```

Figure 68 Queue Reorganization Completion Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
WTOMSGP1   DS  CL80   FIRST ENDING MESSAGE
WTOMSGP2   DS  CL80   SECOND    ENDING
                      MESSAGE
```

Figure 69 Queue Reorganization Completion Exit COMMAREA

Printer Operator Status Display Exit

A user exit is provided in the ROPES Printer Operator Status display program. This exit is invoked whenever a ROPO command is being serviced.

Your exit program will determine if the user requesting the command function may act as the control terminal for the printer and view its status.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEPRE1')
            COMMAREA(COMMAREA)
            LENGTH(8)
```

Figure 70 Printer Status Display Exit Invocation

Note that this should be the same program as that used in the Command Processor program exit which performs the same function.

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
PCRADDR    DS  AL4   ADDRESS  OF  PRINTER
                     CONTROL RECORD
COMMRSPC   DS  XL4   RESPONSE CODE
```

Figure 71 Printer Status Display Exit COMMAREA

Set the return code to binary zero to permit the user to see the status of the printer. A non-zero value will cause the command to be rejected with the message YOU ARE NOT THE CONTROL TERMINAL.

If you do not provide an exit program, ROPES will use its standard logic for determining whether or not the user may act as the control terminal for the affected printer.

Reset Printer Program User Exit

A user exit is provided for the ROPES Printer Reset (RSET) command.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPERSE1')
            COMMAREA(COMMAREA)
            LENGTH(10)
```

Figure 72 Reset Printer Program Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
COMMEXID   DS  CL4   EXIT IDENTIFIER (RSE1)
COMMPRTR   DS  CL4   PRINTER IDENTIFIER
COMMRSPC   DS  H     RESPONSE CODE
```

Figure 73 Reset Printer Program Exit COMMAREA

Set the return code to binary zero to permit the command to be executed. A non-zero value will cause the command to be rejected with the message "ROPES9014* REQUEST DENIED BY INSTALLATION SECURITY."

If you do not provide an exit program, ROPES will use its standard logic for determining whether or not the user may act as the control terminal for the affected printer.

RSTU User Exits

Two user exits are provided for RSTU. One exit is provided in the RSTU Control Component, the other is entered from the Transfer Component. The exits will be invoked only if an exit program name has been specified in the Transfer Control Table. If an exit program is specified but cannot be used at execution time, RSTU will take the action specified by the zero return code. The distributed system includes the sample exits RSTUCTR1 and RSTUXFR1.

Each exit program is invoked using the CICS Command Level LINK function. The exit will receive its input data in a COMMAREA. The user may modify the data in any way desired, but RSTU will not revalidate the data.

Control Component Exit

The Control Component exit routine is entered after a start-up screen entry has been validated, but before the transfer task is initiated. The user exit program should map the COMMAREA as follows:

```
XCTNAME DC  CL4'CTR1'  Exit name.
        This field has the value CTR1 to
        indicate that control component
        exit is being invoked.
XCTRC   DS  F Return code field.
        The exit must set a value when it
        returns to RSTU.
        0 = Normal RSTU will start the
        transfer task
        4 = Do not transfer, issue message
        "Request denied".
        8 = Do not transfer. Do not issue
        message.
XCTDE   DS  A
        This field contains the address of
        the Transfer Control table default
        entry being processed. This entry
        is mapped by the DSECT XCTDENT
        which is generated by coding the
        MACRO instruction:
          ROPEXCT TYPE=DSECT
        The Transfer Selection parameters
        to be used by the transfer task are
        defined in the default entry.
```

Figure 74 Control Component Exit COMMAREA

Transfer Component Exit

The Transfer Component exit routine is entered after a data set has been provided by the Spool system but before the transfer task accesses the data set. The user exit program should map the COMMAREA as follows:

```
XCTNAME DC  CL4'XFR1'  Exit name.
        This field has the value XFR1 to
        indicate that the Transfer
        Component exit is being invoked.
XCTRC   DS  F  Return code field.
        The exit must set a value when it
        returns to RSTU.
        0 = RSTU will process the data set.
        4 = Do not transfer the data set.
        Processing will continue with the
        next data set.
        8 = Do not transfer the data set.
        Perform an immediate terminate
        (Transfer Task ends).
XCTAE   DS  A
        This field contains the address of
        the Transfer Control Table Active
        Entry being processed. This entry
        is mapped by the DSECT XCTTENT
        which is generated by coding the
        MACRO instruction:
          ROPEXCT TYPE=DSECT
        The Transfer Selection parameters
        to be used by the Transfer Task are
        defined in the default entry.
XCTSSOB DS  A
        This field contains Block (SSOB,
        mapped by the MACRO instruction
        IEFJSSOB in library SYS1.AMODGEN.)
        The JES data set name can be found
        here along with the other attri-
        butes of the selected data set.
```

Figure 75 Transfer Component Exit COMMAREA

Note: If the user exit routine does not dispose of the data set before returning to RSTU with a return code of 4, the Spool subsystem will return the same data set to the transfer component and a loop will result. It is the user's responsibility to properly dispose of the data set to be bypassed.

ROPES Application Programming Interface Exits

User exits are provided for the ROPES Application Programming Interface.

Line Editing Exit

This exit will be invoked each time a line is added to a report (for both the line and group forms of the commands). You may edit the content of the line in any way desired. Samples of both the online (ROPEOLEX) and batch (ROPEBLEX) exits are provided.

This exit program is invoked online using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEOLEX')
            COMMAREA(COMMAREA)
            LENGTH(267)
```

Figure 76 API Line Exit Invocation (online)

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
COMMREPT   DS  CL8     REPORT NAME
COMMLINE   DS  CL255   PRINT LINE DATA
COMMRETC   DS  A       RETURN CODE
```

Figure 77 API Line Exit COMMAREA

In batch jobs, the exit program is invoked using the program CALL macro as follows:

```
CALL ROPEBLEX,(COMMAREA)
```

Figure 78 API Line Exit Invocation (batch)

The return code may be set to one of three values:
  0 = Use the line as returned by the exit;
  4 = Suppress any further translation of the data in the line;
  8 = Drop the line from the report.

If you do not provide an exit program, ROPES will use its standard logic for inserting the line.

Undefined Report Exit

This exit will be invoked by the ROPE Batch Interface program when it detects an attempt to store data in a report that has not been defined to ROPES.

This exit is invoked in batch using the CALL command as follows:

```
CALL ROPEBSX1,(COMMAREA)
```

Figure 79 API Missing Report Exit Invocation (batch)

The COMMAREA is defined as follows:

```
COMMAREA   DS  0D
COMMRETC   DS  H    RETURN CODE
COMMRIBA   DS  A    ADDRESS OF RIB WORK AREA
```

Figure 80 API Missing Report Exit COMMAREA

Your exit may take any desired action, but the primary purpose of this exit is to allow you to either allow the ROPES Error Response "1" to be returned to your application, or for you to provide a Report

Definition in the RIB work area, which then will be added to ROPES to allow the application to continue executing.

You control the action of ROPES by setting the Return Code value to either of the following two values:
  0 = Add the report defined in the RIB Work area to ROPES and continue;
  4 = Send the Report Not Found response back to the application program

ROPES Application Service Exits

Your installation may choose to implement security or logging exit routines for statistical or recovery purposes. ROPES provides two such exits, which are entered immediately before writing to the ROPES queue from online and batch applications.

The ROPES distribution tape contains two sample exit routines: ROPEEXTO for online applications, and ROPEEXTB for batch applications. As shipped, these routines simply return control to ROPES, however, the shipped modules describe the entry conditions, conventions, and restrictions which must be adhered to by any user-developed exit routines.

To implement an exit routine, it must be link-edited into ROPES in such a way as to replace the distributed exit routines. The online exit is invoked by the CICS Command Level LINK function. The batch exit is link-edited with module ROPEBSRV. The procedure to be followed to replace the ROPEEXTB exit is as follows:

```
//LINKEXIT EXEC PGM=IEWL
//SYSPRINT DD   SYSOUT=A
//USERLIB   DD DSNAME=USER.LOADLIB,DISP=SHR
//SYSLIB    DD DSNAME=<hlq>LOADLIB,DISP=SHR
//SYSLMOD   DD DSNAME=<hlq>LOADLIB,DISP=SHR
//SYSUT1    DD UNIT=SYSDA,SPACE=(CYL,1)
//SYSLIN    DD *
  REPLACE ROPEEXTB
  INCLUDE SYSLIB(ROPEBSRV)
  INCLUDE USERLIB(ROPEEXTB)
  ENTRY   ROPEBSRV
  NAME       ROPEBSRV(R)
/*
```

Command Processor Front-end Programs

Your installation may wish to develop custom operator menus or other security-related front-end processors for the ROPES command processor. To simplify this task, we have designed a program interface to the command processor for your use.

To use this interface, you must do the following things in your application program:

1. Copy the Command Processor Communication Area into your program. You must place the Communication Area in the dynamic storage area of your command level program or in any other dynamic storage area you wish. The Communication Area is mapped by the assembler copy member ROPESCOM in the <hlq>.SOURCE library.

2. Examine the contents of the Communication Area. You are responsible for setting the command to be executed, in PROP format, in the 26 character variable COMMTEXT. You must set the command string length in the half word variable COMMLEN. You must select the message option you want and set the value of the MSGFLAG byte. If you choose to have the messages returned in the Communication Area, you must decide how many messages you will process and set the value in the half word variable MSGCNT. Finally, you must allocate enough storage, following the symbol MSGLINES, to contain all the 80 character messages you wish to have returned to your application.

3. You must invoke the ROPES Command Processor program as follows:

```
EXEC CICS LINK PROGRAM(ROPEPROP)
          COMMAREA(SCOMAREA)
          LENGTH(arealen)
```

Figure 81 Command Processor Invocation

You must compute the length of the Communication Area yourself. Its length is (80*MSGCNT) + SCOMLEN.

Job Submission Security Exit

In the chapter on the installation of ROPES under step number 2, it discusses the execution of the job in source PDS member RUNBUILD. In this job, there is a step which initializes the 'Screen Handler Parameters', 'System Parameters', and 'PFKEY definitions'.

The 'System Parameters' options (CONTROLS PTYPE(SYSPARMS)) contain two keyword parameters which activate or deactivate the ROPES security exit for the Job Submission facility. These keyword parameters are **SECUPD** and **SECEXIT**. Although this security exit applies to just the Job Submission facility at this time, its use will be expanded to other areas of ROPES in the future.

To activate the security exit for the Job Submission facility, the SECUPD parameter value must be set to 'Y', and a name must be provided for the security exit SECEXIT(by default this is R51RSECX). Before the security exit can be activated some additional RACF customization steps must be performed first. These steps will be described in the next section.

When the security exit is activated R51RSECX is called and performs an EXEC CICS QUERY SECURITY to check the authorization of the user accessing the JCL data file or job file. A pseudo data set name is created by the calling program which contains the ROPEJOBF DD name, the member name, and the terminal. The pseudo data set name is checked by the external security manager (RACF, ACF2, etc.) to make sure the user has authority to access the member and file.

Access to the job file and member name is controlled by the standard RACF or external security manager rules. These rules must be established prior to activating the security exit. These steps are described in the next section.

Customizing RACF For The ROPES Security Exit

Several external security manager customization steps must be executed prior to activating the ROPES security exit (R51RSECX). It is assumed that RACF is the external security manager being used. However, similar steps are required for other external security manager programs. The required steps are listed below.

- New security CLASS names must be defined to RACF using the RACF CDT (Class Descriptor Table-macro **ICHERCDE**). The class names are **$ROPCJBM** and **$ROPGJBM**.
- These CLASS names must also be defined to the RACF Router table using macro **ICHRFRTB**.
- Both tables must be assembled/linked and made available to the operating system by locating them in SYS1.LINKLIB or a comparable authorized link listed library.
- An IPL must be done to pick up the new CDT and Router tables.
- The $ROPCJBM and $ROPGJBM classes must be activated and RACLISTED.
- Rules must be created under the external security manager to define the default access to file ROPEJOBF and its subordinate members.
- Users must be granted access to the ROPEJOBF file and those member names they will be using under the Job Submission facility.
- A REFRESH must be done for the class $ROPCJBM after all the rules have been added to RACF.
- The ROPES security exit (R51RSECX) may now be activated by setting the SECUPD installation parameter to a value of 'Y' and the SECEXIT installation parameter to 'R51RSECX'.

With the appropriate security rules in place, it will be possible to prevent/grant access to JCL members using generic member name prefixes. For example, user John Smith can be granted access to all member names starting with **JS***, and no other member names. In this manner, users can be prevented from accessing other user's JCL members.

The type of JCL member access can also be controlled by using **UPDATE** or **ALTER** authority. Update authority will allow a user to examine and change an existing member, but not delete or add one. Alter authority will grant full authority to create or delete members.

RACF Table Samples

To create or modify an existing RACF Class Descriptor Table the **ICHERCDE** macro must be used to add user type entries. A sample of the required ROPES entries appears below.

```
$ROPCJBM ICHERCDE CLASS=$ROPCJBM,
                  GROUP=$ROPGJBM,
                  DFTRETC=8,
                  ID=128,
                  MAXLNTH=44,
                  RACLIST=ALLOWED,
                  GENLIST=ALLOWED,
                  FIRST=ALPHANUM,
                  OTHER=ANY,
                  POSIT=25,
                  DFTUACC=NONE,
                  OPER=NO
$ROPGJBM ICHERCDE CLASS=$ROPGJBM,
                  MEMBER=$ROPCJBM,
                  DFTRETC=8,
                  ID=128,
                  MAXLNTH=44,
                  FIRST=ALPHANUM,
                  OTHER=ANY,
                  POSIT=25,
                  DFTUACC=NONE,
                  OPER=NO
```

Figure 82 Sample RACF Class Descriptor Table

As with all assembler macros, the opcode ICHERCDE must begin in column ten, and macro parameters begin in column 16. Each line that is continued must have a comma after the last parameter, and a continuation mark ('X') in column 72. After the table entries have been added to the CDT, the table must be assembled and link-edited into SYS1.LINKLIB. Please contact your security administrator for information regarding the update of these tables.

The RACF Router table must also be prepared. A sample of the entries that must be added to this table are shown below.

```
ICHRFR01 CSECT
         ICHRFRTB CLASS=$ROPCJBM,ACTION=RACF
         ICHRFRTB CLASS=$ROPGJBM,ACTION=RACF
         ICHRFRTB TYPE=END
         END ICHRFR01
```

Figure 83 Sample RACF Router Table.

The RACF Router table must also be link edited into library SYS1.LINKLIB. After both tables have been assembled and linked, an IPL must be done to pick up the new RACF tables.

RACF Rule Samples

The new ROPES class must be activated and RACLISTED before rules can be implemented using it. Samples of the RACF commands required to activate and RACLIST the new class is shown below.

```
SETROPTS CLASSACT($ROPCJBM)
SETROPTS GENERIC($ROPCJBM)
SETROPTS RACLIST(ROPCJBM)
```

Figure 84 Sample RACF Activate/RACLIST commands

Once the new ROPES classes are activated, rules may be implemented using the new classes. A sample of the RDEFINE and PERMIT statements required to establish rules for the new classes is shown in the figure below.

```
/***************************************/
/* DEFINE RESOURCE PROFILES          */
/***************************************/
RDEFINE $ROPCJBM ROPEJOBF.JS*.* UACC(NONE)
  OWNER(JSMITH)
RDEFINE $ROPCJBM ROPEJOBF.HR*.* UACC(NONE)
  OWNER(HROGERS)
RDEFINE $ROPCJBM ROPEJOBF.*.* UACC(NONE)
  OWNER(ADMIN)
/***************************************/
/* PERMIT ACCESS TO RESOURCES        */
/***************************************/
PERMIT ROPEJOBF.JS*.* CLASS($ROPCJBM)
  ID(JSMITH) ACCESS(ALTER)
PERMIT ROPEJOBF.HR*.* CLASS($ROPCJBM)
  ID(HROGERS) ACCESS(ALTER)
PERMIT ROPEJOBF.JS*.* CLASS($ROPCJBM)
  ID(HROGERS) ACCESS(UPDATE)
PERMIT ROPEJOBF.*.* CLASS($ROPCJBM)
  ID(JSMITH) ACCESS(UPDATE)
/***************************************/
/* REFRESH THE RACLISTED CLASSES     */
/***************************************/
SETROPTS RACLIST($ROPCJBM) REFRESH
```

Figure 85 Sample RDEFINE/PERMIT Statements

Many possibilities are available with regard to grouping users, and granting access to JCL members. The above examples are only intended to provide a basic and minimum example of the RACF commands required to implement the new ROPES security.

Activating The ROPES Security Exit

After the RACF resources have been defined, and the users have been granted the appropriate access to their JCL members, then the ROPES security exit may be activated. This is accomplished by creating a new JCL member from the RUNBUILD job located in the ROPES.SOURCE data set, and deleting all the steps except the CONTRLS step which populates the ROPES parameter file with the 'Screen Handler Options', 'System Parameter Options', and the 'PF Key Definitions'.

All control card input statements except the one for the 'System Parameters' may be removed before running this step. The resulting job will contain the JCL required to run the CONTROLS type input, and just the control statements necessary to input the 'CONTROLS PTYPE(SYSPARMS)'. A sample of the required control statements appears in the figure below.

```
CONTROLS PTYPE(SYSPARMS),
 DESC(ROPES GENERAL SYSTEM CONTROLS),
 MROREGN(01),TDQUE(CSMT),ITRNPFX(R#),
 MTERMID(TTTT),SECUPD(Y),SECEXIT(R51RSECX),
 INTRDRQ(INTR),ACCDEST(CSMT),RFILES(ROPEALQ,
 ROPEALR,ROPEBQX,ROPEJOBF,ROPEPCR,ROPEQBR,
 ROPERDDD,ROPERDTD,ROPERIB,ROPERPI).
```

Figure 86 Sample PTYPE(SYSPARMS) Input

If you have customized any of the other parameters shown in the above figure as part of your installation of ROPES, be sure to include those changes here before running with these System Parameter options.

Once the system parameters have been updated to activate the security exit, you can test your RACF rules by executing the Job Submission facility transaction **ROJB**. If appropriate access has been given, you should be able to add, delete, and update the appropriate members. If you receive a security violation message from ROPES, then the resource rules have not been setup for you to access the member you are testing with. Please remember, any changes to the rules will require a RACLIST REFRESH for the ROPES class $ROPCJBM.

Job Submission User Exit

This exit is invoked every time the Job Submission facility sends a line to the internal reader. The exit program may edit the line to be sent in any way. You may also replace the data area with one of your own. In this case, you may replace the line passed to the

exit with more than one line. All the lines you return are sent to the reader.

The exit program is invoked using the CICS LINK command as follows:

```
EXEC CICS LINK PROGRAM('ROPEJSX1')
      COMMAREA(EXIT-COMMAREA)
      LENGTH(4)
```

Figure 87 Job Submission Facility Exit Invocation

The COMMAREA is defined as follows:

```
COMMAREA   DS  A      ADDRESS   OF   THE
                      WORKAREA

The work area is defined as follows:

WORKAREA   DS  0D
LINCOUNT   DS  F      COUNT   OF   LINES
                      IN/OUT
LINETEXT   DS  CL80   LINE  SENT  TO  THE
                      EXIT
```

Figure 88 Job Submission Exit COMMAREA

If you choose to send back more than the edited input line, you must obtain an area defined like the work area, but with multiple 80 character lines for LINETEXT. Move in the lines, set the LINCOUNT value to the number of lines the exit is to process, then move the address of the new area into the COMMAREA field. The exit will use the address you return as its pointer to the work area and will submit the lines in the work area.

Display Transaction Front-End Processing

The ROPES Display Transactions can be invoked from your own programs or menus to further integrate ROPES into your operations. This can simplify the tasks of your end-users, extend your installation's security practices to the ROPES transactions, and minimize the training end--users will need to operate ROPES.

The following transactions may be invoked programmatically using the interface described here: ROAL, ROPO, ROPS, RORL and RORS.

To invoke these transactions from your own programs, you must prepare a COMMAREA containing the transaction's initial input. The COMMAREA is passed to the transaction by linking

to the appropriate program. See **Figure 89** for a description of the linkage conventions used to invoke these programs.

```
EXEC CICS LINK PROGRAM('progname)
      COMMAREA(COMMAREA)
      LENGTH(CALEN).

Tran
Code                    Program Name
ROAL                    ROPEROAL
ROPO                    ROPEROPO
ROPS                    ROPEROPS
RORL                    ROPERORL
RORS                    ROPERORS
```

Figure 89 Display Transaction Invocation

The COMMAREA used in each case is formatted as shown in **Figure 90**. The first half word contains the length of the initial input to be processed. The string is the initial input to be processed. The data is formatted exactly as described for the transaction in the Operator Displays section of this manual, which starts on page 17.

```
COMMAREA   DS  0D
COMMLEN    DS  H      LENGTH OF INPUT TEXT
COMMTEXT   DS  Clnn   TRANSACTION INPUT
```

Figure 90 Display Transaction COMMAREA

The transaction processor named in the LINK command is invoked. It will display the data requested by the initial input string and then return to your program. Your program should be prepared to deal with the possible inputs, including the clearing of the screen, the pressing of enter with the ROPES-constructed prompt, either as built or as edited by the user, which may include a new transaction code. How your transaction deals with these various input conditions is up to you. If the user simply presses enter and does not change the transaction code, you should move the input into the COMMAREA and re-invoke the transaction processor.

Mail Report Exit Program

The mail report exit program provides an exit point at which the e-mail header information can be changed. The report mail delivery program (ROPEMRDP) calls this program just before the e-mail header information is processed. This gives the exit an opportunity to change the e-mail header information before processing the e-mail.

The communication area that ROPEMRDX receives contains a number of e-mail related fields. *Only a subset of these fields can be changed by the exit*. The fields that can be changed are:

MDXPLOGF
Contains the diagnostic messages logging activation flag. This field specifies whether diagnostic messages should be logged for this e-mail destination. Possible values are 'Y' or 'N' for yes and no respectively.

MDXPLOGQ
Specifies the diagnostic messages logging transient data destination name. This field must contain a valid 4 character extra-partition destination name such as 'CSMT'.

MDXPMFRL
Specifies the length of the mail from e-mail address. This field is one byte in length, and must contain a binary length value equal to the actual length of the mail from e-mail address below.

MDXPMFRM
Contains the mail from e-mail address. This field is limited to 80 characters of data.

MDXPRCTL
Specifies the length of the receipt to e-mail address. This field is one byte in length, and must contain the actual length of the receipt to e-mail address specified below.

MDXPRCPT
Contains the receipt to e-mail address. This field is limited to 80 characters of data.

MDXPCPYL
Specifies the length of the copy to e-mail address. This field is one byte in length, and must contain the actual binary length of the copy to e-mail address specified below.

MDXPCPYN
Contains the copy to e-mail address. This field is limited to 80 characters of data.

MDXPCP2L
Specifies the length of a copy to e-mail address. This field is one byte in length, and must contain the actual binary length of the copy to e-mail address specified by the MDXPCP2N parameter. If no e-mail address is specified, then the value in this field must be set to zero.

MDXPCP2N
Contains a copy to e-mail address. This field is limited to 80 characters of data, and must contain a valid e-mail recipient address.

MDXPCP3L
Specifies the length of a copy to e-mail address. This field is one byte in length, and must contain the actual binary length of the copy to e-mail address specified by the MDXPCP3N parameter. If no e-mail address is specified, then the value in this field must be set to zero.

MDXPCP3N
Contains a copy to e-mail address. This field is limited to 80 characters of data, and must contain a valid e-mail recipient address.

MDXPCP4L
Specifies the length of a copy to e-mail address. This field is one byte in length, and must contain the actual binary length of the copy to e-mail address specified by the MDXPCP4N parameter. If no e-mail address is specified, then the value in this field must be set to zero.

MDXPCP4N
Contains a copy to e-mail address. This field is limited to 80 characters of data, and must contain a valid e-mail recipient address.

MDXPCP5L
Specifies the length of a copy to e-mail address. This field is one byte in length, and must contain the actual binary length of the copy to e-mail address specified by the MDXPCP4N parameter. If no e-mail address is specified, then the value in this field must be set to zero.

MDXPCP5N
Contains a copy to e-mail address. This field is limited to 80 characters of data, and must contain a valid e-mail recipient address.

MDXPMXCE
Specifies the maximum number of 'copyto' e-mail addresses that can be generated dynamically by the application program. The value must be in the range of 0 to 95, and is only valid if SMTP parameters are built dynamically by the application program using the DCB parameter option "SMTPCMD=R". If the SMTPCMD parameter value is set to "M" then the MDXPMXCE value

must be set to zero. The MDXPMXCE field must contain a 4 byte binary value.

MDXPSBJL

Specifies the length of the subject text for this e-mail. This field is one byte in length, and must contain the actual binary length of the subject text specified below.

MDXPSUBJ

Contains the subject text for this e-mail. This field is limited to 80 characters of text.

MDXPATYP

Specifies the type of file that will be attached to the outgoing e-mail. This field may contain up to six (6) characters, and the two acceptable values are 'REPORT' and 'PDF'. Note that the 'PDF' value must also be padded with blanks.

MDXPATST

Specifies the type of Temporary Storage that will be used as an interim storage area for converting the report to PDF and other formats. This field is 1 character in length, and must contain one of two possible values.   These values are 'A' for Auxiliary Temporary Storage, or 'M' for Main Temporary Storage.

MDXPATSN

Specifies the name of the Temporary Storage Queue that will be used as interim storage for converting the report to PDF and other formats. This field may contain a Temporary Storage Queue name up to 8 characters in length. Names must be padded with blanks if shorter than 8 characters.

MDXPAFNL

Specifies the length of the attach file name prefix. This field contains a 1 byte binary value which represents the length of the file name prefix contained in the field MDXPAFLN below. The file name value contained in this field must match the length of the file name prefix specified in MDXPAFNL exactly, and must not account for any padded characters which may occur at the end of the file name prefix if the file name prefix is less than the maximum size.

MDXPAFLN

Specifies the attach file name prefix. This field may contain a file name prefix up to 50 characters in length. The value must be padded with blanks if the size is less than the maximum. The attach file name prefix is the first part of the complete attach file name. The attach file name suffix is appended to the file name prefix followed by the file name extension. The file name suffix and extension is described below.

MDXPAFSL

Specifies the attach file name suffix length. ROPES prepares a time stamp which is a maximum of 12 characters in length. The time stamp has the format YYMMDDHHMMSS where YY is the two digit year, MM is the 2 digit month, DD is the two digit day, HH is the two digit hour, MM is the two digit minutes, and SS is the two digit seconds value. The time stamp is selected based on the length value contained in this field. Selection is performed from right to left.   The length is specified in this 1 byte binary field and may contain a value from 1 to 12. Values above 12 may cause unpredictable results not limited to but including storage violations.   A file suffix length value must be present if the MDXPAFSF field contains the value "Y". The attach file name suffix is appended to the end of the attach file name prefix to make up the first node of the attach file name. The file extension is added to this to complete the entire attach file name.

MDXPAFSF

Specifies whether the attach file name suffix will be used to construct the complete attach file name or not. This field contains a 1 character value. The possible values which may be contained in this field are 'Y' or 'N'. The value 'Y' means the attach file name suffix is being employed, or 'N' the attach file name suffix is not being used.

MDXPAFXL

Specifies a 1 byte binary length representing the length of the attach file name extension. The attach file name extension is supplied by the field MDXPAFXT which is described below.   This length field must contain a 1 byte binary value that represents the length of the file extension not including pad characters.

MDXPAFXT

Specifies the 3 character attach file name extension which is added to the attach file name prefix/suffix values to complete the entire attach file name. This field may contain a file extension value up to 3 characters in length. The value must be padded with blanks if not a full 3 characters.

MDXPASTA

Specifies whether ROPES status information should be contained in the pre-amble e-mail that accompanies the attached report file. The ROPES status information indicates the date and time the report was sent by e-mail as well as the originating printer and report ids. This field may contain a value of 'Y', or a value of 'N'. The value 'Y' means that the ROPES status information should be contained in the pre-amble e-mail. The value 'N' means the ROPES status information should be left out of the pre-amble e-mail.

MDXPADML

Specifies the 1 byte binary length of the value contained in field MDXPADMT. The field MDXPADMT contains the text of the 'Delivery Message'. This field may contain a delivery message text up to 72 characters in length. Therefor, the 1 byte binary value contained in this field (MDXPADML) must be in the range of 1 to 72 characters, and should not account for padded characters.

MDXPADMT

Specifies the text of the delivery message. This field is mandatory, and the text in this field will be sent in the pre-amble e-mail accompanying the attached report file. The default value for this field is: "This E-mail delivered by ROPES Version 9.0.". The delivery message text may be up to 72 characters in length, and should be padded with blanks.

MDXPANL1

Specifies the 1 byte binary length of the user supplied note text line 1 which will be included in the pre-amble e-mail that accompanies the attached report file. The 1 byte binary length value may be in the range of 1 to 72, and must represent the length of the note text and not any padded blanks. The length contained in this field represents the length supplied by the text provided in field MDXPANT1 (note line 1).

MDXPANT1

Specifies the user supplied note text for note line 1 that will be included in the pre-amble e-mail that accompanies the attached report file. The text value may be up to 72 characters in length, and must be padded with blanks. If no text is supplied in this field, the length in field MDXPANL1 must be set to zero.

MDXPANL2

Specifies the 1 byte binary length of the user supplied note text line 2 which will be included in the pre-amble e-mail that accompanies the attached report file. The 1 byte binary length value may be in the range of 1 to 72, and must represent the length of the note text and not any padded blanks. The length contained in this field represents the length supplied by the text provided in field MDXPANT2 (note line 2).

MDXPANT2

Specifies the user supplied note text for note line 2 that will be included in the pre-amble e-mail that accompanies the attached report file. The text value may be up to 72 characters in length, and must be padded with blanks. If no text is supplied in this field, the length in field MDXPANL2 must be set to zero.

MDXPANL3

Specifies the 1 byte binary length of the user supplied note text line 3 which will be included in the pre-amble e-mail that accompanies the attached report file. The 1 byte binary length value may be in the range of 1 to 72, and must represent the length of the note text and not any padded blanks. The length contained in this field represents the length supplied by the text provided in field MDXPANT3 (note line 3).

MDXPANT3

Specifies the user supplied note text for note line 3 that will be included in the pre-amble e-mail that accompanies the attached report file. The text value may be up to 72 characters in length, and must be padded with blanks. If no text is supplied in this field, the length in field MDXPANL3 must be set to zero.

MDXPANL4

Specifies the 1 byte binary length of the user supplied note text line 4 which will be included in the pre-amble e-mail that accompanies the attached report file. The 1 byte binary length value may be in the range of 1 to 72, and must represent the length of the note text and not any padded blanks. The length contained in this field represents the length supplied by the text provided in field MDXPANT4 (note line 4).

MDXPANT4

Specifies the user supplied note text for note line 4 that will be included in the pre-amble e-mail that accompanies the attached report file. The text

value may be up to 72 characters in length, and must be padded with blanks. If no text is supplied in this field, the length in field MDXPANL4 must be set to zero.

MDXPANL5

Specifies the 1 byte binary length of the user supplied note text line 5 which will be included in the pre-amble e-mail that accompanies the attached report file. The 1 byte binary length value may be in the range of 1 to 72, and must represent the length of the note text and not any padded blanks. The length contained in this field represents the length supplied by the text provided in field MDXPANT5 (note line 5).

MDXPANT5

Specifies the user supplied note text for note line 5 that will be included in the pre-amble e-mail that accompanies the attached report file. The text value may be up to 72 characters in length, and must be padded with blanks. If no text is supplied in this field, the length in field MDXPANL5 must be set to zero.

An assembler macro version of the **ROPEMDXA** copy book is provided in the ROPES distribution source library. This macro copy book is the same one used in the ROPEMRDX sample exit program. The ROPEMRDX sample exit can also be found in the ROPES distribution source library.

If a CICS program definition for the ROPEMRDX program does not exist, then the exit call will be skipped (no abend or error occurs). To implement the exit requires the CICS program definition, and the presence of the load module. If you make use of the exit, you will have to add your own code to modify the contents of the e-mail header fields. The sample exit makes no changes to these fields, and simply returns to the caller.

Your code must be added to the ROPEMRDX program near label '**CHGOPTS**'. Comments exist in the program clearly highlighting this area of the program as the area in which your code should be added. No return code settings are required to indicate your field changes have been made. All COMMAREA fields passed back from the ROPEMRDX exit are used as provided.

LPR Remote Print Exit Program

The LPR Remote Print Exit Program provides an exit point at which the LPR options for a given printer/report can be modified prior to transmitting the control and data files to the line printer daemon. Using this exit, LPD communication options as well as printer options can be modified before the job is actually submitted to the LPD server. The exit program is called by the LPR Remote Print Program (ROPELPRP). The exit program is named ROPELPRX. A sample of this program exists in the ROPES source distribution library.

The communication area passed to the exit program, ROPELPRX, can be found in the ROPES Source library in member ROPELPXA. This is an assembler macro which generates the communication area field descriptions. The field descriptions appear below, in **Figure 91** on page 153.

The option fields in the communication area correspond with the fields of the LPR Options Definition Screen. If you need a detailed definition of what the contents of the fields should be, please consult the section describing this screen.

To activate the exit, the sample ROPELPRX program must be modified, assembled, and link edited into the ROPES load library. The exit program is a Command Level program. The program must be defined to CICS as an assembler program. The program should be linked with AMODE(31) RMODE(ANY). The CICS program definition should also specify DATALOCATION=Any. The exit is really activated by the fact that the CICS program definition has been added, and of course the module must be present also.

Your modifications to the exit must be made in the area of code after label "CHGOPTS". Some fields have corresponding length value fields. These are one byte binary fields that must contain the exact length of the corresponding data values. The exit may either change one or more option values, or simply leave them and return control to ROPELPRP. A return code does not have to be set upon return, and a return code will not be checked after return.

Direct Socket Remote Print Exit Program

The Direct Socket Remote Print Exit Program provides an exit point at which the options for a given printer/report can be modified prior to transmitting the control and data files to the line printer daemon. Using this exit, communication options as well as printer options can be modified before the job is actually submitted to the remote printer. The exit program is called by the Direct Socket Remote Print Program (ROPESOCP). The exit program is named ROPESOCX. A sample of this program exists in the ROPES source distribution library.

The communication area passed to the exit program, ROPESOCX, can be found in the ROPES Source library in member ROPELPXA. This is an assembler macro which generates the communication area field descriptions. The field descriptions appear below, in **Figure 91** on page 153.

The option fields in the communication area correspond with the fields of the LPR Options Definition Screen. If you need a detailed definition of what the contents of the fields should be, please consult the section describing this screen.

To activate the exit, the sample ROPESOCX program must be modified, assembled, and link edited into the ROPES load library. The exit program is a Command Level program. The program must be defined to CICS as an assembler program. The program should be linked with AMODE(31) RMODE(ANY). The CICS program definition should also specify DATALOCATION=Any. The exit is really activated by the fact that the CICS program definition has been added, and of course the module must be present also.

Your modifications to the exit must be made in the area of code after label "CHGOPTS". Some fields have corresponding length value fields. These are one byte binary fields that must contain the exact length of the corresponding data values. The exit may either change one or more option values, or simply leave them and return control to ROPESOCP. A return code does not have to be set upon return, and a return code will not be checked after return.

Maintenance Logging Exit

The logging exit program is called if the control options of the "Logging Controls" are set to call the logging "User Exit". The "Logging Controls" must specify a logging type of "U" (user exit), and must specify the name of a user exit. The user exit name field (LOGEXIT) must specify the full name of an assembler **command level** module. To conform with naming standards, the user exit name should be prefixed with the program prefix value used during ROPES installation. The program prefix value is set by the CONTROLS utility function for parameter record type "SCREEN-HANDLER".

Logging Parameter Areas

When the logging type specified in the "Logging Controls" is set to "U" (user exit), the logging manager program calls the logging exit instead of writing log records directly.

The logging exit program is passed the standard "Screen Handler" communication area (SCRHCOM) The address of the communication area is passed in field DFHEICAP located in the Execute Interface Block (EIB). Standard conventions for addressing a CICS program communication area can be used to address this area.

The Screen Handler communication area is described by a macro called SCRHCOM. The SCRHCOM macro can be found in the ROPES distribution source data set. This macro should be coded in the logging exit program along with any other required DSECT areas. The SCRHCOM macro must be included in the exit program using the statements shown below.

```
USING COMMAREA,Rnn
SCRHCOM TYPE=DSECT
```

The value "Rnn" above refers to an equated symbol which specifies an available program register.

The logging exit program should not modify any of the communication area fields, and only three fields from the communication area are important to the exit program. The three fields are named **COMBIMG**, **COMAIMG**, and **COMJIC3**. The COMBIMG communication area field contains an address which points to the **before** image of the record being updated. The COMAIMG field contains an address which points to the **after** image of the record being updated. The COMJIC3 field contains the address of

the log manager table. The log manager table describes the file and record layout for the record being added, updated, or deleted.

The symbolic description of the log manager table must be included in the logging exit program. This is accomplished by coding the following statements in the logging exit program.

    USING LGTTABLE,Rnn
    SCRHLOGT TYPE=DSECT

The value "Rnn" refers to an equated symbol which specifies a program register.

The log manager table describes the file being updated, the record length of the record being updated, and contains information about each field in the record. A sample of the log manager table DSECT and its fields appears in .

The log manager table consists of two parts, the header portion (fixed part), and the entries portion (variable part). The header portion contains information about the file being updated including the file name, the record length, and a file description. The entries portion of the table is variable in length, and contains an entry segment (which is a fixed length) for each field in the record layout. The field description entries can be accessed by using the **LGTENTA** field. This field contains a pointer which points to the first field entry in the table. The last field entry in the table will contain a full word of high values in the field **LGTRCNM**.

The length of each field entry is described by an equated symbol named **LGTELEN.** The variable portion of the table can be searched or processed by adding LGTELEN to an index register every time the next entry is required until the last entry is reached.

Log Exit Processing

The type of process being performed against the file record is determined by the presence or absence of the addresses contained in the COMBIMG and COMAIMG communication area fields. For example, if a record is being added to a ROPES file, the COMBIMG field will contain zero because there is no before image for a record that is being added. For a record being deleted there is no address in the COMAIMG field. In the case of a record being updated, an address is contained in both communication area fields.

The logging exit may log both before and after images of a record, it may simply log the fact that a change has taken place to a record, or it may compare for actual field level changes and log this information. Whatever the log exit does is totally up to the discretion of the developer.

The logging exit program may perform any processing required, but it must return control back to the logging manager program. This is accomplished by using a standard CICS return command. The log exit program should intercept all error conditions, and avoid abnormal termination where possible. Once the logging exit program has been written, it must be assembled using an assembler **command level** JCL procedure. The JCL member RUNASML, located in the ROPES distribution source data set, may be used for this purpose if a command level pre-processor step is added to it. The ROPES distribution source data set must also be included in the SYSLIB concatenation of the assembly step to pick up the parameter area symbolic descriptions (DSECTS).

Web Access Security Exit

The Web Access Security Exit program (ROPEWEBX) is called by the ROPES Web Services provider (ROPEWEB) when processing a Sign On panel or when processing a data display panel request. The exit, as distributed, uses SAF calls to determine if the user credentials are valid and if the user is permitted the requested access. SAF controls can be set using the provided $ROPEWEB job stream provided in the ROPES.SOURCE library if you are using RACF or you can use this member as a guide to setting the security definitions in the security server employed by your installation.

Please review the source code for module ROPEWEB and module ROPEWEBX for more details on the current state of the implementation.

```
*********************************************************************
*                   ---    R O P E S    ---                         *
*                                                                   *
*      L I N E   P R I N T E R   R E M O T E   P R O G R A M        *
*                                                                   *
*         E X I T   C O M M U N I C A T I O N   A R E A             *
*                                                                   *
*********************************************************************
LPCPAREA DS    0C                      LPRP EXIT ROUTINE AREA
LPCPORTN DS    CL5                     PORT NUMBER - DEFAULT(515)
LPCQUIKR DS    CL1                     USE QUICK PORT RELEASE (Y/N)
LPCSNDCF DS    CL1                     SEND CONTROL FILE FIRST (N=DATA)
LPCUNLNK DS    CL1                     UNLINK/DELETE SOURCE DATA FILE
LPCPRBNR DS    CL1                     PRINT BANNER PAGE (Y/N)
LPCMAILR DS    CL1                     MAIL RESPONSE TO REQUESTOR
LPCTYPEP DS    CL1                     TYPE OF PRINT REQ. (f/l/o/p/r)
LPCLOGFL DS    CL1                     LOG TRANSMISSIONS FLAG (Y/N)
LPCLOGQN DS    CL4                     LOGGING QUEUE NAME
LPCWIDTH DS    CL3                     MAX WIDTH OF OUTPUT-DEFAULT(132)
LPCCLBNR DS    CL31                    BANNER CLASS
LPCTCPTL DS    AL1                     LENGTH OF TCPIP NAME
LPCTCPTN DS    CL8                     NAME OF TCPIP TASK
LPCSHSTL DS    AL1                     LENGTH OF SENDING HOST NAME
LPCSHSTN DS    CL24                    SENDING HOST NAME
LPCRHSTL DS    AL1                     LENGTH OF REMOTE HOST NAME
LPCRHSTN DS    CL24                    REMOTE HOST NAME
LPCJOBNL DS    AL1                     JOB NAME LENGTH
LPCJOBNM DS    CL72                    JOB NAME FOR BANNER PAGE
LPCPRTQL DS    AL1                     LENGTH OF PRINTER QUEUE NAME
LPCPRTQN DS    CL20                    PRINTER QUEUE NAME
LPCSRCFL DS    AL1                     SOURCE FILE NAME LENGTH
LPCSRCFN DS    CL64                    SOURCE FILE NAME
LPCRUSRL DS    AL1                     LENGTH OF REQUESTING USERID
LPCRUSRN DS    CL31                    USER ID OF REQUESTOR
LPCTITLL DS    AL1                     LENGTH OF TITLE
LPCTITLE DS    CL72                    TITLE FOR THE FILE TO BE PRINTED
LPCTRFNT DS    CL1                     TIMES ROMAN FONT TYPE (1/2/3/4)
LPCTRFTL DS    AL1                     TIMES ROMAN FONT FILEID LENGTH
LPCTRFTN DS    CL64                    TIMES ROMAN FONT FILE NAME
LPCPALEN EQU   *-&P.PAREA              LENGTH OF LPXPAREA
```

Figure 91 LPR Exit Communication Area

```
*+-------------------------------------------------------------------+
*|                                                                   |
*|                    S C R E E N   H A N D L E R                    |
*|                                                                   |
*|                 L O G   M A N A G E R   T A B L E                 |
*|                                                                   |
*|                    D E S C R I P T I O N                          |
*|                                                                   |
*+-------------------------------------------------------------------+
LGTTABLE DSECT
LGTRNME  DS    CL8                   DATA RECORD NAME
LGTENTA  DS    A                     STARTING ADDRESS OF ENTRIES
LGTRLEN  DS    AL2                   DATA RECORD LENGTH
LGTDSID  DS    CL8                   DATA RECORD FILE ID
LGTDESC  DS    CL40                  FILE DESCRIPTION
LGTRSRV  DS    CL10                  RESERVED FOR FUTURE USE
         SPACE 1
*                             ENTRIES OCCUR MULTIPLE TIMES
LGTENTRY DS    0C                    START OF FIELD DEFINITIONS
LGTRCNM  DS    CL8                   DATA RECORD FIELD NAME
LGTRCOF  DS    AL2                   DATA RECORD FIELD OFFSET
LGTRCLN  DS    AL2                   DATA RECORD FIELD LENGTH
LGTFLDT  DS    CL3                   FIELD TYPE
LGTFDSC  DS    CL24                  FIELD DESCRIPTION
LGTJIC1  DS    CL1                   RESERVED FOR FUTURE USE
LGTJIC2  DS    CL4                   RESERVED FOR FUTURE USE
LGTELEN  EQU   *-LGTRCNM             ENTRY LENGTH
```

Figure 92 The Log Manager Table DSECT

The ROPES External Interface Feature

Introduction

The ROPES External Interface feature is a new feature for ROPES Version 10.0 and above and has been further enhanced in Version 11.0. It provides a mechanism whereby a batch process (client) may communicate with a CICS process (server) to update ROPES resources under CICS control. This new feature of ROPES has been added to extend CICS operation time and reduce the "batch window" requirements for ROPES. Two new utility functions are offered with the new ROPES External Interface at this time. Many new utility functions will be created to exploit this new feature of ROPES with future updates and releases.

The ROPES External Interface feature uses the CICS External Interface (EXCI) to communicate between the batch and online environments. The External CICS Interface uses CICS/MRO facilities to provide communication between the CICS and batch environments. This means that CICS/MRO facilities must be available in order to use the ROPES External Interface Feature.

Requirements

The ROPES External Interface feature requires CICS/MRO facilities to be installed. The minimum CICS level required to communicate with a CICS region using MRO is CICS 4.1. It is our recommendation that you use a CICS release at least at the CICS/Transaction Server level (CICS/TS 1.1 or higher). The minimum supported Operating System release is MVS/ESA.

To make sure you have MRO facilities installed and running in your system you may check for the following message in your CICS message output:

"DFHSI1519I CICSn The Interregion communication session was successfully started."

If you do not see this message in your CICS output, then CICS/MRO facilities are probably not installed. Please consult the IBM manual "CICS Installation Guide" document number GC33-1681 for more information on installing MRO in CICS.

Installation

The ROPES External Interface feature is installed as part of the normal ROPES installation process. Two new modules and one new transaction are added with this new feature. Program ROPEXPLR is the batch client module, and ROPEXPLS is the CICS server module. Transaction ROXP is the new transaction associated with the CICS server program. The ROXP transaction however, must point to the DFHMIRS (CICS mirror program) to receive the batch client program's COMMAREA properly. The supplied ROPES transaction ROXP points to the DFHMIRS program as required.

After the installation of the ROPES system is complete, the following steps may be taken to complete and verify that the ROPES External Interface feature is available.

1. Confirm CICS/MRO facilities are available and active in the target CICS region. Check for message number "DFHSI1519I" as described above. If MRO is not available, it will have to be installed as per the instructions outlined in the "CICS Installation Guide" document GC33-1681. Note that it is NOT necessary to establish a link between two CICS regions in order to implement MRO and use the ROPES External Interface feature. However, you must have at least one EXCI type "specific" connection or a "generic" connection defined. The sample CICS RDO group 'DFH$EXCI' may be copied into a user defined group for purposes of adding the "specific" connection as well as some generic connections. The 'EXCS' connection definition in RDO group 'DFH$EXCI' is a "specific" connection definition and may be used as a model for creating the new connection. The 'EXCG' connection definition in RDO group 'DFH$EXCI' is a "generic" connection definition and may be used as a model for creating the new connection. If you are using a "specific" connection, note that the NETNAME parameter in the new connection definition must be set to "ROPEXPLR" if you will be using the default Client Program name. If you want to use your own specific Client Program name, you may do so. You will have to code the chosen name as described below.

2. Determine the APPLID of the region you will be installing ROPES into and save this information. It will be needed in the 'OPENLINK' utility control statement executed by the batch client program. See the sample in source member 'RUNEXCI' for an example of the 'OPENLINK' utility control statement.

3. Make note of the ROPES External Interface server transaction name. By default the transaction name is "ROXP". This transaction name will be needed for the 'OPENLINK' utility control statement executed by the batch client. Please see the sample source member 'RUNEXCI' for an example of the 'OPENLINK' utility control statement.

4. Record the name of the ROPES External Interface server program. By default, the server program name is 'ROPEXPLS'. The server program name will be needed for the 'OPENLINK' utility control statement executed by the ROPES External Interface batch client program. Please see the sample source member 'RUNEXCI' for an example of the 'OPENLINK' utility control statement.

5. Customize the JCL sample member RUNEXCI in the ROPES distribution source library and run the sample job. As indicated in steps 2, 3, and 4, the APPLID, the Server Transaction name, and the server program name must be supplied on the "OPENLINK" utility control statement for the "OPTIONS" parameter keyword. The first OPTIONS parameter value supplies the APPLID. The second value supplies the ROPES External Interface server transaction name (default ROXP), and the third parameter value supplies the server program name (default ROPEXPLS). You can also code a fourth parameter, which is the User Id and a fifth parameter, which is the Client Program name to be matched to the NETNAME in the "specific" connection you wish to use.

Two ROPES External Interface utility functions exist at this time. The first lists printer definitions and the second lists report definitions. The printer and report definitions are obtained from the ROPERIB and ROPEPCR files allocated and open to CICS. The type of function invoked by both types of utility control statement are "FUNCTION(SENDREQ)". This means a request will be sent to the CICS server program. The request being made is supplied by the REQUEST keyword parameter. Two possible utility functions are supplied by the REQUEST parameter at this time and they are 'LIST PRINTERS' and 'LIST REPORTS'. Depending on the type of utility function

being performed the PRINTER or REPORT keywords may then be used to specify a single report/printer id, a generic (partial) report/printer id, or the value "ALL". Please modify the sample JCL to produce the desired listing of printers/reports at your installation and then run the job.

For more information regarding the ROPES External Interface batch client JCL and utility control statements, please consult the ROPES Utility Guide.

File Server Program Enhancement

The ROPES External Interface feature has been enhanced to provide additional functionality. This new functionality enables support of the ROPES File Server Program. The ROPES File Server Program is new in ROPES Version 11.

The ROPES File Server program provides a common interface for accessing ROPES files. It eliminates a lot of the repetitive coding required to access ROPES files by providing a flexible interface that does much of the "overhead" work required to access ROPES files through CICS. Most of the standard CICS File Control options are provided by the new File Server interface program. For example, the new File Server program supports the use of Record Level Sharing options, tokens, and request ids. It is also possible to obtain comprehensive information about the file that is being processed. Details on the use of the File Server Program can be found in the ROPES Programmer's Guide.

The ROPES External Interface enhancements enable the File Server Program to service the requests from a batch application program. This means ROPES files under CICS may be accessed by batch application programs designed to communicate with the File Server Program using the ROPES External Interface feature. A sample assembler batch program has been provided to demonstrate and verify the installation of this new feature of ROPES. The sample program is called ROPEXFLE and can be found in the ROPES Distribution Source data set. Sample JCL is also provided to run the sample program. The execution JCL can be found in member RUNXFLE in the ROPES Distribution Source data set.

The ROPES External Interface feature was originally implemented with the ROPES Utility Driver program

ROPEUTIL. Several new utility functions were provided to LIST PRINTERS or LIST REPORTS. Using the External Interface Feature these utility functions were able to access CICS files from batch and produce detailed information about ROPES reports and printers.

The new sample program ROPEXFLE interfaces with the ROPES External Interface differently. It does not use the ROPES Utility Driver program (ROPEUTIL), but rather calls the External Client module (ROPEXPLR) directly using a communication area. The communication area is defined by assembler macro ROPEXPCA. ROPEXPCA can be found in the ROPES Distribution Source data set. When the File Server Program functions are requested through the ROPES External Interface, the communication area for the File Server Program (ROPEFSCA) is merged with the External Interface communication area (ROPEXPCA). This enables some file oriented information to be returned to the calling batch application in fields of the File Server Program communication area. The merge occurs at label "XPCAPRCA" which marks the start of a variable size area that normally contains record data returned by the ROPES External Interface Server program (ROPEXPLS). The size of the variable area is determined by the overall size of the External Interface communication area (ROPEXCPA). Generally, the ROPES External Interface communication area must be set at approximately 28K in size. This would provide enough storage to contain one large Printer Control Record. Due to CICS restrictions, the communication area may not exceed 32K. In most cases, ROPES records will be considerably smaller allowing multiple records to be passed in the communication area in one call. Details of this process are described in the chapter on the ROPES File Server Program in the ROPES Programmer's Guide.

ROPES External Interface Communication Area

The ROPES External Interface Client Program (ROPEXPLR) uses the ROPEXPCA communication area to interface with calling programs. In the first version of the ROPES External Interface, the utility driver program (ROPEUTIL) called ROPEXPLR directly and used the ROPEXPCA communication area to support that communication. Until now, no communication between ROPEXPLR and an end user application was required. With the new ROPES File Server Program enhancement, it becomes necessary for the end user application to communicate directly with the ROPES External Interface Client program (ROPEXPLR).

The sample File Server end user program ROPEXFLE, passes requests/options for the ROPES File Server Program through the External Interface Client's communication area (ROPEXPCA). A subset of the fields in the ROPEXPCA communication area duplicate fields/options which can be found in the File Server Program's communication area (ROPEFSCA). The batch External Interface Client program (ROPEXPLR) moves these options forward to the File Server Program's communication area (ROPEFSCA). In this manner, the File Server Program receives the request from the ROPES External Interface and then passes back the appropriate responses and data.

Please find detailed information on this subject in the Programmer's Guide in the chapter 'Communicating With The ROPES External Client'. Information regarding the File Server Program can also be found in the Programmer's Guide after this chapter.

Batch Client/CICS Server Error Messages

Several of the error messages produced by the batch client program display the response and reason codes produced by calling the CICS External Interface. These response and reason codes can be found in the 'CICS Internet and External Interfaces Guide' or document number SC33-1944-00. The response and reason codes are documented in section 7.10 or chapter 55 titled "Response and reason codes returned on EXCI calls". Other messages and abend codes may be found in the section "Messages and codes" in the same manual.

It is also possible to receive messages that display the EIBRESP and RESP2 values on return from a CICS LINK request. These are possible failures due to calling the external interface server program which may not be properly defined, or may not be named correctly in the batch client JCL on the 'OPENLINK' utility control statement. To determine the cause of those messages that indicate EIBRESP and RESP2 values, please examine these response codes for a CICS LINK request.

Other messages may also indicate an abend failure in the CICS server transaction/program. Such messages may actually include the abend code received by the server transaction/program. These messages may also be accompanied by actual CICS messages listed immediately after the message from the server or batch client programs. Please see the ROPES Messages and Codes Guide for more information on specific ROPES External Interface batch client or server program messages.

Messages issued by the ROPES External Interface batch client module (ROPEXPLR) are numbered ROPES55100-ROPES55199. Messages issued by the ROPES External Interface CICS server module (ROPEXPLS) are numbered ROPES55200-ROPES55299. Note that not all of these message numbers have been used but are reserved for these modules for future expansion.

The ROPES File Server Program

Introduction

The ROPES File Server Program is a new facility in ROPES Version 11. The ROPES Files Server program, called ROPEFSCP, provides file access services to ROPES files for CICS applications and ROPES internal programs. The File Server Program provides a common and standard interface to ROPES files and eliminates much of the work required to access ROPES files directly through CICS. By selecting simple options using a communication area, access to a ROPES file can be accomplished. In many cases, filling in the basic function (i.e. READ), the file name, and the record id is sufficient to retrieve the desired record. Provided there is enough room in the communication area, a single call can be made to the File Server program to browse a file and return a multiple number of records. For example, a browse can be started on a ROPES file, and then the next 20 records can be read into the communication on a single call to the ROPES File Server Program.

CICS options most frequently used when accessing ROPES files are supported by the File Server Program. These options include but are not limited to Record Level Sharing, tokens, and request ids. The File Server Program can also obtain detailed information about the file to be processed using the "GET FILE INFO" function. If you begin access to a ROPES file and do not provide the record length or key length, the GET FILE INFO function is performed automatically as part of your first call. The file information returned provides; key length, key position, record length, access method, record format, object type (base/path), read integrity type, recovery status, RLS access mode, file type (ESDS, KSDS, etc.), file access mode (add, delete, browse, etc.), base data set name, data set name, and file status.

Multiple files can be accessed at the same time by using multiple communication areas. The communication area for the ROPES File Server Program is described by the assembler macro ROPEFSCA. The fields of the communication area can be easily prefixed to change the names of the fields by using the "P=" option on the macro. The default is set to "P=FSP". So, by default, all communication area field names begin with "FSP".

To accommodate additional copies of the communication area simply involves changing the prefix to "FS1", "FS2", etc. Access to the File Server through the ROPES External Interface does not readily support concurrent file access, but it can be accomplished by using a "push" and "pop" methodology on the storage areas associated with the multiple communication areas.

Most forms of file access provided by CICS are also provided by the ROPES Files Server Program. For example, if you want to browse a file you would set the communication request type field to "START BROWSE". The "BROWSE NEXT" request type would then read the next record. The File Server functions work essentially the same way native CICS command level functions work. However, on the "BROWSE NEXT" and "BROWSE PREV" functions you can also specify how many records you want read and returned to your application. It is also possible to specify where the record data is to be returned. The record data can be returned in the File Server Communication Area, in a storage location provided by your program, or in storage obtained dynamically by the File Server Program. The ROPES File Server Program also permits the use of CICS Enqueue/Dequeue to serialize access to records. Support for generic keys, mass insert, and function shipping is also provided. Note that some of these File Server Program features are not available when access is made through the ROPES External Interface. For example, Enqueue/Dequeue will not work when accessing the File Server through the ROPES External Interface. This will be explained in detail in the ROPES Programmers' Guide.

Product Requirements

The File Server Program requires a minimum CICS release level of CICS Transaction Server version 1.1. The File Server feature is not dependent on the release of the operating system but would require a release of OS/390 or ZOS appropriate for the level of CICS/TS being run.

Installation

The File Server Program is installed as part of the installation process for ROPES. No special installation tasks are required to use the program. If the File Server Program is used through the ROPES External Interface, then it will be necessary to ensure that CICS MRO facilities have been made available in CICS to enable the CICS External Interface communication. For more information on requirements please consult the chapter on the "ROPES External Interface Feature" in the Administrator's Guide.

Messages

The File Server Program passes messages back to the calling program through the File Server Communication Area in fields FSPMSG1T, FSPMSG2T, and FSPMSG3T. Messages can be examined in the ROPES Messages and Codes Guide. Message numbers for the File Server Program start with ROPES6000 and end with ROPES6099.

Module and Transaction Lists

Distribution Media Contents

The ROPES Distribution PDS contains TSO TRANSMITTED versions of the ROPES Libraries and Starter System Files.

Once you have restored the files according to the installation instructions, you will have the following new data sets on your system. Remember that the data set names will depend on the values you used when you edited the installation job streams.

FILE 1. <hlq>.SOURCE
All members in this library are assembler source code unless otherwise noted.

Name	Use
$ROPCJBM	Sample JCL to define ROPES Job Submission SAF controls
$ROPEWEB	Sample JCL to define ROPES Web Interface SAF controls
ADDCSD10	DFHCSDUP controls for changes introduced by Version 10
ADDCSD11	DFHCSDUP controls for changes introduced by Version 11
ADDCSD12	DFHCSDUP controls for changes introduced by Version 12
ADDCSD13	DFHCSDUP controls for changes introduced by Version 13
ADDCSD14	DFHCSDUP controls for changes introduced by Version 14
ADDCSD15	DFHCSDUP controls for changes introduced by Version 15
ADDCSD16	DFHCSDUP controls for changes introduced by Version 16
ADDCSD17	DFHCSDUP controls for changes introduced by Version 17
AMSCNTL	JCL to define the ROPES data sets
ASMEXIT	JCL to assemble user exits
ASMRO$D	JCL to assemble Device Blocks
ASMRO$F	JCL to assemble Forms Blocks
ASMXCTM	JCL to assemble the RSTU XCT
ASMXPLD	JCL to assemble the ROPES EXCI Options Table
BOX	Sample PCL module
BTSCNTL	JCL to create the ROPECOMM container file

Name	Use
DFHROPES	ROPES macro instruction for COBOL
DFHRPARM	ROPEPARM instruction for macro level COBOL
EXIT4247	Sample PPDS exit code
FCTCSD	DFHCSDUP controls for files
INITBQDA	JCL to initialize ROPES BDAM file for ROPEBQTX
INIT4247	Sample PPDS entry code
LINKCNTL	Link edit job stream for installation
LINKCTR	Link edit job stream to include EZACICTR when needed
LINKEZAC	Control cards for LINCTR
LINKIN1	Link edit control statements
LINKIN2	Link edit control statements
LINKIN3	Link edit control statements
LINKSVC	Link edit job stream for SVC install
MIGRFILE	Migration JCL
OBOOKSIN	Job stream for copy book release update
PCTCSD	DFHCSDUP controls for transactions
PPTCSD	DFHCSDUP controls for programs
PPTCSDTS	DFHCSDUP controls for programs in Threadsafe environments
REPROIN	IDCAMS control statements
REPROJCL	JCL to load the Starter System files
RO$D	Default Device Control Block used for BSC devices
RO$DBARC	Device Control Block for bar code printers (suppresses translation)
RO$DCAPS	Device Control Block which translates lower case to upper case
RO$DHP21	Device Control Block which uses the FFATEOJ option to suppress form feeds when the target printer or print server adds it automatically.
RO$DHTML	Device Control Block which sends e-mail attachments as HTML
RO$DIPDS	Device Control Block for IPDS printers
RO$DJESP	Device Control Block for JES printers

RO$DLAZR	Device Control Block for HP LaserJet printers attached through emulation hardware
RO$DLPBC	Device Control Block for Barcode
RO$DLPRD	Device Control Block for LPR
RO$DLPRO	Device Control Block for LPR
RO$DLSPD	Device Control Block for Liberty-Soft processing
RO$DNSPL	Device Control Block for NetSpool
RO$DSCSP	Device Control Block for SCSPRT type printers
RO$DSMTP	Device Control Block for Electronic Mail Delivery
RO$DSMT2	Device Control Block for Electronic Mail Delivery
RO$DSOKT	Device Control Block for Direct Socket printing
RO$D1053	Device Control Block for 1053 printers
RO$D1251	Device Control Block for Memorex 1251
RO$D2780	Device Control Block for 2780-type RJE devices
RO$D3278	Device Control Block for display devices
RO$D3284	Device Control Block for 3284 printers
RO$D4247	Device Control Block for 4247 printers
RO$D6000	Device Control Block for RS/6000 printers
RO$F	Default Forms Control Block
RO$FBARC	Forms Control Block which suppresses translations
RO$FBC39	Forms Control Block for Code 3 of 9 bar code soft font loading
RO$FCAPS	Forms Control Block which forces lower case to upper case
RO$FHTML	Forms Control Block showing HTML controls
RO$FLAZR	Forms Control Block for use with HP LaserJet destined output
RO$FLSPD	Forms Control Block for use with LibertySoft destined reports
RO$FPDFM	Forms Control Block showing PDF controls
RO$FPPDS	Forms Control Block for use with PPDS printers
RO$FSCSP	Forms Control Block for use with SCS printers
RO$F16CP	Forms Control Block for 16 CPI printing

RO$F6LPI	Sample Forms Control Block for 6 LPI printing
RO$F8LPI	Sample Forms Control Block for 8 LPI printing
RO$T	Standard translate table
RO$TCAPS	Translate to all upper case
ROPEACTR	Accounting Record DSECT
ROPEACTX	Sample User Accounting Exit program
ROPEAPPL	Macro to map the ROPES APPLDATA values
ROPEAUT	Automatic Start-up Control Record description
ROPEBBQ	Batch Read QBR Backward
ROPEBBS	Batch Backspace
ROPEBCK	Batch Checkpoint
ROPEBDR	Batch Delete Report
ROPEBEL	Batch Endlines
ROPEBER	Batch Endread
ROPEBFQ	Batch Free QBR
ROPEBFR	Batch Find Report
ROPEBFS	Batch Forwardspace
ROPEBGQ	Batch Get QBR
ROPEBLCM	COMMAREA for Business Logic routines (non-BTS)
ROPEBLEX	Batch Line Exit
ROPEBNR	RSTU Banner Exit
ROPEBOP	Batch Read Only Prepare
ROPEBPR	Batch Prepare
ROPEBRG	Batch Readlinegroup
ROPEBRL	Batch Readline
ROPEBRQ	Batch Read QBR
ROPEBRR	Batch Reset Report
ROPEBRW	Browse Control Record description
ROPEBSG	Batch Sendlinegroup
ROPEBSL	Batch Sendline
ROPEBSQ	Batch Send QBR
ROPEBSX1	Batch Missing Report Exit
ROPEBTR	Batch Terminate
ROPECHTP	Parameter list for the text to HTML conversion program
ROPECLCM	BTS Logic COMMAREA and Container mapping macro
ROPECLPN	BTS Logic Sample Program
ROPECNRL	BTS Logic Sample Program
ROPECPYG	Function Key print program
ROPECSTS	ROPES macro inner macro instruction
ROPECTR1	Sample RSTU control component exit
ROPEDCOM	Date conversion request block
ROPEDECS	Inner macro for ROPESFRM
ROPEDESC	JES printer OUTDESCR support macro

ROPEDE64	Source code for Base 64 conversions (batch and online)
ROPEDUP	Mapset for ROPEDUPL sample program
ROPEDVCA	Device Controls COMMAREA
ROPEDVRA	Device Controls Record Description Area
ROPEEXTB	Sample batch exit
ROPEEXTO	Sample online exit
ROPEFSCA	COMMAREA for the File Server Program
ROPEGBLS	ROPES global symbols definition
ROPEID	Module assembly controls
ROPEJCOM	JES Printer Exit COMMAREA definition
ROPEJESX	JES Printer Exit sample
ROPEJSX1	Job Submission Security Exit sample
ROPEJTAB	Macro Instruction for creating the JES Printer Exit table
ROPEJTBR	JES Options record description
ROPEKCRQ	Task Control Request Exit program
ROPELPRX	LPR Print Options Exit Program
ROPELPXA	LPR Device Support Exit Program Communication Area macro
ROPEMCO	Miscellaneous Control Record definition
ROPEMDXA	Mail Report Delivery Exit Communication Area macro
ROPEMINT	User Menu Interface Program example
ROPEMLTD	Message Log Retrieval sample program
ROPEMRDX	Mail Report Delivery Sample exit program
ROPEOBQ	Online Read QBR Backward
ROPEOBS	Online Backspace
ROPEOCK	Online Checkpoint
ROPEODR	Online Delete Report
ROPEOEL	Online Endlines
ROPEOER	Online Endread
ROPEOFQ	Online Free QBR
ROPEOFR	Online Find Report
ROPEOFS	Online Forwardspace
ROPEOGQ	Online Get QBR
ROPEOIP	Online Initial Position
ROPEOLEX	Online Line Exit
ROPEOOP	Online Read Only Prepare
ROPEOPDF	Online PDF creator program
ROPEOPR	Online Prepare
ROPEORG	Online Readlinegroup
ROPEORL	Online Readline
ROPEORQ	Online Read QBR
ROPEORR	Online Reset Report
ROPEOSG	Online Sendlinegroup

ROPEOSL	Online Sendline
ROPEOSQ	Online Send QBR
ROPEOTR	Online Terminate
ROPEPAG1	Start of page user exit
ROPEPARM	ROPES macro level communication area
ROPEPCDS	Printer control string data area
ROPEPCO	Printer Options Record description
ROPEPCR	Printer Control Record DSECT
ROPEPRE1	Sample Exit Program
ROPEPRMS	ROPES parameters macro
ROPEPRNT	Sample screen capture program
ROPEPROL	Module prologue
ROPEPDF	Mapset for online PDF creator
ROPEPRT	Map set for the Function Key Print Utility
ROPEPSCM	COMMAREA for Printer Status Business Logic routine (obsolete)
ROPEPTCH	Module patch area
ROPEQBR	QBR DSECT
ROPEREG	Register equates
ROPERIB	Report Information Block DSECT
ROPEROMX	ROMT Security exit
ROPEROP	Report Options Record
ROPERPI	Report To Printer Index Record DSECT
ROPES	Macro level function invocation macro instruction
ROPESCOM	Command Processor communication area DSECT
ROPESDCT	Destination Control Table samples
ROPESDEV	Device Control Block macro instruction
ROPESEPL	RSTU Separator Line DSECT
ROPESFCT	File Control Table entries
ROPESFRM	Forms Control Block macro instruction
ROPESID	Module identification macro instruction
ROPESLGA	Line Group Area DSECT
ROPESOKM	Mail Delivery Commarea
ROPESPCT	Program Control Table entries
ROPESPPT	Processing Program Table entries
ROPESPRM	Command Level communication area
ROPESPRT	Function Key Print program
ROPESPR1	Start print user exit
ROPESTAT	Inner macro instruction for ROPES macro
ROPESVC	RSTU SVC module
ROPESYSA	System Control Information Record DSECT
ROPETCE1	TCAM print exit
ROPETRCM	COMMAREA for the ROPES Trace Facility Program

ROPEWEB	ROPES Web Interface program
ROPEWEBX	ROPES Web Interface user security exit
ROPEWXCM	COMMAREA definition for the Web Interface security exit
ROPEXCT	RSTU Transfer Control Table macro instruction
ROPEXCTM	RSTU Sample Transfer Control Table
ROPEXPCA	Macro instruction used to create the ROPES EXCI Options Table
ROPEXPLD	The source for the default ROPES EXCI options Table
ROPEXFR1	RSTU Sample Transfer Component Exit
ROPEZCRQ	Attach Exit for screen printing
ROPEZC41	CICS 4.1 Attach Exit for screen printing
RUNADCSD	JCL to apply changes from member ADDCSD
RUNALTU	ROPEALTU job stream
RUNASEC	ROPEASEC job stream
RUNASML	Batch Assemble And Link JCL
RUNBHTM	Convert reports or files to HTML.
RUNBPDF	Convert reports or files to PDF
RUNBQOR	JCL for ROPEBQOR
RUNBUILD	Build Parameter File JCL
RUNCSDUP	JCL for DFHCSDUP utility
RUNEXCI	JCL to run the EXCI batch client
RUNFXLE	JCL to run the EXCI File Server client
RUNICTL	JCL for the ROPEICTL utility
RUNMIGR	JCL for the Migration utility
RUNJBCNV	Convert job file utility sample JCL
RUNJSCVT	Old convert job file utility JCL
RUNLDJCL	Load JCL Utility sample JCL
RUNLDHLP	Load Help Utility sample JCL
RUNLDRPT	Archive process sample JCL
RUNLSEC	JCL for the ROPELSEC utility
RUNOPCC	JCL for the ROPEOPCC program
RUNPURGE	JCL for the ROPEPURG utility
RUNRPIB	JCL for the ROPERPIB utility
RUNSBYU	JCL for the ROPESBYU utility
RUNTRAN	JCL for the ROPETRAN utility
R51FREND	Sample screen front end program
R51JCLRC	JCL utility file record description
R51JOBRC	Job file record description
R51LPRRC	LPR options record description
R51PCT	Job to assemble ROPES PCT
R51PLTPI	ROPES entries for startup PLT
R51PLTSD	ROPES entries for shutdown PLT
R51RSECX	User security exit program
R51RSPAR	Security exit communication area
R51SAMPL	Report Distribution user exit

SBYCNTL	JCL to define the Stand-By Facility data sets
SBYINIT	Initialization data for the SBYCNTL job stream
SCRHARGS	Screen Handler Communication Argument Areas Macro
SCRHCOM	Screen Handler COMMAREA Macro
SCRHCTLS	Screen Handler Communication Control Areas Macro
SCRHENVT	Screen Handler Environment Table Macro
SCRHID	Screen Handler Module Identification Macro
SCRHLOGT	Screen Handler Logging Control Table Macro
SCRHPROL	Screen Handler Module Prologue Code Macro
SCRHPTCH	Screen Handler Patch Area Macro
SCRHREG	Screen Handler register equates
SRCEOBQ	ROPEOBQ source book
SRCEOBS	ROPEOBS source book
SRCEOCK	ROPEOCK source book
SRCEODR	ROPEODR source book
SRCEOEL	ROPEOEL source book
SRCEOER	ROPEOER source book
SRCEOFR	ROPEOFR source book
SRCEOFQ	ROPEOFQ source book
SRCEOFS	ROPEOFS source book
SRCEOGQ	ROPEOGQ source book
SRCEOIP	ROPEOIP source book
SRCEOOP	ROPEOOP source book
SRCEOPR	ROPEOPR source book
SRCEORG	ROPEORG source book
SRCEORL	ROPEORL source book
SRCEORR	ROPEORR source book
SRCEORQ	ROPEORQ source book
SRCEOSG	ROPEOSG source book
SRCEOSL	ROPEOSL source book
SRCEOSQ	ROPEOSQ source book
SRCEOTR	ROPEOTR source book
WEBCSD15	DFHCSDUP Control cards for the ROPES Web Interface
WEBINST	JCL To load the Doctemplate File

FILE 2. <hlq>.COBLIB

All members are COBOL source language unless otherwise noted.

BIGSPOL	Sample program
COBSAMP	Sample program
LOPESLGA	Linkage Section version of ROPESLGA

LOPESPRM	Linkage Section version of ROPESPRM	
OBOOKSIN	Job Stream for copy books release update	
ROPEACTR	ROPES Accounting Record description	
ROPEACTX	User Accounting Exit example	
ROPEBBS	Batch Backspace	
ROPEBCK	Batch Checkpoint	
ROPEBDR	Batch Delete Report	
ROPEBEL	Batch Endlines	
ROPEBER	Batch Endread	
ROPEBFR	Batch Find Report	
ROPEBFS	Batch Forwardspace	
ROPEBLCM	COMMAREA for Business Logic routines (non-BTS)	
ROPEBOP	Batch Read Only Prepare	
ROPEBPR	Batch Prepare	
ROPEBQ	Batch sample program	
ROPEBQTS	Batch sample program	
ROPEBRG	Batch Readlinegroup	
ROPEBRL	Batch Readline	
ROPEBRR	Batch Reset Report	
ROPEBSG	Batch Sendlinegroup	
ROPEBSL	Batch Sendline	
ROPEBTR	Batch Terminate	
ROPECLRS	BTS Container Service COMMAREA for Report Status	
ROPECOM	COMMAREA description	
ROPECOMB	Sample program	
ROPECQBR	QBR record description	
ROPECROP	Report Options record description	
ROPEDEMO	Batch sample program	
ROPEDUPL	Online sample program	
ROPEFSCA	COMMAREA for the File Server Program	
ROPEJCOM	JES Exit COMMAREA description	
ROPEJESX	JES Exit program example	
ROPELBLS	Sample program	
ROPELOAD	Sample program	
ROPEOBS	Online Backspace	
ROPEOCK	Online Checkpoint	
ROPEODR	Online Delete Report	
ROPEOEL	Online Endlines	
ROPEOER	Online Endread	
ROPEOFR	Online Find Report	
ROPEOFS	Online Forwardspace	
ROPEOIP	Online Initial Position	
ROPEOOP	Online Read Only Prepare	
ROPEOPR	Online Prepare	
ROPEORG	Online Readlinegroup	
ROPEORL	Online Readline	
ROPEORR	Online Reset Report	
ROPEOSG	Online Sendlinegroup	
ROPEOSL	Online Sendline	

ROPEOTR	Online Terminate
ROPEPCDS	Printer control strings
ROPEPCR	Printer Control Record Description
ROPEPCRE	Printer Control Record Report Entry Record Description
ROPEPSCM	COMMAREA for Printer Status Business Logic routine (obsolete)
ROPERIB	Report Record description
ROPERPI	Report To Printer Index Record description
ROPERQST	Request code definitions
ROPESCOM	Command Processor COMMAREA description
ROPESGRP	Batch sample program
ROPESLGA	Line Group Area definition
ROPESPOL	Sample program
ROPESPRM	ROPES Communication Area definition
ROPESSCM	COMMAREA for System Status Business Logic routine
ROPESYSA	System Control Record description
ROPES88	Return code definitions
ROPETDUP	Sample program
R51AID	ROPES AID table
R51CPPRM	COMM-Press parameter area
R51DPARM	Date routine parameter area
R51FILES	ROPES Files table
R51MSG	Message file layout
R51PRM	Parameter area
R51SEC	Security exit communication area
SCRHCOM	Screen Handler communication area
SRCEOBS	ROPEOBS source book
SRCEOCK	ROPEOCK source book
SRCEODR	ROPEODR source book
SRCEOEL	ROPEOEL source book
SRCEOER	ROPEOER source book
SRCEOFR	ROPEOFR source book
SRCEOFS	ROPEOFS source book
SRCEOIP	ROPEOIP source book
SRCEOOP	ROPEOOP source book
SRCEOPR	ROPEOPR source book
SRCEORG	ROPEORG source book
SRCEORL	ROPEORL source book
SRCEORR	ROPEORR source book
SRCEOSG	ROPEOSG source book
SRCEOSL	ROPEOSL source book
SRCEOTR	ROPEOTR source book

FILE 3. <hlq>.PL1LIB
   All members are source code unless otherwise noted.

OBOOKSIN	Job Stream for copy book upgrade	**FILE 4. <hlq>.OBJECT**	
ROPEACTR	Accounting Record description		
ROPEBBS	Batch Backspace	D300PROG	COMM-Press substitute module
ROPEBCK	Batch Checkpoint	EXIT4247	PPDS exit code
ROPEBDR	Batch Delete Report	INIT4247	PPDS initialization code
ROPEBEL	Batch Endlines	RO$D	Device Characteristics Block
ROPEBER	Batch Endread	RO$DBARC	Device Characteristics Block
ROPEBFR	Batch Find Report	RO$DCAPS	Device Characteristics Block
ROPEBFS	Batch Forwardspace	RO$DHTML	Device Characteristics Block
ROPEBOP	Batch Read Only Prepare	RO$DIPDS	Device Characteristics Block
ROPEBPR	Batch Prepare	RO$DJESP	Device Characteristics Block
ROPEBRG	Batch Readlinegroup	RO$DLAZR	Device Characteristics Block
ROPEBRL	Batch Readline	RO$DLPRD	Device Characteristics Block
ROPEBRR	Batch Reset Report	RO$DLSPD	Device Characteristics Block
ROPEBSG	Batch Sendlinegroup	RO$DNSPL	Device Characteristics Block
ROPEBSL	Batch Sendline	RO$DSCSP	Device Characteristics Block
ROPEBTR	Batch Terminate	RO$DSMTP	Device Characteristics Block
ROPEDEM	Batch sample program	RO$DSMT2	Device Characteristics Block
ROPEOBS	Online Backspace	RO$DSOKT	Device Characteristics Block
ROPEOCK	Online Checkpoint	RO$D1053	Device Characteristics Block
ROPEODR	Online Delete Report	RO$D1251	Device Characteristics Block
ROPEOEL	Online Endlines	RO$D2780	Device Characteristics Block
ROPEOER	Online Endread	RO$D3278	Device Characteristics Block
ROPEOFR	Online Find Report	RO$D3284	Device Characteristics Block
ROPEOFS	Online Forwardspace	RO$D4247	Device Characteristics Block
ROPEOIP	Online Initial Position	RO$D5038	Device Characteristics Block
ROPEOOP	Online Read Only Prepare	RO$D6000	Device Characteristics Block
ROPEOPR	Online Prepare	RO$F	Forms Control Block
ROPEORG	Online Readlinegroup	RO$FBARC	Forms Control Block
ROPEORL	Online Readline	RO$FCAPS	Forms Control Block
ROPEORR	Online Reset Report	RO$FHTML	Forms Control Block
ROPEOSG	Online Sendlinegroup	RO$FLAZR	Forms Control Block
ROPEOSL	Online Sendline	RO$FLSPD	Forms Control Block
ROPEOTR	Online Terminate	RO$FPDFM	Forms Control Block
ROPEPTS	Online sample program	RO$FPPDS	Forms Control Block
ROPESLGA	Line Group Area definition	RO$FSCSP	Forms Control Block
ROPESPRM	ROPES Communication Area definition	RO$F16CP	Forms Control Block
		RO$F6LPI	Forms Control Block
		RO$F8LPI	Forms Control Block
SRCEOBS	ROPEOBS source book	RO$T	Translation Table
SRCEOCK	ROPEOCK source book	RO$TCAPS	Translation Table
SRCEODR	ROPEODR source book	ROPEADDR	Batch service module
SRCEOEL	ROPEOEL source book	ROPEADR	Batch service module
SRCEOER	ROPEOER source book	ROPEALDQ	Alternate Facility ENQ release
SRCEOFR	ROPEOFR source book	ROPEALTF	Alternate Facility Start-up Program
SRCEOFS	ROPEOFS source book		
SRCEOIP	ROPEOIP source book	ROPEALTL	Alternate Facility Shut-down Program
SRCEOOP	ROPEOOP source book		
SRCEOPR	ROPEOPR source book		
SRCEORG	ROPEORG source book	ROPEALTM	Alternate Facility Processor
SRCEORL	ROPEORL source book	ROPEALTU	Alternate Facility Report File Synchronizer Program
SRCEORR	ROPEORR source book		
SRCEOSG	ROPEOSG source book	ROPEAMSG	Alternate Facility Message Table
SRCEOSL	ROPEOSL source book	ROPEASAT	RSTU Automatic Start-up and Terminate Exit
SRCEOTR	ROPEOTR source book		

ROPEASEC	ROPES Installation Control Information Edit Utility Program	ROPEDCPU	Printer service program module
ROPEASXM	RSTU Automatic Start-up Program	ROPEDCTL	Device Control Code module
ROPEATXM	RSTU Automatic Shut-down Program	ROPEDB64	Batch Base 64 conversion program
		ROPEDO64	Online Base 64 conversion program
ROPEBIP	Batch application service interface	ROPEDRVR	Printer service program
ROPEBHTM	HTML Conversion Batch Utility	ROPEDUP	Sample program Mapset
ROPEBLEX	Batch line exit	ROPEDVCP	Device Controls Access Program
ROPEBLNS	Network Status Business Logic routine	ROPEEXTB	Batch user exit
		ROPEEXTO	Online user exit
ROPEBLPS	Printer Status Business Logic routine	ROPEFSCP	File Server program
		ROPEHLPL	Help Loader Utility
ROPEBLRL	Report List Business Logic routine (primary and alternate facilities)	ROPEHTM	HTML Conversion Mapset
		ROPEICTL	TCP/IP Printer Options Maintenance Utility
ROPEBLRS	Report Status Business Logic routine	ROPEINTF	RSTU JES Interface program
ROPEBLSS	System Status Business Logic routine	ROPEJCLL	JCL File Load Utility
		ROPEJESX	JES printer support user exit
ROPEBMW	Browse transaction mapset	ROPEKCRQ	Task Control Attach Exit
ROPEBNR	RSTU Banner Line exit	ROPEKTBL	Utility Driver keyword table
ROPEBPDF	PDF Conversion Batch Utility	ROPELOGM	RSTU Log Interface program
ROPEBQOR	Batch queue reorganization program	ROPELPRP	LPR Print Request Processor program
ROPEBQTX	Batch queue transfer transaction processor	ROPELRPT	Archive processor utility
		ROPELSEC	ROPES Installation Control Information List Utility Program
ROPEBQUE	Batch queue interface program		
ROPEBRIN	Browse initialization program	ROPEMAP	Displays Mapset
ROPEBRPU	Batch Report Print utility program	ROPEMIGR	Migration Control Utility
ROPEBRPW	Browse Transaction processor	ROPEMI16	V16 Migration Functions
ROPEBSRV	Batch service program	ROPEMI17	V17 Migration Functions
ROPEBSX1	Batch missing report exit	ROPEMNT	Maintenance Mapset
ROPEBTAB	Browse message table	ROPEMPUT	Message router and logger
ROPEBTRC	Batch Trace Program	ROPEMRDP	Mail Ropes Delivery Program
ROPEBUFS	Archive interface service program	ROPEMTAB	Browse message table
ROPECCI	RSTU Carriage Control Interpretation program	ROPEOACT	Printer service accounting routine
		ROPEOHTM	Online HTML conversion program
ROPECDTE	Date conversion services	ROPEOLEX	Online line exit program
ROPECHTM	HTML Batch Conversion program	ROPEOMSG	Printer driver message table
ROPECHTO	Online HTML Conversion routine	ROPEOPDF	Online PDF conversion program
ROPECLPN	BTS Services Network Status presentation logic sample program	ROPEOPUR	Printer service data purge routine
		ROPEOSBY	Stand-By application service program
ROPECNNS	BTS Services Network Status Business Logic program	ROPEOSRV	Online application service program
ROPECNRL	BTS Report Status List Business Logic program	ROPEOPCC	Version 16 and up CPU compatibility tester
ROPECNTR	RSTU Control Transaction		
ROPECOLH	Browse Column Headings	ROPEPDF	PDF Conversion Mapset
ROPECPDF	PDF Batch Conversion program	ROPEPM	Message router Mapset
ROPECPDO	Online PDF Conversion routine	ROPEPMSG	Message table for ROPEPROP
ROPECPYG	Screen Print service program	ROPEPRNT	Sample 3270 copy program
ROPECTBL	Utility Drive parameter table	ROPEPROP	Command processor program
ROPECTRL	System Controls Utility	ROPEPRT	Screen Image Print Mapset
ROPECSRB	Batch Security Data Collection	ROPEPURG	Purge Utility program
ROPECSRI	Online Security Data Collection	ROPEQMSG	Queue Reorganization message table
ROPECVJF	Job File Conversion Utility		

ROPEQORG	Queue Reorganization transaction processor
ROPERGST	Register Utility
ROPERMP	RSTU Mapset
ROPEROAL	Alternate Facility Report List Display
ROPEROMA	System Control Information Maintenance program
ROPEROMB	Report Maintenance program
ROPEROMC	Printer Maintenance program
ROPEROMD	Report Assignment program
ROPEROME	Queue Reorganization Request processor
ROPEROMT	Maintenance driver
ROPEROMX	Security exit for ROMT
ROPEROM1	System Parameter Maintenance program
ROPEROM2	Report Options Maintenance program
ROPEROM3	Printer Options Maintenance program
ROPEROM4	Auto start Options Maintenance program
ROPEROM5	Browse Options Maintenance program
ROPEROM6	Miscellaneous Options Maintenance program
ROPEROPN	Printer Network Display
ROPEROPO	Printer Operator Printer Status Display
ROPEROPS	Supervisory Operator Printer Status Display
ROPERORL	Report List Display
ROPERORS	Report Status Display
ROPERPIB	Report To Printer Index Constructor
ROPERPIM	Report To Printer Index service program
ROPERP15	Sort E15 Exit for ROPERPIB
ROPERP35	Sort E35 Exit for ROPERPIB
ROPERSET	Printer Reset Transaction processor
ROPESBYM	Stand-By monitor program
ROPESBYU	Stand-By SYSIDENT utility
ROPESCHD	Automatic Queue Reorganization Scheduler program
ROPESMSG	Stand-By messages module
ROPESOCP	Direct Socket print program
ROPESORT	PCR report entry sorter
ROPESPRT	Screen Image Print Transaction processor
ROPESSTA	Stand-By Start-up program
ROPESSTP	Stand-By Shutdown program
ROPESTAR	Automatic Start-up program
ROPESTOP	Automatic Shutdown program
ROPESVC	RSTU SVC program
ROPETRAN	IP Translation Defaults utility
ROPETRCE	Extended ROPES IP Activity Trace
ROPETTAB	Translate table
ROPEUDTE	Date Conversion utility program
ROPEUTIL	Batch utility driver program
ROPEWAKE	Inter-region signal program
ROPEWEB	ROPES Web Interface program
ROPEWEBX	ROPES Web Interface user security exit program
ROPEXCTM	RSTU Transfer Control Table
ROPEXFER	RSTU Transfer Component program
ROPEXFLE	File Server program IVP / Sample
ROPEXLAT	TCP/IP Translation Controls
ROPEXMD	Operator Command Menu Mapset
ROPEXMND	Operator Command Menu processor
ROPEXPLD	EXCI Options Table
ROPEXPLR	EXCI Online Server program
ROPEXPLS	EXCI Batch Client program
ROPEZCRQ	Attach Exit for screen printing
ROPEZC41	CICS 4.1 Attach Exit for screen printing
R51ALLOC	Dynamic allocation program
R51CSRI	Security Data Collection
R51DEALO	Dynamic de-allocation program
R51DSTRO	Report input distribution program
R51DSTTD	Transient data input distribution program
R51ENVTB	Environment Table
R51IASIM	Installation Access Input Manager Program
R51IAS0	Installation Access Screen
R51IAS0S	Installation Access Screen Handler Table
R51IPDSI	IPDS Control Interpreter
R51JCILT	Job Submission Index Screen Log Table
R51JCIUM	Job Submission Index Screen Update Manager
R51JCI0	Job Submission Index Mapset
R51JCI0R	Job Submission Index Screen LHT
R51JCI0S	Job Submission Index Screen SHT
R51JCLED	Job Editor update manager
R51JCLLT	Job Submission Editor Log Table
R51JCM0	Job Editor screen mapset
R51JCM0S	Job Editor SHT
R51JDOUM	JES OUTDESCR update manager
R51JM01	JES Options primary menu
R51JM01S	JES Options primary menu screen handler table
R51JM02	JES Options parameters index
R51JM02R	JES Options parameters index list handler table

R51JM02S	JES Options primary menu screen handler table
R51JM03	JES Options parameter entry
R51JM03S	JES Options parameter entry screen handler table
R51JM04	JES Options OUTDESCR index
R51JM04R	JES Options OUTDESCR index list handler table
R51JM04S	JES Options OUTDESCR screen handler table
R51JM05	JES Options OUTDESCR entry
R51JM05S	JES Options OUTDESCR entry screen handler table
R51JTBUP	JES Options Table update manager
R51LPILT	ROPELPRO file updates logging table
R51LPIUM	LPR Options Index Update Manager program
R5 1LPI0	LPR Options Index Panel mapset
R51LPI0R	LPR Options Index Panel List Manager Table
R51LPI0S	LPR Options Index Panel Screen Handler Table
R51LPMUM	LPR Options Definition Screen Update Manager program
R51LPM0	LPR Options Definition mapset
R51LPM0S	LPR Options Definition Screen Handler Table
R51PPDSI	PPDS control interpreter
R51PRNT	Distribution screen print program
R51RDDLT	Distribution definition log table
R51RDDUM	Distribution definition update program
R51RDIST	Report distribution validation program
R51RDTLT	Translate table maintenance log table
R51RDTU1	Translate table update program
R51RDTU2	Translate table entry update program
R51RD01	Distribution primary menu Mapset
R51RD01S	Distribution primary menu screen handler table
R51RD02	Distribution definition index Mapset
R51RD02R	Distribution definition index list handler table
R51RD02S	Distribution definition index screen handler table
R51RD03	Translate table index Mapset
R51RD03R	Translate table index list handler table
R51RD03S	Translate table index screen handler table
R51RD04	Distribution definition Mapset
R51RD04S	Distribution definition screen handler table
R51RD05	Translate table entry index Mapset
R51RD05R	Translate table entry index list handler table
R51RD05S	Translate table entry index screen handler table
R51RD06	Distribution request Mapset
R51RD06S	Distribution request screen handler table
R51RD07	Translate table index Mapset
R51RD07R	Translate table index list handler table
R51RD07S	Translate table index screen handler table
R51RIBLT	Report information block maintenance log table
R51ROOT	ROPES file anchor table
R51RPSAP	Resource protection and security authorization program
R51RS01	System status display Mapset
R51RS01S	System status display screen handler table
R51SETF	File name table
R51SSTAT	System status display manager
R51SUBMT	Job Submission service module
S10CTRAN	Upper/Lower case translate program
S10DATE	Date conversion program
S10DISP	Display panel program
S10DISPN	Display panel program
S10ENTER	Pseudo-conversation entry program
S10ERRM	Error handler Mapset
S10EXITP	Pseudo-conversation exit program
S10GMSG	Get message program
S10HELPF	Help function program
S10HLP0	Help Screen Mapset
S10HLP0S	Help Screen SHT
S10ISPP	Installation Setup Parameters
S10LIST	List processing program
S10LOGM	Record maintenance logging program
S10PLEVL	Pseudo-conversation update level program
S10SCRHD	ROPES screen processing program
S10STDER	ROPES standard error processor

FILE 5. Starter System Report Information Block File

<hlq>.RIBFILE.BASE sequential dump created by IDCAMS.

FILE 6. Starter System Printer Control Record File

<hlq>.PCRFILE.BASE sequential dump created by IDCAMS.

FILE 7. Starter System Queue Buffer Record File

<hlq>.QBRFILE.BASE sequential dump created by IDCAMS.

FILE 8. Starter System Alternate Facility RIB File

<hlq>.RIBALTF.BASE sequential dump created by IDCAMS.

FILE 9. Starter System Alternate Facility QBR File

<hlq>.QBRALTF.BASE sequential dump created by IDCAMS.

FILE 10. Starter System Message File

<hlq>.MSGFILE.BASE sequential dump created by IDCAMS.

FILE 11. Starter System Parameter File

<hlq>.PRMFILE.BASE sequential dump created by IDCAMS.

FILE 12. Starter System Job Stream File

<hlq>.JCLFILE.BASE sequential dump created by IDCAMS.

FILE 13. Starter System Report Distribution Definition File

<hlq>.RDDDFILE.BASE sequential dump created by IDCAMS.

FILE 14. Starter System Report Distribution Translation Table File

<hlq>.RDTDFILE.BASE sequential dump created by IDCAMS.

FILE 15. Starter System Help Text File

<hlq>.HLPFILE.BASE Sequential dump created by IDCAMS.

FILE 16. Starter System JES Options Table File

<hlq>.JTBFILE.BASE sequential dump created by IDCAMS.

FILE 17. Starter System LPR Options Table File

<hlq>.LPROFILE.BASE sequential dump created by IDCAMS.

FILE 18. Starter System Load Help Utility Input File

<hlq>.HLPFILE.TEXT sequential input for the Load Help Utility program.

FILE 19. Starter System Message File Source Statements

<hlq>.MSGFILE.TEXT sequential input for reloading the ROPES Message file using IDCAMS REPRO.

FILE 20. ROPES Web Interface Document Template File

<hlq>.ROPEHTML PDS data set containing the ROPES Web Interface Document Templates.

Transaction Code Summary

Transid	Use
ASTA	Start the Alternate Facility
ASTP	Stop the Alternate Facility
BQTX	Batch queue transfer
BRPW	Browse reports
PROP	Printer operator commands
R#AF	Alternate Facility processor
R#OR	Queue Reorganization
R#O1	Printer Region 1 service task
R#SC	Online reorganization scheduler
R#WU	Inter-region signal task
R$TC	RSTU Control component
R$TU	RSTU manual start and stop
R$TX	RSTU Transfer component
RADQ	Release Alternate Facility ENQ
RCMP	Printer operator menu
RCMS	Supervisory operator menu
RCMX	Operator menu continuation
RHTM	Report conversion to HTML
RJTB	JES Options Table Maintenance
ROJB	Job Submission
ROJE	Job Submission Editor
ROLI	LPR Options Index Screen
ROLM	LPR Options Maintenance Screen
ROAL	Alternate Facility Report List
RODM	Report Distribution
ROIA	Installation Security Access
ROMT	Online Maintenance
ROCN	Container Service Sample
ROPN	Printer Network Status Display
ROPO	Printer Operator Display
ROPW	ROPES Web Interface
ROPS	Supervisory Operator Display
RORL	Report List
RORS	Report Status
ROSS	System and Alternate Status
ROXP	External Interface MRO Transaction
RPDF	Report conversion to PDF
RPRT	Function Key Print task
RSET	Printer Reset
RSTA	Start printing
RSTP	Stop printing
SOOP	Supervisory Operator Commands
SSTA	Start the Stand-By Facility
SSTP	Stop the Stand-By Facility

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