CA Workload Automation Restart Option for z/OS Schedulers

User Guide

r11

CA Technologies Product References

This document references the following CA Technologies products:

- CA Workload Automation Restart Option for z/OS Schedulers (CA WA Restart Option)
- CA 1® Tape Management (CA 1)
- CA ACF2™ (CA ACF2)
- CA APCDDS™ Automated Report Balancing (CA APCDDS)
- CA Datacom/DB® (CA Datacom/DB)
- CA JCLCheck™ Workload Automation (CA JCLCheck WA)
- CA Jobtrac™ Job Management (CA Jobtrac JM)
- CA Roscoe® Interactive Environment (CA Roscoe IE)
- CA Scheduler® Job Management (CA Scheduler JM)
- CA TLMS® Tape Management (CA TLMS)
- CA Top Secret® (CA Top Secret)
- CA Workload Automation EE
- CA Workload Automation SE

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- Online and telephone contact information for technical assistance and customer services
- Information about user communities and forums
- Product and documentation downloads
- CA Support policies and guidelines
- Other helpful resources appropriate for your product

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Contents

Chapter 5: Batch Reports 203

Chapter 1: Introduction

This guide presents the information and procedures necessary for you to understand and use all the facilities of CA Workload Automation Restart Option for z/OS Schedulers (CA WA Restart Option). It is designed to answer your day-to-day questions and serve as a reference guide.

This section contains the following topics:

Reading Syntax Diagrams

The format of all statements and some basic language elements are illustrated using syntax diagrams. Read syntax diagrams from left to right and top to bottom.

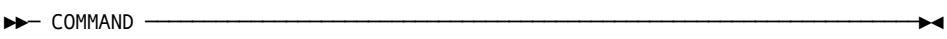
The following terminology, symbols, and concepts are used in syntax diagrams:

- Keywords appear in uppercase letters, for example, COMMAND or PARM. These words must be entered exactly as shown.
- Variables appear in italicized lowercase letters, for example, *variable*.
- Required keywords and variables appear on a main line.
- Optional keywords and variables appear below a main line.
- Default keywords and variables appear above a main line.
- Double arrowheads pointing to the right indicate the beginning of a statement.
- Double arrowheads pointing to each other indicate the end of a statement.
- Single arrowheads pointing to the right indicate a portion of a statement, or that the statement continues in another diagram.
- Punctuation marks or arithmetic symbols that are shown with a keyword or variable must be entered as part of the statement or command. Punctuation marks and arithmetic symbols can include the following:

,	comma
.	period

(	open parenthesis
)	close parenthesis
+	addition
*	multiplication
>	greater than symbol
<	less than symbol
=	equal sign
¬	not sign
-	subtraction
/	division

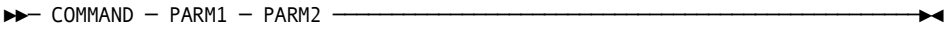
The following is an example of a statement without parameters:



For this statement, you must write the following:

```
COMMAND
```

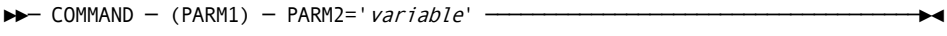
Required parameters appear on the same horizontal line, the main path of the diagram, as the command or statement. The parameters must be separated by one or more blanks.



You must write the following:

```
COMMAND PARM1 PARM2
```

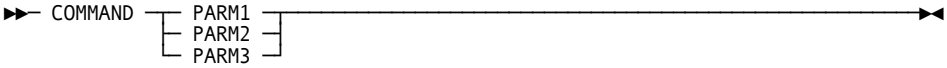
Delimiters, such as parentheses, around parameters or clauses must be included.



If the word *variable* is a valid entry, you must write the following:

```
COMMAND (PARM1) PARM2='variable'
```

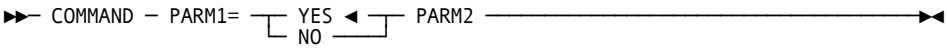
When you see a vertical list of parameters as shown in the following example, you must choose one of the parameters. This indicates that one entry is required, and only one of the displayed parameters is allowed in the statement.



You can choose one of the parameters from the vertical list, such as in the following examples:

```
COMMAND PARM1

COMMAND PARM2

COMMAND PARM3
```

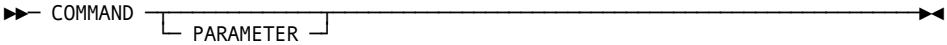
When a required parameter in a syntax diagram has a default value, and the default value appears above the main line, it indicates the value for the parameter if the command is not specified. If you specify the command, you must code the parameter and specify one of the displayed values.



If you specify the command, you must write one of the following:

```
COMMAND PARM1=NO PARM2

COMMAND PARM1=YES PARM2
```

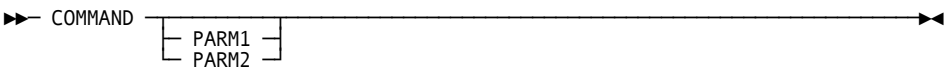
A single optional parameter appears below the horizontal line that marks the main path.



You can choose (or not) to use the optional parameter, as shown in the following examples:

```
COMMAND

COMMAND PARAMETER
```

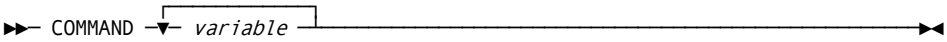
If you have a choice of more than one optional parameter, the parameters appear in a vertical list below the main path.



You can choose any of the parameters from the vertical list, or you can write the statement without an optional parameter, such as in the following examples:

```
COMMAND

COMMAND PARM1

COMMAND PARM2
```

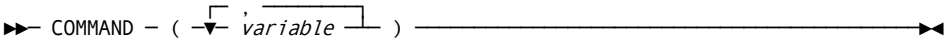
For some statements, you can specify a single parameter more than once. A repeat symbol indicates that you can specify multiple parameters. The following examples include the repeat symbol.



In the preceding example, the word *variable* is in lowercase italics, indicating that it is a value you supply, but it is also on the main path, which means that you are required to specify at least one entry. The repeat symbol indicates that you can specify a parameter more than once. Assume that you have three values named VALUEX, VALUEY, and VALUEZ for the variable. The following are some of the statements you can write:

```
COMMAND VALUEX

COMMAND VALUEX VALUEY

COMMAND VALUEX VALUEX VALUEZ
```

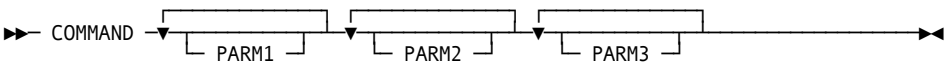
If the repeat symbol contains punctuation such as a comma, you must separate multiple parameters with the punctuation. The following example includes the repeat symbol, a comma, and parentheses:



In the preceding example, the word *variable* is in lowercase italics, indicating that it is a value you supply. It is also on the main path, which means that you must specify at least one entry. The repeat symbol indicates that you can specify more than one variable and that you must separate the entries with commas. The parentheses indicate that the group of entries must be enclosed within parentheses. Assume that you have three values named VALUEA, VALUEB, and VALUEC for the variable. The following are some of the statements you can write:

```
COMMAND (VALUEC)

COMMAND (VALUEB,VALUEC)

COMMAND (VALUEB,VALUEA)

COMMAND (VALUEA,VALUEB,VALUEC)
```

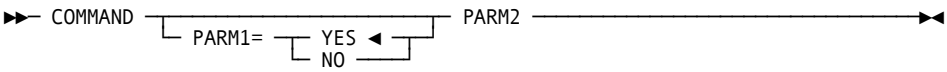
The following example shows a list of parameters with the repeat symbol:



The following are some of the statements you can write:

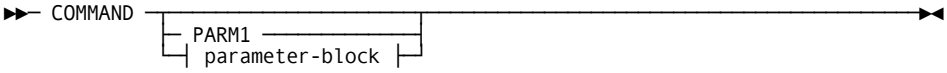
```
COMMAND PARM1

COMMAND PARM1 PARM2 PARM3

COMMAND PARM1 PARM1 PARM3
```

The placement of YES in the following diagram indicates that it is the default value for the parameter. If you do not include the parameter when you write the statement, the result is the same as if you had actually specified the parameter with the default value.

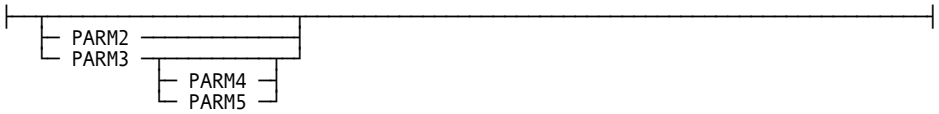


For this command, COMMAND PARM2 is the equivalent of COMMAND PARM1=YES PARM2.

In some syntax diagrams, a set of several parameters is represented by a single reference, as in this example:



parameter-block



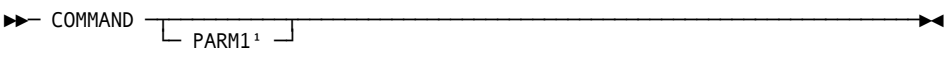
The *parameter-block* can be displayed in a separate syntax diagram.

Choices you can make from this syntax diagram therefore include, but are not limited to, the following:

```
COMMAND PARM1

COMMAND PARM3

COMMAND PARM3 PARM4
```

Note: Before you can specify PARM4 or PARM5 in this command, you must specify PARM3.

A note in a syntax diagram is similar to a footnote except that the note appears at the bottom of the diagram box.



[1] This is a note about the item.

Product Objective - Improved Resource Use

The objective of CA WA Restart Option is to improve resource use and productivity for client data centers. CA WA Restart Option accomplishes this objective by reducing unproductive usage of data center resources. The following paragraphs introduce the product's basic concepts and related terminology.

Production Run Versus Rerun/Restart

A philosophy central to CA WA Restart Option is that there are only two types of job execution:

- Production run
- Rerun (also called a restart)

A production run is the initial execution of a job, that is, not a rerun or restart of a job previously processed.

A rerun (or restart) is considered to be an extension or continuation of a production run. A rerun consists of the reexecution of the entire job, or a portion thereof, due to an abend, lost reports, bad or missing input, and so forth. The terms rerun and restart are synonymous within CA WA Restart Option terminology. Thus, when the term rerun is used, it also means restart.

Production Cycle

Another central theme of the CA WA Restart Option operation is the production cycle. A production cycle begins with the initial attempt to execute the JCL for a job and ends when that JCL has successfully finished processing. Any processing actions occurring between these two events belong to that cycle. The initial run for a job is considered to be the production run; any subsequent run for that job is considered to be a rerun. Therefore, a production cycle can contain a production run and one or more reruns of the same job.

The Tracking System is built around this concept of a production cycle. All data captured for a run is grouped under the appropriate cycle. Job statistics are generated and the Online System can display them for a particular cycle or a particular time frame. These statistics are available for the most current cycle, the next most current cycle, or for *n* cycles back in a detailed or summary format. Job information is also available from a set of batch reports.

Spoilage

The concept of unproductive usage of resources is defined as spoilage. Spoilage in relation to CA WA Restart Option constitutes the resources consumed when reruns or restarts are executed for a job. For a given rerun or restart, spoilage is defined to be the sum of the resources used to rerun steps completed in the previous run, plus the resources expended in the abended step of the previous run. For example, the 10-step job depicted in the following figure abends first in Step 4 and restarts in Step 2. In the first rerun, the job abends in Step 7, restarts in Step 7, and completes successfully.

In the following figure, each box contains the number of SRUs (system resource units) used by the corresponding step. Any step which is rerun when it has reached a good end of step is considered wasted. Any step not reaching a good end of step is considered wasted. The total spoilage is the sum of the resources of the shaded steps.

CA WA Restart Option minimizes spoilage in the following ways:

- Letting you do step restarts as easily as total job reruns.
- Reducing failures due to errors in setting up the rerun.
- Reducing the number of steps executed during reruns based on step dependencies.

You can get spoilage figures for individual reruns and for jobs from Tracking System batch reports.

SPOILAGE COMPUTATION

STEP NUMBER

	1	2	3	4	5	6	7	8	9	10
PRODUCTION RUN	30	60	40	10						
1ST RERUN		60	40	20	10	80	60			
2ND RERUN							90	50	90	10

60 + 40 + 10 + 60 = 170 SRUs (WASTED)

30 + 120 + 80 + 30 + 10 + 80 + 150 + 50 + 90 + 10 = 650 TOTAL JOB SRUs

SRU = SYSTEM RESOURCE UNITS

System Description

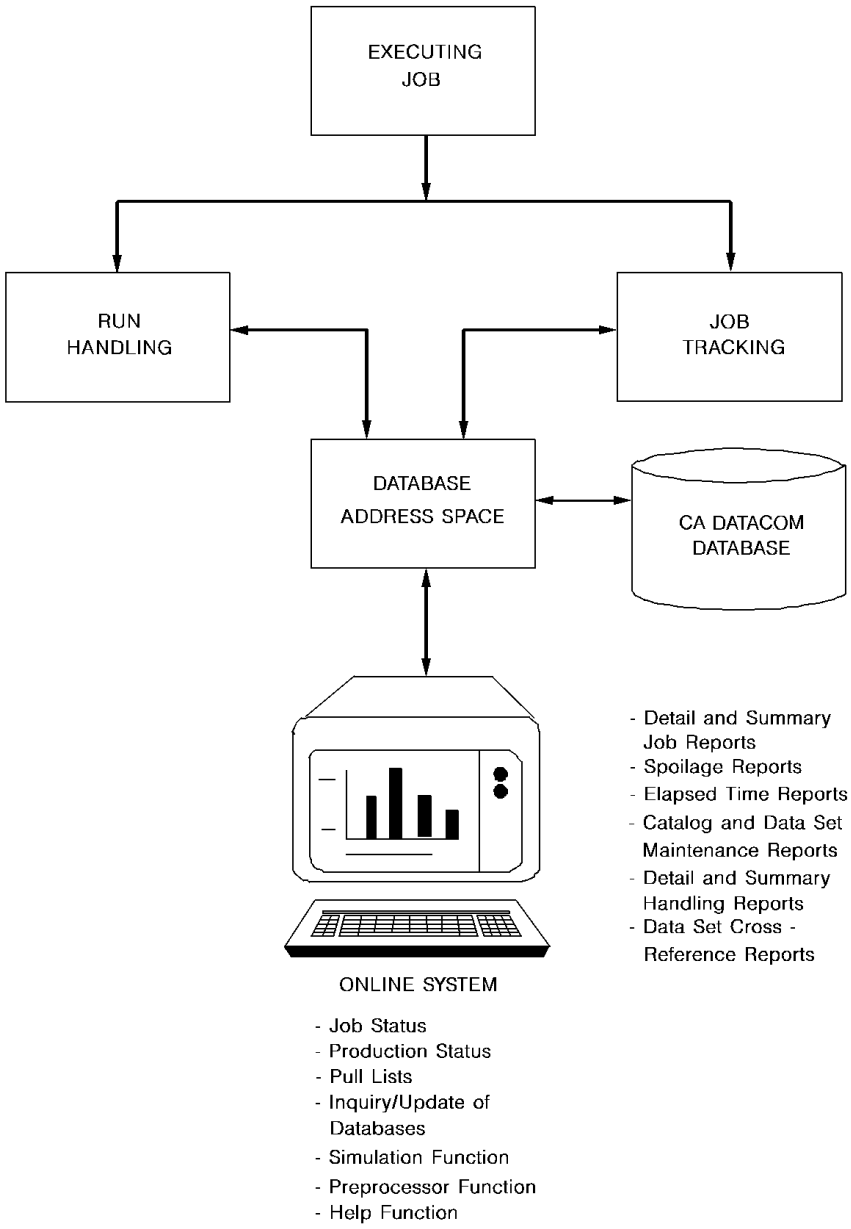
CA WA Restart Option is an automated rerun and tracking system. The system can serve as an effective management tool in a production environment and as an invaluable tool in a test environment. Job management encompasses two major functions: run handling and job analysis/tracking. CA WA Restart Option is designed to perform as a run handler, as a job analysis and tracking system, or as a combination of both.

The Run Handler executes in production runs and handles reruns/restarts. Entire reruns or step restarts are greatly simplified. Catalog and data set maintenance (which prevents NOT CATLGD 2 situations), GDG bias adjustment, and so forth, are handled automatically. The Run Handler operation is based on the Catalog Management Table (CMT).

The Tracking System captures job execution data permitting you to analyze the impact of reruns on personnel and resources. Through real-time online inquiries or batch reports, details of production runs and all associated reruns are available. The Tracking System operation is based on the Job Execution History File (JEHF).

The Online System is a basic tool used with the Run Handler and the Tracking System. The Online System facilitates the Tracking System and is useful in production control.

The following figure shows the functional flow of information through the system:



More information:

Run Handler Benefits (see page 22)
Tracking System Benefits (see page 27)
Online System Benefits (see page 30)

Operating Systems

CA WA Restart Option is designed to operate with all currently supported versions of the IBM z/OS operating systems. IBM or IBM-compatible direct-access storage devices (DASD) are required for residence of the database files.

The product is designed to operate in either single- or multiple-CPU environments. The product supports a multiple-CPU complex using the CA Datacom multi-user facility for the CA WA Restart Option databases.

The product also functions in a Network Job Entry (NJE) environment using the CA General Transaction Server (CA GTS) to communicate across systems.

Installation

For more information about installing the product, see the *Installation Guide*.

Major Features

This topic introduces the major features of CA WA Restart Option.

Run Handler Benefits

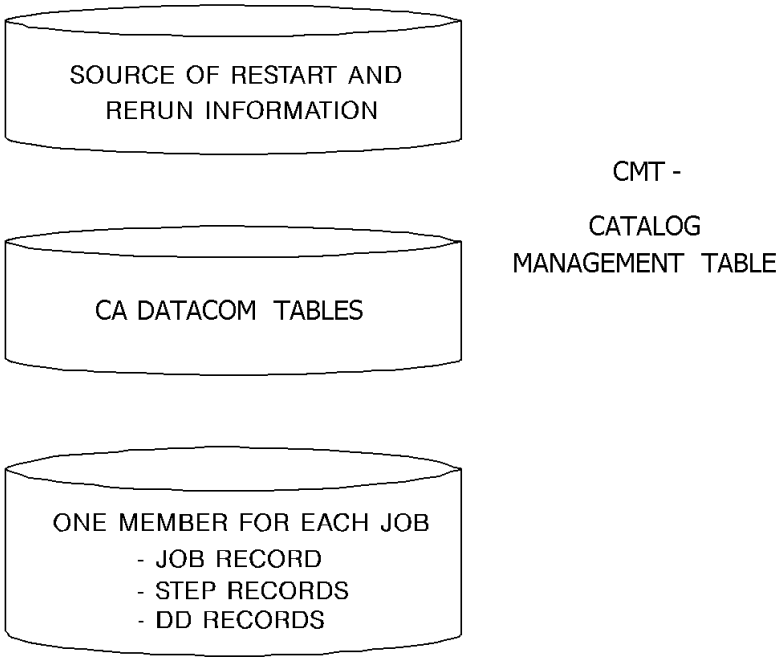
The Run Handler provides the means for automatically handling all catalog maintenance, data set maintenance, and GDG bias adjustment for job reruns and restarts. It handles step restarts as easily as complete job reruns. The use of step restarts by CA WA Restart Option, as opposed to complete reruns, and the reduction of reruns greatly improves the overall efficiency and productivity of your data center. The Run Handler allows you to free personnel from the error-prone manual procedures typically used to set up and execute reruns. That is, CA WA Restart Option handles the necessary tasks of correcting JCL, scratching data sets for production runs or reruns, and so forth.

Description of Run Handler Operation

The following is a general description of how the CA WA Restart Option Run Handler operates.

Insertion of a step which executes the U11RMS program in the JCL for the job brings a job under Run Handler control. The U11RMS step is designed to be the first step in the job. Under certain circumstances, a user can execute U11RMS in a job step other than the first, but this is a typical Run Handler implementation. For optional ways to insert the U11RMS step into a job's JCL, see Run Handler Concepts (see page 39).

The Run Handler is designed around the Catalog Management Table (CMT). The CMT is a set of tables on a CA Datacom database which contains information about each step and each data set for every job executed under Run Handler control. The following figure shows the Catalog Management Table (CMT):



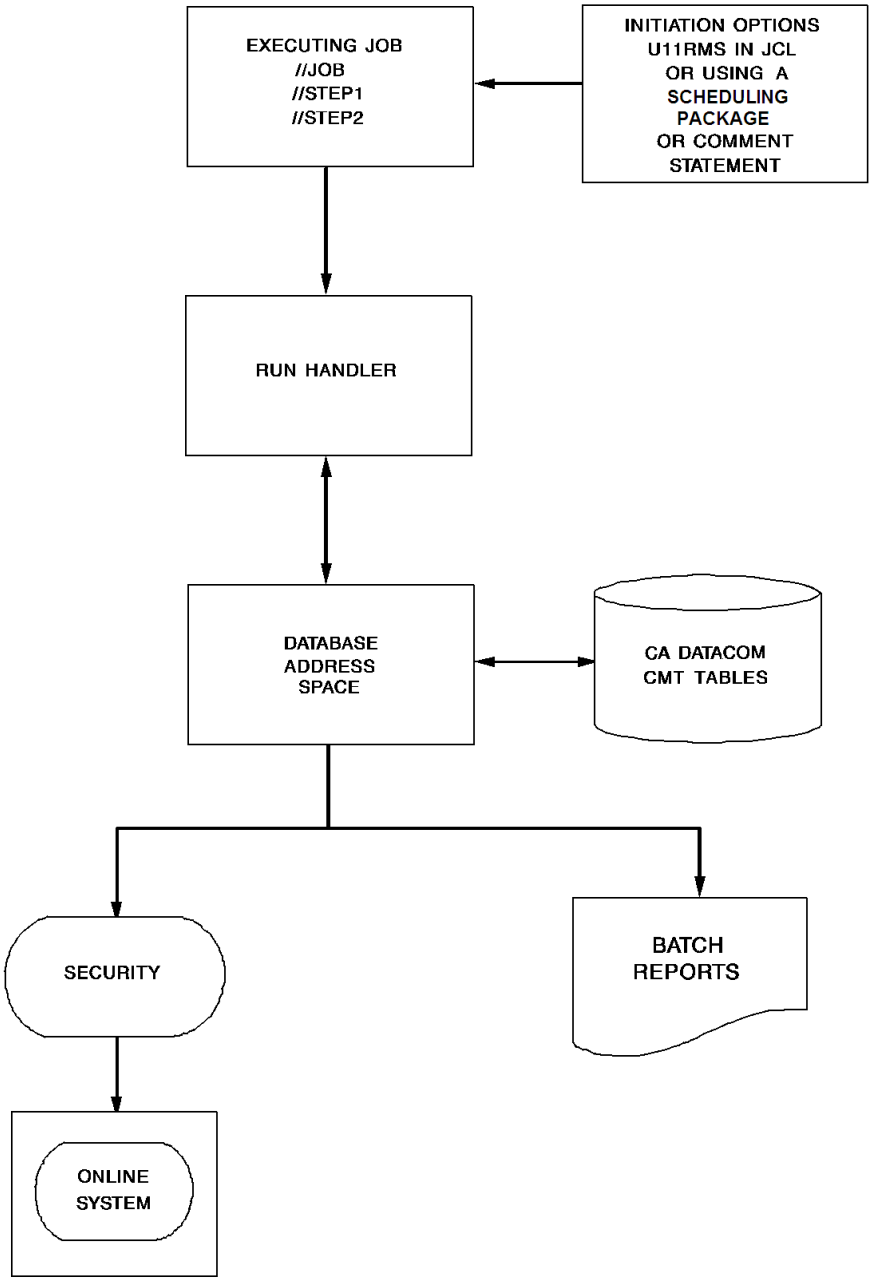
Specifically, the entry for each job under Run Handler control contains one Job record, one Step record per step, and one DD record per permanent input/output data set. (The following are *not* considered to be permanent data sets, and therefore CA WA Restart Option does not build DD records for them: &&, DUMMY, NULLFILE, SYSIN, and SYSOUT.) The Job record, Step record, and DD record information is derived from the production JCL submitted with each job. Also, a separate history record in the CMT contains processing counters and date and time information. For each job, the CMT always reflects the JCL information recorded during the most recent production run.

The Run Handler also works with the catalog to provide update information to the catalog before a rerun. This function is an important feature of the product.

When you request a rerun, CA WA Restart Option uses the data in the CMT to perform the catalog and data set maintenance, permitting the successful recreation of output data sets. Additionally, CA WA Restart Option modifies system control blocks in the job queue to facilitate correct generation data set input and output and to help ensure that only the steps requested to be rerun are executed.

All production runs are executed by specifying to U11RMS that a production run is to be executed. Two methods of executing reruns are available. The first method requires that you input parameter information instructing CA WA Restart Option how to execute. This means specifying whether you want a production run or a rerun performed. The second method, the Auto Setup feature, lets the product automatically determine, on an abnormal job termination, the most recently executed restartable step. The Run Handler assumes that the job is to be restarted at this step when resubmitted for processing. Rerun execution automatically begins at the proper job step without any manual intervention to make JCL changes before the job is resubmitted.

The following figure graphically portrays data flow through the CA WA Restart Option Run Handler:



More information:

Run Handler (see page 39)

Catalog Update

A primary function of CA WA Restart Option is to update the catalog before a rerun. The Catalog Management Table (CMT) is maintained for this purpose. The CMT is the source of necessary information for performing all the catalog maintenance required to set up a rerun. The CMT is a set of tables on a CA Datacom database with an entry for each job processed under CA WA Restart Option.

The CMT is built automatically as jobs are placed under CA WA Restart Option control. The first time a job executes with the CA WA Restart Option step as the initial step in the job, CA WA Restart Option creates an entry in the CMT tables for that job. Subsequent updates to that job's entry must occur whenever the JCL for that job changes. These updates can be initiated automatically or manually, depending on installation options and user requirements.

An online function, Catalog Management Table Inquiry (CINQ), is provided for you to scan the contents of the CMT for any given job. The Catalog Management Table Update (CUPD) function allows you to modify the data controlling the rerun execution if necessary.

Condition Code Recovery and Rerun

A facility in CA WA Restart Option permits the incorporation of recovery procedures into the production JCL. This results in one JCL stream for all production or rerun processing. CA WA Restart Option has the capability of allowing the recovery procedure to execute only during a rerun. You can specify the condition code value with which the CA WA Restart Option step, U11RMS, terminates. This condition code value is generated at the system level as a system generation option.

You can override this option at execution time by using the CC parameter of the CA WA Restart Option step. When the rerun is executed, the CA WA Restart Option step terminates with the specified condition code. Condition code testing can then be used in the recovery step to determine whether to execute the recovery step.

In a production run, the CA WA Restart Option step terminates with a condition code of zero. Consequently, the recovery step is skipped. In a rerun, the recovery step is executed.

Tracking System Benefits

The Tracking System provides the means for the following:

- Determining where to restart an abended job
- Posting return codes to the CMT

With JEHF History Recording (optional), the History information provides for the following:

- Online job inquiry
- Online batch reporting

JEHF History online inquiries permit you to make queries such as the following:

- Job status—Historical information about an individual job basis
- Production status—Status of all jobs, or subgroup of all jobs within a specified time frame
- JEHF display/update—Display/update of JEHF records

Batch reporting permits you to produce reports such as the following:

- Management detail and summary reports
- Job reports for jobs with/without abends
- Spoilage reports for jobs with/without abends
- Elapsed time reports for jobs with/without abends

This type of reporting lets you quantify the impact reruns have on production, determine the causes of reruns, and identify recurring causes. The information provided by Tracking System reports can be effectively used to institute a systematic approach to reduce the number of reruns.

More information:

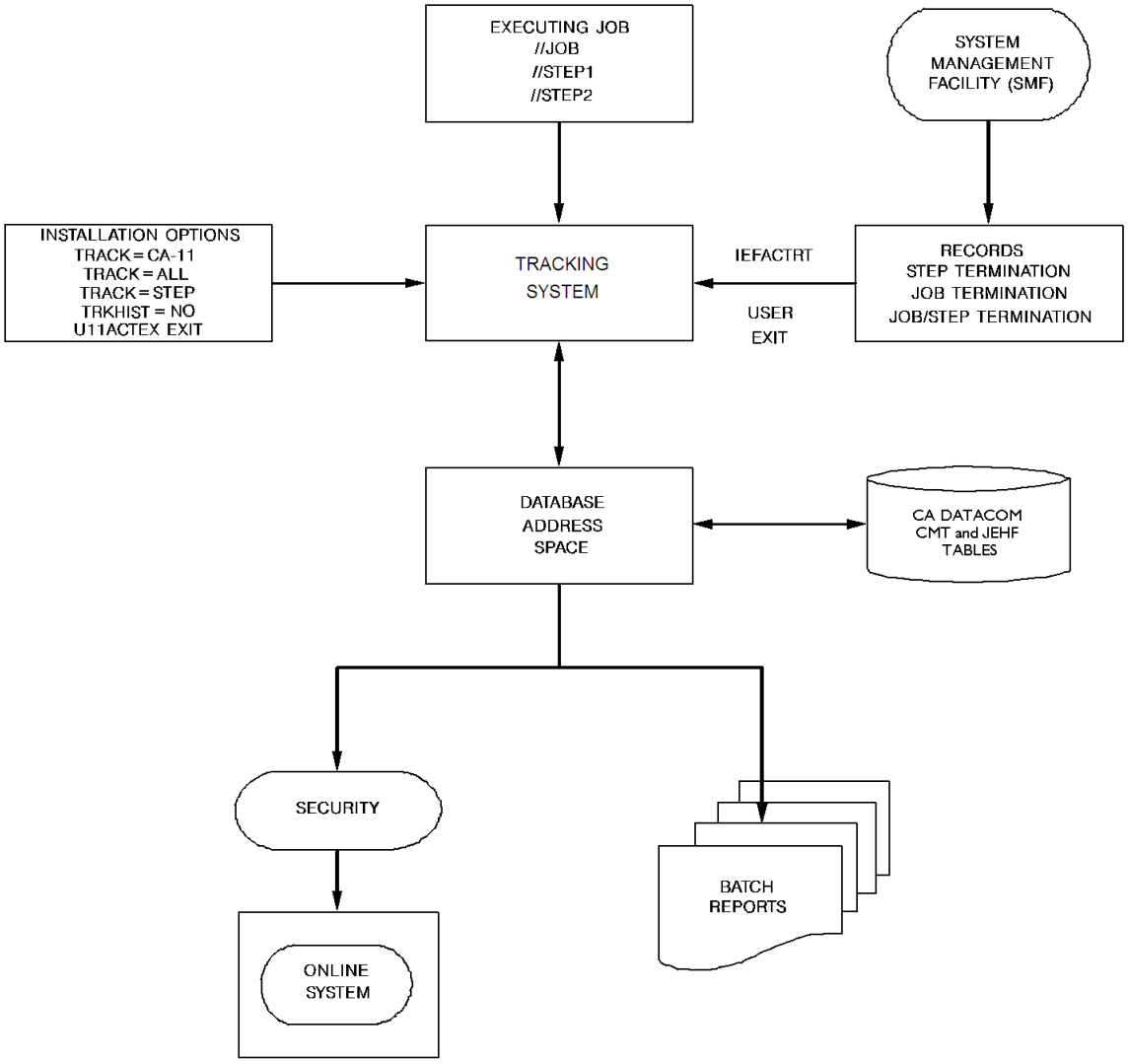
Batch Reports (see page 203)

Description of Tracking System Operation

The following is a general description of how the Tracking System operates.

The Tracking System is an installation option, and your operators initialize it at IPL time. You can track all jobs or only jobs under the control of the CA WA Restart Option Run Handler. A user exit is available that allows Tracking to be determined on a job-by-job basis.

The following figure is a representation of data flow through the Tracking System:

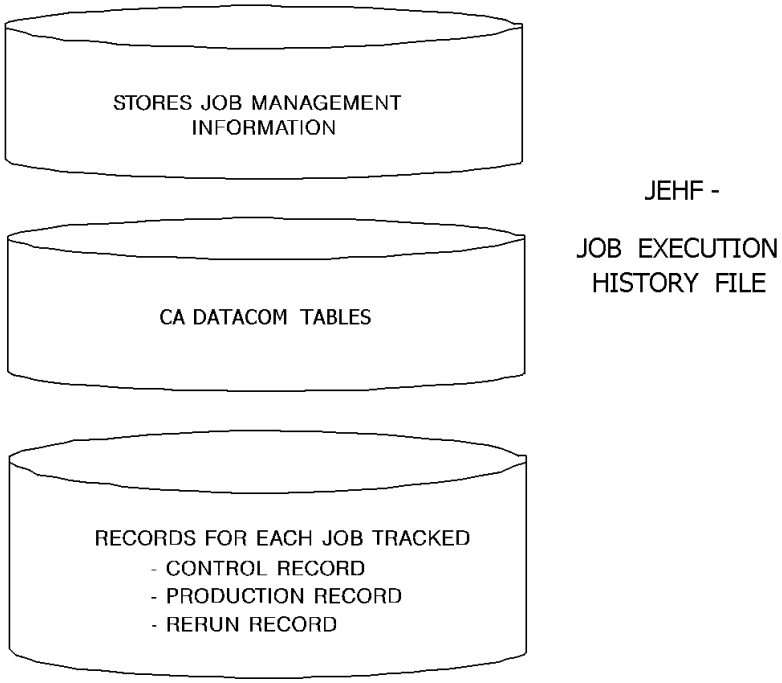


The Tracking System provides for the optional retention of History data in the Job Execution History File (JEHF). The JEHF contains data for jobs and individual runs. The JEHF is allocated when CA WA Restart Option is installed, and the Tracking System updates it if you specified the DBAS option TRKHIST=YES. When active, the JEHF is automatically built as jobs are executed and tracked. An SMF exit captures the data at step and job termination time. You define the amount of data, that is, how much historical data is retained, and the jobs to be tracked as an installation option. You can then override values on an individual job basis as needed.

The JEHF is a set of tables on a CA Datacom database containing, among other data, production and rerun starting and ending times, the resources expended for production runs and reruns (CPU, disk, tape, and so forth), terminating condition codes and abend codes, and so forth. Job status is maintained for all runs. Status is designated as:

- Complete (job completed normally)
- Abended (job completed with an abend, JCL error, or unacceptable return code)
- Executing (job is currently executing)
- Set for restart

The following figure shows the Job Execution History File (JEHF):



The data in the JEHF is used to generate the following standard batch reports:

- Job report
- Spoilage report
- Omitted Reason report
- Elapsed Time report

More information:

Batch Reports (see page 203)
Tracking System (see page 113)

Tracking Without JEHF Access

CA WA Restart Option can track jobs without accessing the JEHF. This allows for jobs to be tracked to have enough information to perform Auto Setup of the job if it terminates abnormally. When using this feature, no history information is available for the jobs. Jobs tracked without JEHF access do not appear on ARTS commands that access the JEHF (such as STA, DIS, JINQ, and JUPD) or in the JEHF reports, such as U11RCP. This option can be specified on the TRKHIST= parameter of the configuration file or can be indicated by the user exit U11ACTEX.

Online System Benefits

The Online System provides online functions that give quick, real-time access to information and permit control of setup for restarts and reruns. The online functions provide for accessing information, controlling the setup of jobs for restart, and allowing inquiries or updates to the CMT, the JEHF, or both as necessary.

The Online System encompasses various functions: basic information displays, control functions (for example, the PRE transaction), and inquiry/update capability.

- Production status—Displays information about all tracked jobs from the present to 99 hours back or for a specified time frame.
- Job status—Shows information about a specific tracked job from the present to as far back as the history is maintained in the database.
- Job restartability—Shows a particular job or a generic cluster of jobs (determined by job name) and tells whether they are restartable and whether they are set for restart.
- Step restartability—Shows whether the steps for a particular job are restartable.

- Pull List—Identifies the tape and disk volume serial numbers (VOLSERs) needed for a particular job name.
- Option table—Shows the installation options in effect.
- SIM—Shows catalog and data set maintenance that the U11RMS step in a batch job would perform.
- PRE—Allows for setting up jobs for restart through a preprocessor.
- CMT inquiry—Displays records for a given job from the CMT.
- CMT update—Displays and updates records for a given job from the CMT.
- JEHF inquiry—Displays records for a given job from the JEHF.
- JEHF update—Displays and updates records for a given job from the JEHF.

Help Tutorial

An online help system is available through the HELP inquiry. The HELP inquiry provides formats and explanations of various CA WA Restart Option online commands. This facility greatly simplifies the use of the product and potentially reduces training in product usage.

Online Security

CA WA Restart Option system security can be controlled internally by the U11SECUR macro, externally by your security system such as CA ACF2, CA Top Secret, or IBM RACF, or through user-developed user exits.

The following topics summarize other major features in addition to the previously discussed Run Handler, Tracking System, and Online System:

- Auto Setup
- Job Status
- Job Groups
- Reason-for-Rerun
- User Exits

Auto Setup

An optional feature, Auto Setup, automatically determines where to restart an abended job. A prime benefit of this option is that you can resubmit a job without making JCL changes, and CA WA Restart Option restarts the job at the abended step. Should the abended step be nonrestartable, the restart begins at the most recently executed restartable step before the abended step. If a system fails, an executing job is set to restart at the last restartable step to begin execution.

Use of Auto Setup is advantageous because a job restarts at the first restartable step rather than at the very beginning of the job. The steps skipped on a restart are consequently not processed, thus considerably reducing resource use and providing significant improvement of throughput for a job.

Auto Setup considers backward volume references and temporary and passed data sets.

At product installation, you designate whether to use Auto Setup for all jobs. An installation option implements this selection and is the system default. All jobs are processed in the manner designated as the default unless you explicitly indicate a particular job not to assume the default. In that case, designate the Auto Setup action for that particular job.

Setting flags in the Job record in the Catalog Management Table (CMT) changes the Auto Setup status for an individual job. A user exit can also change the Auto Setup status at the time of an abend.

Note: For more information about the U11RSTEX exit, see the *Programming Guide*.

More information:

Change Auto Setup Status (see page 104)

Job Status

CA WA Restart Option maintains the continuous status of all jobs that the system tracks. Job status is displayed through the use of two Online System commands, DIS (Job Inquiry) and STA (Production Status Inquiry). Each of these inquiries provides the status of a job (that is, unresolved abend, complete, executing, set for restart) with other pertinent job information.

The LJOB and LSTP commands also provide job status and information. These commands access the CMT to provide information as to the next run type (Production, or Rerun), restorability and last completion code. This information is available, even if JEHF History Recording is not active.

By continuously maintaining job status information, CA WA Restart Option allows for measuring job reliability, job monitoring, and permitting accurate responsiveness to inquiries about job status.

More information:

Online System (see page 137)

Job Groups

When attempting to assign accountability for reruns, it is often desirable, even necessary, to group jobs on some basis. CA WA Restart Option permits you to define as many job groups as necessary using the U11GROUP macro.

Under CA WA Restart Option, job groups are a user-defined set of jobs. The Batch Tracking Report program (U11RCP) uses job groups to assemble jobs into a logical structure for reporting purposes. Job groups can be defined based on job name, programmer name, accounting/user information, or substrings thereof.

For example, GROUP8 can identify payroll applications defined as meeting the criteria of jobs named PAYAA through PAYAR, written by a specific programmer TOM, belonging to a cost center range of F23 through F3I, and so forth.

Reason-for-Rerun

Depending on the installation options for your data center, every rerun can require a reason-for-rerun. The requirement is an installation option. Instituting this standard helps ensure that the Tracking System produces meaningful reports.

Reason-for-rerun is one of the six fields that can be selected to sort on when producing Batch Job History (JEHF) reports. If used as the sort field, it can quickly be determined what the various reasons or causes for job failures are and how many job failures are attributed to each unique cause. The Reason field is 40 bytes long and can accommodate text or user-defined codes to track the causes of job reruns.

Reason-for-rerun codes and their corresponding texts exist within the CA WA Restart Option Reason-for-Rerun Table.

CA WA Restart Option distributes a default version of the Reason-for-Rerun Table. Modify the table to reflect your preferred coding structure and reason-for-rerun messages. Using the UPRS command modifies the table to add or change codes and reason-for-rerun messages. After modification, issuing the REFRESH operator command makes the table available to the active CA WA Restart Option.

User Exits

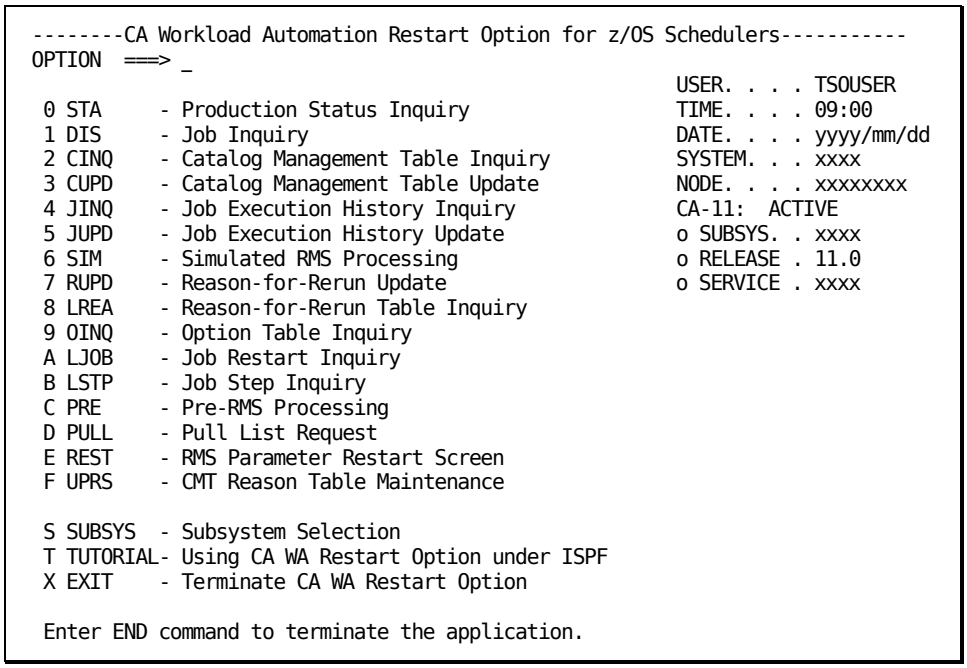
Various user exits are available to provide various functions. One important user exit is the Tracking Action Exit which lets you determine whether tracking occurs for a particular job. Other user exits control prime processing functions such as allowing a user to determine whether to perform Format (F) processing during Production (P) processing for a specified job (Selective Format (F) Processing Exit), and normal processing for a specified data set (Reserved Data Set Exit).

Note: For more information about available user exits, see the *Programming Guide.*

ISPF Interface

The distribution package includes a menu-driven interface between IBM's ISPF and the CA WA Restart Option Online System. If installed, the the following main menu should be accessible from the ISPF/PDF Primary Options Menu under TSO. Ask your systems programmer for the appropriate option to select. After invoking the main menu, issue the TSO HELP command (or press your HELP PF key) to begin the tutorial. All functions available through the Online System are accessible through the ISPF interface, and the ISPF interface is designed to make the Online System easier to use.

ISPF Menu Panel



Other CA Product Interfaces

This topic addresses the interfaces of CA 1, CA TLMS, CA Workload Automation SE, CA Scheduler JM, CA Jobtrac JM, CA Workload Automation EE, CA APCDDS, and CA JCLCheck WA with CA WA Restart Option.

Tape Management Solutions Interfaces

CA 1: CA WA Restart Option interfaces with CA 1 if installed. During the data set maintenance performed before a rerun, any tape data sets to be recreated are expired on the CA 1 database (the TMC) if those tape data sets are cataloged.

CA TLMS: CA WA Restart Option interfaces with CA TLMS (Tape Library Management System) if installed. The operation of the interface is functionally identical to the interface with CA 1. Tape data sets to be recreated are expired on the TLMS database (the VMF) during data set maintenance prior to a rerun if those data sets are cataloged.

More information:

U11RMS Interface to CA 1 (see page 111)
CA TLMS (see page 111)

Scheduling Solutions Interfaces

CA Workload Automation SE: CA WA Restart Option interfaces with CA Workload Automation SE if installed. CA Workload Automation SE can automatically insert the CA WA Restart Option step into jobs scheduled and submitted by CA Workload Automation SE. The CA Workload Automation SE QM.4 panel can be used to enter a reason-for-rerun and to restart a job. The CA WA Restart Option Online System can be accessed throughCA Workload Automation SE.

Note: For more information about the interface, see the CA Workload Automation SE *Interface Reference Guide*.

CA Scheduler JM: CA WA Restart Option interfaces with CA Scheduler JM if installed. CA Scheduler JM can automatically insert the CA WA Restart Option step into jobs scheduled and submitted by CA Scheduler JM. The CA Scheduler Rerun Job panel can be used to enter a reason-for-rerun and to restart a job.

Note: For more information about the interface, see the *CA Scheduler JM Online Reference Guide*, CA-11 Rerun Job panel, and the *CA Scheduler JM Interface Reference Guide*.

CA Jobtrac JM: CA Jobtrac JM provides automatic insertion of the CA WA Restart Option U11RMS step during CA Jobtrac JM job submission. Insertion of the step can be controlled by job class. Step insertion parameters are retrieved from the CA WA Restart Option Option Table.

CA Jobtrac JM integrates with CA WA Restart Option to update the CA WA Restart Option database when CA Jobtrac JM Delete (D) and Purge (P) commands are issued.

The CA Jobtrac JM ISPF online integrates with the CA WA Restart Option ISPF online to display the CA WA Restart Option ISPF panels when a CA Jobtrac JM Rerun (R) command is issued. The job name of the job selected in CA Jobtrac JM is passed to the CA WA Restart Option online. CA Jobtrac JM recognizes when the selected job is set up through the CA WA Restart Option online for restart, and releases the job when you return to the CA Jobtrac JM panels. CA Jobtrac JM also detects restart, cancel, or force complete actions for the selected job.

CA Workload Automation EE: CA Workload Automation EE, starting with r11.3, lets users select CA WA Restart Option for job restarts. The CA WA Restart Option ISPF panels are accessible through the CA Workload Automation EE ISPF interface. CA Workload Automation EE can automatically insert the CA WA Restart Option step into jobs that CA Workload Automation EE schedules and submits. Before a user resubmits a job from the CA Workload Automation EE Job Resubmission panel, the CMT is accessed to provide information about job status. CA Workload Automation EE passes parameters to the U11RMS step through the step's SYSIN data set. Using the CA Workload Automation EE Rerun Multiple panel, a user can enter and apply a set of U11RMS parameters to multiple jobs.

More information:

CA Workload Automation SE and U11RMS Processing (see page 111)
U11RMS Interface to CA Scheduler JM (see page 111)
CA Jobtrac JM and U11RMS Processing (see page 112)
CA Workload Automation EE and U11RMS Processing (see page 112)

Report Balancing Interface

CA APCDDS: CA WA Restart Option interfaces with CA APCDDS if installed. On completion of a step which executes CATKJCL, CA APCDDS notifies CA WA Restart Option through the Tracking System that it has successfully completed processing and has committed status information to its database for all extracted elements and all evaluated rules, compound rules, derivatives, and data equates.

On a rerun of this step, CA WA Restart Option notifies CA APCDDS that this step is being rerun by changing the CATKJCL EXEC PARM statement from PARM=DDS to PARM=DDSR, thus causing CA APCDDS to invalidate all the relevant status from the previous run of this step.

JCL Validation Interface

CA JCLCheck: CA WA Restart Option does not provide a direct interface to CA JCLCheck; however, CA JCLCheck provides an option to prevent selected JCL errors from being reported when CA WA Restart Option is in use.

The CA JCLCheck CA11 option is used to activate special feature #6. This option causes CA JCLCheck to suppress error messages for error conditions that CA WA Restart Option prevents.

Note: For more information about the CA11 option, see the *CA JCLCheck User Guide*.

Chapter 2: Run Handler

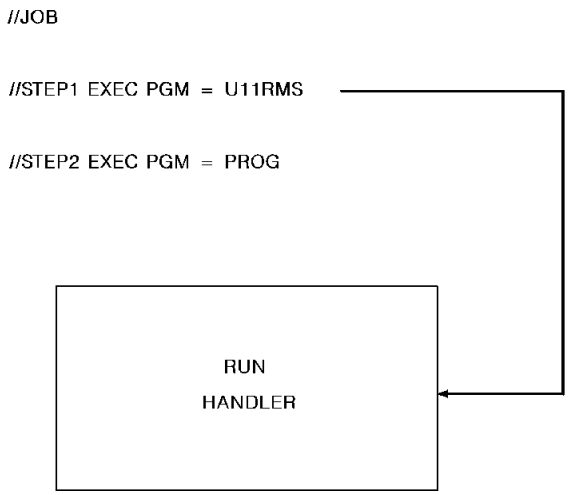
This section contains the following topics:

Introduction

As previously discussed in Chapter 1, “Introduction,” the Run Handler adds a new dimension to the power of JCL. Standard JCL lets you control and direct job execution for production runs. The CA WA Restart Option Run Handler goes beyond this by expanding the power of JCL to direct job execution for reruns and restarts.

With CA WA Restart Option, a job is executable for a production run or a rerun/restart of the same job all with the same JCL. With the U11RMS step as the first step in a job, the Run Handler is initiated. The following figure shows this concept.

Methods of initiating the Run Handler are discussed in detail later in this chapter.



The Run Handler can be used with or without the Tracking System being activated. To use CA WA Restart Option means the obvious use of the Run Handler, since the Run Handler is the core of CA WA Restart Option. As for the Tracking System, it may be or may not be used with the Run Handler active.

However, we highly recommend using both the Run Handler and Tracking System together to take advantage of the overall effectiveness of CA WA Restart Option.

More information:

Features Dependent on the Tracking System (see page 133)

Run Handler Concepts

To fully understand how the Run Handler operates, it is necessary to be familiar with certain concepts peculiar to CA WA Restart Option and the Run Handler. Concepts discussed include the following:

- CA WA Restart Option control methods—How, when and where CA WA Restart Option gains control in the execution of a job.
- The Catalog Management Table (CMT)—Its purpose, structure, contents, and size.
- Processing codes used by the Run Handler program, U11RMS—The various processing codes with specific details of purpose and actions performed.

The following paragraphs describe these important concepts.

Control Methods

CA WA Restart Option must have been implemented to gain control whenever a job is executed to effect continuous current catalog and data set information. This control is imperative for either a production run or a rerun. In a production run, CA WA Restart Option captures job step and data set information and stores it for use in setting up a possible rerun. For a rerun, CA WA Restart Option performs the necessary catalog maintenance and controls which steps are executed.

When CA WA Restart Option Must Gain Control

When and how CA WA Restart Option is implemented is a decision based on your installation's standards and implementation goals, but in all environments, CA WA Restart Option gains control by the execution of the U11RMS program as the first step of a job. Every production run or rerun under CA WA Restart Option control must execute U11RMS in the first step. Information supplied in the parameter field of the U11RMS EXEC statement indicates whether the job execution is a production run or a rerun. The PARM information supplied in the JCL determines the processing action. If U11PRE or PRE has been executed for a particular job, U11RMS uses the PARM information supplied by U11PRE or PRE for that particular job and only for the single run.

In the case of N processing (detailed in this chapter), U11RMS can execute as the first and the last step.

How the U11RMS Step is Inserted into a Job

The U11RMS step can be inserted into a job's JCL:

- Manually, by inserting the U11RMS step as the first step in the JCL for the job.
- Automatically, by CA Workload Automation SE.
- Automatically, by CA Scheduler JM.
- Automatically, by CA Jobtrac JM.
- Automatically, by CA Workload Automation EE.
- Automatically, by a CA-11 comment statement.

The methods that you select depends entirely on the environment and needs of individual jobs and your data center.

More information:

U11RMS Step in JCL (see page 86)
U11RMS Step Using CA Workload Automation SE (see page 90)
U11RMS Step Using CA Scheduler JM (see page 90)
U11RMS Step Using CA Jobtrac JM (see page 90)
U11RMS Step Using a Comment Statement (see page 91)
U11RMS Step Using CA Workload Automation EE (see page 90)

Job Versus Step Level Data Set Cleanup

U11RMS processing determines which data sets need to be scratched, uncataloged, or both for the current execution of a job. CA WA Restart Option can actually perform these maintenance functions on either a job or step level. That is, all of the data set maintenance for the entire job can be performed in the U11RMS step, or the data set maintenance for each step can be performed by the CA WA Restart Option SMF Step Initiation Exit (USI) immediately prior to step execution. In either case the evaluation of data sets is performed in the U11RMS step, only the scratch/uncatalog actions can be deferred.

The global cleanup option is set by the CLEANUP= parameter in the DBAS initialization parameters. Job level cleanup is the default. You can override this global setting for specific jobs by inserting a special DD statement in the JCL for the U11RMS step. By inserting //CA11@JOB DD DUMMY in the U11RMS step, job level cleanup for data sets is used for the job regardless of the global option. By inserting //CA11@USI DD DUMMY in the U11RMS step, step level cleanup for data sets is used for the job regardless of the global option.

Note: For more information about the DBAS configuration file, see the *Programming Guide*.

The major advantage to using step level cleanup is that each step is evaluated at step initiation (USI) time to determine if it will execute based on the abend condition, condition code, and IF/THEN/ELSE clauses in effect at the time. If the USI exit concludes that the step will execute, the data set maintenance for that step is performed. If the USI exit concludes that the step will not execute, the data set maintenance for that step is bypassed.

The following are the disadvantages and restrictions to step level cleanup:

- Step level cleanup cannot be used in JES3 environments.
- Step level cleanup cannot be used with CA TLMS tape management.
- Because the USI SMF exit does not access the CA WA Restart Option database, the CA WA Restart Option CMT tables are not updated if a data set scratch process fails.
- The USI exit issues data set maintenance messages as WTOs rather than messages in the U11RMS step report.

Cleanup for Dynamically Allocated Data Sets

New data sets that are dynamically allocated are associated with the job name and step under which the program executed. DBAS adds data set records to the CMT by DBAS for new, dynamically allocated data sets. These records are appended to the existing data set records for the step executing at the time of the dynamic allocation. The dynamically added data set records exist in the CMT until the next cleanup operation is performed at the next production (P processing) run. After the cleanup is complete, the data set records for dynamically allocated data sets are removed from the CMT. Both job and step level cleanup for dynamically allocated data sets is supported.

Because information about new, dynamically allocated data sets does not exist in JCL as in statically defined DD statements, it is important to note that cleanup of dynamically allocated data sets does not occur the first time a job runs and each time Format processing is performed (explicitly or implicitly). Moreover, if identically named data sets are created through dynamic allocation by different job names or steps, it is possible that data set cleanup will not be performed and NOT CATLG 2 errors could occur.

Nonrestartable Steps and Jobs

Several reasons could make restart at a certain step inadvisable or impossible. For example, a step that updates a database should not be the first step of a restart since a database recovery step should be executed prior to the update step. Also, a step containing a backward volume reference cannot be the first step of a restart.

The first example is a user constraint; the second is a system constraint. CA WA Restart Option flags steps as nonrestartable due to system constraints automatically.

CA WA Restart Option automatically flags a step as nonrestartable:

- If it uses a temporary or passed data set for input.
- If it contains a backward volume reference to a previous step.

When a step is marked as nonrestartable, that step cannot be the first step executed in a restart.

A user can designate any step as nonrestartable using one of the following:

- Manually update the LOGIC field in the appropriate CMT Step record through the Online System.
- Insert //CA11NR DD DUMMY within the step.
- Include the JCL parameter RD=NR or RD=NC on the EXEC or JOB statement.
- Designate the job step program as an abender program through the ABENDPGM configuration file parameter or RMS parameter.

Either CA WA Restart Option or the user can flag a job nonrestartable. For example, a job is automatically flagged as nonrestartable if a P or F run has just finished and CA WA Restart Option abended. CA WA Restart Option flags the job as nonrestartable until a successful P or F run has occurred.

Use the user nonrestartable flag when you have a job that is never to be restarted. You can set the IND1 field in the CMT Job record through the Online System. Set this job level restartability indicator to X'80' to make a job permanently nonrestartable.

By inserting a //CA11CAT DD DUMMY statement within a step, the user can mark the step as nonrestartable without the RMS PARM BYPGDG=CAT. This must be done on a P or F run to be recognized.

How to Prevent Scratching of Data Sets

When using CA WA Restart Option, certain precautions should be followed to ensure that certain data sets are never deleted, such as SYS1.PROCLIB. Be sure that the disposition of these kinds of data sets is specified with disposition parameters such as:

```
DISP=OLD
DISP=SHR
```

If disposition is not specified, the disposition defaults to the following which can cause CA WA Restart Option to delete the data set:

```
DISP=(NEW,DELETE,DELETE)
```

Correct coding of the DISP parameter ensures that data sets which should never be deleted will not be deleted.

CA WA Restart Option provides facilities to help ensure that data sets which should never be deleted are exempt from normal CA WA Restart Option uncatalog/scratch functions. These facilities, available from your systems programmer, are the following:

- Reserved Data Set Exit (U11RDSEX)
- Uncatalog/Scratch Exit (U11UCSEX)
- Volume Include/Exclude List

Use the Reserved Data Set Exit to exempt particular data sets from normal CA WA Restart Option uncatalog/scratch functions. Use it also to specify whether a GDG data set resolution should occur during rerun/restart processing. Many data centers include, in this exit at least, all SYS1. data sets.

The Uncatalog/Scratch Exit allows you to exempt a data set from CA WA Restart Option uncatalog functions, scratch functions, or both.

The Volume Include/Exclude List allows you to exempt entire DASD volumes from CA WA Restart Option uncatalog functions, scratch functions, or both.

Reducing Redundant Steps During Rerun

In this discussion, a *temporary data set* includes any data set created with DISP=(NEW,PASS) regardless of whether && prefixes the data set name.

To use the step dependency feature, include STEPDEP=YES in the U11RMS PARM for the job or in the DBAS configuration file. This option takes effect after Format (F) or Add (A) processing. A database table tracks the steps that create and use temporary data sets. During auto setup for rerun, CA WA Restart Option uses this table to decide which steps to bypass between a step creating a temporary data set and the failing step. Steps that would be bypassed using this feature are not bypassed if they are marked Not Restartable through the use of the CA11NR DD DUMMY statement. CA WA Restart Option assumes these steps should be rerun.

For example, suppose you have a ten-step job. Step 2 creates a temporary data set that is first used as input in Step 6. Suppose the job fails in Step 5. Step 2 must be rerun to recreate the temporary data set. Steps 3 and 4 would normally also be rerun even though they may be redundant. By using the optional step dependency feature, you can bypass these redundant steps on restart.

Using with IBM Utilities

If any steps within a job are set to delete non-VSAM data sets with the IBM utilities IEHPROGM or IDCAMS, you should modify these steps to use IEFBR14. Because CA WA Restart Option determines processing actions from JCL, CA WA Restart Option has no way to know what data sets are deleted through the use of IBM utilities that use control statements rather than JCL.

Using with the IBM Operating System

The IBM operating system does not perform any data set maintenance. Users must perform the following:

- Manually determine restartable steps.
- Manually perform catalog maintenance.
- Manually perform data set maintenance.
- Manually perform GDG bias adjustment.

CA WA Restart Option interacts with the operating system to perform full data set maintenance by performing the following:

- Automatically determining restartable steps.
- Automatically performing catalog maintenance.
- Automatically performing data set maintenance.
- Automatically adjusting GDG bias.

With the CA WA Restart Option Run Handler in place, manual maintenance to data sets and the catalog is unnecessary since their maintenance is assured during reruns/restarts.

CA WA Restart Option does not handle checkpoint restarts. If you perform a step restart using the RESTART= parameter on the JOB statement or a checkpoint restart, then the job is running outside of the control of CA WA Restart Option, and you must perform your own GDG and catalog maintenance. If the CA WA Restart Option installation option OLMAINT is set to YES, CA WA Restart Option can do catalog and data set maintenance for you if the online PRE command is issued. However, CA WA Restart Option tracks the step or checkpoint restart as a rerun only if the job's CMT entry is set for restart and the U11RMS step is not removed from the job.

More information:

Example (see page 75)

Data Set Classification

CA WA Restart Option classifies data sets in one of two ways:

- GDG (generation data group) data sets are denoted by the *presence* of a bias (or relative generation) number.

  ```
  //DD01   DD  DSN=A.B(0)
  ```

- Simple (non-GDG) data sets are denoted by the *absence* of a bias (or relative generation) number.

  ```
  //DD01  DD  DSN=A.B.G0005V00,DISP=(OLD,KEEP),...
  ```

  or

  ```
  //DD01  DD  DSN=X.Y.Z,DISP=(OLD,KEEP),...
  ```

Because CA WA Restart Option often handles GDG data sets differently than it handles simple data sets, the previous definitions must be recalled.

If the RMS Step Abends

If the RMS step abends during a P, F, or R processing run, resubmit the job with the same PARM that U11RMS was attempting to execute when the abend occurred. DO NOT change to R processing if the RMS step abends during P or F processing. Unpredictable results may occur if R processing is attempted. Additionally, if the RMS step abends, jobs will track, if they have previously had a JCR0 (CTL) record built in the JEHF being accessed, otherwise; they will not track.

Non-U11RMS Step Condition Code Checking

JCL can be structured so that steps conditionally execute by coding EXEC statement COND or IF/THEN/ELSE condition code checks to the completion codes of prior steps.

During CA WA Restart Option Production processing, U11RMS assumes that all steps with non-U11RMS step specific condition code checks will execute. If CA WA Restart Option job level cleanup is in effect, U11RMS deletes all simple data sets whose first DD reference is with DISP=NEW. If CA WA Restart Option step level cleanup is in effect, U11RMS stages information for these data sets so that the CA WA Restart Option SMF Step Initiation (USI) exit can perform the delete if it determines that the step with the first DISP=NEW reference will actually execute.

While a job is executing, the CA WA Restart Option Tracking System stores the return code from each step in the appropriate CMT step record. On a rerun, these return codes are posted back to the Job queue to recreate the environment that existed up to the step at which the job is restarted so that steps which would not have executed during the previous run of a job will not execute during the rerun of the job.

Steps that are conditionally executed based on a previously abended step (by coding the EXEC statement with COND=EVEN or COND=ONLY or IF/THEN/ELSE abend or ABENDCC completion code checks) are considered to have executed during the run in which the abend occurred. On a rerun, a not executed (NOEX) condition is posted to the Job queue for the abending step.

During CA WA Restart Option Rerun processing, U11RMS determines whether steps with COND condition code checks execute based on step condition codes saved in the CMT tables during the previous run. CA WA Restart Option performs no data set or catalog maintenance for steps which it determines will not execute. If CA WA Restart Option job level cleanup is in effect, U11RMS performs data set and catalog maintenance on all other steps, even if they use IF/THEN/ELSE logic. If CA WA Restart Option step level cleanup is in effect, U11RMS stages information for these steps so that the CA WA Restart Option USI exit can perform maintenance if it determines that these steps will actually execute based on IF/THEN/ELSE evaluation at step initiation time.

The job in the following example is being restarted at USERSTP3. The last time this job ran, USERSTP1 completed with return code 0 and USERSTP2 completed with return code 4. These return codes are posted to the Job queue during CA WA Restart Option Rerun processing. The IF/THEN/ELSE condition code check for USERSTP3 will be satisfied and USERSTP3 will execute.

```
//JOBNAME   JOB
//CA11STEP  EXEC  PGM=U11RMS,PARM='R,USERSTP3'
  .
  .
  .
//USERSTP1  EXEC  PGM=USERPGM1
  .
  .
  .
//USERSTP2  EXEC  PGM=USERPGM2
  .
  .
  .
//   IF (RC=4 AND USERSTP1.RUN)
//   THEN
//USERSTP3  EXEC  PGM=USERPGM3
//   ENDIF
```

Step Specific to U11RMS Step Condition Code Checking

Using the EXEC statement COND or IF/THEN/ELSE JCL condition code testing facilities, the user can embed additional steps in CA WA Restart Option controlled jobs and control whether these steps execute during CA WA Restart Option Production or Rerun processing.

With Production processing, the U11RMS step returns a condition code of 0. With Rerun processing, the U11RMS step returns a condition code specified by the user. If no condition code setting is specified for the rerun, the value specified by the CA WA Restart Option installation option RETCODE is used.

During Production and Rerun processing, each step with a COND condition code check to the U11RMS step is evaluated to determine if that step executes or not. CA WA Restart Option performs no data set or catalog maintenance for steps which it determines will not execute.

The operating system controls whether steps with IF/THEN/ELSE checks to the U11RMS step will execute. IF/THEN/ELSE checks are not evaluated during U11RMS processing. If CA WA Restart Option job level cleanup is in effect, U11RMS performs data set and catalog maintenance for these steps.

An example of U11RMS step specific condition checking using COND follows:

```
//JOBNAME   JOB
//CA11STEP  EXEC  PGM=U11RMS,PARM='P'
  .
  .
  .
//USERSTP1  EXEC  PGM=USERPGM1
  .
  .
  .
//USERSTP2  EXEC  PGM=RELOAD,COND=(1,NE,CA11STEP)
//BACKUP    DD    DISP=OLD,DSN=BACKUP.MASTER.FILE
//MASTFILE  DD    DISP=NEW,DSN=MASTER.FILE
  .
  .
  .
//USERSTP3  EXEC  PGM=UPDATE
//MASTFILE  DD    DISP=OLD,DSN=MASTER.FILE
```

During Production processing, the COND condition code check to the U11RMS step in USERSTP2 is evaluated against the anticipated return code from U11RMS. The return code from U11RMS will be zero, therefore, USERSTP2 will not execute and MASTFILE will not be deleted. If this job abended in step USERSTP3 while performing a database update, it would be necessary to reload the database by restarting the job in USERSTP2. This would be accomplished by specifying:

```
//CA11STEP  EXEC  PGM=U11RMS,PARM='R,USERSTP2,CC=1'
```

During Rerun processing, the COND condition code check to the U11RMS step in USERSTP2 is evaluated against the anticipated return code from U11RMS. The return code from U11RMS is one, therefore, USERSTP2 executes and MASTFILE is uncataloged and scratched before the reload.

Return Code Processing

If the Tracking System is active, CA WA Restart Option automatically detects and reports on abend situations. If the Auto Setup feature is used, CA WA Restart Option can automatically set an abended job for restart. Optionally, CA WA Restart Option can also detect, take action, and report on user-defined unacceptable step condition codes.

Each CMT Job and Step record contains a HIRTCD (high return code) field which can be used to define unacceptable condition codes. The default setting of these fields is 0000, which indicates that step condition codes are not checked. HIRTCD is a four-position numeric field, and acceptable settings are from 0000 to 4095.

Use the Online System commands LJOB and LSTP to display the settings of these fields online. Update the fields using the Online System command CUPD (CMT Update) or the batch utilities U11OBD or U11UPD.

If HIRTCD in the CMT Job record is set to a nonzero value, CA WA Restart Option checks the return code of each step in the job and considers the job to have failed (abended) if any step returns a condition code equal to or greater than the specified value. If using the Auto Setup feature, Auto Setup is invoked when the job terminates and sets the job for restart.

If HIRTCD in the CMT Step record is set to a nonzero value, CA WA Restart Option checks the return code of the step and considers the job to have failed (abended) if the step return code is equal to or greater than the specified value. If the Auto Setup feature is used, Auto Setup is invoked when the job terminates and will set the job for restart.

If neither the CMT Job record nor the CMT Step record contain a nonzero value in the HIRTCD field, the GBLHIRC configuration file parameter (if set to a nonzero value) is examined. If the step return code is equal to or greater than the specified value, the job is considered to have failed. If the Auto Setup feature is used, Auto Setup is invoked when the job terminates and sets the job for restart.

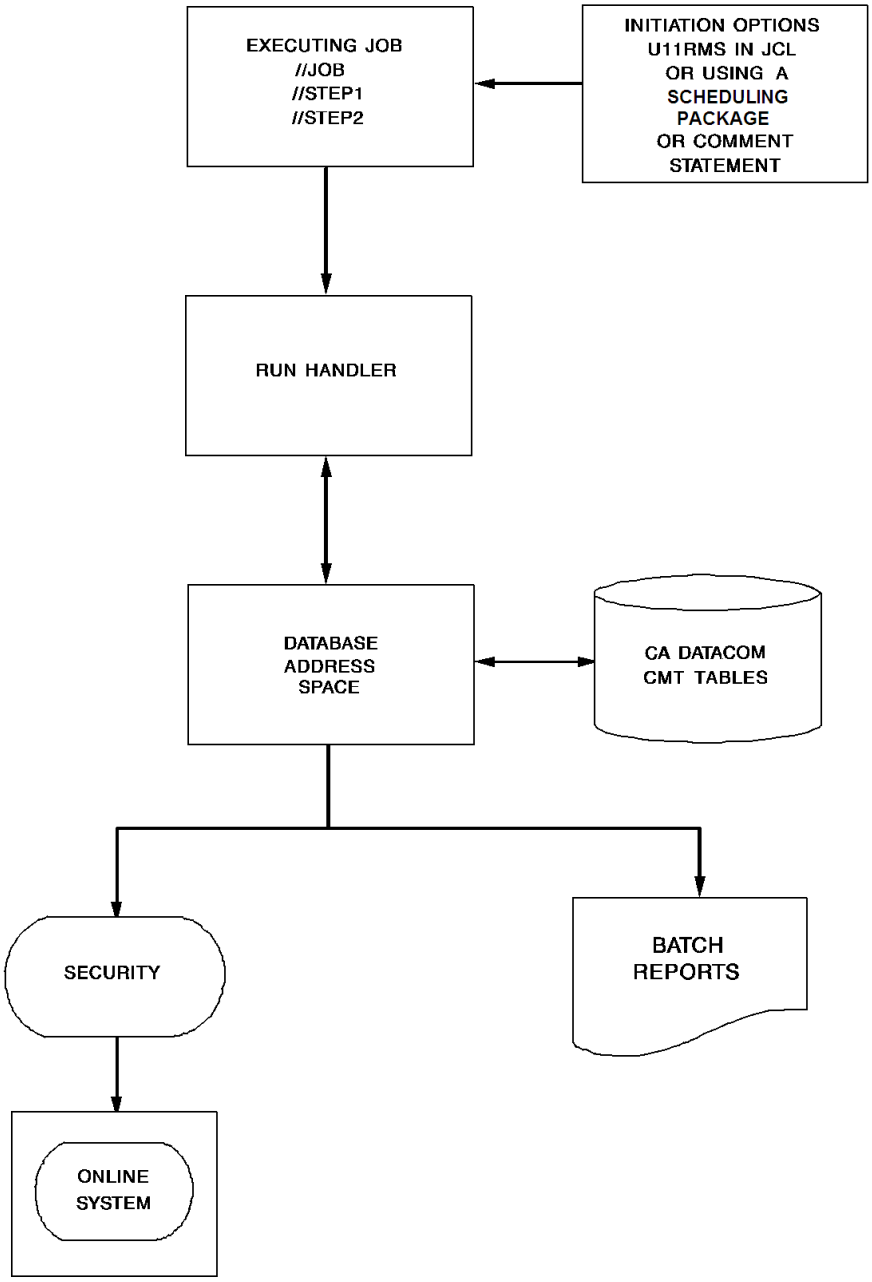
A Tracking System user exit, U11CCREX, is provided to operate with return code processing. This exit makes it possible to override the default handling of the HIRTCD value for a job and its steps.

CA WA Restart Option does not stop processing of the job when an unacceptable condition code is encountered. The job processes until it reaches completion or abends.

A scheduling package can notify CA WA Restart Option that it is in control of condition codes and that CA WA Restart Option should not perform condition code processing (the SCHCC=Y RMS parameter). Through the scheduling package interface module U11SCHCC, CA WA Restart Option can be notified that a JOB has failed in a particular step and cause CA WA Restart Option to set the job for restart as appropriate. Each scheduling package documents the steps necessary to facilitate this function.

Run Handler Operation

The Run Handler encompasses three major components of CA WA Restart Option: Catalog Management Table, Online System, and batch reports. The following figure shows the relationship of the Run Handler within the product and how it interfaces with other components:



Catalog Management Table (CMT)

The functioning of the Run Handler is based on information stored in the Catalog Management Table (CMT). CA WA Restart Option uses the CMT to properly manage the catalog.

Contents of the CMT

The CMT is a set of tables on a CA Datacom database. The Database Address Space gives the CMT the appearance of a partitioned data set (PDS) which contains entries that are automatically built by CA WA Restart Option for every job being managed by CA WA Restart Option. One entry for each job is generated; each entry contains a Job record, Step records, and DD records.

Each CMT entry name is the up to eight-character job name. The CMT entry does not contain DD records for dummy data sets, temporary (&&) data sets, or SYSIN/SYSOUT data sets.

The CMT always reflects the JCL and execution conditions existing at the latest production run. With JCL for a job remaining unchanged at the time of next execution, CA WA Restart Option simply updates existing CMT records for the job.

Online facilities are available to inquire about CMT status (CINQ) or perform actual updates to the CMT (CUPD).

This table summarizes the contents of the CMT records.

Job Record	Step Record	DD Record
Last run type (F, P, R) Date of last production run Date of last rerun Number of production runs Number of reruns Job restart indicator Restart indicator User accounting data (60 bytes) High return code Auto setup indicators	Step name Step restart indicator Last completion code High return code	GDG number Absolute and relative Device type Disposition DDNAME Data set name or GDG index Data set action

Following are the Job Record Fields:

Last Run Type

The processing code used the last time the job processed. The processing code recorded is either F, P, or R.

Date of Last Production Run

The date of the last production run of the job.

Date of Last Rerun

The date of the last rerun of the job.

Number of Production Runs

The total number of production runs of the job in the current year.

Number of Reruns

The total number of reruns of the job in the current year.

Job Restart Indicator

Hexadecimal value indicating one or more of the following:

80

User set the job as nonrestartable

40

Next P force F

20

CA WA Restart Option set the job as nonrestartable

10

Last run was P,PSEUDO=YES

00

No restrictions

Restart Indicator

An indicator which designates whether the job has been preset for restart.

User Accounting Data

A 60-byte field of user-defined information.

High Return Code

CA WA Restart Option considers the job to have failed if the return code of any step is equal to or greater than this value. This feature is activated if the user supplies a nonzero value. A Scheduling Package may override the code if the RMS parameter SCHCC=Y is provided.

Auto Setup Indicators

Two flags specifying that the Auto Setup feature is always active (AUTOSAL) or never active (AUTOSNV) for the job.

Following are the Step Record Fields:

Step Name

A unique step name to enable restarts.

Step Restart Indicator

Hexadecimal value indicating one or more of the following conditions:

80

User set step as nonrestartable

40

Step will not run in P processing because of CA WA Restart Option condition code checking

20

CA WA Restart Option set the step as nonrestartable

10

Step not eligible for Auto Setup

08

User set step as restartable

04

User set step as nonrestartable (CA11NR DD)

00

No restrictions

Last Completion Code

The completion code with which the step finished at the last runtime.

High Return Code

CA WA Restart Option considers the job to have failed if the return code of this step is equal to or greater than this value. This feature is activated if the user supplies a nonzero value. A Scheduling Package may override the code if the RMS parameter SCHCC=Y is provided.

Following are the DD Record Fields:

GDG Number

The absolute (G0000V00) and relative (+0, +1, and so forth) generation numbers of the GDG data set.

Device Type

The device type on which the data set is stored (TAPE or DASD).

Disposition

The three disposition subparameters for the data set.

DDNAME

The data definition name.

Data Set Name or GDG Index

The name of the data set or the GDG index name.

Data Set Action

The action to be taken on the data set.

S

Scratch/uncatalog the data set

N

No scratch to be performed (uncatalog only)

F

Previous scratch attempt failed

X

No action

More information:

CUPD - Catalog Management Table Update (see page 144)
CINQ - Catalog Management Table Inquiry (see page 142)
Keywords for U11UPD (see page 220)

Parameters to U11RMS

The Run Handler program, U11RMS, is parameter (PARM) driven. The Run Handler uses processing codes and other parameters to determine the type of processing to be performed. You designate the type of processing needed for a job and specify that as a parameter value to U11RMS. The various parameters can either be specified as a PARM value on the EXEC statement (EXEC PGM=U11RMS,PARM='…'), or through a SYSIN data set, or both.

When both means are used to specify the parameters, the SYSIN parameters are appended to the ones specified on the EXEC statement. The result is a continuous series of parameters that U11RMS uses to control processing for the job. SYSIN parameters cannot override the positional parameters such as processing code or starting/ending steps specified as parameters on the EXEC statement. Parameters specified on the EXEC statement can continue to multiple lines according to JCL coding rules.

Parameters specified on SYSIN can continue to additional lines in two different ways.

- A parameter ending with a comma and a space indicates additional parameters follow on the next line.
- A nonblank character in column 72 indicates that the current parameter is continued starting in column 1 of the next line.

An asterisk in column 1 indicates a comment line unless a nonblank character was found in column 72 of the previous line.

Examples:

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
//RMSSTEP EXEC PGM=U11RMS,PARM='R'
//SYSIN    DD *
* Rerun 3 steps for the manager
RUNPROC.STEP005,RUNPROC.STEP7,
BYPGDG=YES,CC=1000,
RE=/THE REASON-FOR-RERUN MAY BE 40_BYTESLONG/
/*
```

The result is a continuous 96-character string:

```
R,RUNPROC.STEP005,RUNPROC.STEP7,BYPGDG=YES,CC=1000,RE=/THE REASON-FOR-RERUN MAY BE 40_BYTESLONG/
```

The following (with a nonblank character in column 72) results in the same 96-character string:

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7--
* Rerun 3 steps for the manager
RUNPROC.STEP005,RUNPROC.STEP7,BYPGDG=YES,CC=1000,RE=/THE REASON-FOR-RERX
UN MAY BE 40_BYTESLONG/
```

Processing Codes

The Run Handler program, U11RMS, uses the following processing codes:

P

Production processing. Either Active or Passive (Pseudo) production processing is executed with the P processing code.

R

Rerun/Restart processing. Either Active or Passive (Pseudo) rerun processing is executed with the R processing code.

F

Format processing (reformats the job's CMT entry and performs P processing).

A

Add processing (adds a job to the CMT).

N

Null processing (suppresses CA WA Restart Option control).

O

Operator processing (allows operator to specify run type).

B

Backout processing.

C

Current values from CMT for processing code and starting and ending steps.

The following topics discuss each processing code and variations (Active and Pseudo processing) in detail and present examples showing JCL variations.

P - Production (Active) Processing

The P processing code causes U11RMS to perform production processing. Production processing has two forms:

Active

Uncatalogs and scratches data sets.

Pseudo Processing

Often referred to as Passive P processing. This form of processing does not uncatalog or scratch data sets.

Production (active) processing is normally used on jobs that have been previously tested by using pseudo processing. It is not advisable to run a new job that has never run under CA WA Restart Option without first running it in pseudo processing.

More information:

P - Production (Pseudo) Processing (see page 65)

Processing Actions

Active P processing performs actual production processing. It encompasses updating the CMT Job record with history information, capturing the generation numbers for GDG data sets, and ensuring that all output (DISP=NEW) simple data sets are uncataloged and scratched for the current production run. Specifically, the production processing code P causes the following actions:

- If no CMT entry exists for the job, one is built. (U11RMS automatically switches to F processing to accomplish the building of a CMT entry for the job.)
- If Auto Setup or PRE processing has been invoked indicating R processing should take place, rerun processing occurs rather than production processing.

- If the production JCL has changed significantly since the last production run, two options are available:
  - If Automatic F processing (AUTOF=YES) was specified at CA WA Restart Option installation time, a new CMT entry is built. (U11RMS automatically switches to F processing to accomplish the building of a CMT entry for the job.)
  - If AUTOF=NO, a user abend is issued. You must then force Format processing to occur by either changing the U11RMS PARM to F or using the online command PRE to set the next run for F processing. If using PRE, run the job with a U11RMS PARM of P.

    Note: A user exit, U11UPFEX, is available that can be invoked during P processing to determine if a job should have F processing performed prior to P processing. When the exit code is executed, the CMT Job record and job name are available to the user for examination. If AUTOF=NO is specified and a major JCL change has been made, an abend occurs and abend message U0020 is issued.
- The CMT Job record is updated with history information; for example, the CPNUM counter is updated, with the LPDATE, LPTIME, and LTYPE fields.

  Note: For more information about these fields, see the *Programming Guide*.
- Generation Data Group (GDG) data set information is captured and recorded (for example, GDG index name, relative generation number, and absolute generation/version number). This information is captured for each GDG data set in the job in anticipation of a possible rerun or restart.
- All simple (non-GDG) data sets whose first DD reference is with DISP=NEW are uncataloged and also are scratched if on disk. This action prevents NOT CATLGD 2 situations. This catalog and data set maintenance is not performed on data sets which are exempted from it by the user exits, U11RDSEX or U11UCSEX, or the Volume Include/Exclude List.

  Note: If CA WA Restart Option step level cleanup is in effect, U11RMS stages information for these data sets so that the SMF Step Initiation (USI) exit can perform the maintenance if it determines that the step will actually execute based on abend/condition codes and IF/THEN/ELSE clauses.

Procedure

Implementation of CA WA Restart Option can be staged systematically by job, since it is activated for any job by supplying the U11RMS step as the first step of the job. Perform the following three tasks when a production job is to execute under CA WA Restart Option control:

1. Insert the U11RMS program as the first step of the job.
2. Analyze the production job stream to determine which steps are restartable. Note the restartable steps for each job in the JCL so that other personnel can determine which steps are valid starting steps for job restart. A convenient way to document this information is to place a comment following each EXEC statement stating whether the step is restartable. Also, set the nonrestartable flag for nonrestartable steps in the CMT (CA WA Restart Option automatically marks any step using a temporary or passed data set or containing a volume refer-back as nonrestartable.). If you chose Auto Setup as a system option, its calculation of where to restart a job takes the restartability information into account.
3. Execute the job with the P processing code. The EXEC statement to effect P processing follows:

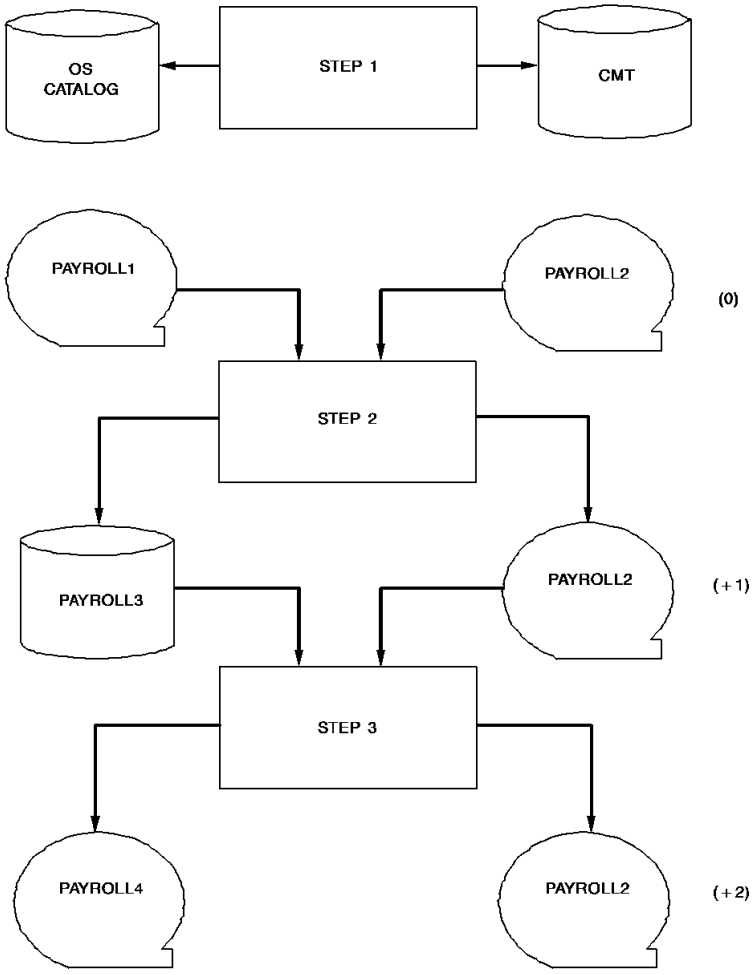
   ```
   //stepname   EXEC  [PROC=]U11RMS,TYPRUN='P'
   ```

More information:

U11RMS Step in JCL (see page 86)
U11RMS Step Using CA Workload Automation SE (see page 90)
U11RMS Step Using CA Scheduler JM (see page 90)
U11RMS Step Using CA Jobtrac JM (see page 90)
U11RMS Step Using a Comment Statement (see page 91)
Set/Reset Restartable Flag (see page 107)
U11RMS Step Using CA Workload Automation EE (see page 90)

Example

The following figure shows production processing in the active mode:




```
//STEP1 EXEC U11RMS,TYPRUN='P'
//*
//STEP2 EXEC PGM=FACTORY
//DD010 DD   DSN=PAYROLL1,DISP=OLD
//DD020 DD   DSN=PAYROLL2(0),DISP=OLD
//DD030 DD   DSN=PAYROLL2(+1),DISP=(,CATLG),UNIT=TAPE
//DD040 DD   DSN=PAYROLL3,DISP=(,CATLG),UNIT=DISK
//*
//STEP3 EXEC PGM=FICA
//DD010 DD   DSN=PAYROLL3,DISP=SHR
//DD020 DD   DSN=PAYROLL2(+1),DISP=OLD
//DD030 DD   DSN=PAYROLL2(+2),DISP=(,CATLG),UNIT=TAPE
//DD040 DD   DSN=PAYROLL4,DISP=(,CATLG),UNIT=TAPE
```

In this example, the Run Handler performs the following actions:

The U11RMS step is the first step in the job. The Run Handler analyzes the JCL and the catalog and records data in the CMT.

The Run Handler identifies all disk and tape data sets to be created in the job. If any non-GDG (simple) data sets to be created have names identical to old data sets already existing, the old versions of disk data sets are scratched and uncataloged, and tape data sets are uncataloged. This data set maintenance is performed by either the U11RMS step or the CA WA Restart Option SMF Step Initiation (USI) exit based on processing options.

Uncatalogs and scratches disk data set PAYROLL3 (created in Step 2). Uncatalogs tape data set PAYROLL4 created in Step 3.

A NOT CATLGD 2 could have occurred with PAYROLL3 and PAYROLL4 in this job. However, the Run Handler prevented that situation by automatically scratching and uncataloging these data sets.

For each GDG data set, CA WA Restart Option records the relative generation (bias) number in the CMT DD record. A locate to the catalog is done to retrieve the absolute generation/version number (G0000V00), and this is also recorded in the CMT DD record. During production processing, GDG data sets are NOT uncataloged or scratched. In this example, if the current (0) generation of GDG PAYROLL2 is G0010V00, then CA WA Restart Option records the following:

DDNAME	Relative Generation	Absolute Generation/Version
STEP2		
DD020	+000	G0010V00
DD030	+001	G0011V00
STEP3		
DD020	+001	G0011V00
DD030	+002	G0012V00

P - Production (Pseudo) Processing

The P processing code in the U11RMS PARM field specifies that the job is being run as a production run. The additional parameter of PSEUDO=YES specifies to perform Pseudo Production processing. Pseudo Production processing is a useful tool to test a job on its first run to verify the actions CA WA Restart Option will take.

Processing Actions

A pseudo production run performs all of the same processing actions as a production run *except* that uncataloging and scratching of data sets does not occur. PSEUDO=YES causes passive production run processing, that is, CA WA Restart Option reports on what U11RMS would have done if active P processing had been requested. Remember, no actual scratching/uncataloging occurs as a result of P,PSEUDO=YES.

Additionally, this processing generates a series of messages detailing the catalog and data set scratching U11RMS *would* have performed had PSEUDO=YES not been specified.

Either a rerun (R) or a pseudo rerun (R,PSEUDO=YES) can follow a pseudo production run. If a pseudo production run abends, and if Auto Setup is in use, the job is set for pseudo restart.

Procedure

To run Pseudo processing, insert the PSEUDO parameter in the U11RMS step as follows:

```
//stepname  EXEC  [PROC=]U11RMS,TYPRUN='P,PSEUDO=YES'
```

R - Rerun/Restart Processing

The R processing code in the U11RMS PARM field specifies that the job is being rerun/restarted and overrides any parameters established by the preprocessor (U11PRE or PRE) or by Auto Setup.

If PRE or U11PRE has not already performed catalog and data set maintenance, U11RMS does this now.

Processing Actions

The rerun processing code R specifies that the job is being rerun and overrides any parameters established by the preprocessor or Auto Setup. When the R processing code is encountered, U11RMS performs the following:

- Attempts to scratch and uncatalog all data sets which are to be recreated in the execution of the job.
- Attempts to expire tape data sets to be recreated if such data sets are cataloged to tape volumes which are controlled by CA 1 or CA TLMS, and if the installation option unique to the system (CA1= or TLMS=) has been specified as YES. For CA 1, the expiration date posted in the Tape Management Catalog (TMC) is calculated from the rerun date plus the number of days selected as a CA 1 user option (RR=) during installation of CA 1. For TLMS, the expiration date posted to the Volume Master File (VMF) is the date of the rerun.

  The preceding functions do not occur for:

  - Data sets created NEW in steps not to be rerun.
  - Data sets that are added or changed.
  - Output data set DD statements set to DUMMY in steps that are to be rerun.
  - Data sets which are exempted from maintenance by the user exits, U11RDSEX or U11UCSEX, or the Volume Include/Exclude List.

  Note: If CA WA Restart Option Step Level Cleanup is in effect, U11RMS stages information for these data sets so that the SMF Step Initiation (USI) exit can perform the maintenance if it determines that the step will actually execute based on abend/condition codes and IF/THEN/ELSE clauses.
- Modifies the Job queue so that the same input and output generations of GDG data sets are used as were used in the prior production run. The GDGNUM field in the CMT DD record is used to supply the generation. You can use the Online System commands SIM or CINQ to determine which generation of a GDG will be used. The Reserved Data Set Exit, U11RDSEX, can exempt a GDG data set from this GDG bias resolution.

- Modifies the Job queue so that return codes from the previous run are available.
- Records the run date and time in the CMT Job record as history information.
- Sets the necessary control blocks in the Job queue to permit the job to start or end at the specified steps.
- Sets the U11RMS return code specified by the CC= parameter on the U11RMS PARM or SYSIN control statement.
- If no return code (CC=) is specified, uses the default specified at the time of CA WA Restart Option installation. To check the value of RETCODE, see Summary of User Installation Options (see page 279), or use the OINQ inquiry.
- Optionally requires verification that the rerun is authorized. For the value of OPVER, see Summary of User Installation Options (see page 279), or use the OINQ inquiry to determine its value. Also, user exit, U11RRSEX, can prevent R processing for a job.

Procedure

To rerun a job, use one of the following methods:

- Change the processing code of the U11RMS step in the job's JCL to R.
- Insert the following CA-11 comment statement in the job's JCL:

  ```
  //*CA-11 PARM='R,...'
  ```

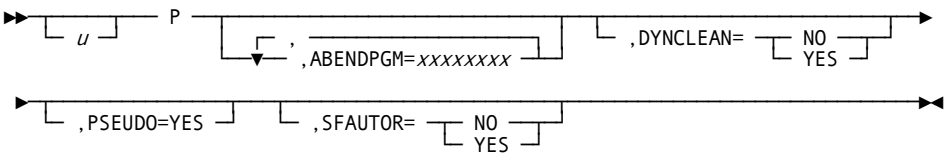
- Use the PRE (preprocessing) or REST (RESTART) commands for online setup or the U11PRE batch utility.

  Note: Specifying an invalid PARM on the U11RMS step of the job or in the //*CA-11 PARM F comment statement can have unexpected tracking results. Specifically, a job that completed normally and is being restarted with the invalid PARM is tracked as a production run. To prevent an invalid PARM, use the online interface to set up jobs for restart.

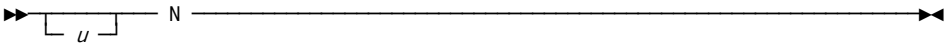
U11RMS PARM Values

The PARM field has several formats. O processing asks the operator for restart parameters. The other processing codes have these formats:

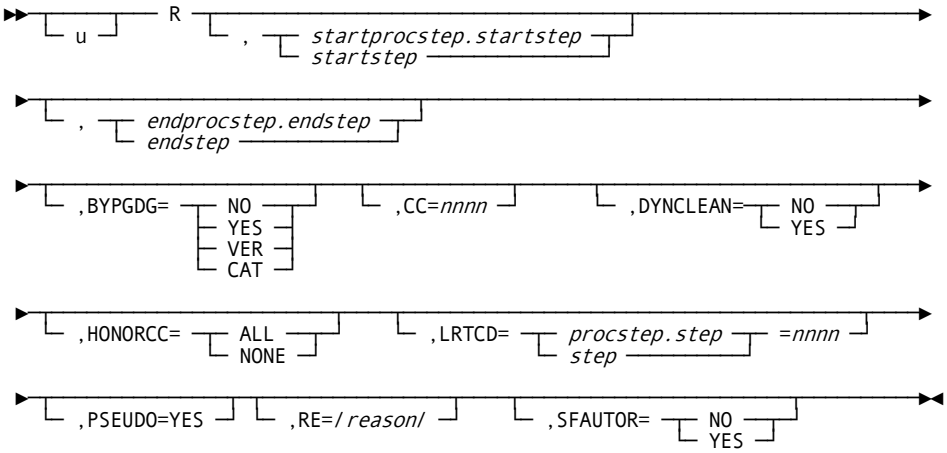
This command has the following format for P processing:



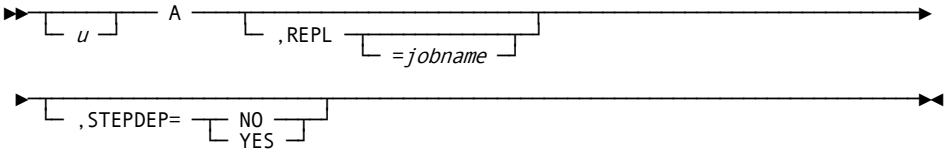
This command has the following format for N processing:



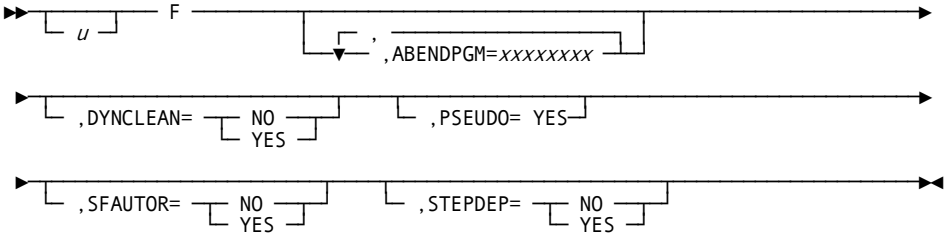
This command has the following format for R processing:



This command has the following format for A processing:



This command has the following format for F processing:



u

(Optional) Specifies the usage code. Use this user-defined code to prevent accidental job reruns. If the usage code parameter in the User Option Table is set to YES, a usage code must be supplied and is required to be changed before each submission of the job. If the usage code parameter in the User Option Table is set to RESTART, usage codes are only used on restarts and must be changed between consecutive restarts within a production cycle. If the usage code parameter in the User Option Table is set to NO, no usage codes are required, and the U11RMS step fails.

P|R|F|N|A|O

Specifies the processing code (P, R, F, N, A, O).

startstep

An option of R processing only; *startstep* is stepname or step number in the execution JCL that executes the program with which the rerun is to start. The default is the first step of the job.

startprocstep.startstep

An option of R processing only; *startprocstep* is the stepname that executes the PROC containing the step at which the rerun is to start. startstep is the stepname in the PROC at which the rerun is to start.

endstep

An option of R processing only; *endstep* stepname or step number in the execution JCL that executes the step with which the rerun is to end. The default is the last step of the job.

endprocstep.endstep

An option of R processing only; endprocstep is the stepname that executes the PROC containing the step at which the rerun is to stop. endstep is the stepname in the PROC at which the rerun is to stop.

Note: If a startprocstep or endprocstep is specified, step number is not valid.

Step number is relative to the RMS step. The RMS step is 0.

ABENDPGM

Designates a job step program as an abender program. An abender program is typically a program that abends whenever it is executed. Its purpose is to abnormally terminate the job if the previous step sets a return code indicating an error. The COND JCL parameter would bypass execution of this step if a normal return code is issued. The designation as an abender program causes the step to be flagged as nonrestartable. You can enter the ABENDPGM keyword multiple times to designate more than one abender program. ABENDPGM is also a configuration file parameter. The ABENDPGM parameter is recognized on F runs. If the designation changes on a P run, a format is forced.

Limits: Only one program can be designated per keyword, but you can enter multiple keywords. {ABENDPGM=PROGRAM1,ABENDPGM=PROGRAM2}

BYPGDG

An option of R processing only; BYPGDG overrides the logic of Bypass Input Generation Data Group Processing for this rerun only. This allows the use of additional or different generation data groups as input.

NO

Specifies that additional or different generation data groups are not to be used as input.

YES

Specifies that additional or different generation data groups are to be used as input.

VER

Verify that GDG bias resolution recorded in the CMT agrees with the catalog.

CAT

Accept the catalog resolution for GDG data sets and save results in the CMT.

Note: BYPGDG=CAT can be required to restart in a particular step by adding //CA11CAT DD DUMMY to that step.

CC=*nnnn*

An option of R processing only; CC overrides the rerun return code specified at the time of CA WA Restart Option installation (RETCODE) where *nnnn* is the value given to the return code. It can range from 0 to 4095 and must be numeric.

DYNCLEAN

An option of F, P, and R processing. Specifies whether to perform data set maintenance for dynamically allocated data sets. Specifying this parameter lets you override the default DYNCLEAN value specified in the configuration file for the execution of the job.

Important! Cleanup of dynamically allocated data sets does not occur the first time a job runs and each time Format processing is performed (explicitly or implicitly).

NO

Does not perform data set maintenance for dynamically allocated data sets.

YES

Performs data set maintenance for dynamically allocated data sets.

HONORCC

Indicates whether evaluation of the conditional step execution honors the condition codes of all previous steps.

ALL

Indicates that evaluation of conditional step execution considers condition codes in steps before the restart step. If the starting step of a rerun is located after a step which abended in an earlier run, the abended step is considered as not having executed.

NONE

Disables the checking of condition codes from the previous run during a restart. HONORCC=NONE does not disable dependencies with respect to the U11RMS step.

LRTCD=*procstep.step=nnnn*|LRTCD=*step=nnnn*

An option of R processing only; LRTCD overrides the last return code for the specified step.

procstep

Indicates the stepname that executes the PROC containing the step for which the last return code is to be changed.

step

Indicates stepname for which the last return code is to be changed.

nnnn

Indicates is the return code you want for the step. It can be any numeric value in the range of 0 to 4095.

PSEUDO=YES

Indicates that processing under U11RMS is to be reported but not performed.

RE=/*reason*/

An option of R processing only; *reason* specifies a reason for rerun for the last execution of the job. The reason can be any word, phrase, code, or number for a maximum of 40 characters enclosed in slashes (/).

REPL[=*jobname*]

An option of A processing only; indicates that if the CMT entry exists, it is to be replaced. If REPL=*jobname* is present, the job name entry is to be replaced.

SFAUTOR

An option of F, P, and R processing. Specifies whether to set jobs for restart automatically if a system failure occurs while the job is executing. Specifying this parameter lets you override the default SFAUTOR value specified in the configuration file for the execution of the job.

NO

Does not set jobs for restart automatically if a system failure occurs while the job is executing.

YES

Sets jobs for restart automatically if a system failure occurs while the job is executing.

STEPDEP

An option of F or A processing only; indicates whether to create and use step dependency table entries for this job. Step dependency entries are used in restarting jobs that use temporary data sets. This parameter overrides the STEPDEP value specified in the DBAS configuration file.

NO

Specifies not to create step dependency table entries. This is the default unless STEPDEP=YES is specified in the DBAS configuration file.

YES

Specifies to create and use step dependency table entries in bypassing redundant steps on reruns where temporary data sets are used.

More information:

Processing Codes (see page 60)
Reducing Redundant Steps During Rerun (see page 47)

Submitting a Rerun

The following steps outline the procedure to submit a rerun. Proceed through the steps answering the questions and performing the indicated tasks.

1. Is the job set for restart?

   - YES—Go to Step 2.
   - NO—Go to Step 3.

   Determine whether the job is set for restart/rerun by using the LSTP inquiry.

2. Are the established restart parameters acceptable?

   - YES—Go to Step 5 (see the note that follows).
   - NO—Go to Step 3.

   If Auto Setup set the job for restart, the job log for the abended run contains a CA WA Restart Option message specifying the restart setup. PRE, U11PRE, or CUPD can also have set the job for restart. In any case, review the restart parameters by using the LSTP inquiry.

   Note: If submitting the job with any parameter other than P, none of the restart parameters previously established take effect. Therefore, establish all parameter information for a restart prior to the submission of the job, unless giving the job an explicit U11RMS parameter of R and all other associated parameters.

3. Determine what setup parameters are required (that is, the starting and ending steps, the CA WA Restart Option return code, and so forth). Remember, some steps are nonrestartable and can be marked as such in the CMT. If in doubt, use the LSTP inquiry to determine step restartability. Additionally, if a reason is required for all reruns, the reason should be determined. If a reason is to be entered, it can be submitted in a number of ways: through the Online System, U11RMS, U11PRE, the CA 7 Restart panel, or the CA Scheduler Rerun Job panel.

4. Is a Pull List required?

   - NO—Go to Step 5.

   Generate a Pull List through the Online System. To generate a Pull List, issue the following command to the Online System:

   ```
   PULL jobname
   ```

   All Pull List information comes from the catalog. If the job is set for restart, PULL displays only the data sets/volumes required for the steps which will be rerun.

5. Submit the job. The rerun submission is now complete. Do not go any further.

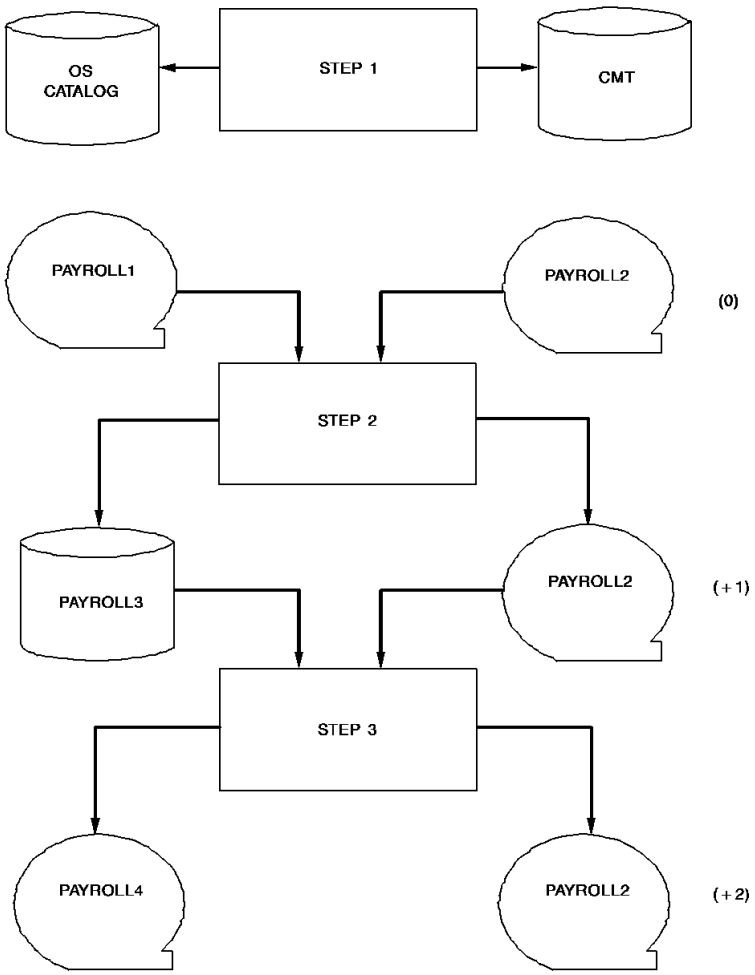
   Note to JES3 Users: If the CA WA Restart Option JES3 interface is not being used, choose the installation option OLMAINT=YES and use either PRE or U11PRE prior to submitting the job. This corrects the catalog prior to the submission of the job for restart or rerun.

More information:

Enter Reason-for-Rerun (see page 105)
LSTP - Job Step Inquiry (see page 164)
PULL - Pull List Request (see page 176)

Example

The following figure shows processing that occurs in a typical rerun:



```
//STEP1 EXEC U11RMS,TYPRUN='R'
//*
//STEP2 EXEC PGM=ADMIN
//DD010 DD   DSN=PAYROLL1,DISP=OLD
//DD020 DD   DSN=PAYROLL2(0),DISP=OLD
//DD030 DD   DSN=PAYROLL2(+1),DISP=(,CATLG),UNIT=TAPE
//DD040 DD   DSN=PAYROLL3,DISP=(,CATLG),UNIT=DISK
//*
//STEP3 EXEC PGM=FICA
//DD010 DD   DSN=PAYROLL3,DISP=SHR
//DD020 DD   DSN=PAYROLL2(+1),DISP=OLD
//DD030 DD   DSN=PAYROLL2(+2),DISP=(,CATLG),UNIT=TAPE
//DD040 DD   DSN=PAYROLL4,DISP=(,CATLG),UNIT=TAPE
```

In this example, the Run Handler performs the following actions:

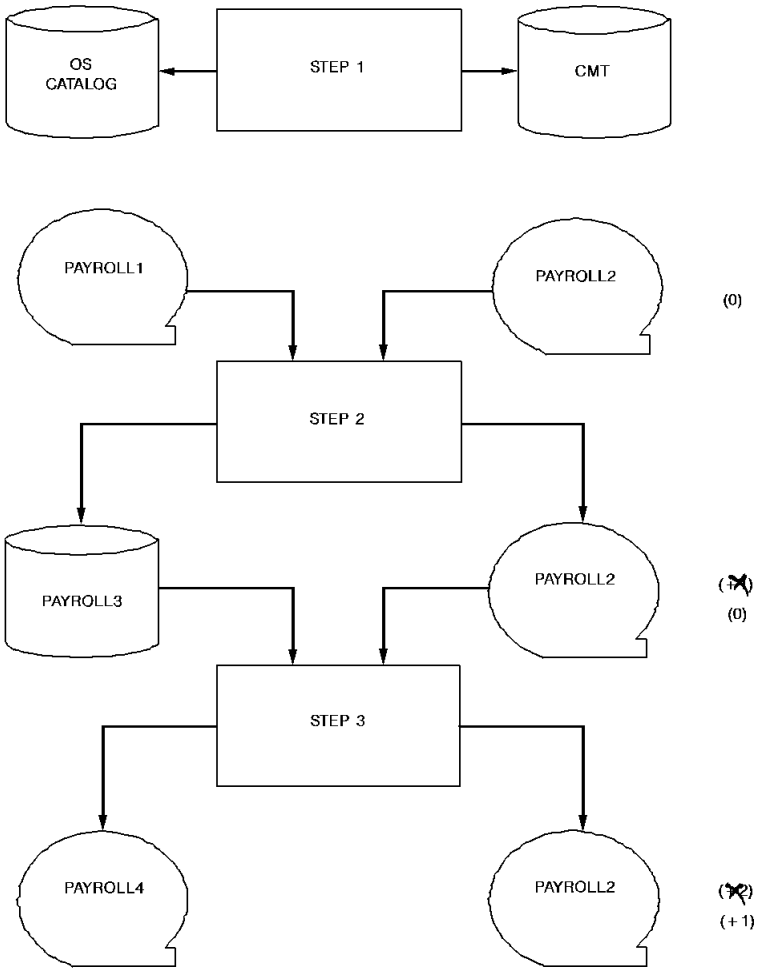
The U11RMS step is the first step in the job. The Run Handler analyzes the JCL and the catalog and uses information recorded in the CMT during the prior Production run.

With GDG data sets, CA WA Restart Option attempts to force the use of the same input generations and recreation of the same output generations as in the previous Production run. To accomplish this, CA WA Restart Option uncatalogs PAYROLL2(+1) that was created in STEP2 of the previous run. Recall from production processing example (see page 64) that the absolute generation/version number was G0011V00. PAYROLL2(+2) (G0012V00) is also uncataloged. If CA 1 or CA TLMS is installed, these tape data sets are automatically expired if they are cataloged. Also, CA WA Restart Option will modify the job queue so that the absolute generation/version numbers of the GDG data sets, rather than the relative generation numbers, are supplied.

Simple data sets PAYROLL3 and PAYROLL4 are uncataloged. This prevents a possible NOT CATLGD 2 situation from occurring. PAYROLL3 is also scratched since it resides on disk. Tape data set PAYROLL4 is expired if it is cataloged and is under the control of CA 1 or CA TLMS.

This data set maintenance, both for GDG and simple data sets, is performed by either the U11RMS step or the SMF Step Initiation (USI) exit based on processing options.

The following figure shows processing that occurs in a typical step restart:




```
//STEP1 EXEC U11RMS,TYPRUN='R,STEP3'
//*
//STEP2 EXEC PGM=ADMIN
//DD016 DD   DSN=PAYROLL1,DISP=OLD
//DD026 DD   DSN=PAYROLL2(0),DISP=OLD
//DD036 DD   DSN=PAYROLL2(+1),DISP=(,CATLG),UNIT=TAPE
//DD046 DD   DSN=PAYROLL3,DISP=(,CATLG),UNIT=DISK
//*
//STEP3 EXEC PGM=FICA
//DD010 DD   DSN=PAYROLL3,DISP=SHR
//DD020 DD   DSN=PAYROLL2(+1),DISP=OLD
//DD030 DD   DSN=PAYROLL2(+2),DISP=(,CATLG),UNIT=TAPE
//DD040 DD   DSN=PAYROLL4,DISP=(,CATLG),UNIT=TAPE
```

In this example, the Run Handler performs the following actions:

The U11RMS step is the first step in the job. The Run Handler analyzes the JCL and the catalog and uses information recorded in the CMT during the prior Production run.

For this example, a step restart is to begin in Step 3. Step 2 is automatically bypassed when the restart is set at Step 3.

In Step 3, the first step of the restart, the following GDG adjustments are made for:

1. Data set PAYROLL2 DSN=PAYROLL2(+1),DISP=OLD is changed to DSN=PAYROLL2.G0011V00,DISP=OLD
2. Data set PAYROLL2 DSN=PAYROLL2(+2),DISP=(,CATLG) is changed to DSN=PAYROLL2.G0012V00,DISP=(,CATLG)

Also, tape data sets PAYROLL4 and PAYROLL2(+2) are uncataloged since they will be recreated. If CA 1 or CA TLMS is installed, these data sets are also expired.

This data set maintenance, both for GDG and simple data sets, is performed by either the U11RMS step or the SMF Step Initiation (USI) exit based on processing options.

The restart shown in this example required no JCL changes for the step restart to occur. Step 2 was automatically bypassed, GDG bias numbers did not need to be manually changed because CA WA Restart Option supplied absolute generation/version numbers, and catalog/data set maintenance was handled automatically.

Effect of JCL Changes on U11RMS

CA WA Restart Option must gain control whenever a job is executed to maintain continuous current catalog and data set information. This control is imperative for either a production run or a rerun. In a production run, CA WA Restart Option gathers job step and data set information and stores it for use in setting up a possible rerun/restart. In a rerun/restart situation, CA WA Restart Option performs the necessary catalog and data set maintenance and controls which steps are executed.

Processing Actions

During production processing, CA WA Restart Option compares the submitted JCL with the job's CMT entry. If a significant JCL change is detected, CA WA Restart Option takes one of two actions depending on the setting of the Automatic Format (AUTOF) user installation option. AUTOF is only triggered during production processing.

- If AUTOF=YES, CA WA Restart Option switches to format processing to build a new CMT entry for the job.
- If AUTOF=NO, CA WA Restart Option issues a user abend. The user must then force format processing to occur.

Six types of JCL changes trigger an AUTOF:

- Adding a new step.
- Changing the name of an existing step.
- Deleting an existing step.
- Adding a significant DD statement to an existing step.
- Deleting a significant DD statement from an existing step.
- Changing the DDNAME, DATA SET NAME, GDG INDEX, or GDG BIAS on a significant DD statement within an existing step.

A significant DD statement is defined as any DD statement which contains a DSN other than NULLFILE, an && temporary name, SYSIN, or SYSOUT.

The philosophy of CA WA Restart Option R processing is to exactly reproduce the production run. CA WA Restart Option allows some JCL changes prior to executing a rerun, but certain situations can occur where you need to make significant changes to the JCL preventing CA WA Restart Option from being able to handle the restart. In this situation, a step restart using the RESTART= parameter on the JOB statement would be required to bypass the U11RMS step.

Note: A special case involving a JCL change deals with the detection of a changed VOL parameter for a DD during P processing. If AUTOF=YES, the CMT DD record is updated to reflect the new VOLSER.

Procedure

The following is a suggested procedure to use for executing a rerun/restart in case significant JCL changes are made.

1. If the installation option is OLMAINT=YES, the PRE command or U11PRE performs all necessary catalog maintenance. If OLMAINT=NO, use the following command online with the stepname to determine what catalog maintenance CA WA Restart Option would have done and do the required maintenance manually.

   ```
   SIM R,jobname
   ```

2. Add RESTART=*stepname or procstep.stepname* on the JOB statement.

Note: CA WA Restart Option is **not** available on subsequent abends of this job since the CMT is incorrect until the next F processing. Use the RESTART= parameter on the JOB statement and manual catalog maintenance until successful.

The following table shows the result of certain JCL changes encountered by U11RMS. The Change to JCL column indicates input or output data sets and the JCL change that is detected. Notice that three columns indicate the various processing types. The effect of a JCL change can vary from P processing to R processing and within R processing depending on whether Bypass GDG logic is in effect. Under the P Processing column, observe that certain JCL changes cause format processing (AUTOF) or an abend with a message (U/0020) issued, depending on the AUTOF option selected.

Note: IN specifies input data set. OUT specifies output data set. SDS specifies simple data set (non-GDG). VC specifies verification code.

Change to JCL	P Processing	R,BYPGDG=NO/CAT	R,BYPGDG=YES
ADD DD DUMMY	O K	O K	O K
DEL DD DUMMY	O K	O K	O K
IN-CHG TO DUMMY	AUTOF/U0020	O K	O K
OUT-CHG TO DUMMY	AUTOF/U0020	O K	O K
IN-SDS-CHG DSN	AUTOF/U0020	O K	O K
IN-SDS-ADD DD	AUTOF/U0020	O K	O K
IN-SDS-DEL DD	AUTOF/U0020	O K	O K
OUT-SDS-CHG DSN	AUTOF/U0020	U0020-VC=24	U0020-VC=24
OUT-SDS-ADD DD	AUTOF/U0020	U0020-VC=24	U0020-VC=24
OUT-SDS-DEL DD	AUTOF/U0020	U0020-VC=24	U0020-VC=24
IN-GDG-CHG INDEX	AUTOF/U0020	U0020-VC=24	O K
IN-GDG-CHG BIAS	AUTOF/U0020	U0020-VC=36	O K

Change to JCL	P Processing	R,BYPGDG=NO/CAT	R,BYPGDG=YES
IN-GDG-ABS OVERIDE	AUTOF/U0020	O K	O K
IN-GDG-ADD DD	AUTOF/U0020	U0020-VC=24	O K
IN-GDG-DEL DD	AUTOF/U0020	U0020-VC=24	O K
OUT-GDG-CHG INDEX	AUTOF/U0020	U0020-VC=32	U0020-VC=32
OUT-GDG-CHG BIAS	AUTOF/U0020	U0020-VC=36	U0020-VC=36
OUT-GDG-ABS OVERIDE	AUTOF/U0020	O K	O K
OUT-GDG-ADD DD	AUTOF/U0020	U0020-VC=32	U0020-VC=32
OUT-GDG-DEL DD	AUTOF/U0020	U0020-VC=20	U0020-VC=20

Note: R,BYPGDG=VER only looks at GDG data sets and produces a U0020 abend whenever the GDGNUM in the CMT does not match the relative GDG in the catalog.

R - Rerun/Restart (Pseudo) Processing

The R processing code in the U11RMS parameter field specifies that the job is being rerun/restarted. The additional parameter of PSEUDO=YES specifies pseudo processing is to be performed.

Processing Actions

The pseudo rerun processing parameter, R,PSEUDO=YES, overrides any parameters established by the preprocessor or Auto Setup. When CA WA Restart Option encounters R and PSEUDO=YES, it performs as follows:

- Identifies data sets that would be scratched and uncataloged during a normal rerun.
- Identifies tape data sets that will be expired during the next normal rerun if CA1=YES or TLMS=YES has been specified as an installation option.
- Identifies steps that would be skipped during a normal rerun.
- Sets the job to restart at the first step.
- Records the date and time as history information.
- Optionally requires the operator to verify that the pseudo rerun is authorized.

Procedure

To run a pseudo rerun, submit it in the same way as a rerun with the processing code R except the parameter PSEUDO=YES is used to specify a pseudo rerun as follows:

```
//STEP1    EXEC   [PROC=]U11RMS,TYPRUN='R,PSEUDO=YES'
```

F - Format Processing

The F processing code is used when the JCL in a job has been changed. Before the job can run with the new JCL, F processing must be performed.

CA WA Restart Option can execute F processing in four ways:

- Manually by specifying a parameter value of F (see the example in this section).
- Through the user exit U11UPFEX (Selective F Processing).
- Through the AUTOF feature of the Run Handler (see the installation options for your system contained in the appendix).
- Through the Online System PRE command. Then execute the job with U11RMS PARM of P.

Processing Actions

CA WA Restart Option deletes the existing CMT entry and builds a new one, based on the JCL submitted with the F processing request. The F processing code causes the following actions:

- Builds a new CMT Job record.
- Builds a new CMT Step record for each step.
- Builds a new CMT Data Set record for each permanent data set.
- Transfers history information from the old Job record to the new one.
- Maintains user-defined step-restartability information, provided a change in the JCL does not add or delete steps.
- Assigns an action code for each data set:
  - An S code (scratch) if the first DISP parameter is NEW.
  - An X code (no action) if the first DISP parameter is not NEW.
- Stores the volume serial number in the data set record if device type is disk and a single volume serial number is specified in the DD statement. (If the system should fail during the step, the disk data set is allocated, but not cataloged. For reruns, U11RMS uses this volume serial number to scratch the data set if the volume serial number cannot be found in the catalog.)
- Determines the device type assigned for a data set by checking first the Eligible Devices table, then checking the passed or cataloged data sets created earlier in the job, and then the system catalog. If the data set name is not found, the SPACE parameter of the DD statement is checked. If either the primary or secondary space quantity is specified, the device is assumed to be disk. If none of this checking determines the device as disk, it is assumed to be tape.

Use this processing code only if the AUTOF feature in the installation options is AUTOF=NO and you have made a change in the JCL for the job. That is, you are performing format processing manually. Normally, CA WA Restart Option performs F processing automatically when it is required (that is, if AUTOF=YES as an installation option).

Note: Production processing always immediately executes following the completion of F processing.

Important! Cleanup of dynamically allocated data sets does not occur the first time a job runs and each time Format processing is performed (explicitly or implicitly).

Procedure

To execute a job with F processing, insert the F processing code in the parameter statement as shown in the following example:

```
//STEP1    EXEC   [PROC=]U11RMS,TYPRUN='F'
```

User Exit

CA WA Restart Option provides a user exit, U11UPFEX (Selective F Processing) that can be invoked during P processing to determine if a job should have F processing performed. When the exit is executed, the CMT Job record and job name are available for examination.

Note: For more information about the U11UPFEX user exit, see the *Programming Guide*.

A - Add Processing

The A processing code is equivalent to F processing without P processing occurring immediately afterward. This code is useful primarily during implementation to add a job to the CMT. A processing causes U11RMS to execute, build a new CMT entry for the job, and flush the remaining steps. A processing allows you to examine JCL and to flag steps as nonrestartable prior to their first execution.

Processing Actions

The A processing code causes the following actions:

- Builds a new entry in the CMT for the job. The new entry includes job, step, and DD records. The entry name is the job name of the job.
- Transfers history information to the new entry if the CMT already contains a entry for the job.
- Replaces the existing CMT entry if a CMT entry already exists for the job when REPL is present in the parameter.
- Executes only the U11RMS step; subsequent job steps are not executed.
- Maintains user-defined step-restartability information, provided a change in the JCL does not add or delete steps.
- Performs *no* maintenance (that is, uncataloging or scratching of data sets).

Important! Cleanup of dynamically allocated data sets does not occur the first time a job runs after Add processing is performed.

Procedure

To run A processing, insert the A processing code in the parameter statement as shown in the following example:

```
//STEP1    EXEC    [PROC=]U11RMS,TYPRUN='A'
                                        'A,REPL'
                                        'A,REPL=jobname'
```

Note: Use the REPL parameter of A processing when you want to replace an existing CMT entry without executing any step other than the U11RMS step. The REPL=*jobname* parameter causes a CMT entry to be built without executing any step other than the U11RMS step. The entry name is the job name specified in the REPL= parameter.

N - Null Processing

The N processing code in the initial U11RMS step indicates that no CA WA Restart Option action is to be taken; that is, no uncataloging or data set scratching is to be performed. CA WA Restart Option control is completely suppressed.

Processing Actions

CA WA Restart Option is turned off; the U11RMS step does not process. However, the JCL for the job executes normally.

If the N processing code is used in the last step of the job, the usage code can be reset. If the job completes successfully, the step is executed and the usage code is reset. If the job terminates abnormally or is determined to be unsuccessful because of condition code testing, and the N processing step does not execute, the usage code is not reset.

Procedure

To run N processing, insert the N processing code in the parameter statement as shown in the following example:

```
//STEP1    EXEC    [PROC=]U11RMS,TYPRUN='N'
```

O - Operator Processing

The O processing code permits the master console operator to specify the processing options at execution time by replying to a WTOR.

Processing Actions

The O processing code causes a WTOR to be issued to the master console requesting that the operator supply U11RMS PARM information. Specify the O processing code as the only PARM value or SYSIN control statement.

Procedure

To run O processing, insert the O processing code in the parameter statement as shown in the following example:

```
//stepname  EXEC   [PROC=]U11RMS,TYPRUN='O'
```

U11RMS Step in JCL

The U11RMS step can be manually inserted as the first step in a job's JCL to execute Run Handler processing for the job. The U11RMS step can be set up as a cataloged procedure on SYS1.PROCLIB or can be added to each job's JCL member. As an alternative, the step can be added as an in-stream PROC to the job's JCL.

U11RMS Set as a PROC

If set up as a PROC, the EXEC statement in the job stream invoking the procedure appears as shown in the following example:

```
//stepname  EXEC [PROC=]AL7RMS,TYPRUN='value'
```

The actual name of the cataloged procedure is user-defined. CAL7SAMP member AL7JRMS provides a sample job to execute a U11RMS PROC.

U11RMS JCL Requirements

The following JCL is required to execute the U11RMS program:

```
 //stepname EXEC PGM=U11RMS[,PARM='value']
 //STEPLIB  DD   DSN=CAI.CAL7LOAD,DISP=SHR
 //RMSRPT   DD   SYSOUT=A
 //SYSUDUMP DD   SYSOUT=A
[//TRACE    DD   SYSOUT=A                                  ]
[//SYSIN     DD   *                                        ]
[control statements                                        ]
[/*                                                        ]
[//CAIVMFI DD DSN=TLMS master volume file,DISP=SHR *       ]
[   *only if using CA TLMS r5.3 or greater                 ]
```

stepname

Indicates a unique stepname for the job.

'*value*'

Indicates a control statement.

CAI.CAL7LOAD

Identifies the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that this library is in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

CAL7SAMP member AL7RMS provides a sample PROC to execute U11RMS.

The presence of the TRACE DD statement is optional and produces a vertical hexadecimal dump of all job queue records read or written by U11RMS. The TRACE DD statement is used only to diagnose CA WA Restart Option problems. This function is not operable under EXECUTOR.

Important! The TRACE facility is a diagnostic tool and causes severe degradation in CA WA Restart Option performance. Use this facility only if you are directed to do so by a Technical Support representative.

Note: If CA 1 is installed and you want to use the CA WA Restart Option CA 1 interface, you must make the CA 1 load library available to the CA WA Restart Option Run Handler. If you are using CA WA Restart Option job level cleanup in the U11RMS step (default method), then the CA 1 Load Module library must be in the STEPLIB concatenation or included in your LNKLST concatenation. If you are using CA WA Restart Option step level cleanup in the CA WA Restart Option SMF Step Initiation (USI) exit, you must include the CA 1 Load Module library in your LNKLST concatenation.

The global CA WA Restart Option option which determines whether data set and catalog maintenance is done at the job or step level can be overridden for specific jobs by inserting a special DD statement in the JCL for the U11RMS step. By inserting //CA11@JOB DD DUMMY in the U11RMS step, job level cleanup for data sets is used for the job regardless of the global option. By inserting //CA11@USI DD DUMMY in the U11RMS step, step level cleanup for data sets is used for the job regardless of the global option.

More information:

Processing Codes (see page 60)

B - Backout Processing

The B processing code is a backout process that only performs data set maintenance for data sets within the specified step range. Unlike the existing F (format), P (set for production) and R (set for restart) processing codes, the backout process does not alter the current restart state of the job.

The simulation feature has changed so that the backout process can be simulated.

For preprocessing only (batch, online, and simulation), the B processing code lets you perform backout data set maintenance for an entire job or a single range of steps, without altering the job's status or restart parameters in the CMT. Preprocessing code B cannot be used with U11RMS and is not saved in the CMT.

B preprocessing is not disabled when a job or a step is marked nonrestartable. B processing performs data set maintenance regardless of whether an included step would actually run during a restart.

Data set maintenance is not performed if the range of steps selected for backout includes an earlier step with a DD statement with DISP=(OLD,DELETE) or DISP=(OLD,UNCATLG).

C - Current Processing

Processing code C permits multiple individual steps or step ranges to be selected for restart. In previous releases, you could specify only a single range. This change creates more flexibility in selecting the portions of a job to run and prevents the need to rerun the job multiple times to process the steps required.

A value of C specifies to use the current values from the CMT. If the job is currently set for production, P preprocessing is performed or simulated. Similarly, if the job is set for restart, the current execution ranges (starting and ending steps) are used, and R preprocessing is performed or simulated.

If a job has been set for restart with multiple step execution ranges, specify processing code C.

If you want to perform simulation for a job that is currently set for restart with multiple step execution ranges, specify processing code C.

U11RMS Step Using CA Workload Automation SE

If you have installed CA Workload Automation SE, it can insert the U11RMS step in any job. By accessing the CA Workload Automation SE DB.1 panel and applying the appropriate parameter to activate the step insertion function, you can set up U11RMS step insertion for any job when it is submitted for execution. Using CA Workload Automation SE to insert the U11RMS step is strictly for use on an individual job-by-job basis.

The procedure involves specifying INSERT-RMS=Y on the CA Workload Automation SE DB.1 panel. CA Workload Automation SE then inserts the U11RMS step (with the procedure name specified in the CA WA Restart Option installation option INSRTPC or the procedure name defined in the PROCRMS parameter of the CA Workload Automation SE initialization file RESTART statement) when the job is submitted.

Note: For more information about the CA Workload Automation SE interface to CA WA Restart Option and how to activate this interface, see the CA Workload Automation SE *Interface Reference Guide.*

This method of inserting the U11RMS step in the job ensures that the step is inserted before the CA WA Restart Option exit IEFUJV reads the first EXEC statement in the JCL.

Note: For more information about the U11CIEEX and IEFUJV exits, see the *Programming Guide*.

U11RMS Step Using CA Scheduler JM

CA Scheduler JM can insert the U11RMS step in any job.

Note: For more information, see the *CA Scheduler JM Interface Reference Guide*.

U11RMS Step Using CA Jobtrac JM

CA Jobtrac JM can insert the U11RMS step in any job.

Note: For more information, see the *CA Jobtrac JM Planning and Implementation Guide*.

U11RMS Step Using CA Workload Automation EE

CA Workload Automation EE can insert the U11RMS step in any job.

Note: For more information, see the CA Workload Automation EE documentation.

U11RMS Step Using a Comment Statement

A CA-11 comment statement (//*CA-11) can insert the U11RMS step automatically into a job's JCL. You can use a user exit to override the insertion or to change any of the parameters.

Note: For more information about U11CIEEX, see the *Programming Guide*.

The CA-11 comment statement has two formats:

```
//*CA-11 INSERTRMS=YES or NO
//*CA-11 PARM='value'
```

Use the first format with the CA WA Restart Option IEFUJV exit to insert the U11RMS step. If the exit is installed with the option not to automatically insert the U11RMS step (INSRTOP=NO), the comment statement specifying INSERTRMS=YES causes an override and the U11RMS step is inserted in the job's JCL.

If the exit is installed with the option to automatically insert the U11RMS step (INSRTOP=YES), the comment statement specifying INSERTRMS=NO causes an override and the U11RMS step is not inserted in the job's JCL.

Important! An invalid CA-11 comment statement causes the job to abend.

Comment Statement Format 1

```
                    {YES}
//*CA-11  INSERTRMS={NO }
```

INSERTRMS

Indicates whether to insert the U11RMS step into a job's JCL. (The default processing code selected in the U11OPTBL macro INSRTPM= parameter is used in the step.) The U11CIEEX user exit can override insertion.

YES

Inserts the U11RMS step into the job's JCL.

NO

Does not insert the U11RMS step into the job's JCL.

Comment Statement Format 2

```
//*CA-11  PARM='value'
```

The following is an alternate format when continuation is required:

```
                                                                col 72
                                                                     |
//*CA-11 PARM='value                                                 x
//*CA-11 PARM=value(continued)'
```

PARM='*value*'

Indicates that the U11RMS step is to be inserted. The specified '*value*' comprises the U11RMS PARM values to use when the RMS step is passed to a job's JCL. If this comment statement is not used, the default parameter specified in the INSRTPM installation option is used.

You can use a user exit, U11CIEEX, to override the insertion or to change any PARM values.

Note: For more information about U11CIEEX, see the *Programming Guide*.

In an environment where a setup or prestaging facility is used, CA WA Restart Option provides a batch preprocessing program, U11PRE, and an online function, PRE, to achieve the required catalog maintenance prior to rerun execution. Setup facilities (JES3), or a prestaging facility such as a Pull List, are based on current contents of the system catalog. For reruns, however, these facilities provide invalid results since CA WA Restart Option has not gained control through U11RMS to perform catalog maintenance. Accordingly, the information retrieved for the output serial numbers and generation numbers comes from the previous unsuccessful run. Execution of U11PRE causes CA WA Restart Option to perform all catalog maintenance that would normally be done by U11RMS at runtime. After U11PRE is executed, setup or prestaging facilities can be used in their normal manner. Besides performing catalog and data set maintenance, U11PRE also presets the job's rerun parameters; that is, the processing code and starting and ending step can be specified. When the job is resubmitted, it is processed as specified by U11PRE.

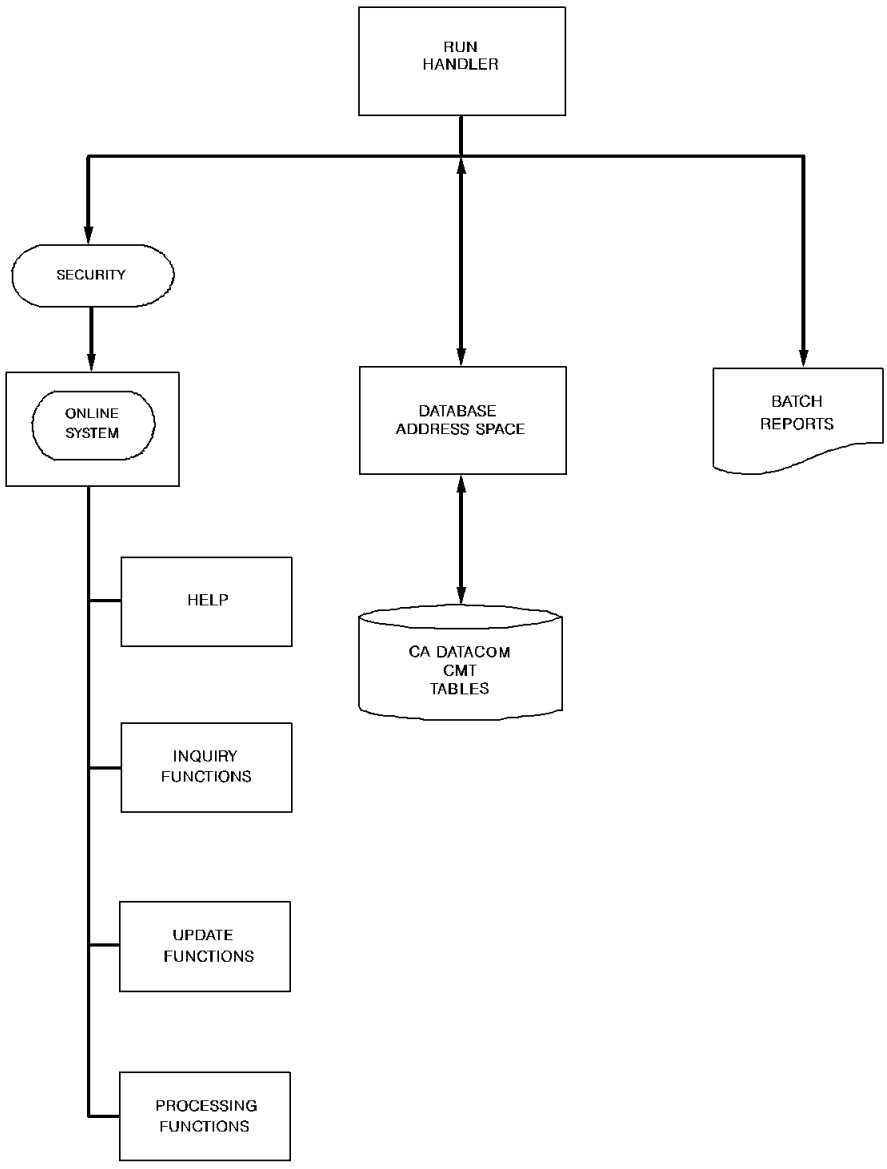
For installations with the CA WA Restart Option JES3 interface installed, manual intervention in restart situations, as described previously, can be avoided only if BYPGDG=VER or CAT is not used. The CA WA Restart Option JES3 interface, IATUX03, automatically performs all catalog maintenance (setup and fetch requests) required before restarting a job. Also, the program alleviates mass storage staging group allocation problems, normally associated with JES3, during Run Handler restarts. If BYPGDG=VER or CAT is used, U11PRE is required or these parameters have no effect.

More information:

U11RMS PARM Values (see page 68)

Online Run Handler Functions

Online System functions are designed to provide timely information and responsive rerun management. Three types of online displays are available: inquiry displays, update displays, and processing displays. The following figure shows how online functions fit the Run Handling scheme:



The following paragraphs briefly describe the various online functions as they relate to the Run Handler.

Security Note

You may not be able to access all of the Online System functions outlined in the following. The Online System provides for user security and requires proper authorization for certain functions.

Note: For more information, see your installation's CA WA Restart Option specialist, security administrator, or both.

HELP

The Online System supports the HELP command which instructs you on the Online System itself. Formats and explanations for all the online commands are available.

More information:

HELP - Tutorial (see page 151)

Inquiry Functions

Online System inquiry functions include CINQ, OINQ, LREA, LJOB, and LSTP. For more information, see the following topics.

CINQ - CMT Inquiry

Use the Online CMT Inquiry to display information from the Catalog Management Table (CMT) which is the data controlling catalog maintenance and rerun execution. A production control analyst would use this inquiry in determining changes required to perform routine job or CMT maintenance. As an aid in determining step restartability, this inquiry is very helpful.

More information:

CINQ - Catalog Management Table Inquiry (see page 142)

OINQ - Option Table Inquiry

Use the Option Table Inquiry to display the CA WA Restart Option options that are currently in effect for the system. These options were user-defined at installation and are subject to change. New users sometimes find this inquiry useful in knowing exactly what the installation options are for this installation.

More information:

OINQ - Option Table Inquiry (see page 167)

LREA - Reason-for-Rerun Table Inquiry

Use the Reason-for-Rerun Table Inquiry function to display the Reason-for-Rerun Table online. This inquiry allows for ready review of the reasons-for-rerun used in your data center. Before a reason-for-rerun is supplied, use this inquiry to verify existing reason-for-rerun codes. The following figure shows the default reason-for-rerun codes installed with the product:

```
CODE   EXPANDED REASON-FOR-RERUN

 1         1 - BAD INPUT FILE
 2         2 - BAD JCL OVERRIDE
 3         3 - BAD OUTPUT FILE
 4         4 - HARDWARE ERROR
 5         5 - JCL ERROR
 6         6 - MISSING OUTPUT REPORTS
 7         7 - OPERATOR ERROR
 8         8 - PROGRAM ERROR
 9         9 - RAN JOB OUT OF SEQUENCE
 10       10 - SCHEDULING ERROR
 S001   S001 - I/O ERROR
 S122   S122 - OPERATOR CANCEL WITH A DUMP
 S137   S137 - I/O ERROR, EOV ON TAPE
 S213   S213 - I/O ERROR, DSCB NOT FOUND
 S222   S222 - OPERATOR CANCEL
 S322   S322 - ESTIMATED TIME EXCEEDED
 S722   S722 - ESTIMATED LINES EXCEEDED
 S806   S806 - PROGRAM NOT FOUND
 SB37   SB37 - NO SPACE AVAILABLE
 SD37   SD37 - NO SECONDARY QUANTITY
```

More information:

LREA - Reason-for-Rerun Table Inquiry (see page 162)

LJOB - Job Restart Inquiry

Use the Job Restart Inquiry function to provide the restartability status of jobs being handled by CA WA Restart Option. The display can be for the following:

- A single job
- All jobs
- Jobs set for rerun
- Jobs within a range

You can limit these categories to nonrestartable jobs and even limit further as to whether flagged by the user or by CA WA Restart Option.

More information:

LJOB - Job Restart Inquiry (see page 160)

LSTP - Job Step Inquiry

Use the Job Step Inquiry function to display step record information from the CMT for a particular job. Information displayed concerns step restartability, last execution completion codes, and CA WA Restart Option condition code checks. A production control analyst could use this function to verify step restartability prior to a rerun.

More information:

LSTP - Job Step Inquiry (see page 164)

Update Functions

Online System update functions include CUPD, REST, RUPD, and UPRS. For more information, see the following topics.

CUPD - Catalog Management Table Update

Use the Catalog Management Table (CMT) Update function to modify the data that controls catalog maintenance and rerun execution. A production control analyst could use this function to update job data.

More information:

CUPD - Catalog Management Table Update (see page 144)

REST - RMS Parameter Restart

Use the Restart function to ensure a job is set for restart, change various parameters to control the restart, or set a job for restart that is currently set for production processing.

More information:

REST - RMS Parameter Restart (see page 179)

RUPD - Reason-for-Rerun Update

Use the Reason-for-Rerun Update function to apply a reason-for-rerun to any CA WA Restart Option job on a job name basis. The most recent job cycle can be accessed through RUPD to update, add, or otherwise check a reason-for-rerun. This allows a job that is set for restart or has been rerun to have its reason-for-rerun added or changed.

More information:

RUPD - Reason-for-Rerun Update (see page 182)

UPRS - CMT Reason-for-Rerun Table Update

Use the CMT Reason-for-Rerun Table Update function for online updating (Add, Delete, Update) of the reason-for-rerun table residing in the database. CA WA Restart Option loads this table during DBAS initialization. The operator command REFRESH reloads the table for use.

More information:

UPRS - Reason-for-Rerun Table Update (see page 200)

Processing Functions

Online System processing functions include PRE and SIM. For more information, see the following topics.

PRE - Preprocessing (Online)

The preprocessing function accommodates the unique requirements of JES3 and also provides a central point to set up reruns if the Auto Setup facility is not used. PRE lets you preset the type of processing to perform before the job is actually in execution for rerun or restart. Preprocessing is necessary when any kind of prestaging facility is used to pull tapes, mount tapes, or both since catalog maintenance must be performed prior to the FETCH messages being issued or Pull Lists being printed. If, however, the CA WA Restart Option JES3 interface is installed, catalog maintenance is performed automatically and use of PRE is unnecessary. Use PRE to accomplish the following:

- Process uncatalogs and data set scratches to keep JES3 from fetching the wrong tapes in a restart or rerun situation, or having the wrong tapes pulled through a Pull List facility when the CA WA Restart Option JES3 interface has not been installed.
- Establish a central point or procedure for setting up restarts and reruns with starting and ending steps and condition codes prior to the actual execution of the rerun.

SIM - Simulated RMS

The SIM command simulates the processing functions normally performed by the U11RMS Run Handler. The panel resulting from SIM displays the actions that would have been taken had the processing taken place. This would be helpful when analyzing JCL of a new job to be run under CA WA Restart Option control or when determining actions that a production mode RMS step would attempt.

More information:

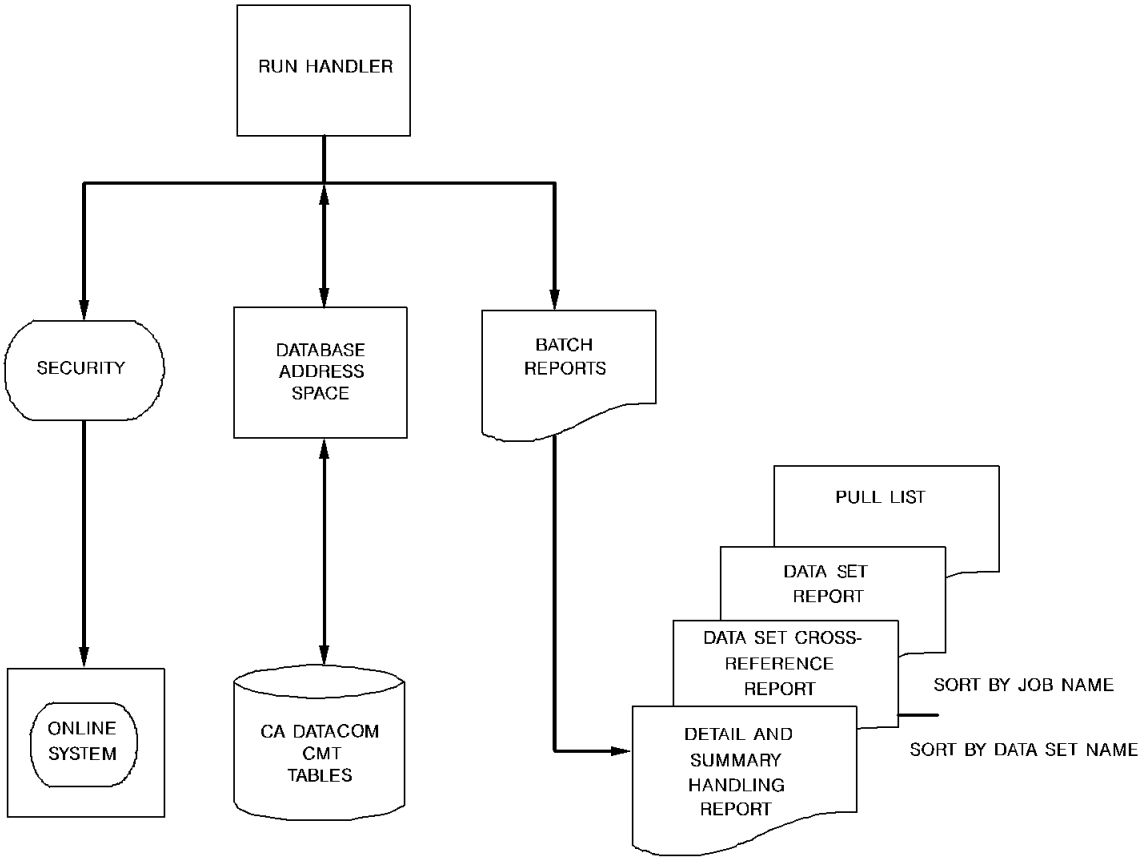
SIM - Simulated RMS (see page 186)

Run Handler Reports

The Run Handler provides various batch and online reports. The CMT (Catalog Management Table) is the prime source of information for reports. The Run Handler produces the following reports:

- Pull List
- Data Set Report
- Data Set Cross-Reference Report
- Detail and Summary Handling Report

The following figure shows how the Batch Reports fit into the overall Run Handler scheme:



More information:

Batch Reports (see page 203)
Online System (see page 137)

Pull List

The Pull List lists the tape volumes, the number of scratch tapes, and disk data sets required for a job. The Pull List is available either online and through batch.

Data Set Report

The Data Set Report lists all output data sets and, optionally, input data sets for any job under CA WA Restart Option control. The generating program for the Data Set Report is U11ODS.

Data Set Cross-Reference Report

The Data Set Cross-Reference Report lists all data sets in jobs under CA WA Restart Option control and where they are used in this installation. This report has two sorting options:

- Sort by data set name. This provides a good reference in determining which jobs under CA WA Restart Option control reference what data sets. This sort is useful for estimating the impact of reruns.
- Sort by job name. This provides a list of what data set is used within each job. This sort is useful in determining which data set is impacted by rerunning that job.

Detail and Summary Handling Report

The Detail Handling Report and the Summary Handling Report are two batch reports which document jobs handled by CA WA Restart Option and give statistics on the number of production runs and reruns executed. The Detail Report lists each job handled by CA WA Restart Option with the number of production runs and reruns over the past two years. The Summary Report lists the number of production runs and reruns/restarts for the whole installation over the past five years. The generating program for these batch reports is U11MGR.

Procedures for Generating Reports

For a detailed discussion on generating Run Handler reports, see Batch Reports (see page 203).

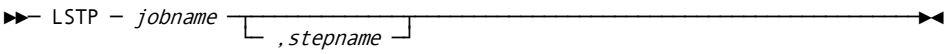
Frequently Used Functions

This topic groups the frequently used functions with explanations and syntax.

Determine Step Restartability

You can use the LSTP command to determine a step's restartability.

This command has the following format:



Also, you can use the CINQ command.

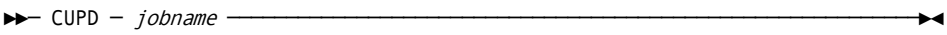
More information:

CINQ - Catalog Management Table Inquiry (see page 142)
LSTP - Job Step Inquiry (see page 164)

Change a CMT Entry

You can modify the data controlling catalog maintenance and rerun execution with the Catalog Management Table (CMT) Update function.

This command has the following format:



More information:

CUPD - Catalog Management Table Update (see page 144)

Delete a CMT Entry

You can delete a CMT entry using the CMT Update function, CUPD, through the Online System.

More information:

CUPD - Catalog Management Table Update (see page 144)

Online System CMT Inquiry

Catalog Management Table (CMT) inquiry is an online function which enables you to display the CMT contents for a given job. A use of the inquiry is to determine if a step in a job is restartable. If the stepname is known, inquiry can be made directly to the particular step. If the stepname is not known, it is necessary to scan through the job's CMT records until the proper step is found. The restartable indicator is the field named LOGIC. The following are the values for LOGIC:

80

Indicates the step is not restartable (user-specified).

40

Indicates the step has CA11NR DD DUMMY.

20

Indicates CA WA Restart Option set the step as not restartable.

10

Indicates the step is not eligible for Auto Setup.

08

Indicates the step is restartable (user-specified).

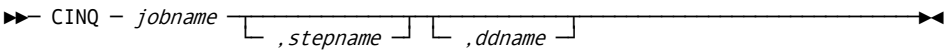
04

Indicates RD=N*x* specified.

02

Indicates an ABENDER program in the step.

This command has the following format:



The LJOB or LSTP command provides an easier method of inquiring on CMT restartability information.

You can delete a CMT entry through the online CMT Update function, CUPD. After the update function has been initiated, records for the job name specified are displayed in a *fieldname=fieldvalue* format. When the Job record is displayed, a response of DEL deletes the CMT entry. The DEL command is valid only when the Job record is displayed. At any other time, the system returns an error message and ignores the request.

More information:

CUPD - Catalog Management Table Update (see page 144)
CINQ - Catalog Management Table Inquiry (see page 142)

Inquire on Auto Setup Parameters and Status

Auto Setup automatically sets a job for step restart at the most recently executed restartable step when the job abends. The restart status is valid only for the next P processing of the job. The Auto Setup parameters can be determined by executing the online LSTP.

This command has the following format:

Two flags in the CMT Job record determine the Auto Setup status, that is, whether the job will use Auto Setup. The meaning of each of the four possible flag combinations is as follows:

- If AUTOSAL=YES and AUTOSNV=NO, the job is always processed as Auto Setup.
- If AUTOSAL=NO and AUTOSNV=YES, the job is never processed as Auto Setup; that is, the user must supply the rerun parameters.
- If AUTOSAL=NO and AUTOSNV=NO (both flags = NO), the job takes the system default. Check the installation default value in the Summary of Installation Options or through OINQ. If AUTOS=YES, the system default is Auto Setup. If AUTOS=NO, the system default is not Auto Setup.
- AUTOSAL and AUTOSNV can never both be YES. CA WA Restart Option does not let you set both flags to YES.

More information:

Summary of User Installation Options (see page 279)
CINQ - Catalog Management Table Inquiry (see page 142)

Change Auto Setup Status

Change Auto Setup status through the CMT Update (CUPD) function. Using the REP command for the Auto Setup fields modifies the status in the CMT Job record. The procedure is as follows:

Enter the CMT update mode:

```
CUPD jobname
```

If the job is to take the system default, enter the following:

```
REP AUTOSAL=NO,AUTOSNV=NO
```

If the job is to assume a value other than the system default, enter the following depending on whether the job is to be subject to Auto Setup:

```
REP AUTOSAL=YES
```

or

```
REP AUTOSNV=YES
```

More information:

CUPD - Catalog Management Table Update (see page 144)

Enter Reason-for-Rerun

You have two primary considerations when entering a reason-for-rerun. The latest production cycle can have the reason-for-rerun entered through the RUPD transaction, the JUPD transaction, U11RMS, U11PRE, PRE, the QM.4 panel from CA Workload Automation SE, or the Rerun Job panel from CA Scheduler JM. Prior production cycles can be updated with the JUPD transaction. Additionally, RUPD, U11RMS, U11PRE, and PRE translate reason-for-rerun codes into the appropriate text message.

You can apply a reason-for-rerun to any CA WA Restart Option job through the batch or the JUPD online command. The reason-for-rerun can be entered through U11RMS or U11PRE using the PARM or SYSIN control statement equated to RE as follows:

```
RE=/reason/
```

/reason/

Specifies the Reason-for-rerun field for the last execution of the job. /*reason*/ can be any word, phrase, code, or number for a maximum of 40 alphanumeric characters enclosed in slashes (/). The text cannot include slashes.

To enter a reason-for-rerun online, use the Job Execution History File Update (JUPD) function. JUPD does not translate reason-for-rerun codes to reason-for-rerun text. The command is as follows:

```
JUPD jobname
```

The response consists of a display of JEHF Control record information in a fieldname=fieldvalue format. To display JEHF Production record data, press Enter. The display includes the actual number of reruns associated with the job. The number of reruns appears as follows:

```
NMRERUNS=nn
```

If NMRERUNS=0, reruns do not exist for the job and the reason-for-rerun is not available. If NMRERUNS=1, the reason-for-rerun is applied as follows:

```
REP PRODRESN=/reason/
```

If the Number-of-reruns field indicates you have *n* number of reruns (NMRERUNS=*n*), press Enter *n*-1 times to display the last Rerun record. When the record has been displayed, enter the reason as follows:

```
REP RRUNRESN=/reason/
```

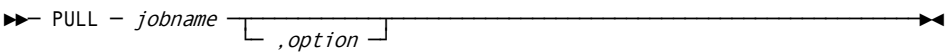
More information:

RUPD - Reason-for-Rerun Update (see page 182)
JUPD - Job Execution History File Update (see page 156)

Request a Pull List

To generate a Pull List online, use PULL to produce a list of tapes and disk volumes required for a run on any given job. If a job is set by CA WA Restart Option to be rerun, the Pull List applies for only those steps to be rerun.

This command has the following format:



More information:

PULL - Pull List Request (see page 176)

Set/Reset Restartable Flag

Use the Online System CMT Update function, CUPD, to set or reset restartable flags.

Fields within the CMT records are referenced by field names. The field name required to set or reset a job's restartable flag is IND1.

The hexadecimal contents of the field name IND1 and the values are the following:

- 80 = Job cannot be restarted (user-specified)
- 40 = Next P force F
- 20 = Job cannot be restarted (system-specified)
- 00 = No restrictions or conditions

The input value to set a job as restartable is RS. The input value to set a job as nonrestartable is NR. For example:

```
ACCREC04 JOB
VER IND1=RS
REP IND1=NR
```

The job, ACCREC04, is changed from restartable (RS) to nonrestartable (NR) after it is verified that it is presently restartable. The verification is optional.

To set a step user-specified nonrestartable, incorporate the following (reserved ddname) DUMMY statement into the step's JCL.

```
//CA11NR   DD  DUMMY
```

If this DD statement is added or removed prior to P processing, it forces F processing if AUTOF is specified. Adding or removing it prior to R processing has no effect. It is recognized on the next P or F run. The CA11NR statement in the JCL accomplishes two things:

- Documents in the JCL the step's nonrestartable status.
- Assures that the LOGIC field is not reset to restartable status during future format processing runs.

Examples of U11RMS JCL

Rerun Processing - First Through Last Steps

The following JCL is for a typical rerun of a job:

```
//RMSSTP    EXEC PGM=U11RMS,PARM='R,CC=8'
//STEPLIB   DD   DSN=CAI.CAL7LOAD,DISP=SHR
//RMSRPT    DD   SYSOUT=A
//SYSUDUMP  DD   SYSOUT=A
```

Restart (R) processing is performed for this job. The job is to be restarted beginning at the first step and ending at the last step. The U11RMS step is set with a condition code of eight.

Starting and Ending Steps in R Processing

Specified steps in a job can be executed in R processing by a simple modification to the JCL.

The following JCL is a sample of the JCL to start and end at specific steps in a job:

```
//STEP1   EXEC  U11RMS,TYPRUN='R,STEP3,STEP5'
//STEP2
//STEP3
   .
   .
   .
//STEP5
```

This JCL executes only the STEP 3 through STEP 5 steps.

Override Condition Code Setting with R Processing

You can use R processing to override the default condition code (RETCODE=) in the CA WA Restart Option Option Table. By setting the condition code in the PARM value to another value, the operating system executes or skips steps as you have specified. The following JCL is a sample in which the condition code is set in the PARM parameter:

```
//STEP1   EXEC   U11RMS,TYPRUN='R,STEP2,CC=20'
//STEP2   EXEC   PGM=RECOVER,COND=(20,GT,STEP1)
//STEP4   EXEC   PGM=UPDATE
//STEP5   EXEC   PGM=ACCTPGM5
```

Indicating Reason-for-Rerun with R Processing

Two sample JCL statements can be used to set a reason-for-rerun for a job. Up to 40 bytes of information can be supplied describing why the job had to be rerun.

Example 1

```
//STEP1   EXEC  U11RMS,TYPRUN='R,RE=/LOST REPORTS/'
```

Example 2

```
//STEP1   EXEC  U11RMS,TYPRUN='R,RE=/10/'
```

Any of three other ways through CA WA Restart Option can preset Reason-for-rerun:

- Online using the PRE command
- Online using the RUPD command
- Batch using U11PRE

When the job is rerun, the reason-for-rerun appears on the batch job reports and on online displays. The reason-for-rerun table provided at product installation time is the source of the reason.

More information:

LREA - Reason-for-Rerun Table Inquiry (see page 95)

U11RMS Reports

U11RMS produces two reports:

- Report 01—Automated Rerun and Tracking System Report
- Report 02—Job Queue Trace Report

Report 01—Automated Rerun and Tracking System Report

This report is the main report from the Run Handler. The report lists occurrence messages and completion codes for error conditions encountered. The report shows what was attempted by the Run Handler and the results of those attempts. This report allows you to manage the restartability of jobs to be prepared for any possible restarts that can occur.

More information:

U11RMS Run Handler Reports (see page 236)

Report 02—Job Queue Trace Report

This report is output under the TRACE function of the U11RMS program. The report is a vertical hexadecimal dump of all records read and written to the system Job queue. This provides a real-time trace of records from the Job queue showing exactly what was present when the Run Handler processed the records and what changes the Run Handler made to the records. The report displays a timestamp (whether the record was read or written), the return code from the system when the read or write was attempted, and whether the record was successfully read or written.

Report 02 is primarily used in diagnosing possible CA WA Restart Option problems.

The report is produced only if the TRACE DD statement is present in the JCL for the U11RMS step. Remember that the TRACE DD significantly increases processing requirements and decreases efficiency.

More information:

U11RMS Run Handler Reports (see page 236)

U11RMS Interface to Other CA Products

This topic addresses the interfaces of CA 1, CA TLMS, CA Workload Automation SE, CA Scheduler JM, CA Jobtrac JM, CA Workload Automation EE, and CA APCDDS with U11RMS.

U11RMS Interface to CA 1

CA WA Restart Option can interface with CA 1, the Tape Management System, if installed. During the data set maintenance performed during a rerun, any tape data sets to be recreated will be expired on the CA 1 database (the TMC) if those tape data sets are cataloged.

At installation time, one installation option of CA 1 is to specify the TMS retention period. That retention period is used to recalculate the expiration date in this way. CA WA Restart Option adds that number of days to the current date, and this total is the new expiration date unless the current expiration date is less than the calculated expiration date. For example, if a tape is set to expire on the 5th and CA WA Restart Option recalculates it to expire on the 7th, the expiration date remains the 5th because it is less than the calculated expiration date.

CA TLMS

CA WA Restart Option interfaces with CA TLMS (Tape Library Management System) if installed. The operation of the interface is functionally identical to the interface with CA 1. Tape data sets to be recreated are expired on the TLMS database (the VMF) during data set maintenance prior to a rerun if those data sets are cataloged.

CA Workload Automation SE and U11RMS Processing

CA Workload Automation SE provides an extensive interface to CA WA Restart Option. The CA WA Restart Option online panels are accessible through the CA Workload Automation SE terminals without any intermediate logging on or off. CA Workload Automation SE can automatically insert the CA WA Restart Option step into jobs scheduled and submitted by CA Workload Automation SE. When restarting production jobs from CA Workload Automation SE, the CMT is accessed to provide information about job status, and it is updated to set restart conditions.

Note: For more information about the interface with CA Workload Automation SE and how to activate this interface, see the *CA Workload Automation SE Interface Reference Guide*.

U11RMS Interface to CA Scheduler JM

CA Scheduler JM can interface with CA WA Restart Option if installed. The interface is similar to that between CA Workload Automation SE and CA WA Restart Option.

CA Jobtrac JM and U11RMS Processing

CA Jobtrac JM provides automatic insertion of the CA WA Restart Option U11RMS step during CA Jobtrac JM job submission. Insertion of the step can be controlled by job class. Step insertion parameters are retrieved from the CA WA Restart Option Option Table.

CA Workload Automation EE and U11RMS Processing

CA Workload Automation EE, starting with r11.3, lets users select CA WA Restart Option for job restarts. The CA WA Restart Option ISPF panels are accessible through the CA Workload Automation EE ISPF interface. CA Workload Automation EE can automatically insert the CA WA Restart Option step into jobs that CA Workload Automation EE schedules and submits. Before a user resubmits a job from the CA Workload Automation EE Job Resubmission panel, the CMT is accessed to provide information about job status. CA Workload Automation EE passes parameters to the U11RMS step through the step's SYSIN data set. Using the CA Workload Automation EE Rerun Multiple panel, a user can enter and apply a set of U11RMS parameters to multiple jobs.

Note: For more information about the interface and how to activate this interface, see the CA Workload Automation EE documentation.

U11RMS Interface to CA APCDDS

CA WA Restart Option interfaces with CA APCDDS, if installed. On completion of a step which executes CATKJCL, CA APCDDS notifies CA WA Restart Option through the Tracking System that it has successfully completed processing and has committed status information to its database for all extracted elements and all evaluated rules, compound rules, derivatives, and data equates.

On a rerun of this step, CA WA Restart Option notifies CA APCDDS that this step is being rerun by changing the CATKJCL EXEC PARM statement from PARM=DDS to PARM=DDSR, thus causing CA APCDDS to invalidate all the relevant status from the previous run of this step.

Chapter 3: Tracking System

This section contains the following topics:

Introduction

The CA WA Restart Option Tracking System is a fully automated job tracking and analysis system. It provides job execution statistics through online inquiries and batch reports to assist you in quantifying the impact reruns have on production, determining causes of reruns, and identifying recurring causes. With this pertinent information provided by the Tracking System, you can develop and implement a systematic approach to reduce the number of reruns and to improve overall processing productivity.

Historical and real-time information is automatically collected for use as an aid in management control of production runs and reruns.

Information provided by the Online System and batch reports is beneficial to users, systems programmers, and management. Benefits to persons directly involved in day-to-day data center operations include the following:

- Reduction in the need for manual logging tasks required in many data centers.
- Elimination of manual reporting.
- Reduction of data retrieval and formatting tasks involved in day-to-day report generation.

Management is provided with the tools to monitor, on a real-time basis, the production status of the data center. Job historical trends can easily be tracked and analyzed with documented reasons for problems encountered in runs. Problem areas can be isolated, and the impact of these problems can be evaluated with the concise information provided by the Tracking System.

The Tracking System can be used with or without the Run Handler being active on jobs. However, to take advantage of the overall effectiveness of CA WA Restart Option, we highly recommend that both the Run Handler and the Tracking System be used together.

Certain valuable CA WA Restart Option features are directly affected if the Tracking System is not used with the Run Handler.

More information:

Features Dependent on the Tracking System (see page 133)

Tracking System Operation

Tracking System operation revolves around four major components of CA WA Restart Option:

- IEFACTRT SMF Exit
- Job Execution History File (JEHF)
- Online System
- Batch Reports

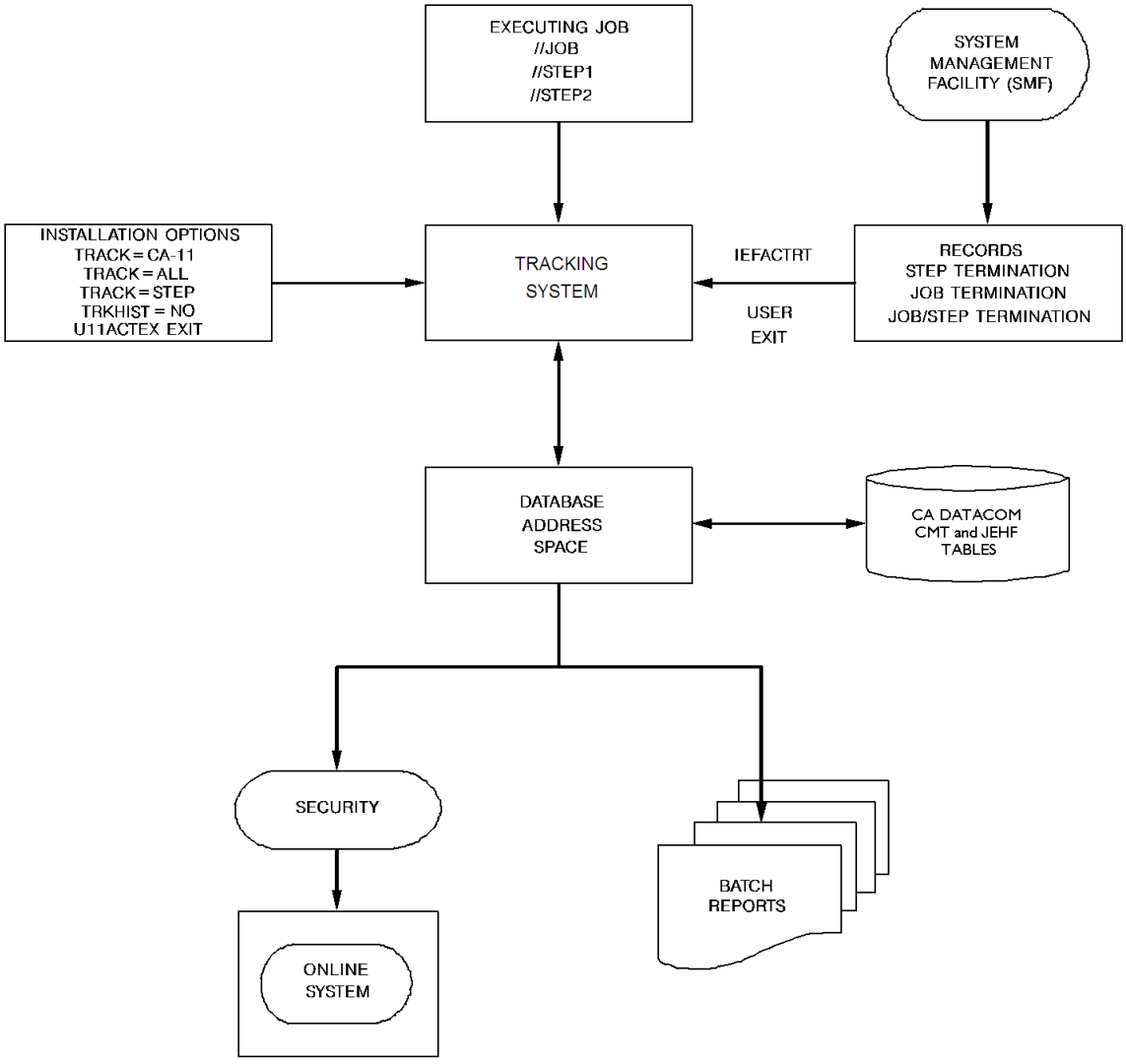
As a job executes, the Tracking System IEFACTRT exit gathers information from the System Management Facility (SMF). This information is used to update the CMT with step condition codes and Auto Setup information. Optionally, this information can be stored in the JEHF when active. The JEHF contains information about production cycles and the production runs and reruns contained in those cycles. The following is an abbreviated list of the JEHF contents:

- Job runtime
- Resources used
- Completion code
- Production and rerun information

This information is used to produce the various batch reports.

The Online System provides quick and easy access to JEHF data and other CA WA Restart Option data. However, CA WA Restart Option security controls access and update capability.

Batch reports provide you with the job execution information vital for analysis of job activity. The following shows the relationship of the Tracking System within the product and the data flow involved.



More information:

Job Execution History File (JEHF) (see page 117)
Online System (see page 137)

Tracking System Options

At product installation, you can select from several options how you want to use the Tracking System. The value specified for the TRACK parameter at the time your system is installed controls these options. Tracking System installation options include the following:

- Track only the jobs under Run Handler control (TRACK=CA-11).
- Track all jobs being processed in your data center (TRACK=ALL).
- Track jobs without accessing the JEHF database (TRKHIST=NO).
- Track selected jobs (through the U11ACTEX exit which overrides the TRACK option).
- Track only jobs that contain a specified step name (TRACK=STEP,TRKSTP=*xxxxxxxx*).

To determine the TRACK option in effect for your data center, use the Online System command OINQ.

Tracking All CA WA Restart Option Jobs (TRACK=CA-11)

If TRACK=CA-11 is specified as the Tracking System option, only those jobs which execute the U11RMS step are tracked. This option cannot provide all of the tracking that you actually want. It cannot track all of the production jobs in a data center simply because not all production jobs run under CA WA Restart Option control. If your installation option is TRACK=CA-11, and you want to track *every* production job (that is, all jobs including all non-CA WA Restart Option jobs), you can still do so by using the Tracking Action Exit. This exit is a user exit (U11ACTEX) described briefly in this chapter and in the chapter "User Exits" in the *Programming Guide*.

Tracking All Jobs (TRACK=ALL)

If TRACK=ALL is specified as the Tracking System option parameter, CA WA Restart Option tracks all jobs that execute. This includes all production jobs and test jobs including all non-CA WA Restart Option controlled jobs (that is, jobs without the U11RMS step). This option does not track started tasks (that is, jobs started by the operator from the master console) and TSO foreground jobs.

Tracking Without History Recording (TRKHIST=NO)

If TRKHIST=NO is specified in the DBAS configuration file, jobs are tracked without accessing the JEHF database. Without the JEHF, tracking updates the CMT with step completion information, Auto Setup information, and APCDDS step information but no History records are maintained in the JEHF.

Tracking Selected Jobs (U11ACTEX - Tracking Action Exit)

If coded and installed, this exit is invoked once per job, at the termination of the first step in the JCL. The Tracking Action Exit (U11ACTEX) lets you select which jobs are to be tracked with or without JEHF access. This exit overrides the Tracking System installation option.

Once this exit specifies which jobs are to be tracked, the Tracking System automatically collects job information when the jobs execute.

Tracking Jobs That Contain a Specified Stepname

If TRACK=STEP and TRKSTP=*xxxxxxxx*, only jobs that contain //*xxxxxxxx* EXEC *ca11rmsprocname* are tracked.

Job Execution History File (JEHF)

Recording of the tracking information is based on the JEHF. When JEHF recording is active, the Tracking System automatically builds the JEHF, and it is the repository for all tracking History information. Jobs are automatically added to the JEHF without any other predefinition or manual intervention required by you or the master console operator.

Information captured in the JEHF is from the Tracking System. The Tracking System uses the SMF IEFACTRT exit to capture step termination (SMF type-4 record), job termination (SMF type-5 record), or step/job termination (SMF type-30 record). This method of data capture ensures that the JEHF contains accurate, real-time information about job activity.

More information:

Tracking System Operation (see page 114)

JEHF Records

The JEHF is a set of tables on a CA Datacom database. The Database Address Space (DBAS) gives the JEHF the appearance of a VSAM key-sequenced data set maintained by CA WA Restart Option on a real-time basis. The JEHF contains information about jobs in the form of three kinds of records: Control, Production, and Rerun. The JEHF key is a concatenation of record type, job name, and reader start date and time.

The following table shows the contents of JEHF records:

Control Record	Production Record	Rerun Record
Job name	Reader start date and time	Reader start date and time
Maximum days held	CPU	Restart starting step
Min cycles held	Tape EXCP count	Restart ending step
Programmer name	DASD EXCP count	Reason field
Accounting field	Job completion code	Resources used
User field	Abending program name	CPU
	Reason field	Tape EXCP count
	Resources used	DASD EXCP count
		Job completion code
		Abending program name

Field Descriptions of JEHF Records

Following are the field descriptions of JEHF records:

Jobname

The eight-character name of the job.

Maximum Days Held

The installation-defined retention time (MAXDAY) for total number of days that the record for the job is retained in the JEHF. (See Installation Options for your data center.)

Min Cycles Held

The installation-defined retention amount (MINCNT) for the minimum number of JEHF production entries per job.

Programmer Name

The name of the programmer responsible for the job.

Accounting Field

The user-supplied accounting field.

User Field

The reserved field for a user-defined value.

Reader Start Date and Time

The starting date and time that the reader read the job.

CPU

The ID of the CPU performing the processing.

Tape EXCP Count

The execute channel program I/O count for the applicable tape drive unit.

DASD EXCP Count

The execute channel program I/O count for the applicable DASD unit.

Job Completion Code

The indicator reflecting the status of the job at termination.

Abending Program Name

The name of the program in which the abend occurred.

Reason Field

The reason-for-rerun text.

Resources Used

The total system resource units (SRUs) used.

Restart Starting Step or Number

The first JCL step executed in a restart.

Restart Ending Step or Number

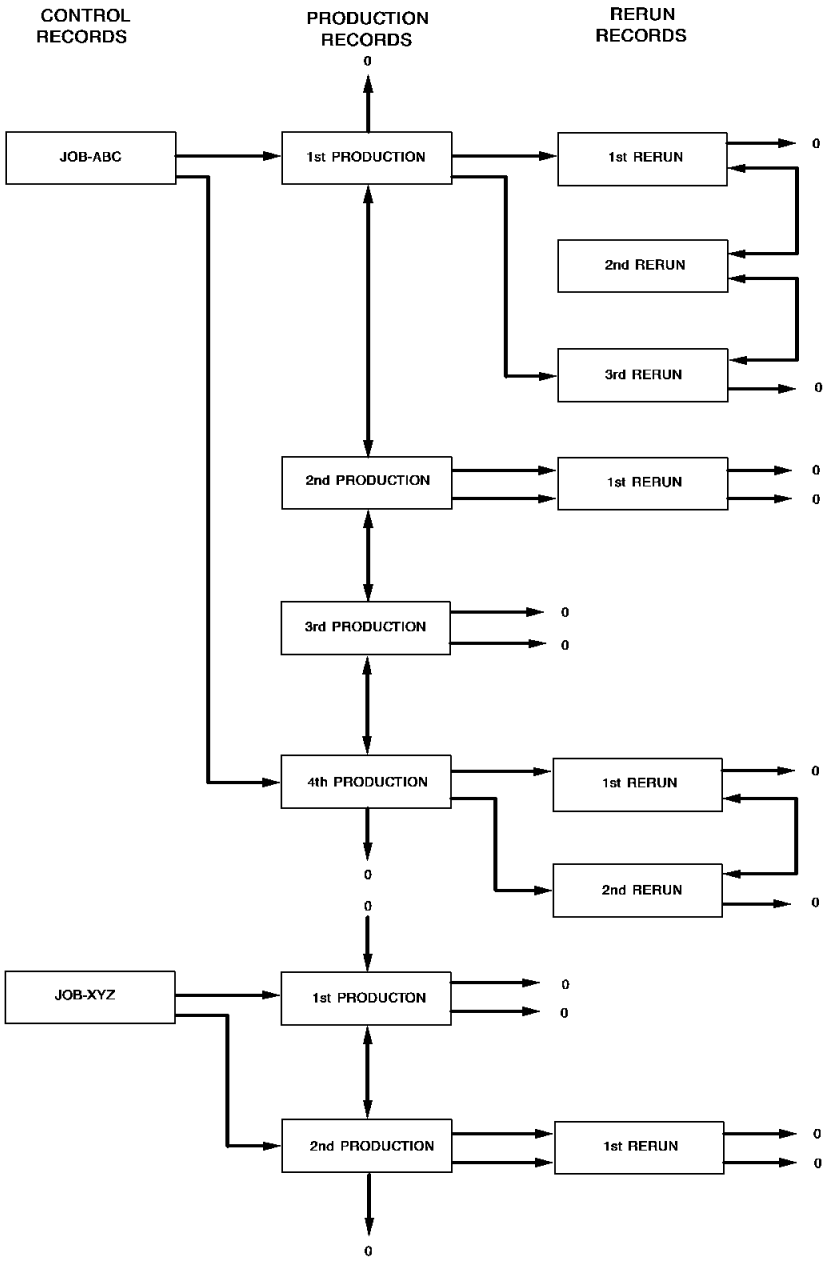
The last JCL step executed in a restart.

Reason Field

The reason-for-rerun text.

JEHF Structure

The following figure shows the structure of the JEHF and the key pointers to and from the records. The Control record for each job has key pointers to the Production records for that job. In turn, each Production record has key pointers to the Rerun records for that production job.



You can display and update the JEHF through batch processing or through the Online System. CA WA Restart Option security controls the updating of the JEHF.

The following examples show a sample JINQ inquiry. Notice the record key in the first line of each of the three distinct record types: Control, Production, and Rerun.

Sample JINQ

```
       CNTL RECORD KEY =   ACGHGDG   00.00   00.00.00.00
MAXDAY  =00060 MINCNT  =00005 TLPRDCNT=00028
CRPRDCNT=00028 PGMRNAME=GINA HICKEY
CNTLACCT=(4957CFFZ) CNTLUSER=''

      PROD RECORD KEY =   ACGHGDG   09.010  11.26.10.61
PRDSRU   =0000000262 PRDUMEM =0108 PRDSMEM =0208 PRDNRTAP=0000 PRDNRDSK=0006
PRDNROTH=0000  PRDTCPU =00000025 PRDSCPU =00000002 PRDTPCNT=0000000000
PRDDKCNT=0000000123  PRDVICNT=0000000000 PRDOTCNT=0000000000
PRDPGIN =0000000021  PRDPGOUT=0000000000 PRDCLASS=A PRDSDATE=09.010
PRDSTIME=11.31.41.18  PRDNRSTP=004 PRDEDATE=09.010 PRDETIME=11.33.35.88
PRDSYSID=8301  PRODCPCD=S/B37 PRDOPSYS=13 PRD#STPX=004 LSTRRCCD= 0000
PRDABSP#=004  PRDAPROC=         PRDASTEP=S3       PRDABPGM=IEBGENER
NMRERUNS=001  PRODUSER=
PRODRESN= SB37  - NO SPACE AVAILABLE
```

```
RRUN RECORD KEY     ACGHGDG   09.010 11.29.16.41
RRNSRU   =0000000263 RRNUMEM =0072 RRNSMEM =0208 RRNNRTAP=0000 RRNNRDSK=0006
RRNNROTH=0000  RRNTCPU =00000026 RRNSCPU =00000002 RRNTPCNT=0000000000
RRNDKCNT=0000000111  RRNVICNT=0000000000 RRNOTCNT=0000000000
RRNPGIN =0000000002  RRNPGOUT=0000000000 RRNCLASS=A RRNSDATE=09.010
RRNSTIME=11.33.38.83  RRNNRSTP=003 RRNEDATE=09.010 RRNETIME=11.34.07.26
RRNSYSID=8301 RRUNCPCD= 0000RRNOPSYS=13 RRN#STPX=003 RRNOSRRN=NO
RRNOCRRN=NO  RRNUCRRN=YES RRNUPRRN=NO   RRNABSP#=000 RRNABPRC=
RRNABSTP=S3       RRNABPGM=         RRUNUSER=          RRNRSSTP=
RRNRESTP=         RRNSSRU =0000000263 RRNSUMEM=0072  RRNSSMEM=0208
RRNSTCPU=00000026 RRNSSCPU=00000002 RRNSTPCT=0000000000  RRNSDKCT=0000000111
RRNSVICT=0000000000 RRNSOTCT=0000000000
RRUNRESN=
```

JEHF Size

The size of the JEHF or the total number of records that it contains depends entirely on the number of jobs being recorded and the amount of job information you have designated to be retained.

CA WA Restart Option installation parameters control the minimum number of production cycles to be retained for any job and the maximum number of days for the system to retain a production cycle. You define these system parameters at product installation. MAXDAY defines the maximum number of days that records are retained on the JEHF. The default is 60 days.

MINCNT defines the minimum number of production entries permanently maintained on the JEHF. The default is five production entries.

More information:

JEHF Structure (see page 121)

Maintaining JEHF Integrity

The JEHF can only reflect the true status of a job if tracking was on with History Recording, and the JEHF was updated for that job every time it was run. If tracking was inactive, not tracking the job in question, not recording (TRKHIST=NO) history for the job, or if CA WA Restart Option or DBAS abended while the job was running, then the JEHF cannot reflect the job's current status. For this reason, it is necessary to correct any error conditions which may have been evident during DBAS operations or in the job run. To correct error conditions, use JINQ and JUPD to ensure that a suspect job has the correct status.

More information:

Online Functions Related to the JEHF (see page 124)

Initialization of the Tracking System

Initialization processing for the Tracking System is done during initialization of the Database Address Space (DBAS). A DBAS configuration file parameter specifies whether to make the Tracking System active or inactive. By specifying TRAKINIT=TRAK, DBAS automatically activates tracking. Specifying TRAKINIT=NTRK results in an inactive Tracking System when DBAS initializes. If the TRAKINIT parameter is not coded in the DBAS configuration file, messages U11-600 and U11-601/U11-602 are issued, requiring an operator reply. A reply to U11-600 must be given to activate the Tracking System. To inactivate tracking, the operator must reply with the CA WA Restart Option master password as supplied by the systems programmer.

Note: If RECOVCSA=YES is coded in the DBAS configuration file and the TRAKINIT parameter is not coded, the status of the Tracking System remains the same as when the previous DBAS was active, if any.

Following the initial setting of the Tracking System status during DBAS initialization, tracking can be reset to the opposite status by use of the AL7NIT cataloged procedure. The following console command invokes AL7NIT:

```
S AL7NIT,PARM=pppp
```

pppp is either TRAK or NTRK. If the PARM data is not supplied, messages U11-600 and U11-601/U11-602 are issued as previously described.

CAL7SAMP provides a sample AL7NIT PROC. CAL7SAMP member AL7JNIT provides a sample job to execute the AL7NIT PROC.

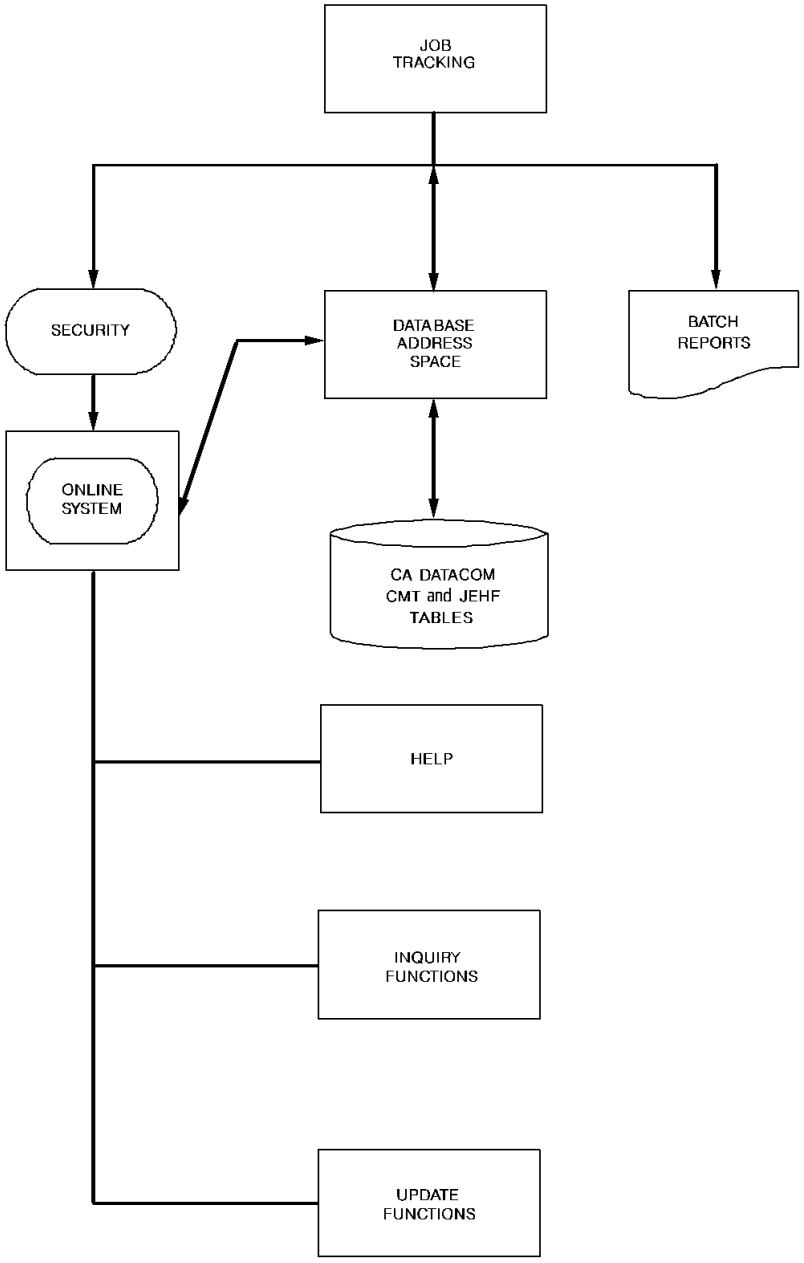
Note: If TRKHIST=NO in DBAS configuration file, you can initialize the Tracking System without the JEHF task active. If tracking determines that the JEHF task is not active, tracking continues without History Recording.

Online Functions Related to the JEHF

Online System functions are a major means of monitoring jobs and job status when the Tracking System is active. Through Online System access, you can obtain various displays of job and job status information. Depending on your defined security access, you can also update the JEHF through the Online System.

It is important to remember that the information displayed with these functions comes from the JEHF. The Tracking System updates this file. If tracking is not active when a job is run or DBAS is not active when the job is run, the JEHF was not updated to reflect the job's true status. These functions do not report jobs that are being tracked without JEHF recording (TRKHIST=NO).

Job status appears on various online displays. Often it is useful to know whether a job is executing, completed, and so forth. CA WA Restart Option keeps job status ready for immediate display. The following figure shows how online functions fit the Tracking System scheme:



The following paragraphs briefly describe the various online inquiry and update functions related to the Tracking System and the JEHF.

DIS - Job Inquiry

The Online Job Inquiry displays historical information on execution cycles for a specified job. This inquiry permits display of as many production cycles for a job as wanted. The number of cycles is limited only by the amount of data stored in the JEHF. The facility supports summary type displays from which it is possible to isolate a particular cycle. Detailed information is available on a cycle basis.

The number of reruns performed in each cycle, abend information, and reason-for-rerun are displayed. This display can be used to view job trends over a given time period.

Examples: The following example shows the summarized history for six cycles for job ADJF0021. The relative production cycle zero is the most recent cycle for the job which is currently executing (Status=E). Seven reruns occurred over the last six cycles for the job; three of which occurred in the (-2) cycle.

DIS - History Report for Several Cycles of a Job

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
DIS ADJF0021,H(6)
-- CA WA RESTART OPTION ONLINE - PRODUCTION CYCLE INQUIRY --
                   HISTORY REPORT FOR JOBNAME = ADJF0021

RELATIVE             INITIATION             NUMBER              STATUS
PROD. CYCLE             TIME                OF RERUNS

   (0)            yy.036/17.25.00.00          00000               E
   (1)            yy.030/15.35.02.00          00000               C
   (2)            yy.026/16.21.42.00          00003               C
   (3)            yy.021/17.30.00.00          00001               C
   (4)            yy.019/16.59.55.04          00000               C
   (5)            yy.017/17.09.25.03          00001               C
   (6)            yy.014/15.55.00.01          00002               C

 ---  PRODUCTION JOB INQUIRY ENDED ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

An inquiry for the (-2) cycle shows a detailed history to determine the causes for the reruns. The following example shows this second inquiry.

DIS - Detailed History Report for a Specified Cycle

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
DIS ADJF0021(-2)
-- CA WA RESTART OPTION ONLINE - PRODUCTION CYCLE INQUIRY --
                    DETAIL REPORT FOR JOBNAME = ADJF0021
                    --------- LAST OR ABENDED ----------

DATE    TIME   C  SYSID  PROCNAME  STEPNAME  PROGRAM  RTCD  S REASON FOR RERUN

yy026  162142  C  8301   MTYPROC1   STEP4     PGM2    S/001     MACHINE ERROR
yy026  162512  C  8301   MTYPROC1   STEP7     PGM3    S/0C7     PROGRAM ERROR
yy026  164523  C  8301   MTYPROC1   STEP9     PGM6    S/001     MACHINE ERROR
yy026  170121  C  8301   MTYPROC1   STEP12    PRINT   0000  C

  ---  PRODUCTION JOB INQUIRY ENDED ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

This example shows the job status of the job currently executing.

DIS - Detailed Report for a Job Currently Executing

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
DIS ADJF0021
-- CA WA RESTART OPTION ONLINE - PRODUCTION CYCLE INQUIRY --
                    DETAIL REPORT FOR JOBNAME = ADJF0021
                    --------- LAST OR ABENDED ----------

DATE    TIME   C  SYSID  PROCNAME  STEPNAME  PROGRAM  RTCD  S REASON FOR RERUN
yy036  172500  C  8301   MTYPROC1    STEP3     PGM3          E

  ---  PRODUCTION CYCLE INQUIRY ENDED ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

More information:

DIS - Job Inquiry (see page 147)

STA - Production Status Inquiry

The Production Status Inquiry displays the status of all jobs or a subgroup of all jobs in a given time frame. The display shows which jobs are completed, those abended, still executing, and those set for restart. It also displays the last successfully executed PROC name, stepname and program name. The same information is displayed for abended jobs.

Example: The following example shows an inquiry made to display all jobs with a reader start time within the past two hours.

STA - Report of Jobs Executed During Past Two Hours

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
STA H=2
-- CA WA RESTART OPTION ONLINE - PRODUCTION STATUS INQUIRY --

                                ---------------- LAST OR ABENDED --------------
  JOBNAME    DATE    TIME    #RR  C  SYSID  PROCNAME  STEPNAME  PROGRAM   RTCD   S

  CL9000    yy515   103405    0  C  8301   PROC02    BACKUP    IEFBR14    0000  C
  HTJE101   yy515   103714    1  C  8301   ASIMS100  STEPR20   PAS06      0000  C
  DUSTTST1  yy515   104103    0  A  8301   AHTJE10MO PRINT     RSER      S/001  C
  DUSTTST2  yy515   110123    1  C  8301   MOP       S2        MGL505    S/0C7  A
  DUSTTST3  yy515   110745    3  C  8301   HTED201   S20       MOPRINT    0000  E

  TOTALS.   #C      #A     #E     #S       #JOB        #RR     #RUN      %RR
            0003    0001   0001   0000     0005        0005    0010    50.00 %

   --- PRODUCTION STATUS INQUIRY ENDED ---
  U11-411  ENTER CA-11 ONLINE COMMAND ?
```

For each job, the number of reruns (#RR), class (C), system ID (SYSID), information about the last or abended PROC (PROCNAME), stepname, program, completion code, and status are displayed. Also shown is the number of jobs categorized in each of the four status groups (C, A, E, and S). The rerun percentage is the total number of runs (production runs plus reruns - #RR=10) in the specified time frame (two hours).

More information:

STA - Production Status Inquiry (see page 194)

JINQ - Job Execution History File Inquiry

The Job Execution History File (JEHF) Inquiry displays data for a particular job in a given time frame. The inquiry can be limited to the specific record types (Control, Production, Rerun) for the particular job as required.

Note: For more information about the record layouts and field descriptions of the JEHF records, see the *Programming Guide*.

Example: Information displayed is the same as displayed in Sample JINQ (see page 121). You can display all three records (Control, Production, Rerun) or make a selection.

More information:

JINQ - Job Execution History File Inquiry (see page 153)
Example (see page 155)

JUPD - Job Execution History File Update

The Online JEHF Update function allows updating of fields in the Job Execution History File. Fields that are displayed are the only fields which can be updated (in accordance with your defined CA WA Restart Option security).

Field names are displayed in the topic Records and Keywords of the JEHF topic in the chapter "System Structure" in the *Programming Guide*. Fields specified can be updated with new data as required.

Example: Since the JUPD update function is used only by those having authorized security access, see Example (see page 159).

RUPD - Reason-for-Rerun Update

A reason-for-rerun can be applied to any CA WA Restart Option job. The most recent job cycle can be accessed through the RUPD transaction to update, add, or otherwise check a reason-for-rerun. If it is desired to access previous job cycles to enter a reason-for-rerun, RUPD cannot be used. The reason-for-rerun can be entered through U11RMS, PRE, or U11PRE using the PARM or SYSIN control statement.

Example: To use the RUPD update function, your security access must be set to allow access and update. For an example of this function, see Example (see page 185).

More information:

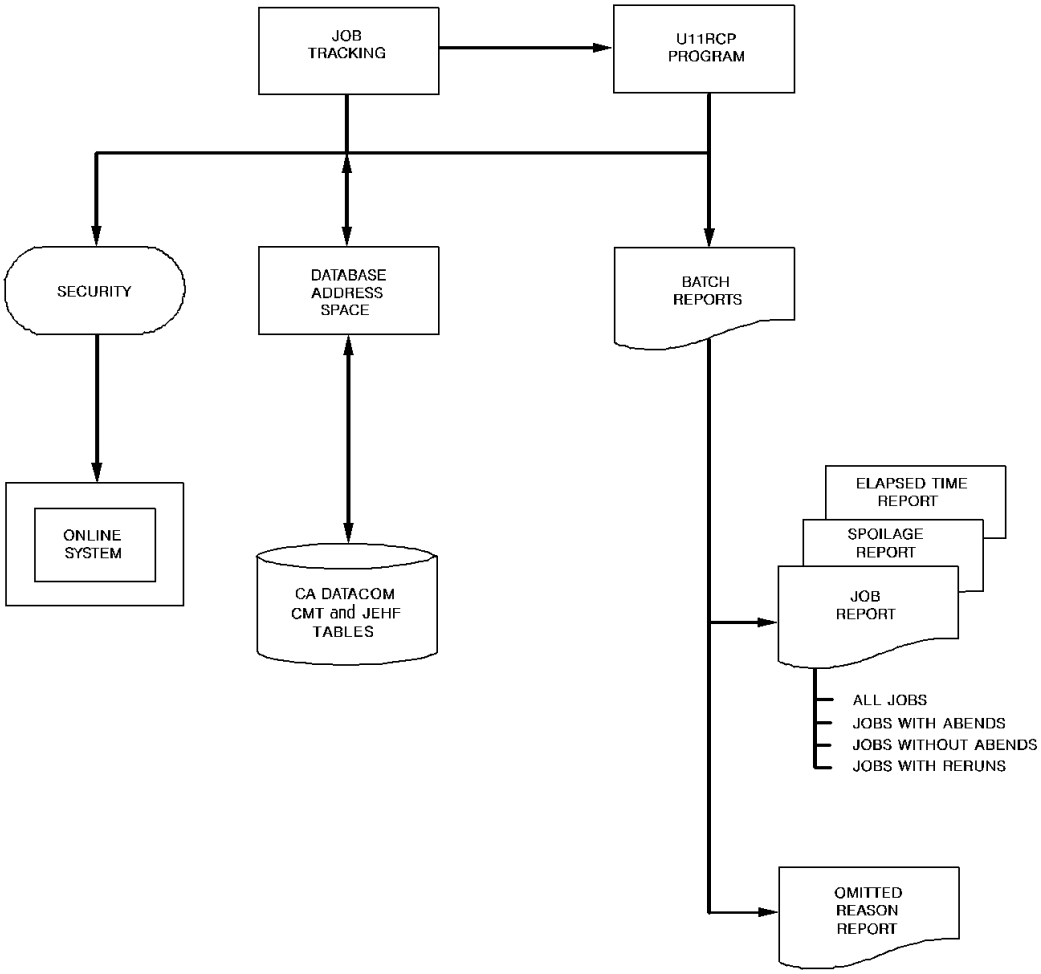
RUPD - Reason-for-Rerun Update (see page 182)

Usage Note

Online tracking information can be difficult to analyze on the panel display, particularly if large amounts of data are retrieved. Generating a batch report is a good alternative in such cases.

JEHF Reports

Various batch reports are available from the JEHF History Data. The JEHF History Data generating program for all JEHF reports is U11RCP. The following figure shows how the batch reports fit into the overall Tracking System scheme:



More information:

Batch Reports (see page 203)
Online System (see page 137)

Management Reports

Efficient use of system resources, job status, and selective reporting are among the concerns of management and production control. CA WA Restart Option through the Tracking System and JEHF Batch Reports can aid in the management and control of resources and jobs.

CA WA Restart Option reports on wasted resources. When you must reexecute an entire job or job steps for any reason, the resources used are wasted. The CA WA Restart Option term for this occurrence is spoilage. CA WA Restart Option uses IBM's System Resource Units (SRUs) for spoilage reporting.

SMF automatically calculates SRUs. Spoilage information, as reported by the Tracking System, helps in determining which reruns and restarts are the costly ones.

The JEHF Batch Reporting produces four basic types of management reports with job execution data:

- Job report
- Spoilage report
- Omitted Reason report
- Elapsed Time report

CA WA Restart Option offers four variations on the Job report, Spoilage report, and Elapsed Time report:

- All jobs are reported.
- Only jobs with a normally terminated production run are reported. These jobs can still have reruns due to lost reports, and so forth.
- Only jobs with an abnormally terminated production run are reported.
- Only jobs with reruns are reported.

The Omitted Reason report reports only jobs that have been rerun and do not have a reason-for-rerun.

User Selected Report Options

Another unique feature of batch reporting, flexible report selection, lets you customize reports for your individual needs. This flexibility encompasses the following four options:

- Grouping—Group jobs by job name, programmer name, accounting information, or substrings of these fields. Grouping permits reporting on jobs from selected applications (that is, payroll, accounting, and so forth). You can define an unlimited number of groups.

  Grouping is a quick, efficient way to isolate the applications for which you want to produce reports.
- Selecting—Specify time ranges for all jobs, jobs with/without abends, or jobs with reruns.
- Sorting—Generate reports by job name, abending program or code, job initiation time, or reason-for-rerun.
- Printing—Generate either detail or summary reports.

Headings for reports are also under your direct control. Even though report installation options determine heading format, you can override those default values with the use of the report heading control statement.

More information:

Report Headings (see page 205)

Procedures for Generating Reports

For more information about generating Tracking reports, see U11RCP Reports (see page 247).

Features Dependent on the Tracking System

The Tracking System directly affects the operation and performance of certain functions of the product. If the Tracking System is not initiated and active, the following system elements are affected:

- Auto Setup
- JEHF record building
- Step completion codes
- CA APCDDS interface

The following paragraphs discuss the effects to each of these elements and CA WA Restart Option in general.

Auto Setup

The Auto Setup feature of CA WA Restart Option depends entirely on the Tracking System being initiated and active for each job. The Auto Setup feature (AUTOS) of the Run Handler does not function if the Tracking System is not initiated. If AUTOS=YES is installed as a default in your system, the Tracking System should be turned on.

A user exit, U11RSTEX (Tracking Action Exit), is available which lets you select Auto Setup on a job-by-job basis.

Note: For more information about this exit, see the *Programming Guide*.

More information:

Summary of User Installation Options (see page 279)
OINQ - Option Table Inquiry (see page 167)

JEHF Record Building

Some of the Online System functions rely on the records captured by the Tracking System and stored in the JEHF. If the Tracking System is not active, History Recording is not enabled, or DBAS is not active when a job is run, then record building in the JEHF does not occur for that job. Consequently, the Online System data displayed for the job is not accurate.

For example, the STA - Production Status Inquiry requires the following data from the JEHF to display reliable information:

- Initiation time
- System ID
- Job status
- Abended program name
- Abended or last stepname
- Abended or last PROC stepname

Two Online System functions are exclusively tied to the JEHF: JINQ - Job Execution History File Inquiry and JUPD - Job Execution History File Update. These functions display and modify JEHF data directly. Use the functions to correct any discrepancies observed in JEHF data and the actual status of a job. However, unless the Tracking System remains active with History Recording, the status of the job is again inaccurate next time the job is run.

Step Completion Codes

Recording of completion codes in the Step record of the CMT does not occur with the Tracking System inactive (TRAKINIT=NTRK). The absence of these completion codes can significantly affect reruns.

Without having access to step completion codes, rerun of abended jobs can result in unnecessary rerunning of steps which contain condition code tests which are not executed in the rerun/restart. This feature does not require JEHF History Recording.

CA APCDDS Interface

CA WA Restart Option interfaces with CA APCDDS if installed. On completion of a step which executes CATKJCL, CA APCDDS notifies CA WA Restart Option through the Tracking System that it has successfully completed processing and has committed status information to its database for all extracted elements and all evaluated rules, compound rules, derivatives, and data equates.

On a rerun of this step, CA WA Restart Option notifies CA APCDDS that this step is being rerun by changing the CATKJCL EXEC PARM statement from PARM=DDS to PARM=DDSR, thus causing CA APCDDS to invalidate all the relevant status from the previous run of this step. This feature does not require JEHF History Recording.

Chapter 4: Online System

This section contains the following topics:

Introduction

The major function of the Online System is to display information relative to both the shop-wide production status and the individual job status. Additionally, both CA WA Restart Option databases, the Catalog Management Table (CMT) and the Job Execution History File (JEHF), can be inquired against and updated through the Online System. Finally, the Pull List facility and the Rerun Setup facility (PRE) are available online.

The Online System is available through any of the following facilities:

- Master console
- TSO terminal
- CICS terminal
- CA Roscoe IE terminal
- CA Workload Automation SE terminal

Additionally, a batch interface is provided. This batch interface permits the initiation of all the Online System functions in batch mode. All system responses could then be directed to an output printer. Printing is useful to obtain hardcopy of valuable output such as production status at shift changes.

The Online System functions are the following:

- Job Inquiry (DIS)
- Production Status Inquiry (STA)
- Job Execution History File Inquiry (JINQ)
- Job Execution History File Update (JUPD)
- Catalog Management Table Inquiry (CINQ)
- Catalog Management Table Update (CUPD)
- Pull List Request (PULL)
- Preprocessing (PRE)
- Simulated RMS (SIM)
- Option Table Inquiry (OINQ)
- Reason-for-Rerun Table Inquiry (LREA)
- Reason-for-Rerun Update (RUPD)
- RMS Parameter Restart (REST)
- CMT Reason-for-Rerun Table Update (UPRS)
- Job Restart Inquiry (LJOB)
- Job Step Inquiry (LSTP)

- Tutorial Session (HELP)
- Terminate the Online System (END)

More information:

U11OBD Online Batch Driver (see page 206)

Initiate Online System

You can initiate the Online System from a master console or a TSO, CICS, CA Workload Automation SE, or CA Roscoe IE terminal.

Note: For more information about the security requirements, see the *Programming Guide*.

If the system is initiated from a console or TSO terminal, a maximum time-out limit for lack of activity is set for 15 minutes. The system then automatically terminates and requires reinitiation for further online operation. When using a CA Roscoe IE or CICS terminal, you have no time-out limit. The MONLIM parameter on the CA Workload Automation SE TERM statement in the initialization file determines its time-out limit.

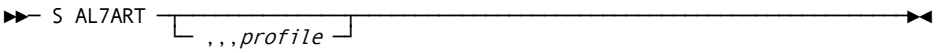
The following topics present procedures for initiating the Online System from the various consoles and terminals.

More information:

U11OBD Online Batch Driver (see page 206)

Master Console

Initiate the Online System by executing a cataloged procedure from SYS1.PROCLIB using the START command. The format of the START command is:



The fourth positional parameter, profile, is optional.

Note: For more information about the security options, see the *Programming Guide*.

Switch to Another Console

The operator's console driver limits all communication with the Online System to the console that started the driver. If this console becomes unavailable, the system permits a switch to another console. Enter the following operator's modify command to make the switch:

This command switches all communication with the Online System from the current operator's console to the console that entered the modify command.

Interrupt or Terminate the Online System

To interrupt or terminate the Online System from any operating system terminal, enter the following operator's stop command:

This command causes the Online System to terminate its current activity and return control to the operating system. For an orderly termination, use the END command of the Online System.

CAL7SAMP provides a sample AL7ART PROC. CAL7SAMP member AL7JART provides a sample job to execute the AL7ART PROC.

More information:

END - Terminate Online System Functions (see page 151)

TSO Terminal

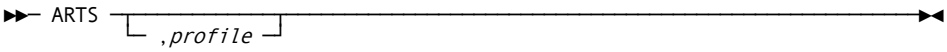
To initiate the Online System using the TSO terminal driver, enter the following TSO CLIST command:

The profile is optional.

Note: For more information about the security options, see the *Programming Guide*.

CICS Terminal

Initiation of the Online System using the CICS interface requires the following command from the CICS terminal:



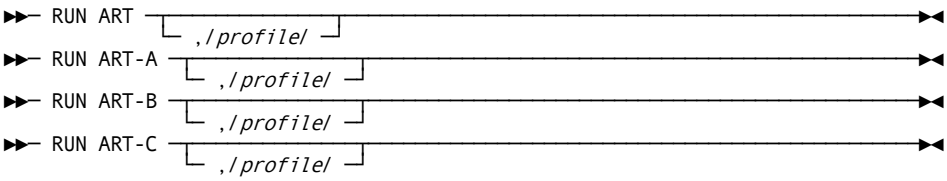
The profile is optional.

Note: For more information about the security options, see the *Programming Guide*.

Use of the CICS interface, U11ODC, can trigger CA WA Restart Option initialization in which case the standard CA WA Restart Option initialization WTORs are issued. If CICS is shut down with U11ODC active, it can return to the operating system with a subtask attached causing an SA03 abend. This abend can be prevented by terminating all active ARTS transactions from the CICS master terminal before shutting down CICS.

CA Roscoe IE Terminal

Several command options are available to initiate the Online System from a CA Roscoe IE terminal. The commands to activate the CA Roscoe IE interface to the Online System are as follows:

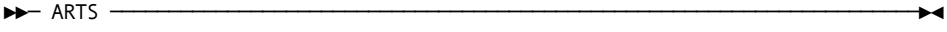


The profile is optional.

Note: For more information about the security options, see the *Programming Guide*.

CA Workload Automation SE Terminal

To initiate the Online System using a CA Workload Automation SE terminal, enter the following command:



No parameters are entered with this command.

CINQ - Catalog Management Table Inquiry

This function is an inquiry to the Catalog Management Table (CMT), which contains the data that controls catalog maintenance and rerun execution.

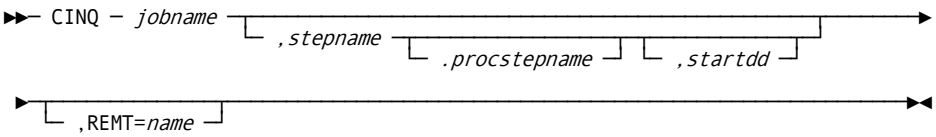
Note: For more information about record layouts and field descriptions of the CMT records, see the *Programming Guide*.

Typical Use

The CINQ function is useful in examining individual fields in the CMT records. For example, you might want to determine which generation of a GDG was used in the last execution of a job.

Command Format

This command has the following format:



jobname

Indicates a request for information regarding the specified job name. If the name of the CMT History record is specified, the History record is displayed. Use the OINQ command to determine the name of your CMT History record (HISTNM).

stepname

Indicates the name of the step in the job at which the inquiry is to begin.

procstepname

Indicates the name of the PROC step in the job at which the inquiry is to begin.

startdd

Indicates the ddname in the step at which the inquiry is to begin.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location at which the command is to execute.

Inquiry Procedure

After the inquiry has been initiated, the first record selected is displayed in a fieldname=fieldvalue format. Each time the Job record or Step record and the corresponding DD records are displayed, the following response must be initiated:

- Press Enter to display the next record. Records for the job are read sequentially from the CMT. If all records have been displayed, control returns to the Online System.

Exit Procedure

To exit this command and to continue performing online tasks, enter the following:

```
CANCEL
```

Then enter another online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the CINQ transaction. The request was to display CMT information for the job DUSTTST1. First the CMT Job record was displayed, the user indicated to continue displaying (with an Enter response), then the step and its associated DD records were displayed, and the user canceled the inquiry.

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
CINQ DUSTTST1
-- CA WA RESTART OPTION ONLINE - CMT INQUIRY --
  JOB=DUSTTST1

   JOB  RECID=1 BTCHID=111 PROCSTEP/STEP=RMS     /RMS@21   IND1=01 HIRTCD=0000
      RESTRIND=80   RESTRTCCD=0000   STPROCSTEP/STEP=        /
      ENDPROCSTEP/STEP=        /           LTYPE=P   LUSE=   LFDATE=yy.109
      LFTIME=10:56:00   LPDATE=yy.206   LPTIME=10:30:50   LRDATE=yy.206
      LRTIME=08:15:51  CYR=yy  CPNUM=0005  CRNUM=0004  AUTOSAL=YES AUTOSNV=NO
      LYR=yy LPNUM=0025 LRNUM=0013 NYR=00 NPNUM=0000 NRNUM=0000 USERLEN=00
      USERDATA=''
 U11-441  CONTINUE DISPLAY ?
```

CMT Inquiry Display (CINQ)

```
PROCSTEP/STEP=          /STEP1

 STEP RECID=3 BTCHID=110 PROCSTEP/STEP=         /STEP1    SEQNO=001
    LOGIC=00 LRTCD= 0000 HIRTCD=0000 NBRCC=0 CC1=NONE     CC2=NONE
    CC3=NONE    CC4=NONE    CC5=NONE    CC6=NONE    CC7=NONE     CC8=NONE

 DD    RECID=4 BTCHID=000 DSN='AC.CA11.TESTSDS1
     GDGNUM=           GDGDISP=000   GDGJBIAS=N/A    GDGSBIAS=N/A
     VOLSER=   DEVTYPE=DASD  DSTPNUM=000 DSP1=OLD  DSP2=UNKNOWN  DSP3=UNKNOWN
     DDNAME=INPUT1     STATIND=00   ACTION=X   DPSTNUM=000

 DD    RECID=4 BTCHID=000 DSN='AC.CA11.TESTSDS2
     GDGNUM=           GDGDISP=000   GDGJBIAS=N/A    GDGSBIAS=N/A
     VOLSER=   DEVTYPE=DASD  DSTPNUM=000 DSP1=NEW  DSP2=UNKNOWN  DSP3=UNKNOWN
     DDNAME=OUTPUT1    STATIND=00   ACTION=S   DPSTNUM=000
U11-441   CONTINUE DISPLAY ?
CANCEL
 ---  PROCESSING TERMINATED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

CUPD - Catalog Management Table Update

The Catalog Management Table (CMT) update function lets you modify the data in the CMT that controls catalog maintenance and rerun execution.

Note: For more information about record layouts and field descriptions of the CMT records, see the *Programming Guide*.

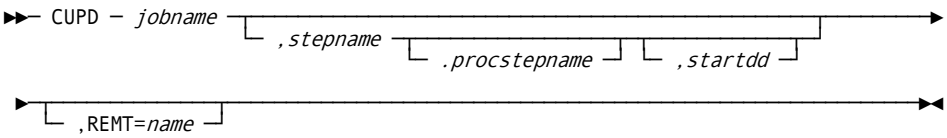
Typical Use

The CUPD function is useful in the following:

- Deleting CMT entries for jobs which are no longer processed in your data center.
- Modifying data set information when overrides are made.

Command Format

This command has the following format:



CUPD

Indicates a CMT Update.

jobname

Indicates the name of the job to inquire against.

step

Indicates the name or number of the step within the job at which the inquiry is to start.

procstep

Indicates the name of the PROC step within the job at which the inquiry is to start.

startdd

Indicates the ddname within the step at which the inquiry is to start.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Update Procedure

After the update is initiated, records display in a fieldname=fieldvalue format. Each time a record displays, one of the following responses must be initiated:

- Press Enter to display the next CMT record. If all records have been displayed, control returns to the Online System.
- VER field1=data1,field2=data2,... redisplays the current record and verifies the contents of the specified fields against the specified values. This may be necessary if the panel has been lost, partially overwritten, and so forth, or if verification of the field contents prior to updates made is desired, such as running in batch emulation of the Online System.
- REP field1=data1,field2=data2,... causes the indicated fields to be updated with the specified data. The fields are referenced through keywords. For more information, see the *Programming Guide*. The record automatically redisplays with the new data. The same record can then be updated again to correct any errors. The REP transaction cannot continue to a second line.
- DEL deletes the CMT entry. This command is valid only when the Job record is displayed. At any other time, the system returns an error message and ignores the request.

Note: The REP transaction invokes a security check if using field level security. VER and DEL require no further security checks.

Exit Procedure

To exit this command and to continue performing online tasks, enter the following:

```
CANCEL
```

Then enter another online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the CUPD transaction. The request was for a display and subsequent update of the CMT Step record for STEP1 of job DUSTTST1. The Step record was displayed and REP used to change the value of the LOGIC field from X'00' to X'80' to indicate that the user has set this step as not restartable. The Step record was redisplayed after confirming that the update was correct and then the update cycle was canceled.

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
CUPD DUSTTST1,STEP1
-- CA WA RESTART OPTION ONLINE - CMT INQUIRY/UPDATE --
 JOB=DUSTTST1

 PROCSTEP/STEP=        /STEP1

   STEP RECID=3 BTCHID=110 PROCSTEP/STEP=      /STEP1     SEQNO=001
    LOGIC=00 LRTCD= 0000 HIRTCD=0000 NBRCC=0 CC1=NONE     CC2=NONE
    CC3=NONE    CC4=NONE    CC5=NONE    CC6=NONE    CC7=NONE     CC8=NONE
U11-445  AWAITING NEXT REPLY / COMMAND ?
REP LOGIC=80
              LOGIC    CHANGED FROM - 00
                                TO   - 80
U11-446  REPLY 'U' TO UPDATE -- 'R' TO REJECT
U
```

```
PROCSTEP/STEP=        /STEP1

   STEP RECID=3 BTCHID=110 PROCSTEP/STEP=      /STEP1      SEQNO=001
    LOGIC=80  LRTCD= 0000  HIRTCD=0000  NBRCC=0  CC1=NONE  CC2=NONE
    CC3=NONE      CC4=NONE    CC5=NONE     CC6=NONE   CC7=NONE   CC8=NONE
U11-445  AWAITING NEXT REPLY / COMMAND ?
CANCEL

                ---  CMT INQUIRY/UPDATE ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

DIS - Job Inquiry

The Online Job Inquiry function displays historical information on execution cycles of a particular job. The facility supports summary type displays from which it is possible to isolate a particular cycle. Detailed information is available on a cycle basis. Only jobs tracked with JEHF recording can be displayed.

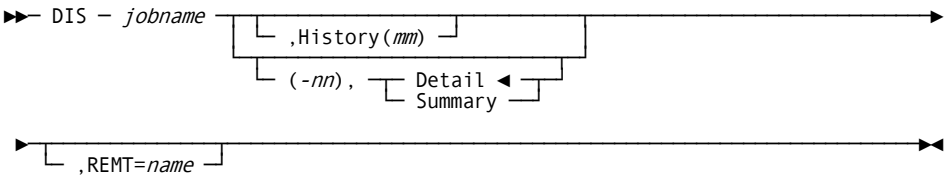
Typical Use

The DIS function is useful as a JEHF History and a production control tool. Advantages include the following:

- The summarized job history provided is valuable in allowing you to analyze the reliability of jobs and performance of specified jobs over a selected time span.
- As a management tool, this inquiry aids quality assurance groups, auditors, and management. It provides valuable insight on a daily, weekly, or monthly basis for jobs processed.
- After a system crash, this inquiry can be used to identify which step, in any specified job, was the last to successfully complete.

Command Format

This command has the following format:



DIS

Indicates a Job Inquiry.

jobname

Indicates the name of the job for which the inquiry is initiated. If none of the optional parameters are specified, the DETAIL format of the most recent cycle, that is, (0),DETAIL, is assumed.

History(*mm*)

Indicates a request of a display on the last *mm* cycles of the job indicated by job name. The display is in the SUMMARY format as defined below.

(-*nn*)

Indicates optional request of a display of the *nn*th cycle back. Zero or minus zero (-0) is the most recent cycle, (-1) the next most recent, and so forth. If the optional (-*nn*) parameter is not specified, (0), the most recent, is assumed.

If either the optional DETAIL or SUMMARY is omitted, DETAIL is assumed.

Detail

Indicates to display the following data for the initial production run and each rerun in the cycle:

- Job name
- Initiation time (*yyddd/hhmmss* format)
- Class
- System ID
- Terminating procname
- Terminating stepname
- Terminating program name
- Completion code
- Status of the job:
  - A = Unresolved abend
  - C = Job run complete
  - E = Job is executing
  - S = Job is set to be rerun
- Reason-for-rerun

If the status for the job is set-for-rerun, an additional line of data details the parameters CA WA Restart Option uses for the rerun to include:

- Starting step name or step number
- Ending step name or step number
- CA WA Restart Option return code
- Last usage
- Last processing type (P=production, R=rerun)
- Whether bypass GDG processing occurred
- Reason-for-rerun (of last unsuccessful run)

The reruns are listed in chronological order.

Summary

Indicates to display the following job information:

- Job name
- Initiation time (*yyddd/hhmmsshh* format)
- Relative cycle (0) is current, (-1) is next most current, and so forth. This number can then be used to request a particular cycle, that is, (-*nn*),DETAIL.
- Number of reruns for this cycle.
- Status of the cycle:
  - A = Unresolved abend
  - C = Job run complete
  - E = Job is executing
  - S = Job is set to be rerun

The jobs are listed in reverse chronological order, that is, the most recent first.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To perform another online inquiry, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the DIS transaction with an inquiry for the last cycle of job DUSTTST1. The display indicates that the last cycle completed (C) with a completion code of zero.

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
DIS DUSTTST1
-- CA WA RESTART OPTION ONLINE - PRODUCTION JOB INQUIRY --
          DETAIL REPORT FOR JOBNAME = DUSTTST1

               SYS  **** LAST OR ABENDED *****
 DATE   TIME C ID   PROCNAME STEPNAME PROGRAM   RTCD S REASON FOR RERUN

09215 104007 F 8301          STEP5    IEFBR14   0000 C

 ---  PRODUCTION JOB INQUIRY ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

END - Terminate Online System Functions

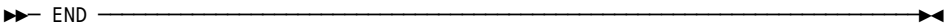
Use the END function to release the Online System and disallow further access to Online System functions.

Typical Use

The END function is useful for terminating your online session. Thus, an unauthorized user cannot access system functions using your session (under your profile security level) when you leave the terminal.

Command Format

This command has the following format:



HELP - Tutorial

The HELP command issues a request for a tutorial session and can be used initially to simply display a list of the Online System functions. You can then select and request a display of the command syntax format for a specific function.

Typical Use

The HELP command is frequently used and is useful for the following:

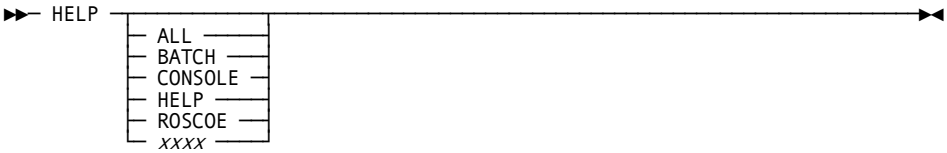
- New users to learn the various system functions
- Reference information for all users (command syntax, and so forth)

Such a HELP facility enhances user training and often significantly reduces training time and effort.

Command Format

The HELP command can be issued in response to the system inquiry.The HELP command is a request for a list of Online System functions. HELP specified with no options displays a summary of commands available to the Online System.

This command has the following format:



ALL

Displays the formats for all Online System functions.

BATCH

Displays formats for unique commands available to the Online Batch Driver.

CONSOLE

Displays formats for unique commands available to the console driver.

HELP

Displays all formats of the HELP command.

ROSCOE

Displays formats for unique commands available to the CA Roscoe terminal.

xxxx

Displays the formats for a specific Online System function (CINQ, CUPD, JINQ, JUPD, PULL, END, DIS, STA, PRE, SIM, OINQ, LREA, RUPD, LJOB, LSTP).

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

JINQ - Job Execution History File Inquiry

The Job Execution History File (JEHF) Inquiry displays data for a particular job in a given time frame. The JEHF appears as a VSAM data set containing Control, Production, and Rerun records. The inquiry can be limited to these specific record types for the particular job as required.

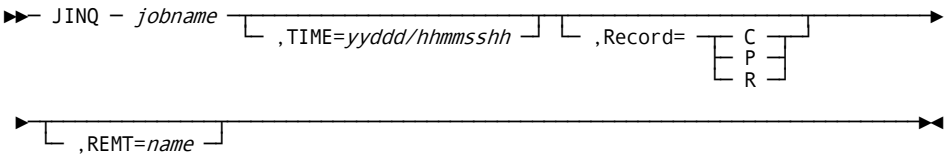
Note: For more information about record layouts and field descriptions of the JEHF records, see the *Programming Guide*.

Typical Use

The JINQ function is useful for verifying the JEHF retention criteria for a job. See MAXDAY and MINCNT fields in the Control record.

Command Format

This command has the following format:



JINQ

Indicates a Job Execution History File Inquiry.

jobname

Indicates the job name of the job to inquire against.

TIME=*yyddd/hhmmsshh*

Indicates optional and if used, indicates the beginning time from which the display of Production records is to start. Records are then displayed in chronological order. If TIME is omitted, the display begins with the Control record, then the Production records are displayed in reverse chronological order, that is, the most recent first. Those Rerun records associated with each production run are always displayed in chronological order. TIME can be specified as a partial string of any length up to a full year, day of year, hour, minute, second, or hundredths of a second, for example, *yy*201, *yy*201/10, *yy*201/10132590.

Record

Indicates optional and can be used to limit the inquiry to specific record types. The record types are:

C

Control records

P

Production records

R

Rerun records

If RECORD is omitted, all records are displayed.

After the inquiry is initiated, the first record displays in a fieldname=fieldvalue format. Each time a record displays, the following response must be initiated:

- Press Enter to display the next record. If all records have been displayed, control returns to the Online System.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To exit this command and to continue performing online tasks, enter the following:

```
CANCEL
```

Then enter another online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the JINQ transaction. The example shows a standard inquiry for Job DUSTTST1. It first showed the Control record, then was instructed (by Enter) to display the most recent Production record, and then canceled.

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
JINQ DUSSTTST1
-- CA WA RESTART OPTION ONLINE - JOB EXECUTION HISTORY FILE INQUIRY --

     CNTL RECORD KEY =   DUSTTST1  00.000  00:00:00:00
MAXDAY  =00060 MINCNT  =00005 TLPRDCNT=00004
CRPRDCNT=00004 PGMRNAME=TOM JONES
CNTLACCT=(4967CFCZ) CNTLUSER=''

U11-466  AWAITING NEXT REPLY / COMMAND ?
```

JEHF Inquiry Display (JINQ)

```
     PROD RECORD KEY =   DUSTTST1  09.215  10:40:01:02
PRDSRU  =0000000220 PRDUMEM =0072 PRDSMEM =0296 PRDNRTAP=0000 PRDNRDSK=0005
PRDNROTH=0000 PRDTCPU =00000040 PRDSCPU =00000004 PRDTPCNT=0000000000
PRDDKCNT=0000000018 PRDVICNT=0000000000 PRDOTCNT=0000000000
PRDPGIN =0000000003 PRDPGOUT=0000000004 PRDCLASS=F PRDSDATE=09.215
PRDSTIME=10:40:07:47 PRDNRSTP=006 PRDEDATE=09.215 PRDETIME=10:40:39:10
PRDSYSID=8301 PRODCPCD= 0000 PRDOPSYS=13 PRD#STPX=006 LSTRRCCD= 0000
PRDABSP#=006 PRDAPROC=         PRDASTEP=STEP5    PRDABPGM=IEFBR14
NMRERUNS=000 PRODUSER=
PRODRESN=

U11-466  AWAITING NEXT REPLY / COMMAND ?
CANCEL

 ---  J E H F  INQUIRY ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

JUPD - Job Execution History File Update

The Job Execution History File (JEHF) Update function lets you update fields in the Job Execution History File. Fields displayed (in accordance with your profile) are the only fields which can be updated. Fields specified can be updated with new data as required.

Note: For more information about record layouts and field descriptions of the CMT records, see the *Programming Guide*.

JUPD does not do translation of the reason-for-rerun codes to their text equivalent; text must be entered.

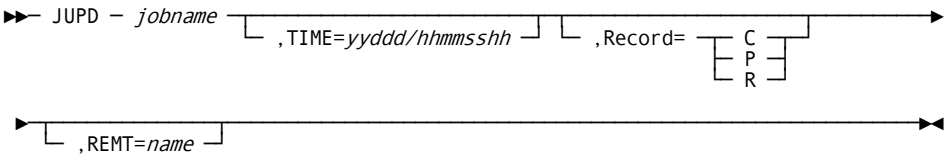
Typical Use

The JUPD function is useful in the following:

- Changing JEHF retention criteria for a job (see Typical Use for JINQ).
- Adding or changing a reason-for-rerun for a job.

Command Format

This command has the following format:



JUPD

Indicates a Job Execution History File Update.

jobname

Indicates the name of the job to update.

TIME=*yyddd/hhmmsshh*

Indicates optional and if used, indicates the beginning time from which the display of Production records is to start. Records are then displayed in chronological order. If TIME is omitted, the display begins with the Control record, the Production records are listed in reverse chronological order, that is, the most recent first. Those Rerun records associated with each production run are always displayed in chronological order. TIME can be specified as a partial string of any length up to a full year, day of year, hour, minute, second, or hundredths of a second, for example, *yy*201, *yy*201/10, *yy*201/10132590.

Record

Indicates optional and can be used to limit the display to specific record types. The record types are the following:

C

Control records

P

Production records

R

Rerun records

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Update Procedure

After the update is initiated, the display consists of Control record information in a fieldname=fieldvalue format. To display Production record data, press Enter. The display includes the actual number of reruns associated with the job.

Each time a record is displayed, one of the following responses must be initiated:

- Press Enter to display the next record. If all records have been displayed, control returns to the Online System.
- VER field1=data1,field2=data2,... redisplays the current record and verifies the contents of the specified fields against the specified values. This response can be necessary if the panel has been lost, partially overwritten, and so forth, or if verification of the field contents prior to updates being made is desired, such as when running in batch emulation of the Online System.
- REP field1=data1,field2=data2,... causes the indicated fields to be updated with the specified data. The record is then redisplayed with the new data, whereupon the same record can be updated again to correct any errors. The REP transaction cannot continue to a second line.
- The SET2PURG flag can be set to YES by using the REP command. This marks all records for this job name to be deleted during the next maintenance cycle. This flag is found only in the Control record.

Exit Procedure

To exit this command and to continue performing online tasks, enter the following:

```
CANCEL
```

Then enter another online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows an update of the JEHF Control record for the job DUSTTST1 using the JUPD command. First the Control record was displayed, then the user replaced the SET2PURG field with YES, was prompted to update or reject, subsequently displayed the updated Control record, and then canceled the update transaction.

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
JUPD DUSTTST1                                                          0000150
-- CA WA RESTART OPTION ONLINE - JOB EXECUTION HISTORY FILE UPDATE/INQUIRY --

     CNTL RECORD KEY =   DUSTTST1  00.000  00:00:00:00
CNTLDATE=00.000 CNTLTIME=00:00:00:00 CNTLJOBN=DUSTTST1 MAXDAY  =00060
MINCNT  =00005 TLPRDCNT=00013 SET2PURG=NO  FSTPRDTE=yy.300
FSTPRDTM=11:25:28:58 LSTPRDTE=yy.206 LSTPRDTM=10:30:44:48 CRPRDCNT=00013
PGMRNAME=MOOR
CNTLACCT=(40100000) CNTLUSER=''

U11-466  AWAITING NEXT REPLY / COMMAND ?
REP SET2PURG=YES                                                       0000160
              SET2PURG CHANGED FROM - NO
                               TO   - YES
U11-467 REPLY 'U'TO UPDATE -- 'R' TO REJECT
U
```

```
                                                                       0000170
     CNTL RECORD KEY =   DUSTTST1  00.000  00:00:00:00
CNTLDATE=00.000 CNTLTIME=00:00:00:00 CNTLJOBN=DUSTTST1 MAXDAY  =00060
MINCNT  =00005 TLPRDCNT=00013 SET2PURG=YES FSTPRDTE=yy.300
FSTPRDTM=11:25:28:58 LSTPRDTE=yy.206 LSTPRDTM=10:30:44:48 CRPRDCNT=00013
PGMRNAME=MOOR
CNTLACCT=(40100000) CNTLUSER=''

U11-466  AWAITING NEXT REPLY / COMMAND ?
CANCEL                                                                 0000220

 ---  J E H F  UPDATE/INQUIRY ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

LJOB - Job Restart Inquiry

The Job Restart Inquiry provides a generalized display of information contained in the Job records of the CMT. This generalized display can be based on all jobs, jobs set for rerun, jobs within a range, or a single job. For each category, the display can be limited to those jobs that are nonrestartable jobs. The segregation can be further limited to those jobs that are flagged as nonrestartable by any user or by CA WA Restart Option.

LJOB displays the following information:

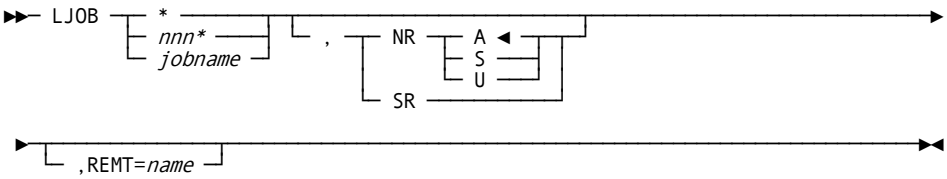
- Job name
- Job restartability status
- Whether the job is set for restart
- The dates of the last P, F, and R runs
- The total number of P and R runs for the current year

Typical Use

The LJOB function is useful in letting you readily determine which jobs are set for restart.

Command Format

This command has the following format:



LJOB

Indicates the Job Restartability Inquiry.

*****

Indicates that all jobs are to be reported.

nnn*

Indicates that only jobs beginning with *nnn* (up to seven characters) are to be reported.

jobname

Indicates the job name of a single job that is to be reported.

NR

Limits the report to those jobs which are nonrestartable. NR indicates to include only nonrestartable jobs.

All

Indicates that all jobs designated as nonrestartable are desired. Coded as either A or ALL. This is the default.

System

Indicates only CA WA Restart Option designated nonrestartable jobs are desired. Coded as either S or SYSTEM.

User

Indicates that only user-designated nonrestartable jobs are desired. Coded as either U or USER.

SR

Indicates that all jobs set for restart are desired. This provides a global checking process for all jobs set for restart.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the LJOB transaction. The request was for the job DUSTTST1. The job is displayed and shows that it is both restartable and set for a restart. The high return code field displays the return code value with which CA WA Restart Option is to compare the return code of each step. If any step returns a condition equal to or greater than the specified return code, CA WA Restart Option considers the job to have failed. Additionally shown are the last dates on which the job was run under P, F, and R processing, and the total runs for the year-to-date for P and R processing.

Job Restartability Inquiry (LJOB)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
LJOB DUSTTST1
-- CA WA RESTART OPTION ONLINE - JOB RESTART INQUIRY --

         RESTART  SET FOR  HIGH  ------ DATE OF ------       TOTALS FOR 20yy
JOBNAME   ABLE    RESTART  RTCD  LASTP   LASTF   LASTR      P-RUNS     R-RUNS

DUSTTST1   YES     YES     0004  yy.215  yy.215                4         0
 ---  JOB RESTART INQUIRY ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

LREA - Reason-for-Rerun Table Inquiry

The Reason-for-Rerun Table inquiry function lets you display the active Reason-for-Rerun Table online.

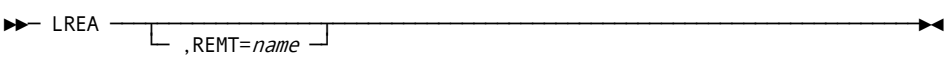
Note: The table displayed by LREA is different from the one displayed with the UPRS L command. LREA displays the Reason-for-Rerun Table that is currently loaded and being used by CA WA Restart Option. UPRS L displays the Reason-for-Rerun Table on the CMT. The CMT Table is copied to the current table when DBAS is started or when a DBAS REFRESH command is entered.

Typical Use

The LREA inquiry is used only to display the Reason-for-Rerun Table.

Command Format

This command has the following format:



LREA

Indicates the request for the Reason-for-Rerun Table list.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

The display consists of the four-character reason-for-rerun code, followed by the reason-for-rerun text in up to 40 characters.

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows the default Reason-for-Rerun Table supplied with the product.

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
LREA
-- CA WA RESTART OPTION ONLINE - REASON FOR RERUN TABLE --
        CODE   DESCRIPTION

        1         1 - BAD INPUT FILE
        2         2 - BAD JCL OVERRIDE
        3         3 - BAD OUTPUT FILE
        4         4 - HARDWARE ERROR
        5         5 - JCL ERROR
        6         6 - MISSING OUTPUT REPORTS
        7         7 - OPERATOR ERROR
        8         8 - PROGRAM ERROR
        9         9 - RAN JOB OUT OF SEQUENCE
        10       10 - SCHEDULING ERROR
        S001   S001 - I/O ERROR
        S122   S122 - OPERATOR CANCEL WITH A DUMP
        S137   S137 - I/O ERROR, EOV ON TAPE
        S213   S213 - I/O ERROR, DSCB NOT FOUND
        S222   S222 - OPERATOR CANCEL
        S322   S322 - ESTIMATED TIME EXCEEDED
        S722   S722 - ESTIMATED LINES EXCEEDED
        S806   S806 - PROGRAM NOT FOUND
        SB37   SB37 - NO SPACE AVAILABLE
        SD37   SD37 - NO SECONDARY QUANTITY
```

LSTP - Job Step Inquiry

The Job Step Inquiry function provides a display of Step record information from the CMT for a particular job. Information is provided concerning step restartability, last execution completion codes, and CA WA Restart Option condition code checks.

This transaction helps determine whether a step can be restarted and where the most efficient restart point is. The display can be for all job steps or for any specific steps.

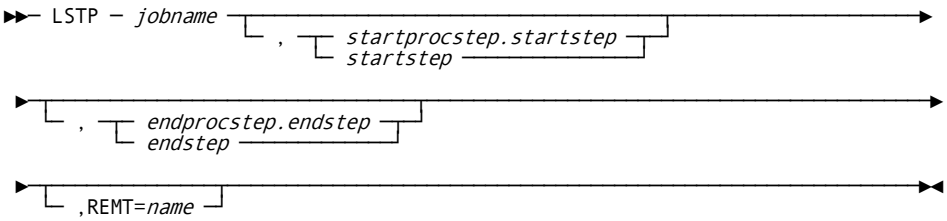
Typical Use

The LSTP function is useful because you no longer need to search through SYSOUT messages to locate step return codes because it lists each step in a specified job and indicates the following:

- Whether each step is restartable.
- The completion code with which each step most recently terminated.
- Any condition code checks to the U11RMS step.
- The step at which restart will begin (if the job is set for restart).

Command Format

This command has the following format:



LSTP

Indicates job step inquiry.

jobname

Indicates the name of the desired job.

startprocstep.startstep

Indicates a requested starting stepname that executes the beginning PROC, and the first step within that PROC to be executed.

startstep

Indicates a starting stepname or step number that executes the beginning program. The default is the beginning of the job.

endprocstep.endstep

Indicates a stepname that executes the ending PROC, and the last step within that PROC to be executed.

endstep

Indicates a requested ending stepname or step number that executes a program. The default is the end of the job. Finally, if a starting step is not specified, but an ending step with two commas preceding it is, the display begins with the first step and ends with the specified ending step.

Note: Step number is mutually exclusive with startprocstep and endprocstep.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the LSTP transaction. The job inquired on, DUSTTST1, is shown to be restartable and set for restart in STEP2. Additionally, the display shows all the job steps, their restartability, the last completion code for each step, the high return code for each step, and condition code checks to the U11RMS step, if any. The high return code field specifies the value with which CA WA Restart Option is to compare the return code of the step. If the step returns a condition equal to or greater than this value, CA WA Restart Option considers the job to have failed. The possible settings for restartability are as follows:

NO-USER

Indicates one of the following:

- Incorporated the //CA11NR DD DUMMY statement in the step's JCL.
- Used the RD=N*x* parameter on the JOB statement or on the EXEC JCL statement.
- Designated the program being executed as an ABENDER program.
- Manually set the nonrestartable flag with the Online System.

NO-CA-11

Indicates either the step performs a volume refer back or the step uses a temporary or passed data set for input.

NO-AUTOS

Indicates that a data set is passed *around* the step. Auto Setup does not pick this step as the starting step in a restart.

The difference between AUTOS, CA-11, and USER is that you can restart in a step that is not eligible for Auto Setup selection with manual intervention. You cannot restart in a step marked NO-USER or NO-CA-11.

The following example shows that STEP3 was set not restartable by the user, STEP4 is not eligible for Auto Setup, and STEP5 was set not restartable by CA WA Restart Option.

Step Inquiry Display (LSTP)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
LSTP DUSTTST1
-- CA WA RESTART OPTION ONLINE - JOB STEP INQUIRY FOR JOB DUSTTST1 --

  JOB IS RESTARTABLE.
  JOB IS SET FOR RESTART AT  STEP2

                                 STEP      LAST    HIGH     CONDITION CODE
STEP#  PROCSTEP  STEPNAME  RESTARTABLE  RTCD    RTCD   CHECKS TO RMS STEP

001              STEP1     YES          00000   0000
002              STEP2     YES          00000   0000
003              STEP3     NO - USER    00000   0000
004              STEP4     NO - AUTOS   00000   0000
005              STEP5     NO - CA-11   00000   0000
 --- ONLINE STEP INQUIRY ENDED ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

OINQ - Option Table Inquiry

The Option Table Inquiry (OINQ) function displays a subset of all CA WA Restart Option options maintained by the system. You define these processing options during installation, and they are subject to change.

More information:

Summary of User Installation Options (see page 279)

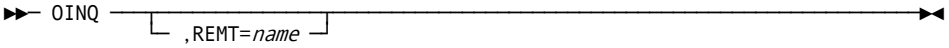
Typical Use

The OINQ function is useful in verifying the processing options currently in effect for your installation. You can easily determine installation settings for the following:

- AUTOS—Auto Setup
- TRACK—Track jobs
- BYPGDG—Bypass GDG Logic

Command Format

This command has the following format:



OINQ

Indicates an Option Table Inquiry.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the OINQ transaction, an Option Table Inquiry display of all of the options installed and maintained on your system.

Option Table Inquiry Display (OINQ)

```
OINQ
-- CA WA RESTART OPTION ONLINE - OPTION TABLE INQUIRY --

AUTOF ------ YES        AUTOS ------ YES        BIAS ------- JOB
BYPGDG ----- NO         CA1 -------- NO         DEVLCNT ---- 055
HISTNM ----- HISTORY    INSRTOP ---- NO         INSRTPC ---- AL7RMS
INSRTPM ---- 'P,PSEUDO=YES'                     LOGO ------- YES
MAXDAY ----- 0060       MAXOLD ----- 0200       MAXPASS ---- 0200
MAXUGDG ---- 0000       MINCNT ----- 0005       OLMAINT ---- NO
OPCORCT ---- NO         OPVER ------ NO         PRANGEB ---- 001W
PRANGEO ---- 018H       REASON ----- NO         RETCODE ---- 0000
STPSKIP ---- INIT       SYSLCNT ---- 055        TLMS ------- NO
TRACK ------ CA-11      TRKSTP ----- CA07RMS    UNCDASD ---- YES
USAGE ------ NO         SVC -------- 211

OPTIONS TABLE VERSION: 1 ASSEMBLED: 20yy-mm-dd hh.mm

  U11-420  -- INQUIRY ENDED --
   -- ARTS SUBTASK COMPLETION S/000, U/0000 --
```

PRE - Preprocessing

Preprocessing lets you preset the type of processing to be performed for the next job run. If OLMAINT=YES has been specified in the U11OPT Option Table, PRE R processing causes data sets to be scratched and uncataloged before the job is actually submitted for execution. Preprocessing is a necessity when any kind of prestaging facility, such as JES3, is used to pull tapes, to mount tapes, or both since catalog maintenance must be performed prior to the FETCH messages being issued. If, however, the CA WA Restart Option JES3 interface is installed, catalog maintenance is performed automatically and use of PRE is unnecessary.

Important! BYPGDG=VER/CAT is *not* processed by the JES3 C/I interface.

If OLMAINT=NO is specified, jobs are preset for rerun, but catalog maintenance is not performed online.

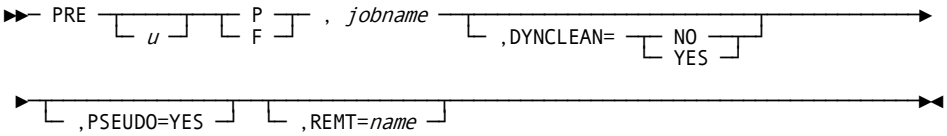
Typical Use

The PRE function is useful in the following:

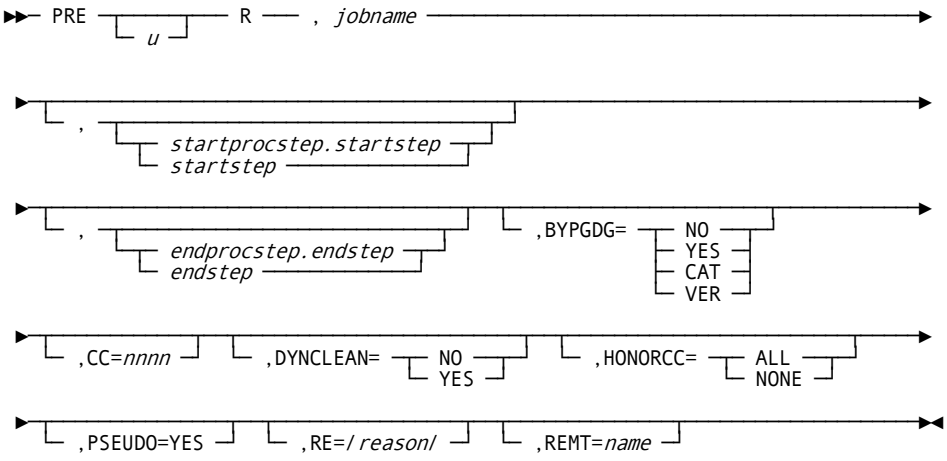
- Performing catalog maintenance
- Presetting jobs for Production (P) processing
- Presetting jobs for Rerun or Restart (R) processing
- Presetting jobs for Format (F) processing
- Setting up multiple reruns from a central location

Command Format

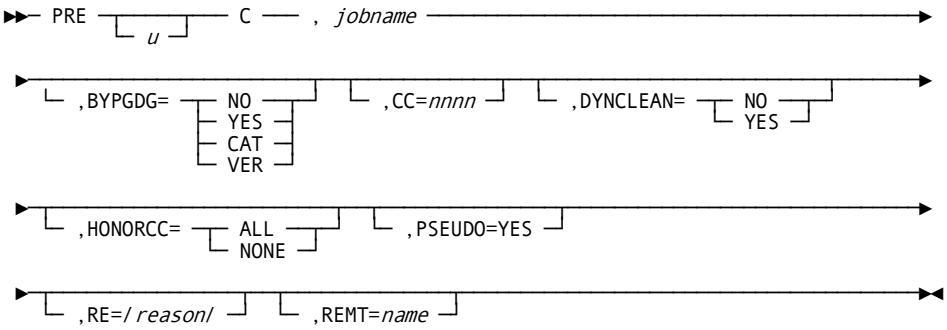
This command has the following format for P and F processing:



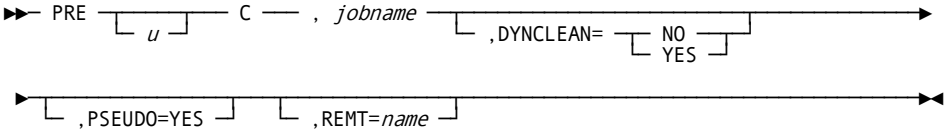
This command has the following format for R processing:



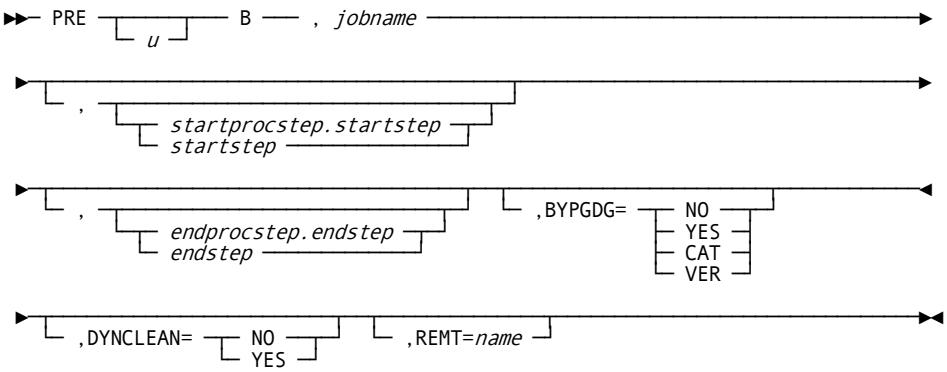
This command has the following format for C processing in R status:



This command has the following format for C processing in P status:



This command has the following format for B processing:



u

(Optional) Indicates the usage code.

For C preprocessing, a usage code is required when a job is in P or R status and the DBAS is configured with USAGE=YES and when a job is in R status and USAGE=RESTART.

For B preprocessing, a usage code is always required if the DBAS is configured with USAGE=YES or USAGE=RESTART.

P|R|F|C|B

Indicates the Processing code to preset in a CMT job record (P, R, or F only). PRE performs data set maintenance only for processing codes B, R, and, if a job is in R status, C. For a description, see Processing Codes (see page 60). If a value is entered for *startstep* (or *startprocstep.startstep*) or *endstep* (or *endprocstep.endstep*), that value is used instead of the preset values.

A value of C specifies to use the current values from the CMT. If a job is currently set for production, P processing is performed. Similarly, if a job is set for restart, the current execution ranges, starting and ending steps, are used and R processing is performed. If a job is set for restart with multiple step execution ranges, you should use processing code C.

A value of B, backout, performs data set maintenance for data sets within the specified step range.

jobname

Indicates the name of the job for which this processing is to be performed.

startstep

An option of R and B processing only; this is the stepname or step number that executes the beginning program. The default is the first step of the job.

startstep.startprocstep

An option of R and B processing only; this is the stepname that executes the beginning PROC and the first step within that PROC to be executed.

endstep

An option of R and B processing only; this is the stepname or step number that executes the last program. The default is the last step of the job.

endstep.endprocstep

An option of R and B processing only; this is the stepname that executes the ending PROC and the last step within that PROC to be executed.

Note: If startprocstep or endprocstep is specified, step number is not valid.

Step number is relative to the RMS step. The RMS step is 0.

BYPGDG

An option of R, B, and C processing only; alters the logic of Bypass Input Generation Data Group Processing for the next rerun only. (To determine the default value of BYPGDG, see the Summary of User Installation Options , or use the OINQ command.)

NO

Does not permit the rerun to use additional or different generation data groups as input.

YES

Permits the rerun to use additional or different generation data groups as input.

CAT

Accepts the catalog resolution for GDG data sets and save results in the CMT.

Note: The CAT parameter is mutually exclusive with the JES exits (U11U2X and U11U3X (IATUX03)). The JES exit modifies the data set names prior to CAT processing. If a JES exit is operational, the CAT parameter is ignored.

VER

Requests that during restart, GDG data sets are verified against the catalog according to the bias recorded in the CMT. If the CMT and catalog do not match, the job is abended.

CC=*nnnn*

An option of R and C processing only; assigns the return code value for the U11RMS step. If the CC parameter is omitted, the value specified by the installation option RETCODE is used. (To determine the value of RETCODE, see the Summary of User Installation Options, or use the OINQ command.) *nnnn* is the value given to the return code. It can range from 0 through 4095 and must be numeric. This return code can be checked by using the EXEC/COND or IF/THEN/ELSE JCL condition code testing facilities.

DYNCLEAN

An option of F, P, R, C, and B processing. Specifies whether to perform data set maintenance for dynamically allocated data sets. Specifying this parameter lets you override the default DYNCLEAN value specified in the configuration file for this execution of the job.

Important! Cleanup of dynamically allocated data sets does not occur the first time a job runs and each time Format processing is performed (explicitly or implicitly).

NO

Does not perform data set maintenance for dynamically allocated data sets.

YES

Performs data set maintenance for dynamically allocated data sets.

HONORCC

Indicates whether evaluation of the conditional step execution honors the condition codes of all previous steps.

ALL

Indicates that evaluation of conditional step execution considers condition codes in steps before the restart step. If the starting step of a rerun is located after a step which abended in an earlier run, the abended step is considered as not having executed. The effect of HONORCC=ALL can only be seen during an actual rerun.

NONE

Disables the checking of condition codes from the previous run during a restart. HONORCC=NONE does not disable dependencies with respect to the U11RMS step.

PSEUDO=YES

If this PARM is used, PRE sets a job for pseudo-rerun, which only reports on data set and catalog maintenance that would have been performed. Value must appear as shown.

Note: JCL runs as if U11RMS is not present.

RE=/*reason*/

Passes a reason-for-rerun for the last execution of the job. The reason can be any word, phrase, code, or number for a maximum of 40 characters enclosed in slashes (/).

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Important! Since R processing uncatalogs and scratches data sets for the job, subsequently resetting to P or F processing (by use of the PRE function) after R processing could cause unwanted results when the job is run.

More information:

Summary of User Installation Options (see page 279)
Step Specific to U11RMS Step Condition Code Checking (see page 51)
Processing Codes (see page 60)
U11PRE PARM Values and Control Statements (see page 232)

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Examples

Example 1

```
PRE R,CT102ABC,CC=0020
```

RESTART processing is performed for Job CT102ABC starting with the first step of the job and ending with the last step. A condition code of 20 is set for the U11RMS step when Job CT102ABC runs.

Example 2

```
PRE AR,CT101DEF,CT130.SECOND,CT130.STEP6,CC=0016
```

For Job CT101DEF, the usage code of A is checked against the last specified usage code. If it is different, then rerun processing is performed for Job CT101DEF starting with step SECOND of the procedure called by step CT130 and ending with STEP6 of CT130. When CT101DEF runs, a condition code of 16 is set for the U11RMS step.

Example 3

The following example shows an example of PRE transaction use. The example shows the changing of the usage code from X to 2, the use of the R processing code, starting at the step named STEP2. The data set maintenance was not performed because of the installation option OLMAINT=NO.

Preprocessing Display (PRE)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
PRE 2R,DUSTTST1,STEP2,RE=/1/

-- CA WA RESTART OPTION ONLINE - PRE-JOB PROCESSING --
U11-001 CA-11 - PARM RECEIVED FOR JOB DUSTTST1 -  PARM=
    2R,DUSTTST1,STEP2,RE=/1/
U11-023 USAGE PARM CHANGED FROM X TO 2

 .DATASET MAINTENANCE NOT PERFORMED DUE TO SYSTEM OPTION.
 ..... JOB IS NOW SET FOR RERUN/RESTART ....

U11-010 CA-11 - 'R' PROCESSING COMPLETE FOR JOB DUSTTST1
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

Example 4

The following example illustrates the use of a PRE transaction used with the C processing code. The job is currently set for restart and multiple step execution ranges exist. The data set maintenance was not performed because of the installation option OLMAINT=NO.

Preprocessing Display (PRE)

```
U11-411 ENTER CA-11 ONLINE COMMAND ?
PRE C,CT101MLT

-- CA WA RESTART OPTION ONLINE - PRE-JOB PROCESSING --
U11-001 CA-11 - PARM RECEIVED FOR JOB CT101MLT - PARM=
    C, CT101MLT
U11-111 CURRENT PROC CODE=R, MULTIPLE EXECUTION RANGES EXIST

 .DATASET MAINTENANCE NOT PERFORMED DUE TO SYSTEM OPTION.
 ..... JOB IS NOW SET FOR RERUN/RESTART ....

U11-010 CA-11 - 'C' PROCESSING COMPLETE FOR JOB CT101MLT
U11-420  -- INQUIRY ENDED --
 -- ARTS SUBTASK COMPLETION S/000, U/0000 --
```

PULL - Pull List Request

The Pull List Request function generates a list of tapes, a list of disk volumes, or both required for the execution of a job. If a job is set for rerun, the display is limited to only the data sets referenced in steps to be rerun. Use the DIS display to check set-for-rerun status. A job can be set for rerun through the PRE function or through Auto Setup. All volume serial information used in producing the Pull List comes from the catalog rather than the CMT.

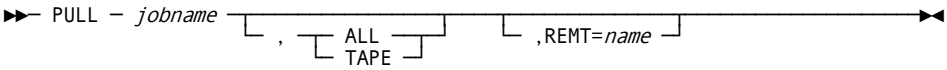
Typical Use

The PULL function is an excellent production control tool. Your access to total resources required to run a job can improve production by reducing mount time for tapes or disk volumes. Only the required resources for job steps to be executed are requested.

Also, use it to determine approximately how many scratch tapes that a specified job needs for output data set creation.

Command Format

This command has the following format:



PULL

Indicates a Pull List request.

jobname

Indicates the name of the job for which the Pull List is requested.

ALL

Indicates to list input tapes and output tapes and DASD data sets, and the number of scratch tapes required.

TAPE

Indicates to list input tapes and output tapes, and the number of scratch tapes required.

The default, if neither TAPE nor ALL is specified, lists only input tapes and the number of scratch tapes required.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following examples are two typical uses of the PULL transaction. The first use was to list only the default input tapes because neither TAPE nor ALL was specified (as shown in the following example). The display shows that this job needs two input tapes and two scratch tapes.

Pull List Display (PULL)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
PULL DUSTTST1

CA WA RESTART OPTION ONLINE - PULL LIST FOR JOB DUSTTST1 ** INPUT TAPES ONLY **
                                                            VOLUME DEVICE
STEP# STEPNAME  DDNAME   DATA SET NAME                      SERIAL TYPE

002  STEP2    INPUT2B   AC.CA11.TSTGDG1(+000)              136481   T
003  STEP3    INPUT3    AC.CA11.TSTGDG2(+000)              148379   T

INITIAL SCRATCH TAPES NEEDED FOR JOB DUSTTST1 = 0002

ESTIMATED NUMBER OF TAPES NEEDED FOR JOB DUSTTST1 = 0004
---  PULL LIST ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
PULL DUSTTST1,ALL
```

The second use was specified with the ALL parameter and lists all data sets used by the job (as shown in the following example). Data sets that already exist in the catalog show the volume on which they reside and the data sets that are used in steps after which they are created show references to the creating step.

Pull List Display (PULL)

```
CA WA RESTART OPTION ONLINE - PULL LIST FOR JOB DUSTTST1 ** INPUT/OUTPUT DATASETS
**
                                                          VOLUME DEVICE
STEP# STEPNAME  DDNAME   DATA SET NAME                    SERIAL TYPE

001  STEP1    INPUT1    AC.CA11.TESTSDS1                 W75001   D
              OUTPUT1   AC.CA11.TESTSDS2                          D
002  STEP2    INPUT2A   AC.CA11.TESTSDS2                 SEE STEP# 001
              INPUT2B   AC.CA11.TSTGDG1(+000)            136481   T
              OUTPUT2A  AC.CA11.TSTGDG1(+001)                     T
003  STEP3    INPUT3    AC.CA11.TSTGDG2(+000)            148379   T
004  STEP4    OUTPUT4   AC.CA11.TSTGDG2(+001)                     T
005  STEP5    INPUT5A   AC.CA11.TSTGDG1(+001)            SEE STEP# 002
              INPUT5B   AC.CA11.TSTGDG2(+001)            SEE STEP# 004

INITIAL SCRATCH TAPES NEEDED FOR JOB DUSTTST1 = 0002

ESTIMATED NUMBER OF TAPES NEEDED FOR JOB DUSTTST1 = 0004
---  PULL LIST ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

REST - RMS Parameter Restart

Use this function to make database updates required to rerun/restart a job.

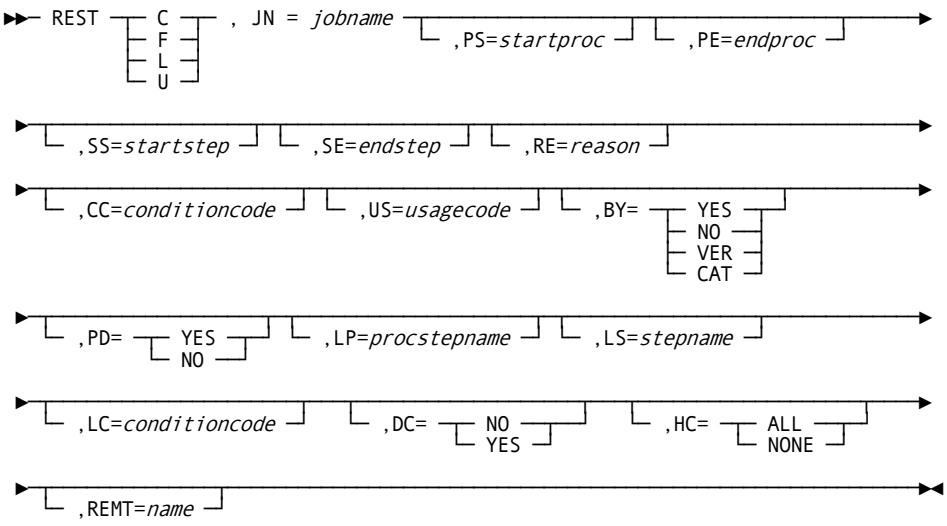
Typical Use

The REST function is useful in the following:

- Specifying reason-for-rerun
- Specifying starting steps, ending steps, or both
- Setting condition code for RMS
- Specifying usage code
- Specifying bypass GDG
- Specifying pseudo= parameter

Command Format

This command has the following format:



C

Indicates a request to cancel.

F

Indicates a request to force complete.

L

Indicates a request to list.

U

Indicates a request to update.

JN

Indicates a job name.

PS

Indicates a starting PROC step name.

PE

Indicates an ending PROC step name.

SS

Indicates a starting step name.

SE

Indicates an ending step name.

RE

Indicates a reason-for-rerun.

CC

Indicates a RMS step condition code.

US

Indicates a usage code.

BY

Indicates bypass GDG (YES, NO, VER, CAT).

PD

Indicates pseudo (YES or NO).

LP

Indicates a PROC step name.

LS

Indicates a step name.

LC

Indicates a condition code.

DC

Specifies whether to perform data set maintenance for dynamically allocated data sets (YES or NO).

HC

Specifies whether evaluation of the conditional step execution honors the condition codes of all previous steps (NONE or ALL).

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location at which the command is to execute.

Exit Procedure

To perform another online command, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the REST command with the L(ist) function.

```
------------ CA WA Restart Option - RESTART Interface ------------ Row 1 of 14
COMMAND ===>                                                    SCROLL- CSR
     (R=reset to production, M=message scan, Cancel, Save)

 Jobname: USER001D           Remote:                        Profile:
  Reason-For-Rerun:
  Use Step Seq?: N    Job Status:           HONORCC: ALL      DYNCLEAN:

  Starting   Starting   Ending     Ending    Usage  Bypass  Pseudo   Condition
  Proc       Step       Proc       Step      Code   GDG    Execution Code
-------------------------------------------------------------------------------
             009                                  NO      NO       0000
  Step
  Seq        Procname      Stepname    Rstind          Comp             Newcmp
  001                      STEP1       YES             0001
  002                      STEP2       YES             0002
  003                      STEP3       YES             0003
  004                      STEP4       YES             0000
  005                      STEP1       YES             0000
  006                      STEP2       YES             0000
  007                      STEP3       YES             0000
  008                      STEP4       YES             0000
  009 <STRT>               STEP1       YES            S/806 <--ABENDED
  010                      STEP1       YES             0000
  011                      STEP1       YES             0000
  012                      STEP1       YES             0000
  013                      STEP1       YES             0000
  014                      $J          YES             NOEX
******************************* BOTTOM OF DATA ********************************
```

RUPD - Reason-for-Rerun Update

A reason-for-rerun can be applied to any CA WA Restart Option job on a job name basis. The most recent job cycle can be accessed through the Reason-for-Rerun Update (RUPD) transaction to update, add, or otherwise check a reason-for-rerun. This lets a job that is set for restart or has been rerun have its reason-for-rerun added or changed. Requiring a reason-for-rerun is an option at the time of system generation.

If you want to access previous job cycles to enter a reason-for-rerun, RUPD *cannot* be used. Other methods are available to do this and are detailed following the explanation of RUPD.

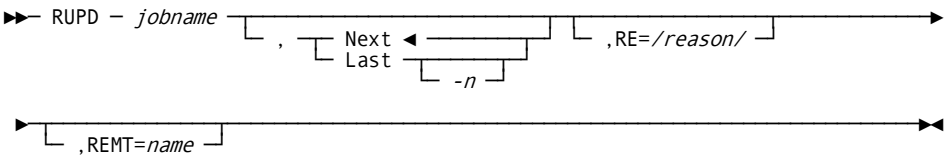
For jobs tracked without JEHF recording, the reason-for-rerun will only be retained for the next run (in the CMT). Updating of previous runs will not be possible and the reason will not be retained past the next run.

Typical Use

The RUPD update function is typically used to supply a reason-for-rerun. This is necessary if you are required to supply a reason for the rerun, and you accept Auto Setup parameters.

Command Format

This command has the following format:



jobname

Indicates the name of the job for which the reason is to be displayed, added, or updated.

Next

Indicates that a reason is to be provided for the next execution of the job. It is assumed that the job is set for restart either by Auto Setup or PRE. This is the default.

Last

Indicates that the previous rerun is to be provided a reason-for-rerun.

-n

Indicates that the last rerun, minus *n* number of reruns, is updated. For example, if the last production cycle consists of one production run and two reruns, LAST-1 is the first rerun. The LAST feature is limited to the last production cycle. The previous production cycle is not accessible if the current cycle has already begun.

The JUPD transaction is used for accessing previous production cycles.

RE=/*reason*/

Indicates the actual reason-for-rerun text or reason-for-rerun code. The *reason* can be any phrase, word, number, or code for a maximum of 40 alphanumeric characters enclosed in slashes (/).

If RE=/*reason*/ is provided, the processing is direct and automatic. If there is a qualifying rerun, the reason is directly updated and you are notified that processing was completed successfully. However, if the specified rerun already had a reason-for-rerun, RUPD displays the previous reason and prompts you to either update or cancel.

If the parameter is not coded, RUPD lets you verify or update the reason-for-rerun. You can review what the current reason-for-rerun is, add a reason-for-rerun where none is present, or change the reason-for-rerun. CANCEL, when the RE parameter is not present, causes the current reason-for-rerun to be retained. Otherwise, a reason-for-rerun must be provided for update.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the RUPD transaction. The next rerun of the job DUSTTST1 is to be given the reason code 2, which the Reason-for-Rerun Table expands into 2 - BAD JCL OVERRIDE. The user is notified that the CMT already contains a reason-for-rerun for the next next rerun and is given a chance to cancel before the update is completed.

Reason-for-Rerun Update (RUPD)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
RUPD DUSTTST1,NEXT,RE=/2/
-- CA WA RESTART OPTION ONLINE - REASON FOR RERUN UPDATE --
U11-469 THE SPECIFIED RERUN OF DUSTTST1 ALREADY HAD A REASON FOR RERUN.
        IT WAS:   1 - BAD INPUT FILE
U11-467 REPLY 'U' TO UPDATE 'C' TO CANCEL.
U
REASON FOR RERUN CHANGED FROM:   1 - BAD INPUT FILE
                           TO:   2 - BAD JCL OVERRIDE
 --- REASON FOR RERUN UPDATE COMPLETED ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

Reason-for-Rerun Update - Previous Job Cycles

You can enter the reason-for-rerun online through the Job Execution History File Update (JUPD) function. The following is the command:

```
JUPD jobname
```

JUPD does not perform translation of the reason-for-rerun codes to their text equivalents. You must enter text for the reason-for-rerun.

The JUPD command initiates display of Control record information in a field name=fieldvalue format. To display Production record data, press Enter. The display includes the actual number of reruns associated with the job. The Number-of-reruns field appears as follows:

```
NMRERUNS=nn
```

If NMRERUNS=0, reruns do not exist for the job, and the reason-for-rerun is not available. If NMRERUNS=1, the reason-for-rerun is supplied as follows:

```
REP PRODRESN=/reason/
```

REP

Indicates the keyword used to indicate the replacement of a field.

/reason/

Indicates the reason-for-rerun. It can be any phrase, word, code, or number for a maximum of 40 alphanumeric characters enclosed in slashes (/).

If the Number-of-reruns field indicates you have *n* number of reruns (NMRERUNS=*n*), press Enter *n*-1 times to display the last Rerun record. When the record displays, enter the reason-for-rerun as follows:

```
REP RRUNRESN=/reason/
```

/reason/

Indicates the reason-for-rerun. It can be any phrase, word, code, or number for a maximum of 40 alphanumeric characters enclosed in slashes (/).

SIM - Simulated RMS

The SIM command simulates the processing functions that would normally be performed by the U11RMS Run Handler. The panel resulting from SIM displays the forecasted actions that would take place; the job does not actually run. Any data set or catalog maintenance required is only simulated; maintenance is *not* actually performed.

You can simulate both Production and Rerun/Restart processing with SIM.

Typical Use

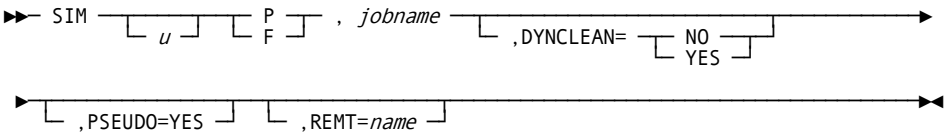
The SIM function is useful in the following:

- Analyzing JCL of a new job to be run for the first time under control of CA WA Restart Option.
- Investigating what would happen if abended jobs previously run as Production or Pseudo-Production were to run under CA WA Restart Option control.
- Detailing the data set/catalog actions a production mode U11RMS step would attempt to perform. SIM lists the data sets that would be uncataloged, disk data sets that would be scratched, and the GDG generations that would be created.

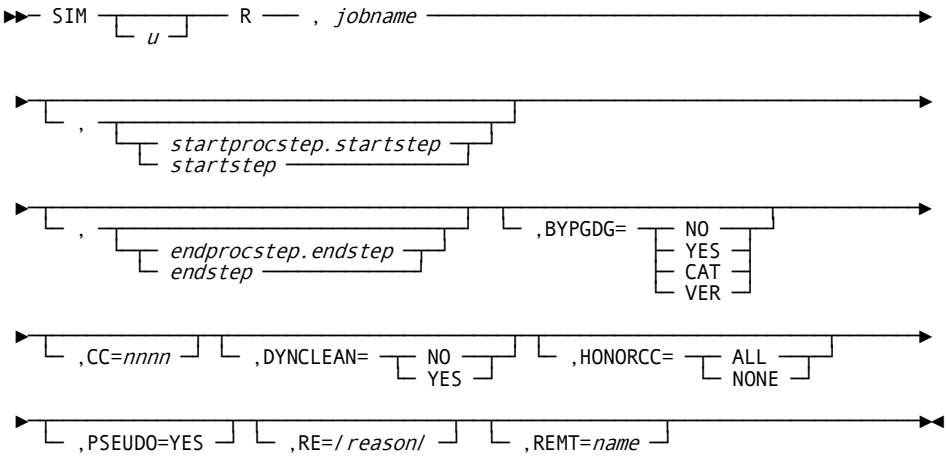
If CA 1 is installed, SIM displays the tapes that would be expired.

Command Format

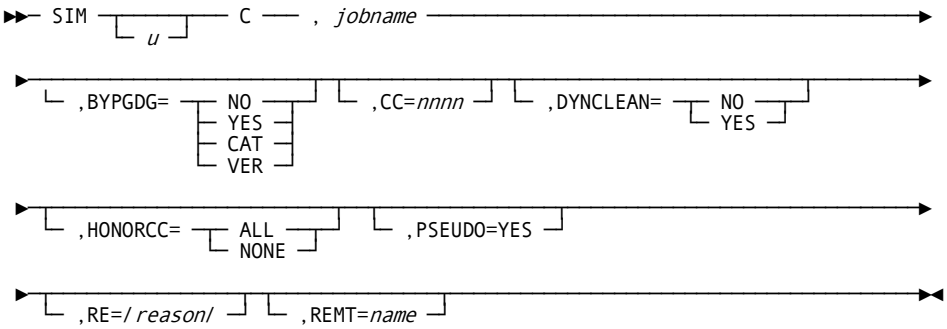
This command has the following format for P and F processing:



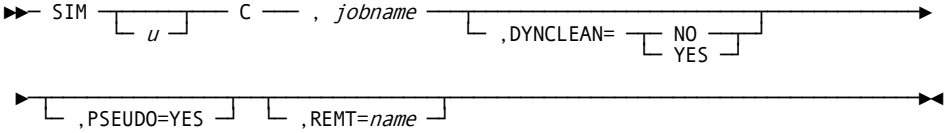
This command has the following format for R processing:



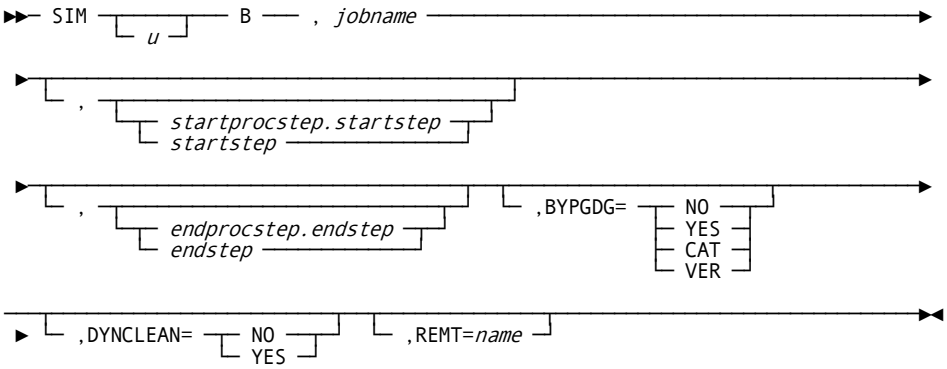
This command has the following format for C processing in R status:



This command has the following format for C processing in P status:



This command has the following format for B processing:



u

(Optional) Indicates the usage code.

P|R|F|C|B

Indicates the Processing code (P, R, or F only). For more information, see Processing Codes (see page 60).

A value of C specifies to use the current values from the CMT. If a job is currently set for production, P processing is performed. Similarly, if a job is set for restart, the current execution ranges, starting and ending steps, are used and R processing is performed. If a job is set for restart with multiple step execution ranges, you should use processing code C.

A value of B, backout, simulates data set maintenance for data sets within the specified step range.

jobname

Indicates the name of the job for which this simulated processing is to be performed.

startstep

An option of R and B processing only; *startstep* is the stepname or step number that executes the beginning program. The default is the first step of the job.

startprocstep.startstep

An option of R and B processing only; *startstep.startprocstep* is the stepname that executes the beginning PROC and first step of the PROC to be executed.

endstep

An option of R and B processing only; *endstep* is the stepname or step number that executes the last program. The default is the last step of the job.

endprocstep.endstep

An option of R and B processing only; *endstep.endprocstep* is the stepname that executes the ending PROC and the last step within that PROC to be executed.

Note: If *startprocstep* or *endprocstep* is specified, step number is not valid.

Step number is relative to the RMS step. The RMS step is zero.

BYPGDG

An option of R, B, and C processing only; alters the logic of Bypass Input Generation Data Group Processing for the next rerun only. (To determine the default value of BYPGDG, see the Summary of User Installation Options, or use the OINQ command.)

NO

Indicates that additional or different generation data groups are not to be used as input.

YES

Allows the rerun to use additional or different generation data groups as input.

VER

Verifies that GDG bias resolution recorded in the CMT agrees with the catalog.

CAT

Accepts the catalog resolution for GDG data sets and save results in the CMT.

CC=*nnnn*

An option of R and C processing only; assigns the return code value for the U11RMS step. If the CC parameter is omitted, the value specified by the CA WA Restart Option installation option RETCODE is used. (To determine the value of RETCODE, see the Summary of User Installation Options, or use the OINQ command.) *nnnn* is the value given to the return code. It can range from 0 through 4095 and must be numeric. This return code can be checked by using the EXEC/COND or IF/THEN/ELSE JCL condition code testing facilities.

DYNCLEAN

An option of F, P, R, C, and B processing. Specifies whether to simulate data set maintenance for dynamically allocated data sets. Specifying this parameter lets you override the default DYNCLEAN value specified in the configuration file for the simulation of the job.

Important! Cleanup of dynamically allocated data sets does not occur the first time a job runs and each time Format processing is performed (explicitly or implicitly).

NO

Does not simulate data set maintenance for dynamically allocated data sets.

YES

Simulates data set maintenance for dynamically allocated data sets.

HONORCC

Indicates whether evaluation of the conditional step execution honors the condition codes of all previous steps.

ALL

Indicates that evaluation of conditional step execution considers condition codes in steps before the restart step. The effect of HONORCC=ALL can only be seen during an actual rerun. SIM only performs a syntax check on HONORCC.

NONE

Indicates to bypass conditional step execution if the step depends on the condition code of a step before the restart step. HONORCC=NONE does not disable dependencies with respect to the U11RMS step.

PSEUDO=YES

Indicates that processing under RMS is to be reported but not performed.

RE=/*reason*/

Passes a reason-for-rerun for the last execution of the job. The *reason* can be any word, phrase, code or number for a maximum of 40 characters enclosed in slashes (/). A reason must be input if the REASON=ABEND installation option has been chosen. Otherwise, the job abends. The SIM command, however, does not update the CMT with this reason.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

More information:

Summary of User Installation Options (see page 279)
Step Specific to U11RMS Step Condition Code Checking (see page 51)
Processing Codes (see page 60)
U11PRE PARM Values and Control Statements (see page 232)

Exit Procedure

To perform another online operation, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the SIM transaction. The example shows the actions that U11RMS would take if job DUSTTST1 were to be restarted in STEP3 with a usage code of 3 and a reason-for-rerun of OPERATOR ERROR.

The usage code would be changed from two to three. STEP1 would not be executed. The GDG data set AC.CA11.TSTGDG2.G0003V00 would be scratched, uncataloged, or both, and U11RMS would force the same data set to be used in the rerun.

Simulated RMS Display (SIM)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
SIM 3R,DUSTTST1,STEP3,RE=/OPERATOR ERROR/
-- CA WA RESTART OPTION ONLINE - SIM-JOB PROCESSING --

U11-001 CA-11 - PARM RECEIVED FOR JOB DUSTTST1 -  PARM=
    3R,STEP3,RE=/OPERATOR ERROR/
U11-023 USAGE CODE CHANGED FROM 2 TO 3
    .THIS MESSAGE IS PROVIDED FOR THE USER INFORMATION
     ONLY, IT IS NOT AN INDICATION OF AN ERROR.

* AT YOUR REQUEST RESTART SPECIFIED TO BEGIN AT PROC/STEP=STEP=STEP3
  THEREFORE U11RMS WILL NOT ALLOW THE FOLLOWING STEPS TO EXECUTE...

  PROC/STEP=         STEP=STEP001    EXECUTED ON A PRIOR RUN WITH RC=0008

  PROC/STEP=         STEP=STEP002    NOT EXECUTED DURING THIS CYCLE

* PROCESSING WILL BEGIN AT THE FOLLOWING STEP...

* PROC/STEP=         STEP=STEP3     IS MARKED *** NOT ELIGIBLE FOR AUTOS ***

* PROC/STEP=         STEP=STEP4     IS MARKED *** NOT ELIGIBLE FOR AUTOS ***


* U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
  DDNAME=OUTPUT4  DSN=AC.CA11.TSTGDG2.G0003V00

* U11RMS WILL POST THE JOBQUE SO THAT THE FOLLOWING GDG WILL BE USED...
  DDNAME=OUTPUT4   DSN=AC.CA11.TSTGDG2.G0003V00

* PROC/STEP=         STEP=STEP5     IS MARKED ***      RESTARTABLE       ***

U11-010 CA-11 - 'R' PROCESSING COMPLETE FOR JOB DUSTTST1
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

The following example illustrates the use of a SIM transaction with the C processing code. The job in the example is currently set for restart and multiple step execution ranges exist.

Simulated RMS Display (SIM)

```
SIM C,CT101MLT
-- CA WA RESTART OPTION ONLINE - SIM-JOB PROCESSING --

 U11-001 CA-11 - PARM RECEIVED FOR JOB CT101MLT - PARM=
     C
 U11-100 'C' PARMS - STEP EXECUTION FLAGS EXIST AND WILL BE HONORED


 * BASED ON CURRENT VALUES MULTIPLE STEP RANGES WILL BE RESTARTED...
   THEREFORE U11RMS WILL NOT ALLOW THE FOLLOWING STEPS TO EXECUTE...

   PROC/STEP=         STEP=STEP1    EXECUTED ON A PRIOR RUN WITH RC=0001

 * PROCESSING WILL BEGIN AT THE FOLLOWING STEP....


 * PROC/STEP=         STEP=STEP2     IS MARKED ***       RESTARTABLE       ***

 * U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
   DDNAME=TESTDSN       DSN=CT101.TSTDSN02


 * PROC/STEP=         STEP=STEP3     IS MARKED ***       RESTARTABLE       ***

 * PROC/STEP=         STEP=STEP4     IS MARKED ***       RESTARTABLE       ***
 * U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
   DDNAME=TESTDSN       DSN=CT101.TSTDSN04

 * PROC/STEP=         STEP=STEP5     IS MARKED ***       RESTARTABLE       ***

 * PROC/STEP=         STEP=STEP6     IS MARKED *** USER ** NOT RESTARTABLE ***

 * U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
   DDNAME=TESTDSN       DSN=CT101.TSTDSN06
```

```
* BASED ON CURRENT VALUES THE FOLLOWING STEPS WILL NOT BE EXECUTED...
  PROC/STEP=         STEP=STEP7      PROC/STEP=         STEP=STEP8
  PROC/STEP=         STEP=STEP9

* PROCESSING WILL RESUME AT THE FOLLOWING STEP...


* PROC/STEP=         STEP=STEP10    IS MARKED ***       RESTARTABLE       ***

* U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
  DDNAME=TESTDSN       DSN=CT101.TSTDSN10


* PROC/STEP=         STEP=STEP11    IS MARKED ***       RESTARTABLE       ***

* U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
  DDNAME=TESTDSN       DSN=CT101.TSTDSN11


* PROC/STEP=         STEP=STEP12    IS MARKED ***       RESTARTABLE       ***

* PROC/STEP=         STEP=STEP13    IS MARKED ***       RESTARTABLE       ***

* U11RMS WILL ATTEMPT TO *SCRATCH/UNCATALOG*  THE FOLLOWING DASD
  DDNAME=TESTDSN       DSN=CT101.TSTDSN13

* BASED ON CURRENT VALUES THE FOLLOWING STEPS WILL NOT BE EXECUTED...
  PROC/STEP=         STEP=STEP14     PROC/STEP=         STEP=STEP15
  PROC/STEP=         STEP=STEP16     PROC/STEP=         STEP=STEP17
  PROC/STEP=         STEP=STEP18     PROC/STEP=         STEP=STEP19

U11-010 CA-11 - 'C' PROCESSING COMPLETE FOR JOB CT101MLT
U11-420  -- INQUIRY ENDED --
 -- ARTS SUBTASK COMPLETION S/000, U/0000 --
```

STA - Production Status Inquiry

The Production Status Inquiry provides a status display of all jobs or a subgroup of all jobs in a given time frame. A subgroup can be defined by specifying the status of the jobs to be displayed.

Note: The status information is retained in the Job Execution History file (JEHF). Jobs that are not tracked or were tracked without JEHF recording will not be included in the STA display.

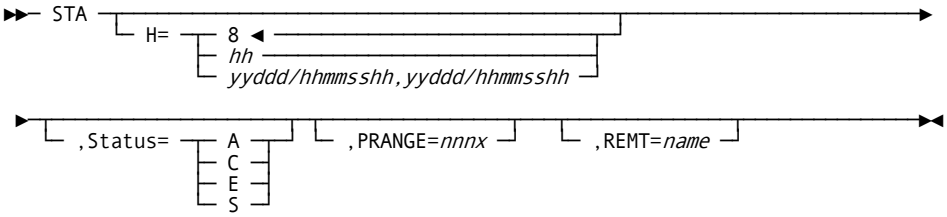
Typical Use

The STA function is useful in the following:

- Documenting productivity and identifying current activity at shift changes in a data center.
- Listing all abended jobs in the form of an exception report to allow production control analysis.
- Identifying the last successfully executed step for all jobs that were executing at the time of a total system crash.

Command Format

This command has the following format:



H

Indicates the time frame for the display. The default is eight hours.

hh

Indicates the optional number of hours in the time frame desired (display all jobs within the last *hh* hours rounded back to the nearest hour from the current hour). If omitted, eight hours is assumed. Maximum is 99 hours; minimum is 1 hour. If *hh* is specified, the *yyddd* format cannot be used.

yyddd/hhmmsshh,yyddd/hhmmsshh

Represents the initiator start and end times. *yyddd* is a specific Julian date, and *hhmmsshh* the time in hours, minutes, seconds, and hundredths of a second. *yyddd/hhmmsshh* can be specified as a partial string of any length up to a full year, day of year, hour, minute, second or hundredths of a second, for example, *yy*201, *yy*201/10, *yy*201/10132566.

Status

Indicates to limit the display to only those jobs having a certain status:

A

Unresolved abend

C

Job complete

E

Executing

S

Set-for-rerun

If STATUS is omitted, all jobs are listed.

PRANGE

Indicates an optional reader start time that is used in selecting JEHF records. This is the number that is subtracted from the initiator start time to create a reader start time.

nnn

Must be a numeric value in the range of 1 through 999.

x

Can be one of the following:

H

Hours

D

Days

W

Weeks

M

Months

Examples: 36H = 36 hours and 1D = 1 day

If PRANGE is not specified, the default from PRANGEO in the Option Table is used.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location where the command is to execute.

For all jobs meeting the selection criteria, the following is listed:

- Job name
- Initiation time (*yyddd/hhmmss* format)
- Number of reruns
- Class
- System ID
- Abended or last successfully executed PROC stepname
- Abended or last successfully executed stepname
- Abended or last successfully executed program name
- Completion code
- Status

The jobs are listed in chronological order.

The report concludes with the following summary figures for all jobs in the time frame:

- #C = Number of jobs with complete status
- #A = Number of jobs with abend status
- #E = Number of jobs with executing status
- #S = Number of jobs with set-for-rerun status
- Total jobs in time frame
- Number of reruns for jobs in time frame
- Number of runs in time frame
- Percentage of reruns (number of reruns for jobs in time frame divided by number of runs in time frame) times 100

The summary figures are for all jobs in the time frame and are not affected by the STATUS option of the Inquiry function.

Exit Procedure

To perform another online inquiry, enter the appropriate online command.

To exit from the Online System, enter the following:

```
END
```

Example

The following example shows a typical use of the STA transaction. The display is for all jobs within the last four hours. The display is for all status categories. The total line lists the number of jobs in each status category, the number of jobs for the time period, the number of reruns, the total number of runs, and the percentage of reruns.

Production Status Display (STA)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
STA H=4
-- CA WA RESTART OPTION ONLINE - PRODUCTION STATUS INQUIRY --

                          ************* LAST OR ABENDED *************
JOBNAME   DATE   TIME #RR C SYSID PROCNAME STEPNAME PROGRAM   RTCD  S

CL9000   yy215 100926   0 A  8301 MOP      STEP1    MOPRINT  S/0C4  A
ASIMS10  yy215 102207   0 A  8301 ASIMS10  STEPR20  IEBGENER  0000  C
DUSTTST0 yy215 101442   0 F  8301          STEP1    IEFBR14   0000  C
HTOC101  yy215 101747   0 A  8301 HTOC101  HTOC124  H0003100  0000  C
DUSTTST1 yy215 101949   0 F  8301 UCC11    U11STEP  U11RMS   U0064  A
HTJE101  yy215 104413   0 A  8301 HTJE101  HTJE124  MED230    0016  C
DUSTTST1 yy215 102507   0 F  8301 UCC11    U11STEP  U11RMS   U0064  A
DUSTTST0 yy215 103611   0 F  8301          STEP1    IEFBR14   0000  C
DUSTTST1 yy215 103731   0 F  8301          STEP5    IEFBR14   0000  C
DUSTTST1 yy215 104007   0 F  8301          STEP5    IEFBR14   0000  C
FSWMBKUP yy215 110409   0 F  8301          BACKUP   RSER      0000  C
DUSTTST2 yy215 104835   0 F  8301          CRD2     U11CRD    0000  C
CL9000   yy215 110622   0 A  8301 MOP      STEP1    MOPRINT   0000  C
CLMAIN35 yy215 115101   0 A  8301          STEP06   PAS06     0000  C
ISMNTHIV yy215 115708   0 A  8301          S20      RBSCUBLD  0128  C
CLXMSBK4 yy215 115924   0 A  8301          STEP01   MASBRK4   0000  C
CLOFFSLP yy215 123019   0 A  8301          S3       OFFSRVCS  0000  C
```

```
ACBWCOPY yy215 125344   0 A  8301          JS10     IEBCOPY   0000  C
HTED201  yy215 125602   0 A  8301 HTED201  MGL505   MGL505    0016  C
DUSTTST3 yy215 130347   0 F  8301          UCC11OBD U11OBD    0000  C
DUSTTST3 yy215 131637   0 F  8301          UCC11OBD U11OBD    0000  C
DUSTTST3 yy215 133222   1 F  8301          UCC11OBD U11OBD    0000  C
DUSTTST3 yy215 135237   0 F  8301 UCC11    U11STEP  U11RMS    0000  E

TOTALS:   #C    #A    #E    #S  #JOB   #RR  #RUN    %RR
           20     2     1     0    23     1    24     4.1

 ---  PRODUCTION STATUS INQUIRY ENDED  ---
U11-411  ENTER CA-11 ONLINE COMMAND ?
```

UPRS - Reason-for-Rerun Table Update

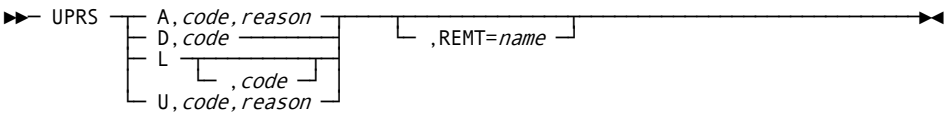
The Reason-for-Rerun Table Update function lets you update the Reason-for-Rerun Table that resides on the CMT. Table entries can be added, deleted, updated, or listed. The CMT resident Reason-for-Rerun Table is used to build the CSA resident table that CA WA Restart Option uses. The table is copied to CSA when DBAS is started and can be reloaded by issuing the DBAS REFRESH command. To view the active CSA Table, see the LREA command.

Typical Use

The UPRS function is useful in listing and altering the Reason-for-Rerun Table online.

Command Format

This command has the following format:



A|D|L|U

Specifies the request code. The following are the request codes:

A

Specifies that the indicated code and reason should be added to the table.

D

Specifies that the code specified should be deleted from the table.

L

Specifies that the current table contents should be listed.

U

Specifies that the reason should be updated for the indicated code.

code

Indicates the one- to four-character code to be associated with the reason for rerun text.

reason

Indicates the 1- to 40-byte reason for rerun text.

REMT=*name*

Identifies the 1- to 8-byte JES node name or the 1- to 16-byte CA GTS node name of the location at which the command is to execute.

Example

The following examples is a typical use of the UPRS transaction. The example lists the table (UPRS L), adds a new entry (UPRS A,..), and then lists the table again to see the entry that was added.

Reason-for-Rerun Table Update (UPRS)

```
U11-411  ENTER CA-11 ONLINE COMMAND ?
 UPRS L                                                                0000180
-- CA WA RESTART OPTION ONLINE - CMT REASON FOR RERUN TABLE UPDATE --

         CODE   DESCRIPTION
            1      1 - BAD INPUT FILE
            2      2 - BAD JCL OVERRIDE
            3      3 - BAD OUTPUT FILE
            4      4 - HARDWARE ERROR
            5      5 - JCL ERROR
         SB37   SB37 - NO SPACE AVAILABLE
         SD37   SD37 - NO SECONDARY QUANTITY
         S001   S001 - I/O ERROR
         S122   S122 - OPERATOR CANCEL WITH A DUMP
         S137   S137 - I/O ERROR, EOV ON TAPE
         S213   S213 - I/O ERROR, DSCB NOT FOUND
         S222   S222 - OPERATOR CANCEL
         S322   S322 - ESTIMATED TIME EXCEEDED
         S722   S722 - ESTIMATED LINES EXCEEDED

 U11-411  ENTER CA-11 ONLINE COMMAND ?
```

Reason-for-Rerun Table Update (UPRS) (Continued)

```
UPRS A,S013,S013 - DATASET OPEN FAILED                                 0000190
-- CA WA RESTART OPTION ONLINE - CMT REASON FOR RERUN TABLE UPDATE --

         CODE   DESCRIPTION
         S013   S013 - DATASET OPEN FAILED
  ---  TABLE ENTRY ADDED

 U11-411  ENTER CA-11 ONLINE COMMAND ?
 UPRS L                                                                0000200
-- CA WA RESTART OPTION ONLINE - CMT REASON FOR RERUN TABLE UPDATE --

         CODE   DESCRIPTION
            1      1 - BAD INPUT FILE
            2      2 - BAD JCL OVERRIDE
            3      3 - BAD OUTPUT FILE
            4      4 - HARDWARE ERROR
            5      5 - JCL ERROR
         SB37   SB37 - NO SPACE AVAILABLE
         SD37   SD37 - NO SECONDARY QUANTITY
         S001   S001 - I/O ERROR
         S013   S013 - DATASET OPEN FAILED
         S122   S122 - OPERATOR CANCEL WITH A DUMP
         S137   S137 - I/O ERROR, EOV ON TAPE
         S213   S213 - I/O ERROR, DSCB NOT FOUND
```

Chapter 5: Batch Reports

This chapter describes the various batch reports that are available. It also shows you how to generate the reports and provides sample reports.

This section contains the following topics:

Report Cross-Reference

The following table cross-references report titles, report numbers, generating programs, and sample JCL members in CAL7SAMP.

Report Number	Report Title	Generating Program	CAL7SAMP Member
01	Automated Rerun and Tracking System	U11RMS	AL7JRMS
02	Job Queue Trace	U11RMS	AL7JRMS
03	Pre-Job Processing	U11PRE	AL7JPRE
04	Job Queue Records for Job	U11PJQ	AL7JPJQ
05	Batch CMT Update	U11UPD	AL7JUPD
06	Batch CMT Inquiry	U11BNQ	AL7JBNQ
07	(Output) Data Set List for Job	U11ODS	AL7JODS
08	Management Report Detail List	U11MGR	AL7JMGR
09	Management Report Summary Report	U11MGR	AL7JMGR

Report Number	Report Title	Generating Program	CAL7SAMP Member
11	Batch Online Inquiry/Update	U11OBD	AL7JOBD
20	Control Statements for JEHF Batch Reports	U11RCP	AL7JRCP
21	Job Report	U11RCP	AL7JRCP
22	Job Report for Jobs Without Abends	U11RCP	AL7JRCP
23	Job Report for Jobs with Abends	U11RCP	AL7JRCP
24	Spoilage Report	U11RCP	AL7JRCP
25	Spoilage Report for Jobs Without Abends	U11RCP	AL7JRCP
26	Spoilage Report for Jobs with Abends	U11RCP	AL7JRCP
27	Job Report for Jobs with Reruns	U11RCP	AL7JRCP
28	Spoilage Report for Jobs with Reruns	U11RCP	AL7JRCP
31	Omitted Reason Report	U11RCP	AL7JRCP
41	Elapsed Time Report	U11RCP	AL7JRCP
42	Elapsed Time Report for Jobs Without Abends	U11RCP	AL7JRCP
43	Elapsed Time Report for Jobs with Abends	U11RCP	AL7JRCP
44	Elapsed Time Report for Jobs with Reruns	U11RCP	AL7JRCP
50	List Audit Report Processing Options	U11ARP	AL7ARP
51	List Audit Report Totals	U11ARP	AL7ARP
52	List Audit Report: By Time	U11ARP	AL7ARP
53	List Audit Report: By Subsystem	U11ARP	AL7ARP
54	List Audit Report: By Job Name	U11ARP	AL7ARP
55	List Audit Report: By Node ID	U11ARP	AL7ARP
56	List Audit Report: By Facility	U11ARP	AL7ARP
57	List Audit Report: By User ID	U11ARP	AL7ARP
80	Control Statements for CMT Batch Reports	U11CRD	AL7JCRD
81	CMT Data Set Cross-Reference Report	U11CRD	AL7JCRD

Files Accessed for Reports: The batch programs in this chapter are organized according to the files accessed:

File Accessed	By Program
CMT and JEHF	U11OBD Online Batch Driver
CMT	U11BNQ CMT Inquiry U11UPD CMT Update U11MGR CMT Reports U11PRE Preprocessing U11RMS Run Manager U11ODS Job Data Set List U11CRD Data Set Cross-Reference Report
JEHF	U11RCP Reports
System Job Queue	U11PJQ Print Job Queue Records

Report Headings

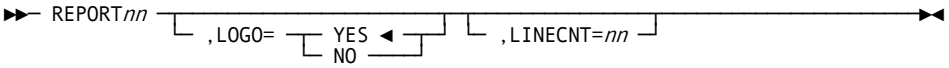
All reports have a standard heading. The first line contains the date and company name. The second line contains the report number and name.

Depending on the option selected at installation time, two pages with the CA WA Restart Option logo, the user-specified company name and address, and some job accounting information can precede all reports.

All report programs support a runtime override of the logo printing and the report line count specified at the time of installation. For the value of SYSLCNT (SYSOUT line count) and DEVLCNT (actual device line count), see Summary of User Installation Options (see page 279), or use OINQ.

Control Statement Format

This control statement has the following format:



REPORT*nn*

Indicates the report number (right-justified, zero-filled).

Note: The U11RCP program can only have *nn*=20 for its override report number on all reports it produces.

LOGO

Controls printing the logo.

YES

Produces the logo.

NO

Suppresses the logo.

LINECNT

Indicates the line count (including headings) per page.

Control Statement Example

The following is an example of the override in use:

```
//RMSOPTNS  DD  *
REPORT06,LOGO=NO,LINECNT=30
```

In whichever step these two control statements are inserted, they cause Report 06, Batch CMT Inquiry, to print without the preceding logo and limited to 30 lines per page.

U11OBD Online Batch Driver

The Online Batch Driver simulates initialization and operation of the Online System functions using the SYSIN and RMSRPT SYSOUT data sets.

U11OBD JCL Requirements

The JCL required to execute the Online Batch Driver program is as follows:

```
 //stepname    EXEC  PGM=U11OBD[,PARM='profile']
 //STEPLIB     DD    DSN=CAI.CAL7LOAD,DISP=(SHR,PASS)
 //CA11HELP    DD    DSN=CA11.help.dsn,DISP=(SHR,PASS)
 //RMSRPT      DD    SYSOUT=A
 //SYSUDUMP    DD    SYSOUT=A
 //SYSIN       DD    *
 online commands
 END
 /*
[//CAIVMFI DD DSN=TLMS master volume file,DISP=SHR *   ]
[   *only if using CA TLMS r5.3 or greater             ]
```

CAI.CAL7LOAD

Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

CA11.*help.dsn*

Indicates the data set name of the CA WA Restart Option Online HELP facility data set.

The profile can be supplied through the PARM (PROFILE=*pppppppp*) or the first online command supplied by SYSIN (*pppppppp*). All the CA WA Restart Option online functions are available. The default profile is not used unless a blank line is inserted in front of the first command, and the PARM statement is removed.

U11OBD Special Commands

The following special Online Batch Driver commands are available.

```
 *          - In column 1 - comment line
 ..EJECT    - Force an immediate page eject.
 ..SPACE n  - Space n number of lines where n is 1, 2, or 3 lines.
END         - End the Online Batch Driver
```

Note: For more information about security requirements and options, see the *Programming Guide*.

To display additional records while using the Online System (JINQ, JUPD, CINQ, CUPD), you must press Enter. To accomplish this while using the Online Batch Driver, you must use a blank entry to access each additional record, that is, a blank entry corresponds to one pressing of Enter. Also, to terminate these functions, enter the CANCEL command at the appropriate point following the number of blank entries needed for the desired number of records to be displayed.

Note: A condition code of 03 with the U11-405 message is received if the processing is not terminated correctly by specifying the END online function.

CAL7SAMP member AL7JOBD provides a sample job to run U11OBD.

U11BNQ CMT Inquiry

The CMT Batch Inquiry program, U11BNQ, prints selected entries from the CMT. The entries are printed either in character format (with titles for each field) or in a hexadecimal dump format. U11BNQ produces Report 06, entitled Batch CMT Inquiry.

Note: For more information about the four record types available to U11BNQ (Job, Step, DD, and History), see the *Programming Guide*.

U11BNQ JCL Requirements

The JCL required to execute the U11BNQ program is as follows:

```
//stepname     EXEC  PGM=U11BNQ
//STEPLIB      DD    DSN=CAI.CAL7LOAD,DISP=SHR
//SYSUDUMP     DD    SYSOUT=A
//RMSRPT       DD    SYSOUT=A
//SYSIN        DD    *
control statement
/*
```

stepname

Indicates any user-defined stepname.

CAI.CAL7LOAD

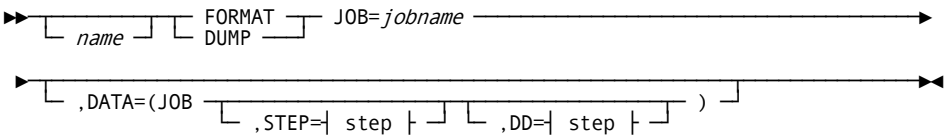
Indicates the data set name of the CA Common target library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

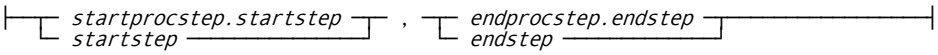
U11BNQ Control Statements

U11BNQ has only one type of control statement.

This control statement has the following format:



step:



name

Indicates an optional user-defined name with a maximum of eight characters, which must start in column 1.

FORMAT|DUMP

Indicates how to display the records.

FORMAT

Causes printing of records in character format with titles for each field.

DUMP

Causes printing of records in a vertical hexadecimal format. A blank must precede and follow this value.

JOB

Indicates a required keyword parameter specifying the job name (CMT entry name) to print. If the name of the History record is specified, the History record is printed.

DATA

Indicates optional keywords specifying the type of records to print for the job. If omitted, prints all record types unless you use the STEP or DD keyword. (See the following definitions.)

STEP

Indicates an optional keyword specifying the first and last *step* for which Step records are printed.

startprocstep.startstep

Indicates the stepname that executes the PROC containing the first step to report. If *startproc* is specified, *startstep* must be specified.

startstep

Indicates the stepname or step number of the first step to report.

endprocstep.endstep

Indicates the stepname that executes the PROC containing the last step to report. If *endproc* is specified, *endstep* must be specified.

endstep

Indicates the stepname or step number of the last step to report.

Note: If *startprocstep* or *endprocstep* is specified, step number is not valid.

Step number is relative to the RMS step. The RMS step is zero.

If no starting step is specified, reporting begins with the first step. If no ending step is specified, reporting continues through the last step. If only the starting step is specified, the parentheses can be omitted, for example, STEP=stepone. However, parentheses are required if only the ending step is specified, for example, STEP=(,stepnine).

DD

Indicates an optional keyword used to specify starting steps, ending steps, or both for DD record printing. Subparameters for this keyword are the same as for the STEP keyword.

Control statements are continued by entering a nonblank character in column 72. A comma must follow the last keyword parameter on a continued statement.

Continuation statements must have blanks in columns 1 through 15.

If placed before the first control statement, comment statements can be used. An asterisk (*) in column 1 identifies a comment statement.

CAL7SAMP member AL7JBNQ provides a sample job to run U11BNQ.

U11BNQ Control Statement Examples

This statement prints the Job record and Data Set records for MYJOB starting with the first Data Set record and ending with records for STEPR.

```
                                                                72
                                                                |
DUMPIT     DUMP      JOB=MYJOB,DATA=(JOB,DD),                   *
                     DD=(,STEPR)
```

This statement prints the History record for the CMT. histname is the user-specified name for the CMT history data. This name is defined within the user options (U11OPTBL assembly), default=HISTORY. The History record is updated when it is necessary to roll historical information out of the Job records. The History record contains totals for each of the past five years.

```
HISTORY       FORMAT      JOB=histname
```

Note: For more information, see the *Programming Guide*.

The following is a sample page from the Batch CMT Inquiry report. This example displays records grouped by step. Also, the example shows three of the four record types: the Job, Step, and DD records.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 06 - BATCH INQUIRY

U11-020 SYSIN CONTROL CARD =  ' FORMAT JOB=CARJ5310 DATA=(JOB,STEP,DD)                                  00170000'
JOB=CARJ5310
   JOB   RECID=1   BTCHID=103   PROCSTEP/STEP=        /RMS        IND1=00   RESTRIND=88   RESTRTCCD=0000
                   STPROCSTEP/STEP=        /ASM        ENDPROCSTEP/STEP=        /           LTYPE=R   LUSE=
                   LFDATE=09.216   LFTIME=09:58:39   LPDATE=00.000   LPTIME=00:00:00   LRDATE=09.216   LRTIME=10:01:31
                   CYR=yy   CPNUM=0003   CRNUM=0002   LYR=yy   LPNUM=0000   LRNUM=0000   NYR=yy   NPNUM=0000   NRNUM=0000
                   AUTOSAL=YES   AUTOSNV=NO  USERLEN=00   USERDATA=''
PROCSTEP/STEP=        /ALLOC
   STEP  RECID=3   BTCHID=102   PROCSTEP/STEP=        /ALLOC      SEQNO=001   LOGIC=00   LRTCD=00000   NBRCC=0
                   CC1=NONE      CC2=NONE      CC3=NONE      CC4=NONE      CC5=NONE      CC6=NONE      CC7=NONE      CC8=NONE
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.V3R0M00.TESTSRCJ                '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN_
                   DDNAME=S              STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.V3R0M00.TESTSRC                 '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=TS             STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.CL7B000.SOURCE                  '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=PS             STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.V3R0M00.TESTMACC                '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=CM             STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.V3R0M00.TESTMACJ                '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=M              STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.V3R0M00.TESTMAC                 '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=TM             STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.CL7VB00.MACROS                  '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=PM             STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.CL7B000.MACLIB                  '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=UNKNOWN DSP3=UNKNOWN
                   DDNAME=PM      +001   STATIND=00   ACTION=X   DPSTNUM=000
   DD    RECID=4   BTCHID=000   DSN='SSDDEV.CA11.V3R0M00.TESTLOAD                '   GDGNUM=________   GDGDISP=000
                   GDGJBIAS=N/A    GDGSBIAS=N/A    VOLSER=       DEVTYPE=DASD  DSTPNUM=000   DSP1=OLD     DSP2=CATLG   DSP3=DELETE
                   DDNAME=TL             STATIND=00   ACTION=X   DPSTNUM=000
```

U11UPD CMT Update

The CMT Batch Update program, U11UPD, can be used to update fields in the CMT records and to delete CMT records (entries of the CMT). Also, you can use the online CMT update capability (CUPD). With the exception of the step and job restartable flags, fields in the CMT should not require updating by the user. Fields within the CMT records are referenced by keywords.

Most updates and all deletions require the specification of a password for the batch program U11UPD. This password is unique to U11UPD and is not used by other systems. The restartable flags are not password-protected.

Note: For more information about the password contents, see the *Programming Guide*.

More information:

Keywords for U11UPD (see page 220)

U11UPD JCL Requirements

The JCL required to execute the U11UPD program is as follows:

```
//stepname  EXEC  PGM=U11UPD
//STEPLIB   DD    DSN=CAI.CAL7LOAD,DISP=SHR
//SYSPRINT  DD    SYSOUT=A
//SYSUDUMP  DD    SYSOUT=A
//RMSRPT    DD    SYSOUT=A
//SYSIN     DD    *
control statements
/*
```

stepname

Indicates any user-defined stepname.

CAI.CAL7LOAD

Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

U11UPD Control Statements

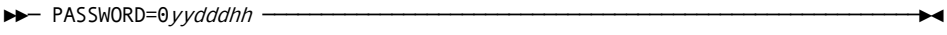
U11UPD has three types of control statements:

- Password control statement
- Member control statement
- Operation control statement

Password Control Statement

The Password control statement, if used, must be the first input control statement and must start in column 1.

This control statement has the following format:



0yydddhh

Indicates the batch update password in year, day, and hour format. The job must execute within the hour specified in the password. The format is as follow:

0

Numeric zero

yy

Current year

ddd

Current Julian date

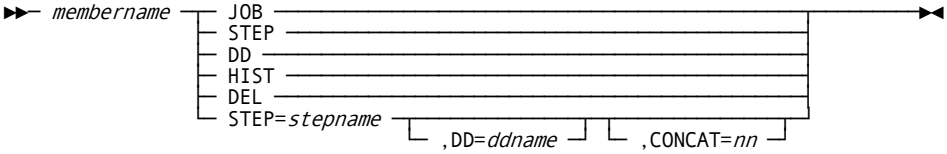
hh

Hour in military time

Member Control Statement

The Member control statement specifies the CMT entry (the job) to be updated or deleted. All Operation control statements following a Member control statement and preceding the next Member statement (or end of file) apply to the preceding Member statement.

This control statement has the following format:



membername

Indicates the one- to eight-character name of the CMT entry to be updated or deleted. The *membername* must start in column 1 and be followed by a blank.

One of the following keywords must be specified to indicate the type of CMT record to be acted upon or to indicate that the entire entry is to be deleted. This keyword must be preceded and followed by a blank.

JOB

Indicates to update the Job record.

STEP

Indicates to update a Step record.

DD

Indicates to update a DD record (data set record).

HIST

Indicates that CMT history data (*membername=histname*) is to be updated. *histname* is the user-specified name for the CMT history data. This name is defined within the user options (U11OPTBL assembly), default=HISTORY.

Note: For more information, see the *Programming Guide*.

DEL

Indicates to delete the entry specified in *membername*.

STEP=*stepname*

Indicates a step. Used only if STEP or DD is specified as the type of CMT record to be updated or which contains the DD record. *stepname* can be entered as procstepname.stepname, stepname, or step number (1-255).

DDNAME=*ddname*

Indicates a ddname. Used only if DD is specified as the type of CMT record to be acted upon. *ddname* is the ddname of the DD record to be updated.

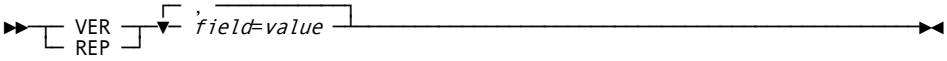
CONCAT=*nn*

Indicates required when a concatenated DD has been specified. The value specified for *nn* is a two-digit number that identifies the relative occurrence of this DD within the concatenation. For example,

```
//DDS    DD   DSN=DD1    CONCAT=0
//       DD   DSN=DD2    CONCAT=1
```

Operation Control Statement

This control statement has the following format:



VER

Indicates that the values in the CMT for the specified fields (the following keywords) are to be verified against the values in the control statement. The function of the VER parameter is to assure that the proper record is being updated or deleted. Any field in the CMT record can be verified whether it is being replaced or not. If any field fails verification, the membername is not updated or deleted.

For a given membername, all VER parameters must precede the first REP parameter. VER must be preceded and followed by a blank.

REP

Indicates that the fields specified by the following keywords are to be updated with the indicated values. REP must be preceded and followed by a blank.

field

Indicates the field to be verified, replaced, or both (VER/REP).

value

Indicates the value to be verified or replaced. Character values which contain special characters can be entered by enclosing the string in delimiters. A delimiter is a character whose hexadecimal value is less than that of the character A, that is less than X'C1'. The keyword HEXZERO can be used to set, verify, or replace (VER/REP) a field to binary or packed zero.

A maximum of 30 fields can be verified or replaced per Member control statement.

Continuation statements are not accepted.

Comment statements can be used. An asterisk (*) in column 1 identifies a comment statement.

CAL7SAMP member AL7JUPD contains a sample job to run U11UPD.

More information:

Keywords for U11UPD (see page 220)

U11UPD Control Statement Examples

This example uses single quote marks are used as delimiters to include the blank as part of the USERDATA value. The user data accounting information is placed in the user field of the Job record for Job AC11TST2.

```
AC11TST2 JOB
 REP USERDATA='accounting information'
```

This example changes job AC11TST3 from restartable (RS) to nonrestartable (NR) if the verification is successful.

```
AC11TST3 JOB
 VER IND1=RS

 REP IND1=NR
```

This example deletes the CMT entry for Job ACRMSGEN.

```
ACRMSGEN DEL
```

This example sets STEP04 of Job AC11TST4 to nonrestartable (NR).

```
AC11TST4  STEP  STEP=STEP04
 REP LOGIC=NR
```

This example changes the volume serial number of the data set that corresponds to the first concatenated DD statement in the CMT for STEP6 of Job AC11TST5 from MYPACK to NEWPAK.

```
AC11TST5 DD STEP=AC11PROC.STEP6,DDNAME=DD1,CONCAT=01
 VER VOLSER=MYPACK,DSN=AC11ABC

 REP VOLSER=NEWPAK
```

This example sets the H1YR field to 09.

```
HISTORY HIST
   REP H1YR=09
```

U11UPD Messages and Return Codes

The following message is issued for a successful REP operation:

xxxxxxxx CHANGED FROM *yy...y* TO *zz...z*

xxxxxxxx

Indicates a CMT keyword.

yy...y

Refers to the old value.

zz...z

Indicates the new value.

The following return codes are issued by U11UPD upon termination:

- 00 = Successful completion
- 12 = A VER/REP failed

The following is a sample page of the Batch CMT Update report. The control statements indicate that the Step record for STEP1 of job DUSTTST1 is to be updated. The VER statement verifies that the LOGIC field shows that the step is restartable. The REP statement replaces that value indicating that the step is not restartable by the user.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 05 - CMT UPDATE

 U11-020 SYSIN CONTROL CARD  =   'DUSTTST1 STEP STEP=STEP1
                                 ' VER LOGIC=RS
                                 ' REP LOGIC=NR
              LOGIC   CHANGED FROM - 00
                              TO   - 80
              DUSTTST1 UPDATED
                 01 CMT RECORDS UPDATED
```

Keywords for U11UPD

Use the following list to determine what values to input when updating CMT records. Keywords are given for the Job, Step, DD, and History records. The input length is the maximum length accepted. In the case of character and numeric type data, the maximum length or less is accepted. All other data types should be expanded to maximum length before being entered.

Eight data types are described. They are defined as follows:

- C—Character
- D—Date in yyddd (Julian) format
- X—Hexadecimal. Unless noted under Special Considerations, always enter two hexadecimal digits.
- N—Numeric (decimal number)
- ± N—Numeric with leading sign
- T—Time in hhmmss (24-hour) format
- Y—Year in yy (without the century) format
- Z—The first two bytes are the condition code value in binary. The third byte is the condition code operator, as defined in the following table. The fourth byte is the step reference number.

Hex Value	Operator
02	GT
04	LT
07	NE
08	EQ
11	GE
12	LE

All fields, except those with their keyword followed by a single asterisk (*), are password protected in the Batch System.

Keywords followed by a double asterisk (**) represent fields containing stepnames that can be input in step or proc.step format.

Job Record Keywords

Keyword	Input Length	Type	Contents
PROCSTEP**	17	C	Stepname of the EXEC PGM=U11RMS step
IND1*	2	X	Job Logic: ■ 80—Job cannot be restarted (user) **Note:** U11UPD input value is NR. ■ 40—Next P force F ■ 20—Job cannot be restarted (CA WA Restart Option) ■ 10—Last production run used PSEUDO=YES option ■ 00—No restrictions or conditions **Note:** U11UPD input value is RS.
AUTOSAL	3	C	Always Auto Setup indicator (YES or NO)
AUTOSNV	3	C	Never Auto Setup indicator (YES or NO)
HIRTCD	4	N	High job return code to check for
RESTRIND	2	X	Restart Logic: ■ 80—Job is to be restarted ■ 40—Condition code has been given ■ 20—BYPGDG=YES ■ 10—BYPGDG=NO ■ 08—Reason-for-rerun supplied ■ 02—BYPGDG=VER ■ 01—BYPGDG=CAT ■ 00—None
RESTRTCC	4	N	Restart condition code
STPROCST**	17	C	Starting step for restart
ENDPROCS**	17	C	Ending step for restart
LTYPE	1	C	Last run type: ■ P—Production ■ F—Format ■ R—Restart
LUSE*	1	C	Last usage code

Keyword	Input Length	Type	Contents
LFDATE	5	D	Date of last F processing
LFTIME	6	T	Time of last F processing
LPDATE	5	D	Date of last P processing
LPTIME	6	T	Time of last P processing
LRDATE	5	D	Date of last R processing
LRTIME	6	T	Time of last R processing
CYR	2	Y	Current year
CPNUM	4	N	Number of P processings in current year
CRNUM	4	N	Number of R processings in current year
LYR	2	Y	Last year
LPNUM	4	N	Number of P processings in last year
LRNUM	4	N	Number of R processings in last year
NYR	2	Y	Next year
NPNUM	4	N	Number of P processings in next year
NRNUM	4	N	Number of R processings in next year (January)
USERDATA*	0-60	C	User accounting data - length is fixed during F processing

Step Record Keywords

Keyword	Input Length	Type	Contents
PROCSTEP	17	C**	Stepname of the step
SEQNO	3	N	Step sequence number within the job

Keyword	Input Length	Type	Contents
LOGIC*	2	X	Step restart logic: ■ 80—Step is not restartable (user-specified) ■ 40—Step has CA11NR DD DUMMY ■ 20—CA WA Restart Option set the step as not restartable ■ 10—Step is not eligible for Auto Setup ■ 08—Step is restartable (user-specified) ■ 04—RD=N*x* specified ■ 02—ABENDER program in step ■ 00—No flags specified
LRTCD	5	C	Last completion code of step ■ Return code—four decimal digits followed by a blank (0000) ■ System abend—S/ followed by three hex digits (S/0C4) ■ User abend—U followed by four decimal digits (U9999)
HIRTCD	4	N	High step return code to check for
NBRCC	1	N	Number of condition code checks to U11RMS step
CC1	6	Z	Step condition code 1. First four digits are the condition value. Last two digits are the decimal value of the condition code operator.
CC2	6	Z	Step condition code 2; see CC1
CC3	6	Z	Step condition code 3; see CC1
CC4	6	Z	Step condition code 4; see CC1
CC5	6	Z	Step condition code 5; see CC1
CC6	6	Z	Step condition code 6; see CC1
CC7	6	Z	Step condition code 7; see CC1
CC8	6	Z	Step condition code 8; see CC1

DD Record Keywords

Keyword	Input Length	Type	Contents
DSN	44	C	Data set name or GDG index name
GDGNUM	8	C	GDG number (absolute generation/version)

Keyword	Input Length	Type	Contents
GDGDISP	2	N	GDG number displacement in data set name
GDGJBIAS	4	+-N	GDG bias (job)
GDGSBIAS	4	+-N	GDG bias (step)
VOLSER	6	C	Volume serial number; recorded only: ■ 1) If disk data set, and ■ 2) If specified in JCL
DEVTYPE	2	X	UCB device type: ■ 20—DASD ■ 80—TAPE
DSTPNUM	3	N	Step number of (OLD,DELETE) or (OLD,UNCATLG)
DISP1	2	X	1st disposition
DISP2	2	X	2nd disposition
DISP3	2	X	3rd disposition
DDNAME	8	C	DDNAME
STATIND	2	X	Status indicator: ■ 00—Other ■ 80—VOLSER specified in JCL
ACTION	1	C	Data set action code: ■ S—Scratch/uncatalog ■ N—Do not scratch ■ F—Previous scratch failed ■ X—No action
CONCAT	3	N	Concatenation number

History Record Keywords

Keyword	Input Length	Type	Contents
H1YR	2	Y	Current year
H1JOBS	6	N	Number of jobs executed
H1JOBP	6	N	Number of P processings

Keyword	Input Length	Type	Contents
H1JOBR	6	N	Number of R processings
H2YR	2	Y	Prior year
H2JOBS	6	N	Number of jobs executed
H2JOBP	6	N	Number of P processings
H2JOBR	6	N	Number of R processings
H3YR	2	Y	Prior year
H3JOBS	6	N	Number of jobs executed
H3JOBP	6	N	Number of P processings
H3JOBR	6	N	Number of R processings
H4YR	2	Y	Prior year
H4JOBS	6	N	Number of jobs executed
H4JOBP	6	N	Number of P processings
H4JOBR	6	N	Number of R processings
H5YR	2	Y	Prior year
H5JOBS	6	N	Number of jobs executed
H5JOBP	6	N	Number of P processings
H5JOBR	6	N	Number of R processings

U11MGR CMT Reports

The Management Report program, U11MGR, produces two management level reports from the information stored in the CMT:

- Detail Report
- Summary Report

Typical Use

These management level reports can help determine historical trends in rerun percentages or for locating unused or "dead" CMT entries (jobs that have not run for a long time) to perform CMT database cleanup.

U11MGR CMT Detail Report

The CMT Detail report contains a list of all jobs in the CMT. For each individual job executing under CA WA Restart Option, this report lists the date and the time of the last P processing, the last R processing, and the last F processing. Also, R processing totals for this year and the last year are reported.

The CMT Detail report contains the processing totals for all jobs in the CMT executing under CA WA Restart Option. The totals are listed by job and processing type for a two-year comparative analysis based on the current year and the preceding year. The productivity period commences on January 1 and ends on December 31 of each year. The information is listed in the report under the headings LAST YEAR and THIS YEAR (cumulative year-to-date). These categories are determined on an individual job basis by the actual year (greatest date) of the job's last activity. For example, a job most recently executed in 2009 will list the 2009 statistics under THIS YEAR and the 2007 statistics as LAST YEAR regardless of the report date.

For report purposes, the annual totals are not rolled to the previous year until February 1. During the month of January, all counts are collected and reported separately under the report heading JANUARY. This enables the user to view the previous two years in their entirety plus the current month of January. Therefore, until the totals are rolled on the 31st of January, THIS YEAR will actually reflect the previous year's totals and LAST YEAR will denote the year prior to the actual preceding year. This occurs during the month of January only until the 3lst is encountered and the rolling is performed. January statistics will then be moved to THIS YEAR and all totals shift accordingly. The JANUARY column will then remain zero until the current year has completed and the cycle is repeated.

The following is an example of the Management Report Detail List. This report lists all jobs in the CMT. It shows the time of the last P and R processings, the totals of each P and R for this year and last, and spikes out the January totals for each. Use of the F processing option is detailed by the last occurrence of F processing.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                  Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 08 - MANAGEMENT REPORT DETAIL LIST
 JOBNAME     DATE/TIME         DATE/TIME       CURR  TOTAL P  LAST    TOTAL P  TOTAL P    DATE/TIME        TOTAL R   TOTAL R   TOTAL R
              LAST F            LAST P         YEAR  CURR YR  YEAR    LAST YR  THIS JAN    LAST R          CURR YR   LAST YR   THIS JAN
-----------------------------------------------------------------------------------------------------------------------------------------

ACDBCC1   08.268  9:52:29                  2007          2              0          08.268  9:58:13         2         0
ACDBGDG   08.307 16:14:58  08.268 12:31:28 2007          6              0                                  0         0
ACDBPSE   08.240 16:35:02  08.240 16:30:11 2007          4              0                                  0         0
ACGHGDG   08.049 16:18:50                  2007          2              0                                  0         0
ADAM999   09.041  9:24:26                  2009          3 2007         2                                  0         0
ADAM999D  08.308 14:29:08                  2007          5              0                                  0         0
AD4014    08.352 12:42:23                  2007          6              0                                  0         0
APKIM     09.107 11:00:57  09.123 11:00:09 2009         10              0                                  0         0
BUILDPDB  09.051  7:04:23  09.053  7:00:48 2007          3              0                                  0         0
CLEMUCC7  08.274  8:24:48  09.091 20:59:09 2007          3 2006         5                                  0         0
C345MS18  09.154 18:00:30  09.180 18:00:33 2009         19              0                                  0         0
C4BR14    08.182 16:24:10                  2007          1              0                                  0         0
C4DBT     08.009 10:53:35  08.027 10:17:06 2007          5              0                                  0         0
C4DBTT    08.169 18:58:14  08.169 19:03:19 2007          2              0                                  0         0
C4DBT1    08.219  8:48:09                  2007          1              0                                  0         0
C4DB1     08.063  9:14:09                  2007          1              0                                  0         0
C4FM11T   08.163 11:58:41                  2007          1              0                                  0         0
C4JBR1    08.051 16:29:55                  2007          1              0                                  0         0
C4JBT     08.055 16:04:37  08.055 16:09:36 2007         38 2006         5          08.051 13:46:04         5         0
C4JBUNLD  08.010 11:42:47                  2007          2              0          08.010 14:54:52         2         0
C4JB11T   08.163 12:01:52  08.163 12:08:37 2007          2              0                                  0         0
C4JB13    08.048 10:18:30  08.048 10:08:13 2007          3              0                                  0         0
C4JB131   08.048 10:10:48  08.048 10:16:56 2007          3              0                                  0         0
C4KBT     08.063  8:56:37  08.063 14:38:03 2007          9              0          08.101  9:14:44         1         0
C4KBX     08.009 11:45:17                  2007          1              0                                  0         0
C4RESTST  08.192 10:49:25                  2007          1              0          08.192 11:11:36         1         0
C4TEST    08.182 16:44:15                  2007          1              0                                  0         0
C4TSTP    08.182 16:48:33                  2007          1              0                                  0         0
C495DB1V  08.314 16:22:16  08.310 16:41:39 2007         10              0                                  0         0
C495JB1N  08.325 15:04:46                  2007          1              0                                  0         0
C495JB1P  08.325 17:08:21  08.338  9:41:06 2007          7              0          08.335 13:34:24         2         0
C495JB1Q  08.304 14:46:15  08.321 15:52:28 2007          5              0                                  0         0
C495JB1R  09.049 10:57:51  09.140  8:54:43 2009          5 2007         5          08.079 10:06:35         3         0
C495JB1S  08.295  8:14:51                  2007          2              0                                  0         0
C495JB1T  08.276 11:05:00  08.307 16:20:36 2007          5              0                                  0         0
C495JB1X  08.303 16:28:58  08.294 16:34:40 2007          7              0          08.294 16:30:40         2         0
C495JB1Y  09.012  9:41:21  09.022 14:11:29 2009          3 2007         6          09.016 14:34:21         2         2
C495SS1Q  09.142 12:08:40  09.148 13:36:09 2009          3              0          09.148 13:55:15         2         0
C495TC1Q  09.169 14:16:23                  2009          1              0          09.169 15:35:59         1         0
C495TC1R  09.008 15:05:13  09.008 15:00:09 2009          3              0          09.019 14:48:03         3         0
C495TC1T  09.135  8:49:37                  2009          1              0          09.135 10:54:25         5         0
C495U11   08.170 10:39:39  08.170 16:11:19 2007         14              0          08.170 16:14:00        13         0
C495U12   08.184  8:55:35                  2007          2              0                                  0         0
C496TST1  09.111 16:40:41                  2009          1              0                                  0         0
C496T001  09.085 13:54:28                  2009          1              0                                  0         0
DIINQ     08.139 13:03:37  09.166 14:06:38 2007         24 2006        47                                  0         0
DIPROSE   08.182 11:30:16  09.098 19:16:17 2007          6 2006         3                                  0         0
```

More information:

U11MGR JCL Requirements (see page 229)

U11MGR CMT Summary Report

Besides the CMT Detail report, the U11MGR Management Report program produces a CMT Summary report. This report lists the accumulated totals for reruns and production runs for the past five years. The total number of jobs currently stored on the CMT is also reported.

The following is a sample of the Management Report Summary Page. This report shows by year the totals of production runs, reruns, and number of jobs in the CMT.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R  C O M P A N Y  N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 09 - MANAGEMENT REPORT SUMMARY PAGE
          YEAR          PRODUCTION RUNS                  RERUNS               NUMBER OF JOBS

          2009                  646                        35                       71
          2007                1,369                        82                      111
          2006                   92                         5                       14
         TOTAL                2,107                       122                      196
TOTAL NUMBER OF JOBS READ FROM CMT EQUALS    153
         END OF REPORT 09  -  TOTAL ITEMS LISTED=         5
```

U11MGR JCL Requirements

The JCL required to execute the U11MGR program for either the Detail report or the Summary report is as follows:

```
                                  {DETAIL   }
//stepname   EXEC   PGM=U11MGR,PARM={NODETAIL}
//STEPLIB    DD     DSN=CAI.CAL7LOAD,DISP=SHR
//RMSRPT     DD     SYSOUT=A
//SYSUDUMP   DD     SYSOUT=A
```

stepname

Indicates any user-defined stepname.

PARM

Indicates which CMT report is to be produced.

DETAIL

If DETAIL is specified, both the CMT Detail report and the CMT Summary report print. DETAIL is the system default.

NODETAIL

If NODETAIL is specified, only the CMT Summary report prints.

CAI.CAL7LOAD

Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

CAL7SAMP member AL7JMGR contains a sample job to run U11MGR.

U11PRE Preprocessing

U11PRE lets the user preset the type of processing to be performed before the job is actually in execution for rerun or restart. This is necessary when any kind of prestaging facility is used to pull or mount tapes since catalog maintenance must be performed prior to the FETCH messages being issued or Pull Lists being printed. If, however, the CA WA Restart Option JES3 interface is installed, catalog maintenance is performed automatically and use of U11PRE is unnecessary unless BYPGDG=VER/CAT is being used.

The Online System command PRE also provides the functionality of the U11PRE program.

More information:

PRE - Preprocessing (Online) (see page 98)

Typical Use

Uncatalogs and scratches data sets to keep JES3 from fetching the wrong tapes in a restart or rerun situation, or having the wrong tapes pulled through a Pull List facility when the CA WA Restart Option JES3 interface has not been installed.

U11PRE Examples

```
//PRESTEP  EXEC PGM=U11PRE,PARM='F,CT100ABC'
//STEPLIB  DD   DSN=CAI.CAL7LOAD,DISP=SHR
//RMSRPT   DD   SYSOUT=A
//SYSUDUMP DD   SYSOUT=A
```

F processing will be forced the next time Job CT100ABC executes.

```
//PRESTEP  EXEC PGM=U11PRE
//STEPLIB  DD   DSN=CAI.CAL7LOAD,DISP=SHR
//RMSRPT   DD   SYSOUT=A
//SYSUDUMP DD   SYSOUT=A
//SYSIN    DD   *
AR,CT10lDEF,CT130.SECOND,CT130.STEP6,CC=0016,
          RE=/LOST REPORTS/
BR,CT102ABC,CC=0020
/*
```

For Job CT101DEF, the usage code of A is checked against the last specified usage code. If it is different, then Restart processing is performed for Job CT101DEF starting with step SECOND of the procedure invoked by PROC step CT130 and ending with step STEP6. A condition code of 16 is set for the U11RMS step. LOST REPORTS is posted in the Reason-for-rerun field.

For Job CT102ABC, the usage code of B is checked against the last specified usage code. If it is different, Restart processing is performed for Job CT102ABC starting with the first step of the job and ending with the last step. A condition code of 20 is set for the U11RMS step when Job CT102ABC executes.

The following is a sample of the Pre-Job Processing report. The R processing option was used with a starting step of STEP2 and a reason-for-rerun was supplied. The R processing option scratches and uncatalogs appropriate data sets in preparation for the restart. The report closes by indicating that R processing completed successfully.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 03 - PRE-JOB PROCESSING

U11-020 SYSIN CONTROL CARD =  '1R,C495SS1B,PRINT000,CC=0016,RE=/LOST REPORTS/                        00077201'
U11-001 CA-11  - PARM RECEIVED FOR JOB C495SS1B -  PARM=1R,C495SS1B,PRINT000,CC=0016,RE=/LOST REPORTS/
U11-023 USAGE PARM CHANGED FROM   TO 1
U11-031 * PROC-STEP=         STEP=PRINT000
U11-066 SCRATCH SUCCESSFUL - DSN = SSDDEV.DBAS.LOGGDG.G0020V00
U11-063 UNCATALOG SUCCESSFUL - DSN = SSDDEV.DBAS.LOGGDG.G0020V00
U11-031 * PROC-STEP=         STEP=PRINT001
U11-031 * PROC-STEP=         STEP=LAST0000
U11-066 SCRATCH SUCCESSFUL - DSN = C495SS1.TEST.SDS
U11-063 UNCATALOG SUCCESSFUL - DSN = C495SS1.TEST.SDS
U11-010 CA-11 - 'R' PROCESSING COMPLETE FOR JOB C495SS1B
        END OF REPORT 03  -  TOTAL ITEMS LISTED=       13
```

U11PRE JCL Requirements (Batch)

The JCL required to execute the U11PRE program is as follows:

```
 //stepname  EXEC  PGM=U11PRE[,PARM='value']
 //STEPLIB   DD    DSN=CAI.CAL7LOAD,DISP=SHR
 //RMSRPT    DD    SYSOUT=A
 //SYSUDUMP  DD    SYSOUT=A
 //SYSIN     DD    *
 control statements
 /*
[//CAIVMFI DD DSN=TLMS master volume file,DISP=SHR *   ]
[   *only if using CA TLMS r5.3 or greater             ]
```

stepname

Indicates any user-defined stepname.

'*value*'

Indicates a control statement pertaining to a single job.

CAI.CAL7LOAD

Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

More information:

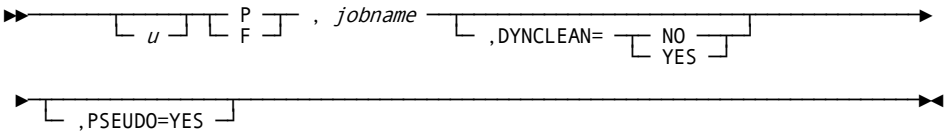
U11PRE PARM Values and Control Statements (see page 232)

U11PRE PARM Values and Control Statements

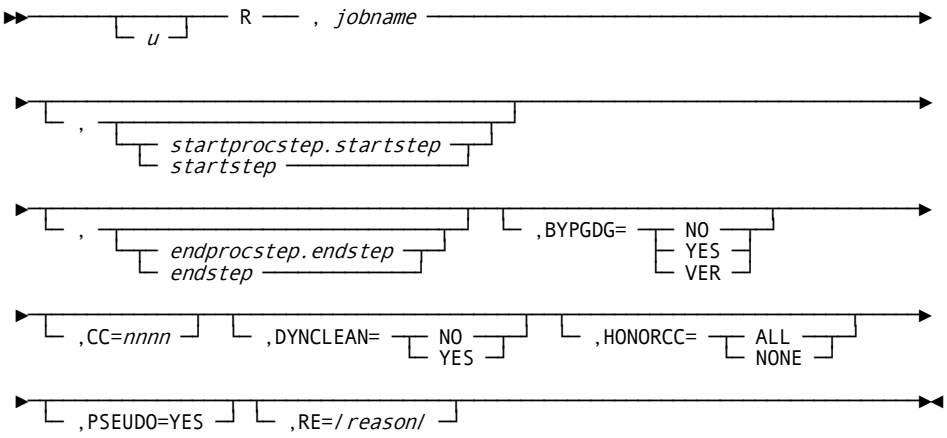
Specify the necessary control information either in the PARM field or through SYSIN control statements. If the PARM field is used, only one job can be processed per execution of U11PRE. Multiple jobs can be processed if control statements are supplied. The format of the PARM field and the SYSIN control statements are identical.

Comments can be added in the control statements after a delimiting blank. Comment statements can be continued on the next statement by ending the statement with a complete operand followed by a comma. The continuation statement must begin in column 16 and must not contain embedded comment statements. As many continuation statements as needed can be used to supply the operand.

The PARM field or control statement has the following format for P and F processing:



The PARM field or control statement has the following format for R processing:



u

(Optional) Indicates the usage code. This user-defined code can prevent accidental job reruns. If the usage code parameter in the User Option Table is set to YES, then a usage code must be supplied and is required to be changed before each submission of the job. If the usage code parameter in the User Option Table is set to RESTART, usage codes are only used on restarts and must be changed between consecutive restarts within a production cycle. If the usage code parameter in the User Option Table is set to NO, no usage codes are permitted.

P|R|F

Indicates the Processing code to preset in a CMT job record (P, R, or F only). PRE performs data set maintenance only for processing codes B, R, and, if a job is in R status, C.

Note: Because U11PRE R processing uncatalogs and scratches data sets for the job, subsequent resetting through U11PRE to P or F processing after R processing could cause undesirable results when the job is executed.

For whichever job is specified by the next PARM variable job name, an indicator in the CMT is set equal to this processing code. The next time U11RMS executes with production processing, it performs the processing specified by the CMT indicator. The processing code for the subsequent U11RMS execution is preset. This setting only applies to the next U11RMS P processing execution. If R is specified, U11PRE performs catalog maintenance in anticipation of the next run. All output data sets to be recreated are scratched and uncataloged.

jobname

Indicates the name of the job for which to perform this processing.

startstep

An option of R processing only; *startstep* is the stepname or step number that executes the beginning program. The default is the first step of the job.

startstep.startprocstep

An option of R processing only; names the stepname that executes the beginning PROC and the first step within that PROC to execute.

endstep

An option of R processing only; names the stepname or step number that executes the last program. The default is the last step of the job.

endstep.endprocstep

An option of R processing only; names the stepname that executes the ending PROC and the last step within that PROC to execute.

Note: If *startprocstep* or *endprocstep* is specified, step number is not valid.

Step number is relative to the RMS step. The RMS step is zero.

BYPGDG

An option of R processing only; alters the logic of Bypass Input Generation Data Group Processing for the next rerun only. To determine the default value of BYPGDG, see the Summary of User Installation Options, or use the OINQ command. This parameter lets the next rerun use additional or different generation data groups as input.

NO

Does not use additional or different generation data groups as input.

YES

Uses additional or different generation data groups as input.

CAT

Indicates to accept the catalog resolution for GDG data sets and save results in the CMT.

Note: Because U11PRE R processing uncatalogs and scratches data sets for the job, subsequent resetting through U11PRE to P or F processing after R processing could cause unwanted results when the job is executed.

CC=*nnnn*

An option of R processing only; assigns the return code value for the U11RMS step. If the CC parameter is omitted, the value specified by the installation option RETCODE is used. (To determine the value of RETCODE, see the Summary of User Installation Options, or use the OINQ command.) *nnnn* is the value given to the return code. It can range from 0 through 4095 and must be numeric. This return code can be verified by using the EXEC/COND or IF/THEN/ELSE JCL condition code testing facilities.

DYNCLEAN

Specifies whether to perform data set maintenance for dynamically allocated data sets. Specifying this parameter lets you override the default DYNCLEAN value in the configuration file for the execution of the job.

Important! Cleanup of dynamically allocated data sets does not occur the first time a job runs and each time Format processing is performed (explicitly or implicitly).

NO

Does not perform data set maintenance for dynamically allocated data sets.

YES

Performs data set maintenance for dynamically allocated data sets.

HONORCC

Indicates whether evaluation of the conditional step execution honors the condition codes of all previous steps.

ALL

Indicates that evaluation of conditional step execution considers condition codes in steps before the restart step. If the starting step of a rerun is located after a step which abended in an earlier run, the abended step is considered as not having executed. The effect of HONORCC=ALL can only be seen during an actual rerun.

NONE

Disables the checking of condition codes from the previous run during a restart. HONORCC=NONE does not disable dependencies with respect to the U11RMS step.

PSEUDO=YES

Indicates that processing under U11RMS is reported but not performed.

RE=/*reason*/

An option of R processing only; passes a reason-for-rerun for the last execution of the job. The /*reason*/ can be any word, phrase, number, or code for a maximum of 40 characters enclosed in slashes (/). Requiring a reason-for-rerun is an installation option. The Reason-for-Rerun Table contains the information necessary to convert a code to the appropriate text.

CAL7SAMP member AL7JPRE contains a sample job to run U11PRE.

More information:

Summary of User Installation Options (see page 279)
Step Specific to U11RMS Step Condition Code Checking (see page 51)
Processing Codes (see page 60)

U11RMS Run Handler Reports

The following is a sample of the Automated Rerun and Tracking System report. In this particular case, the P processing option was chosen indicating a production run of the job DUSTTST1. A data set to be created in the second step of the job was located by U11RMS and subsequently scratched/uncataloged to prevent a JCL error later in the job. This report is automatically generated each time a job is executed under the control of the Run Handler.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 01 - (ARTS) ------ AUTOMATED RERUN AND TRACKING SYSTEM -- 11.0 --

U11-001 CA-11 - PARM RECEIVED FOR JOB C495SS1B - PARM=P
U11-031 * PROC-STEP=         STEP=PRINT000
U11-073 GDG IN 'P' PROCESSING - DSN=SSDDEV.DBAS.LOGGDG.G0019V00
U11-073 GDG IN 'P' PROCESSING - DSN=SSDDEV.DBAS.LOGGDG.G0020V00
U11-031 * PROC-STEP=         STEP=PRINT001
U11-031 * PROC-STEP=         STEP=LAST0000
U11-060 LOCATE SUCCESSFUL - DSN = C495SS1.TEST.SDS
U11-066 SCRATCH SUCCESSFUL - DSN = C495SS1.TEST.SDS
U11-010 CA-11 - 'P' PROCESSING COMPLETE FOR JOB C495SS1B
         END OF REPORT 01  -  TOTAL ITEMS LISTED=        10
```

The following is a sample of the Job Queue Trace report. The timestamps and all records were successfully read as shown by the return code of 0. This report is only generated when the U11RMS JCL contains the TRACE DD statement. This should be done only at the direction of Technical Support since it causes performance degradation.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                  Y O U R   C O M P A N Y   N A M E                                            PAGE=00001
CA WA RESTART OPTION REPORT 02 - ONLINE JOB QUEUE TRACE

U11-901 JOBQUE TRACE - JOBQUE RECORD READ      DATE=yy.181   TIME=14:48:21:45   RC=00000000
   JCT      8D7EF0    =0   1 C495SS1B             0 =                                                 $
                     90F080F9CFFFEEFC0000000000000000D903090B090700000000000000000000000000000000000000000000858000000000
                     DE000103495221200000000000000006DE00D900DD0000000000000000000000000000000000000000000000DB0020010000
                    00....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80...85...90...95....
                                  =                      8      U  U
                     0000000000009030004444444444444444903 0F000055E55E811000008114444444400000000
                     000000000002DE00400000000000000000DB008000013413478F0000078F0000000100000000
                   100....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75

U11-901 JOBQUE TRACE - JOBQUE RECORD READ      DATE=yy.181   TIME=14:48:21:45   RC=00000000
   SCT      8D7E30    =    =       0                              RMS     U11STEP           0                        0
                     90300074000090F000009070907000008940000000000DDE44444EFFEECD40000000290F00000000000000000000000F00000
                     DE0205E00105DB000000D100D4000000DF0000000000942000004112357000001000D8000000000000000002000050B0000
                    00....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80...85...90...95....
                             U11RMS
                     00000000ECCFFDDE000000000000000000000000000000000000000000000000000000008000
                     0000800043311942010000000000000000000000000000000000000000000000000000000020
                   100....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75

U11-901 JOBQUE TRACE - JOBQUE RECORD WRITTEN   DATE=yy.181   TIME=14:48:21:46   RC=00000000
   SCT      8D7E30    =    =       0                              RMS     U11STEP           0                        0
                     90300074000090F000000000907000008940000000000DDE44444EFFEECD40000000290F00000000000000000000000F00000
                     DE0205E00105DB000000000D4000000DF0000000000942000004112357000001000D8000000000000000002000050B00000
                    00....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80...85...90...95....
                             U11RMS
                     00000000ECCFFDDE000000000000000000000000000000000000000000000000000000008000
                     0000800043311942010000000000000000000000000000000000000000000000000000000020
                   100....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75

U11-901 JOBQUE TRACE - JOBQUE RECORD READ      DATE=yy.181   TIME=14:48:22:50   RC=00000000
   SCT      8D7170         =       0      ,                                PRINT000
                     90700074000090F000008980898000008900000089C044444444DDCDEFFF0000000000000000000000000000000000D00000
                     D10205E00002D2000000DB00DE000000DA000000DD000000000079953000000020000000000000000000C00002000020B0000
                    00....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75...80...85...90...95....
                             IEFBR14
                     00000000CCCCDFF4000000000000000000000000000000000000000000000000000000000000
                     0000000095629140010000000000000000000000000000000000000000000000000000000020
                   100....5...10...15...20...25...30...35...40...45...50...55...60...65...70...75
```

CAL7SAMP member AL7JRMS contains a sample job to run U11RMS.

U11ODS Data Set List

U11ODS can list the output data sets (DISP=NEW) exclusively, or optionally list all data sets, for any job executing under CA WA Restart Option. The job for which data sets are to be printed can be explicitly specified. The SYSIN data set can contain control statements specifying which jobs are to be reported on. If the SYSIN is dummied, U11ODS assumes the job in which U11ODS is executing is the job for which reports are required. The latter facility allows the generation of an automatic Data Set List report for every job if U11ODS is executed as the last step in the job. This eliminates the need for manual logging of the data sets used by a job.

Typical Use

Use this report for obtaining a list of data sets used by a job. The report is useful when determining the impact of reruns on other jobs. However, the Data Set Cross-Reference Report contains more information.

U11ODS JCL Requirements

The JCL required to execute the U11ODS program is as follows:

```
                                  {OUTPUT}
//stepname  EXEC  PGM=U11ODS,PARM={INPUT }
//STEPLIB   DD    DSN=CAI.CAL7LOAD,DISP=SHR
//RMSRPT    DD    SYSOUT=A
//SYSIN     DD    *
control statement
/*
```

stepname

Indicates any user-defined name.

PARM

Indicates type of data sets to list.

OUTPUT

Indicates only output data sets are listed. This is the default.

INPUT

Indicates all data sets are listed.

CAI.CAL7LOAD

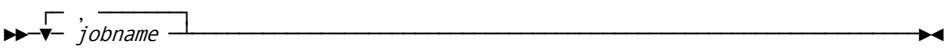
Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

U11ODS Control Statement

The report reflects the data sets for the current job unless a SYSIN data set is present and not dummied.

This control statement has the following format:



Where the desired jobs are listed across the statement with a blank terminating the list. Although continuation is not permitted, you can use multiple statements.

The following is an example of the U11ODS report.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 07 - DATA SET LIST FOR JOB JOBAA04A ** INPUT/OUTPUT **
 PROC.STEPNAME      DDNAME          DATA SET NAME                              DATA SET   VOLUME      VOLUME   DEVICE
                                                                                  SEQ       SEQ       SERIAL    TYPE

 JOBSTEP1.PSTEP1    DD1             JOBAA04.CSB00.TEST.STEP1.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP1.DD2                 000       001       M80008    DISK
 JOBSTEP1.PSTEP2    DD1             JOBAA04.CSB00.TEST.STEP2.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP2.DD2                 000       001       M80008    DISK
                    DD3$1           JOBAA04.CSB00.TEST.STEP1.DD1                 000       001       M80008    DISK
                    DD3$1    +001   JOBAA04.CSB00.TEST.STEP1.DD2                 000       001       M80008    DISK
 JOBSTEP1.PSTEP3    DD1             JOBAA04.CSB00.TEST.STEP3.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP3.DD2                 000       001       M80008    DISK
 JOBSTEP2.PSTEP4    DD1             JOBAA04.CSB00.TEST.STEP4.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP4.DD2                 000       001       M80008    DISK
 JOBSTEP2.PSTEP5    DD1             JOBAA04.CSB00.TEST.STEP5.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP5.DD2                 000       001       M80008    DISK
                    DD3$1           JOBAA04.CSB00.TEST.STEP1.DD1                 000       001       M80008    DISK
                    DD3$1    +001   JOBAA04.CSB00.TEST.STEP1.DD2                 000       001       M80008    DISK
 JOBSTEP2.PSTEP6    DD1             JOBAA04.CSB00.TEST.STEP6.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP6.DD2                 000       001       M80008    DISK
 JOBSTEP3.PSTEP7    DD1             JOBAA04.CSB00.TEST.STEP7.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP7.DD2                 000       001       M80008    DISK
 JOBSTEP3.PSTEP8    DD1             JOBAA04.CSB00.TEST.STEP8.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP8.DD2                 000       001       M80008    DISK
                    DD3$1           JOBAA04.CSB00.TEST.STEP1.DD1                 000       001       M80008    DISK
                    DD3$1    +001   JOBAA04.CSB00.TEST.STEP1.DD2                 000       001       M80008    DISK
 JOBSTEP3.PSTEP9    DD1             JOBAA04.CSB00.TEST.STEP9.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEP9.DD2                 000       001       M80008    DISK
 JOBSTEP4.PSTEPA    DD1             JOBAA04.CSB00.TEST.STEPA.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEPA.DD2                 000       001       M80008    DISK
 JOBSTEP4.PSTEPB    DD1             JOBAA04.CSB00.TEST.STEPB.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEPB.DD2                 000       001       M80008    DISK
                    DD3$1           JOBAA04.CSB00.TEST.STEP1.DD1                 000       001       M80008    DISK
                    DD3$1    +001   JOBAA04.CSB00.TEST.STEP1.DD2                 000       001       M80008    DISK
 JOBSTEP4.PSTEPC    DD1             JOBAA04.CSB00.TEST.STEPC.DD1                 000       001       M80008    DISK
                    DD2             JOBAA04.CSB00.TEST.STEPC.DD2                 000       001       M80008    DISK
```

CAL7SAMP member AL7JODS contains a sample job to run U11ODS.

U11CRD Data Set Cross-Reference Report

Use the U11CRD program to produce Report 81, the CMT Data Set Cross-Reference report. The SYSIN data set can contain control statements specifying sort criteria and designating specific jobs to include or to exclude for the report. A sample report follows in this topic.

Typical Use

This report is available in two sort patterns.

- SORT=JOB report is used for determining which jobs are used by which data sets. When a rerun of a job is required, this report is helpful in determining what data sets will be recreated.
- SORT=DSN report is used to determine which data sets are used by which jobs.

Through the use of these reports, it is possible to determine the flow of data sets between jobs and to determine what other jobs must be rerun when a job within a completed system must be rerun.

U11CRD JCL Requirements

The JCL required to execute the U11CRD program is as follows:

```
 //stepname   EXEC   PGM=U11CRD
 //STEPLIB    DD     DSN=CAI.CAL7LOAD,DISP=SHR
 //RMSRPT     DD     SYSOUT=A
 //SYSOUT     DD     SYSOUT=A
 //SYSUDUMP   DD     SYSOUT=A
 //SORTLIB DD     DSN=SYS1.SORTLIB,DISP=SHR
 //SORTOUT DD     UNIT=SYSDA,SPACE=(CYL,(5,5)),
 //                  DCB=(RECFM=FB,LRECL=343,BLKSIZE=3430)
 //SORTWK01 DD    UNIT=SYSDA,SPACE=(CYL,(5,5))
 //SORTWK02 DD    UNIT=SYSDA,SPACE=(CYL,(5,5))
 //SORTWK03 DD    UNIT=SYSDA,SPACE=(CYL,(5,5))
 //SYSIN       DD    *
[REPORTS control statement]
[PAGEBRK control statement]
[SORT control statement   ]
[INCLUDE control statement]
[EXCLUDE control statement]
 /*
 //
```

CAI.CAL7LOAD

Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

U11CRD Control Statements

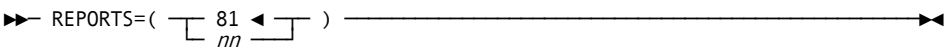
The batch report program recognizes five types of control statements:

- REPORTS
- PAGEBRK
- SORT
- INCLUDE
- EXCLUDE

REPORTS

REPORTS specifies by number which reports you want produced.

This control statement has the following format:



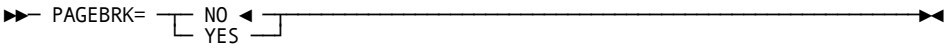
81

Indicates a two-digit report number. The default is 81.

PAGEBRK

PAGEBRK indicates whether a page break should occur.

This control statement has the following format:



NO

Indicates that no page break occurs. This is the default.

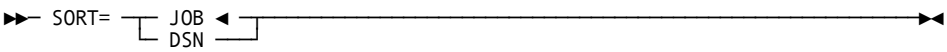
YES

Causes a page break to occur each time a sort break occurs.

SORT

SORT indicates the sorting criteria for the report data.

This control statement has the following format:



JOB

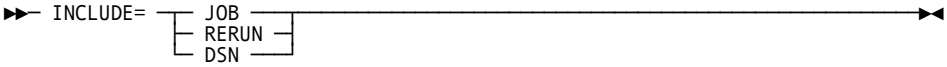
Indicates that the report data is to be sorted by job name, stepname, and data set name. This is the default.

DSN

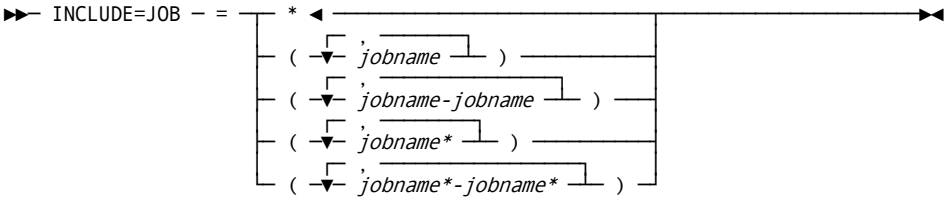
Indicates that the report data is to be sorted by data set name, job name, and stepname.

INCLUDE

INCLUDE indicates what is to be included on the report. Three forms of the INCLUDE control statement are available:



INCLUDE=JOB: This control statement has the following format: statement is as follows:



*****

Indicates that all job names are to be selected. This is the default.

jobname

Indicates the one- to eight-character job name to be selected.

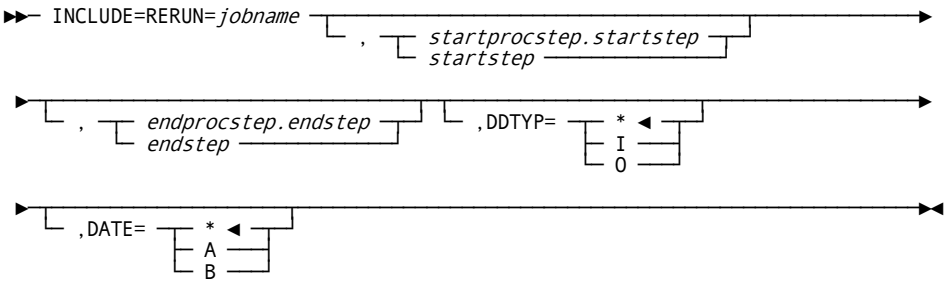
jobname*

Indicates a generic job name that can be specified in up to seven characters.

Multiple combinations of absolute, generic, and range values can be specified, as in:

```
INCLUDE=JOB=(jobname*,jobname*-jobname*,jobname-jobname*,
            jobname*-jobname,jobname,jobname-jobname)
```

INCLUDE=RERUN: This control statement has the following format:



jobname

Indicates the one- to eight-character job name to be selected.

startprocstep.startstep

Indicates the stepname that executes the beginning PROC and the first step within that PROC where the selection is to begin.

startstep

Indicates the stepname or step number that executes the program where the selection is to begin.

endprocstep.endstep

Indicates the stepname that executes the ending PROC and the last step within that PROC to be selected.

endstep

Indicates the stepname or step number that executes the last program to be selected.

Note: If *startprocstep* or *endprocstep* is specified, step number is not valid.

Step number is relative to the RMS step. The RMS step is zero.

DDTYP=*value*

Indicates the type of DDs to be selected. One of the following can be specified for *value*:

*****

All DDs are to be selected. This is the default.

I

Only input DDs are to be selected.

O

Only output DDs are to be selected.

DATE=*value*

Indicates the date of the jobs to be selected. One of the following can be specified for *value*:

*****

Scan all jobs. This is the default.

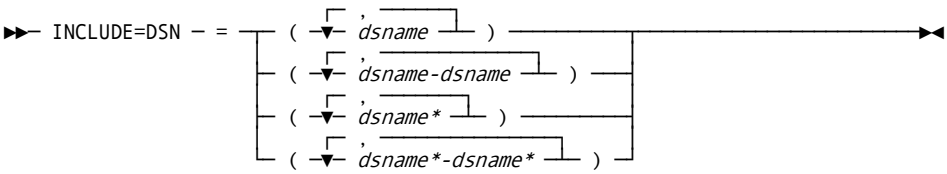
A

Scan only those jobs having a date/time after that of the rerun job.

B

Scan only those jobs having a date/time before that of the rerun job.

INCLUDE=DSN: This control statement has the following format:



dsname

Indicates a data set name to be selected. It can be specified in up to 44 characters.

dsname*

Indicates a generic data set name to be selected. It can be specified in up to 43 characters.

Multiple combinations of absolute, generic, and range values can be specified, as in:

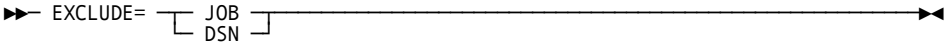
```
INCLUDE=DSN=(dsname*,dsname*-dsname*,dsname-dsname*,
             dsname*-dsname,dsname,dsname-dsname)
```

Up to two INCLUDE statements (JOB,DSN) or one INCLUDE=RERUN statement can be submitted per run.

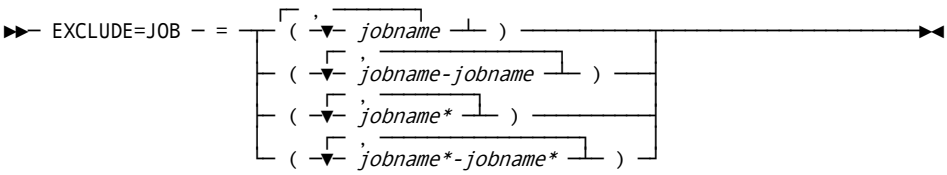
INCLUDE control statements can be continued after a comma by placing any non-blank character in column 72 and continuing the next statement in any column prior to column 17.

EXCLUDE

EXCLUDE indicates what is to be excluded from the report. Two forms of the EXCLUDE control statement are available:



EXCLUDE=JOB: This control statement has the following format:



jobname

Indicates the one- to eight-character job name to be excluded.

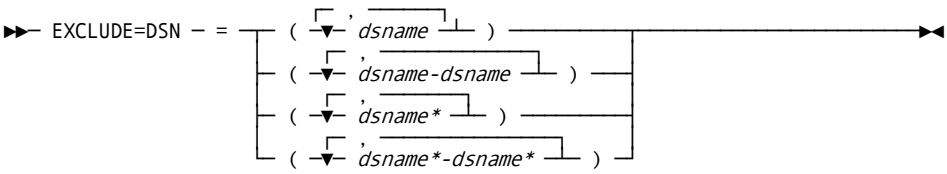
jobname*

Indicates a generic job name to be excluded. It can be specified in up to seven characters.

Multiple combinations of absolute, generic, and range values can be specified, as in:

```
EXCLUDE=JOB=(jobname*,jobname*-jobname*,jobname-jobname*,
             jobname*-jobname,jobname,jobname-jobname)
```

EXCLUDE=DSN: This control statement has the following format:



dsname

Indicates the data set name to exclude. The name can be specified in up to 44 characters.

dsname*

Indicates a generic data set name to exclude. The name can be specified in up to 43 characters.

Multiple combinations of absolute, generic, and range values can be specified, as in the following:

```
EXCLUDE=DSN=(dsname*,dsname*-dsname*,dsname-dsname*,
               dsname*-dsname,dsname,dsname-dsname)
```

Up to two EXCLUDE statements (JOB, DSN) can be submitted for any one run. The EXCLUDE control statement is valid with the INCLUDE=RERUN control statement.

EXCLUDE control statements can be continued after a comma by placing any non-blank character in column 72 and continuing the next in any column prior to column 17.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                  Y O U R  C O M P A N Y  N A M E                                          PAGE=00001
CA WA RESTART OPTION REPORT 81 - CMT DATA SET CROSS REFERENCE            SORT=JOB

             DATA SET NAME                   GDG    GDG   DISPOSITION  DDNAME CONC UNIT  JOB NAME PROCSTEP   STEP    RET  LAST-RUN
                                            NUMBER  BIAS                      NMBR                  NAME     NAME    CODE DATE/TYPE
-----------------------------------------------------------------------------------------------------------------------------------

***** C495SS1B *****
SSD5SS1.TEST.SDS                                            NEW,CATLG   DD1      000 DASD  C495SS1B          LAST0000  0000 yy181 P
SSDECS.RPT.LOADLIB                                          OLD,******* STEPLIB  000 DASD  C495SS1B          LAST0000  0000 yy181 P
SSDDEV.DBAS.LOGGDG                           G0019V00 +000  OLD,******* DD2      000 TAPE  C495SS1B          PRINT000 S/806 yy181 P
SSDDEV.DBAS.LOGGDG                           G0020V00 +001  NEW,CATLG   DD4      000 DASD  C495SS1B          PRINT000 S/806 yy181 P
SSDECS.RPT.GENLIB                                           OLD,******* SYSUT1   000 DASD  C495SS1B          PRINT001  NOEX yy181 P
         END OF REPORT     -  TOTAL ITEMS LISTED=        13
```

CAL7SAMP member AL7JCRD contains a sample job to run U11CRD.

U11CRD Report 80 - Control Statements for CMT Batch Reports

This report prints the SYSIN control statements for the CMT Batch reports. This report is useful primarily for verification. Error conditions detected in control statements are also shown.

The following is a sample of Report 80. Besides control statement error reporting, this report shows totals of the number of CMT entries read, CMT entries selected for the report, and records written for the SORTOUT DD statement.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R  C O M P A N Y  N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 80 - CONTROL STATEMENTS FOR CMT BATCH REPORTS.....................................................

REPORTS=(81)                                                              00250000
PAGEBRK=NO                                                                00260000
SORT=JOB                                                                  00261000
INCLUDE=JOB=C495SS*                                                       00262000
TOTAL CMT MEMBERS READ --                                  154
TOTAL CMT MEMBERS SELECTED --                                2
TOTAL # OF RECORDS WRITTEN TO SORTOUT --                     5
```

U11RCP Reports

Four basic management reports are produced providing job execution data through the Batch system: the Job report, the Spoilage report, the Omitted Reason report, and the Elapsed Time report. The four variations of the Job, Spoilage, and Elapsed Time reports are:

- All jobs are reported.
- Only jobs with a normally terminated production run are reported. These jobs can still have reruns due to lost reports and so forth.
- Only jobs with an abnormally terminated production run are reported.
- Only jobs with reruns are reported.

The Omitted Reason report contains only jobs that have been rerun and do not have a reason-for-rerun.

Note: These reports include only jobs tracked with JEHF recording.

Typical Use

The Job report and its variations (U11RCP Reports 21, 22, 23, and 27) report on the total activity within the data center. They provide a history of all jobs that were tracked during the reporting period.

The Spoilage report and its variations (U11RCP Reports 24, 25, 26, and 28) report on the resources wasted due to reruns (spoilage) within the data center. They provide a listing of the spoilage in jobs that were tracked during the reporting period.

The Omitted Reason report (U11RCP Report 31) reports on jobs rerun without a reason-for-rerun. This report is in a worksheet format. This format allows it to be used to gather the missing reasons-for-rerun for updates to the JEHF through the RUPD or JUPD Online System commands.

The Elapsed Time report and its variations (U11RCP Reports 41, 42, 43, and 44) report the time lag between the occurrence of an abend which necessitates a rerun and the resolution of the abend and submission of the rerun. This report is useful in determining the effectiveness of the handling of these situations. It also lists the queue time. This figure is the amount of time between submittal and beginning of execution for a job. This figure is useful in examining system throughput and your production scheduling accuracy.

U11RCP JCL Requirements

The JCL required to execute the U11RCP program can be found in the CAL7SAMP library shipped with the product. The PROC is named AL7RCP, and an example of the JCL to execute this PROC is named AL7JRCP.

Within the AL7RCP PROC are several DD statements that could require some additional attention. If the executable load modules for this product are in the LNKLIST, the following STEPLIB is not necessary.

STEPLIB

Besides the standard CAL7LOAD load library, two library concatenations are required to provide support for CA Datacom:

- The CUSLIB that provides the customization options for the CA Datacom region in use.
- The DB.CAILIB that provides the load modules (provided they are not on the primary CAL7LOAD).

The following DDs are only needed if you want to access previously purged records.

PURGE

Contains the data purged prior to CA WA Restart Option Version 3.0.

PURGEDB

Contains the data purged from CA WA Restart Option Version 3.0 and beyond.

SYSUT1

Contain intermediate work results from processing purge records.

U11RCP SORTOUT DD

Optionally, the SORTOUT DD statement can be used to generate any customized reports wanted by means of another program. The user can add a data set name to this DD and catalog it for use as input to other user-written programs. An image of the VSAM file will be written to this DD. The only difference is that there is a sort key in front of the record.

Note: For more information about the U11VSMRC macro, see the *Programming Guide*.

The SORTOUT data set contains all of the JEHF Production and Rerun records that were selected by means of the SYSIN control statements. The REPORT and PRINT control statements are not taken into consideration, as the report modules do the extraction of records for their specific needs.

All records output from the SORTOUT DD must meet the criteria that were specified in the SORT, RANGE, and GROUP control statements.

U11RCP Control Statements

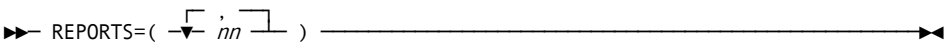
The batch report program recognizes six types of SYSIN control statements:

- REPORTS
- SORT
- GROUP
- RANGE
- PRANGE
- PRINT

REPORTS

REPORTS specifies by number which reports you want produced. This control statement is required.

This control statement has the following format:



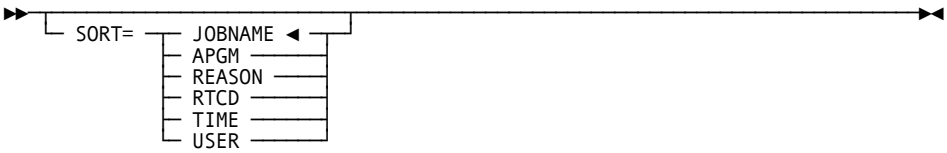
nn

Indicates a two-digit report number ranging from 21-28, 31, and 41-44. Up to eight reports can be requested at one time. If only a single report is requested, parentheses are not required.

SORT

SORT indicates the criteria for sorting the data in the requested report.

This control statement has the following format:



JOBNAME

Indicates the job name. This the default.

APGM

Indicates the abending program name for the production runs.

REASON

Indicates the reason-for-rerun for the production runs.

RTCD

Indicates the highest job completion code for the production runs.

TIME

Indicates the initiation time of the production runs.

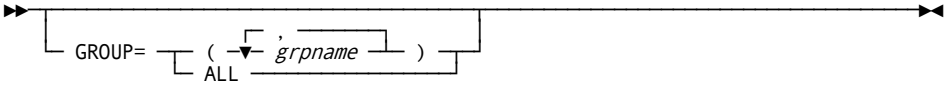
USER

Indicates the user-defined data area (PRODUSER).

GROUP

GROUP specifies by group definitions which records you want printed. This control statement is optional, and if omitted, *no* grouping occurs.

This control statement has the following format:



grpname1,grpname2,...

Indicates the user-defined group names. Only records falling into these groups print. The maximum number of groups that can be specified is twelve, and they must all be specified on a single statement.

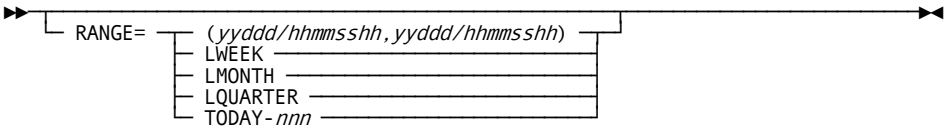
ALL

Represents all group definitions known to the system. Records not qualifying under any group are treated as belonging to a system default group (*SYSTEM*) and print first.

RANGE

The initiator start time of the Production record is the time used to qualify a job for a RANGE.

This control statement has the following format:



yyddd/hhmmsshh,yyddd/hhmmsshh

Represents the initiator start and end times. *yyddd* is a specific Julian date, and *hhmmsshh* the time in hours, minutes, seconds, and hundredths of a second. The end time can also be the literal TODAY.

LWEEK

Indicates the last calendar week from Sunday 00:00:00:0l to Saturday 24:00:00:00.

LMONTH

Indicates the last calendar month from the first to the end of the month.

LQUARTER

Indicates the last calendar quarter.

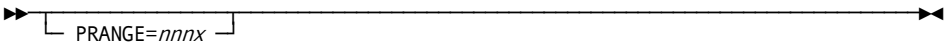
TODAY-*nnn*

nnn is the number of days to go back, for example, TODAY-2 would be today, yesterday and the day before.

PRANGE

Represents the reader start time to use in selecting JEHF records.

This control statement has the following format:



nnn

Represents the number to subtract from the initiator start time to create a reader start time. Must be a numeric value in the range of 1 through 999.

x

Represents a unit of time and can be one of the following:

H

Hours

D

Days

W

Weeks

M

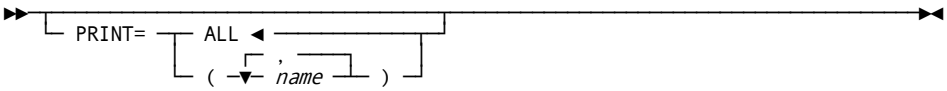
Months

If no PRANGE statement is specified, the value specified in the PRANGEB parameter of the U11OPT Option Table is used by default.

PRINT

PRINT specifies by name which data is printed. It is meaningless for the Omitted Reason report. This control statement is optional. If omitted, all report data prints. If coded, only the specified data prints.

This control statement has the following format:



ALL

Indicates all data prints. This is the default.

name1,name2,...

Specifies the names of the specific data (as indicated in *name1,name2,...*) to print. *name1,name2* can be one of the following:

DETAIL

Detail data prints.

ASSOCIATED

Detail data and associated totals print.

SORT

Sort break totals print.

GROUP

Group totals print.

GRAND

Grand totals print.

Example:

This example would produce Reports 21 and 24, sorted by reason-for-rerun for all group definitions known to CA WA Restart Option, for the last week, with all data printed.

```
REPORTS=(21,24)
SORT=REASON
GROUP=ALL
RANGE=LWEEK
PRINT=ALL
```

CAL7SAMP member AL7JRCP contains a sample job to run U11RCP.

U11RCP Report 20 - Control Statements for JEHF Batch Reports

This report prints the SYSIN control statements for the JEHF batch reports. This report is useful primarily for verification. Error conditions detected in control statements are also shown.

The following is a sample of Report 20. Besides control statement error reporting, this report shows totals of the Control records read, Production records sorted, and Rerun records sorted from the JEHF.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R  C O M P A N Y  N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 20 - CONTROL STATEMENTS FOR JEHF BATCH REPORTS

REPORTS=(21,22,23,24,25,26,27,28)                                          00080200
SORT=JOBNAME                                                               00290000
RANGE=TODAY-1                                                              00300000
PRINT=ALL                                                                  00310000
TOTAL CONTROL RECORDS READ FROM THE JEHF.                    0
TOTAL PRODUCTION RECORDS SORTED FROM THE JEHF.              15
TOTAL RERUN RECORDS SORTED FROM THE JEHF.                    3
```

U11RCP Job Reports

The Job report contains the following data for each run (production or rerun).

- Job name—Name of job. Job name appears only with the production run. This provides a facility to easily distinguish production runs from reruns.
- Start date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time job began execution.
- End date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time job ended.
- Elapsed time—(*hh:mm:ss:hh*) The difference in the starting date and time, and the ending date and time.
- System ID—ID of CPU where job executed.
- Terminating stepname—Name of the stepname with which job terminated.
- Terminating program name—Name of the program with which job terminated.
- Terminating return code—Highest return code of any step or abend code.
- Reason-for-rerun—Reason the job was rerun.

The report contains sort break totals, group subtotals at each group break, and totals for the combined groups.

For examples of Job reports, see the following samples.

The following is a sample page of the Job report. Jobs are listed in JOBNAME sequence. The default *SYSTEM* group is the subject of the report.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                  Y O U R  C O M P A N Y  N A M E                                          PAGE=00001
CA WA RESTART OPTION REPORT 21 - JOB REPORT                          GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME        START               END            ELAPSE   SYS     TERMINATING                       REASON FOR RERUN
          DATE      TIME     DATE      TIME        TIME    ID     STEP    PROGRAM  RTCD
-------------------------------------------------------------------------------------------------------------------------------------

C345MS18 09.180 18:00:33:10 09.180 18:00:33:10  0:00:00:00                        EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     C345MS18
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1A 09.181 15:15:32:00 09.181 15:15:32:00  0:00:00:00                        EXEC  INITIAL BUILD RECORD
C495SS1A 09.181 15:39:52:48 09.181 15:40:13:17  0:00:20:69 IPO1 PRINT001 IEFBR15  S/806
         09.181 15:42:50:77 09.181 15:42:56:06  0:00:05:29 IPO1 U11STEP  U11RMS   U0012  RERUN JOB
         09.181 15:44:06:03 09.181 15:44:28:26  0:00:22:23 IPO1 LAST0000 IEFBR14  FLUSH
C495SS1A 09.181 15:54:38:07 09.181 15:55:07:19  0:00:29:12 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1A
**          3 PRODUCTION RUNS          2 ASSOCIATED RERUNS
C495SS1B 09.181 14:15:16:00 09.181 14:15:16:00  0:00:00:00                        EXEC  INITIAL BUILD RECORD
C495SS1B 09.181 14:48:22:10 09.181 14:48:22:10  0:00:00:00                        EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     C495SS1B
**          2 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1G 09.181 16:02:11:68 09.181 16:02:38:61  0:00:26:93 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1G
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1H 09.181 16:02:42:33 09.181 16:03:03:18  0:00:20:85 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1H
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1X 09.181 15:40:17:17 09.181 15:40:38:49  0:00:21:32 IPO1 PRINT001 IEFBR15  S/806
         09.181 15:41:57:92 09.181 15:42:04:68  0:00:06:76 IPO1 U11STEP  U11RMS   U0012
C495SS1X 09.181 15:55:10:17 09.181 15:55:28:93  0:00:18:76 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1X
**          2 PRODUCTION RUNS          1 ASSOCIATED RERUNS
DITMSVAL 09.181  7:01:33:10 09.181  7:01:33:10  0:00:00:00                        EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     DITMSVAL
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
                                                                                  EXEC  INITIAL BUILD RECORD
```

The following is a sample of the Job Report for Jobs Without Abends.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                  Y O U R  C O M P A N Y  N A M E                                          PAGE=00001
CA WA RESTART OPTION REPORT 22 - JOB REPORT: JOBS WITHOUT ABENDS    GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME        START               END            ELAPSE   SYS     TERMINATING                       REASON FOR RERUN
          DATE      TIME     DATE      TIME        TIME    ID     STEP    PROGRAM  RTCD
-------------------------------------------------------------------------------------------------------------------------------------

C495SS1A 09.181 15:54:38:07 09.181 15:55:07:19  0:00:29:12 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1A
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1G 09.181 16:02:11:68 09.181 16:02:38:61  0:00:26:93 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1G
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1H 09.181 16:02:42:33 09.181 16:03:03:18  0:00:20:85 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1H
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1X 09.181 15:55:10:17 09.181 15:55:28:93  0:00:18:76 IPO1                    0000
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
```

The following is a sample of the Job Report for Jobs with Abends. The report data is once again sorted by JOBNAME. Also, this report shows the number of production runs and associated reruns for each reported job.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                          Y O U R   C O M P A N Y   N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 23 - JOB REPORT: JOBS WITH ABENDS       GROUP=*SYSTEM*   SRT=JOBNAME RNG=09.156/00000000-09.163/00000000
JOBNAME        START               END            ELAPSE   SYS     TERMINATING                    REASON FOR RERUN
          DATE      TIME     DATE      TIME        TIME    ID     STEP    PROGRAM  RTCD
-------------------------------------------------------------------------------------------------------------------------------

C345MS18 09.180 18:00:33:10 09.180 18:00:33:10  0:00:00:00                       EXEC  INITIAL BUILD RECORD

**  TOTALS FOR JOBNAME     C345MS18
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1A 09.181 15:15:32:00 09.181 15:15:32:00  0:00:00:00                       EXEC  INITIAL BUILD RECORD
C495SS1A 09.181 15:39:52:48 09.181 15:40:13:17  0:00:20:69 IPO1 PRINT001 IEFBR15  S/806
         09.181 15:42:50:77 09.181 15:42:56:06  0:00:05:29 IPO1 U11STEP  U11RMS   U0012  RERUN JOB
         09.181 15:44:06:03 09.181 15:44:28:26  0:00:22:23 IPO1 LAST0000 IEFBR14  FLUSH
**  TOTALS FOR JOBNAME     C495SS1A
**          2 PRODUCTION RUNS          2 ASSOCIATED RERUNS
C495SS1B 09.181 14:15:16:00 09.181 14:15:16:00  0:00:00:00                       EXEC  INITIAL BUILD RECORD
C495SS1B 09.181 14:48:22:10 09.181 14:48:22:10  0:00:00:00                       EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     C495SS1B
**          2 PRODUCTION RUNS          0 ASSOCIATED RERUNS
C495SS1X 09.181 15:40:17:17 09.181 15:40:38:49  0:00:21:32 IPO1 PRINT001 IEFBR15  S/806
         09.181 15:41:57:92 09.181 15:42:04:68  0:00:06:76 IPO1 U11STEP  U11RMS   U0012
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUNS          1 ASSOCIATED RERUNS
DITMSVAL 09.181  7:01:33:10 09.181  7:01:33:10  0:00:00:00                       EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     DITMSVAL
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
ISBACKUP 09.180 21:19:07:10 09.180 21:19:07:10  0:00:00:00                       EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     ISBACKUP
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
TMONHIST 09.180 21:19:09:10 09.180 21:19:09:10  0:00:00:00                       EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     TMONHIST
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
TMONNETM 09.180 21:23:14:10 09.180 21:23:14:10  0:00:00:00                       EXEC  INITIAL BUILD RECORD
**  TOTALS FOR JOBNAME     TMONNETM
**          1 PRODUCTION RUNS          0 ASSOCIATED RERUNS
```

The following is a sample page from a Job Report for Jobs with Reruns. As its name implies, only production cycles with associated reruns are reported. Again, the sorting occurred on the JOBNAME. Also complete production cycles, including reruns with abends, are listed.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                        Y O U R   C O M P A N Y   N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 27 - JOB REPORT: JOBS WITH RERUNS      GRP=*SYSTEM*   SRT=JOBNAME    RNG=09.156/00000000-09.163/00000000
JOBNAME        START               END            ELAPSE   SYS     TERMINATING                    REASON FOR RERUN
          DATE      TIME     DATE      TIME        TIME    ID     STEP    PROGRAM  RTCD
-------------------------------------------------------------------------------------------------------------------------------

C495SS1A 09.181 15:39:52:48 09.181 15:40:13:17  0:00:20:69 IPO1 PRINT001 IEFBR15  S/806
         09.181 15:42:50:77 09.181 15:42:56:06  0:00:05:29 IPO1 U11STEP  U11RMS   U0012  RERUN JOB
         09.181 15:44:06:03 09.181 15:44:28:26  0:00:22:23 IPO1 LAST0000 IEFBR14  FLUSH
**  TOTALS FOR JOBNAME     C495SS1A
**          1 PRODUCTION RUNS          2 ASSOCIATED RERUNS
C495SS1X 09.181 15:40:17:17 09.181 15:40:38:49  0:00:21:32 IPO1 PRINT001 IEFBR15  S/806
         09.181 15:41:57:92 09.181 15:42:04:68  0:00:06:76 IPO1 U11STEP  U11RMS   U0012
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUNS          1 ASSOCIATED RERUNS
```

U11RCP Spoilage Reports

The Spoilage report contains the following data for each job run (production or rerun):

- Job name—Name of the job. Job name appears only with the production run. This provides a grouping to easily identify production runs.
- System ID—ID of CPU where job executed.
- Start date and time—(*yy.ddd.hh:mm:ss*) Julian date and clock time job began execution.
- Core used—Amount of virtual storage used.
- CPU time—Amount of CPU time used.
- Disk I/Os—Number of I/Os to disk.
- Tape I/Os—Number of I/Os to tape.
- Other I/Os—Which could be unit record, telecommunication, or other nonstandard device I/Os.
- SRUs—Which are the standard units of measurement of system resources used.

Additionally for each rerun, the report displays the following spoilage data:

- CPU time—Amount of CPU time used.
- Disk I/Os—Number of I/Os to disk.
- Tape I/Os—Number of I/Os to tape.
- Other I/Os—Which could be unit record, telecommunication, or other nonstandard device I/Os.
- SRUs—The standard units of measurement of system resources used.

The report contains job (production cycle) spoilage subtotals for jobs with reruns, sort break subtotals, group subtotals at each group break, and totals for the combined groups.

For examples of the Spoilage report, see the following samples.

The following is a sample page from a Spoilage report. This report and its three variants show the resources used by jobs and the spoilage that occurred, if any. The report has two distinct report sections. The left section covers resource usage for all jobs within the parameters requested. The right section shows spoilage figures for those jobs where spoilage occurred.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R  C O M P A N Y  N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 24 - SPOILAGE REPORT                  GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
                                                                                                        SPOILAGE
JOBNAME  SYS        START      CORE    CPU             TOTAL I/O COUNTS          |    CPU          TOTAL I/O COUNTS
         ID     DATE   TIME    USED    TIME      DISK      TAPE     OTHER    SRU'S |    TIME      DISK      TAPE      OTHER    SRU'S

C345MS18      09.180 18:00:33     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     C345MS18
**          1 PRODUCTION RUNS           0.00         0         0         0     0.00|
C495SS1A      09.181 15:15:32     0     0.00         0         0         0     0.00|
C495SS1A IPO1 09.181 15:39:52    80     0.60        26         0         0    16.76|
         IPO1 09.181 15:42:50    64     0.18        17         0         0     5.52|     0.09        0         0         0    1.99
         IPO1 09.181 15:44:06    88     0.85        44         0         0    24.96|     0.18       17         0         0    5.52
                         TOTALS:         1.63        90         0         0    47.24|     0.27       17         0         0    7
                            % :                                                    |    16.56%    19.54%  ********  ********  15
C495SS1A IPO1 09.181 15:54:38   112     1.04        43         0         0    29.55|
**  TOTALS FOR JOBNAME     C495SS1A
**          3 PRODUCTION RUNS           2.67       130         0         0    76.79|     0.27       17         0         0    7.51
**          2 ASSOCIATED RERUNS                                                    |    10.11%    13.07%  ********  ********  09.77%
C495SS1B      09.181 14.15.16     0     0.00         0         0         0     0.00|
C495SS1B      09.181 14.48.22     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     C495SS1B
**          2 PRODUCTION RUNS           0.00         0         0         0     0.00|
C495SS1G IPO1 09.181 16.02.11   112     0.96        44         0         0    28.09|
**  TOTALS FOR JOBNAME     C495SS1G
**          1 PRODUCTION RUNS           0.96        44         0         0    28.09|
C495SS1H IPO1 09.181 16:02:42   112     0.96        52         0         0    28.63|
**  TOTALS FOR JOBNAME     C495SS1H
**          1 PRODUCTION RUNS           0.96        52         0         0    28.63|
C495SS1X IPO1 09.181 15:40:17   112     0.90        33         0         0    25.80|
         IPO1 09.181 15:41:57    64     0.19        18         0         0     5.90|     0.09        0         0         0    1.89
                         TOTALS:         1.09        51         0         0    31.70|     0.09        0         0         0    1
                            % :                                                    |    08.25%    00.00%  ********  ********  05
C495SS1X IPO1 09.181 15.55.10   112     0.94        42         0         0    27.82|
**  TOTALS FOR JOBNAME     C495SS1X
**          2 PRODUCTION RUNS           2.03        93         0         0    59.52|     0.09        0         0         0    1.86
**          1 ASSOCIATED RERUNS                                                    |    04.43%    00.00%  ********  ********  03.12%
```

The following is an example of a variant on the basic Spoilage report. This report covers only jobs that did not encounter an abend. The categories OTHER and SRUs are defined as follows:

- OTHER—Unit record, telecommunication, or nonstandard device I/Os.
- SRUs—System resource units. The system resource unit is an IBM standard unit of measurement of resources used by a job. It is not an absolute measurement. It is an accurate relative measurement.

Note: Some fields in Spoilage reports can show values of asterisks. This value indicates that invalid mathematical calculations (that is, divide by zero) took place in arriving at that value, or that the result was too large to fit in the permitted space on the print line.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                Y O U R  C O M P A N Y  N A M E                                                PAGE=00001
CA WA RESTART OPTION REPORT 25 - SPOILAGE REPORT: JOBS W/O ABENDS   GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
                                                                                                          SPOILAGE
JOBNAME  SYS        START      CORE    CPU             TOTAL I/O COUNTS          |    CPU          TOTAL I/O COUNTS
         ID     DATE   TIME    USED    TIME      DISK      TAPE     OTHER    SRU'S |    TIME     DISK      TAPE     OTHER    SRU'S
C495SS1A IPO1 09.181 15:54:38   112     1.04        43         0         0    29.55|
**  TOTALS FOR JOBNAME     C495SS1A
**          1 PRODUCTION RUNS           1.04        43         0         0    29.55|
C495SS1G IPO1 09.181 16:02:11   112     0.96        44         0         0    28.09|
**  TOTALS FOR JOBNAME     C495SS1G
**          1 PRODUCTION RUNS           0.96        44         0         0    28.09|
C495SS1H IPO1 09.181 16:02:42   112     0.96        52         0         0    28.63|
**  TOTALS FOR JOBNAME     C495SS1H
**          1 PRODUCTION RUNS           0.96        52         0         0    28.63|
C495SS1X IPO1 09.181 15:55:10   112     0.94        42         0         0    27.82|
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUNS           0.94        42         0         0    27.82|
```

The following is an example page of the Spoilage Report for Jobs with Abends. This report includes reruns only if they resulted from a job that abended.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R  C O M P A N Y  N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 26 - SPOILAGE REPORT: JOBS WITH ABENDS  GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
                                                                                                      SPOILAGE
JOBNAME  SYS        START      CORE    CPU             TOTAL I/O COUNTS          |    CPU          TOTAL I/O COUNTS
         ID     DATE   TIME    USED    TIME      DISK      TAPE     OTHER    SRU'S |    TIME     DISK      TAPE     OTHER    SRU'S

C345MS18      09.180 18:00:33     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     C345MS18
**          1 PRODUCTION RUNS           0.00         0         0         0     0.00|
C495SS1A      09.181 15:15:32     0     0.00         0         0         0     0.00|
C495SS1A IPO1 09.181 15:39:52    80     0.60        26         0         0    16.76|
         IPO1 09.181 15:42:50    64     0.18        17         0         0     5.52|     0.09        0         0         0    1.99
         IPO1 09.181 15:44:06    88     0.85        44         0         0    24.96|     0.18       17         0         0    5.52
                         TOTALS:         1.63        90         0         0    47.24|     0.27       17         0         0    7
                            % :                                                    |    16.56%   19.54%  ********  ********  15
**  TOTALS FOR JOBNAME     C495SS1A
**          2 PRODUCTION RUNS           1.63        90         0         0    47.24|     0.27       17         0         0    7.51
**          2 ASSOCIATED RERUNS                                                    |    16.56%   19.54%  ********  ********  15.89%
C495SS1B      09.181 14:15:16     0     0.00         0         0         0     0.00|
C495SS1B      09.181 14:48:22     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     C495SS1B
**          2 PRODUCTION RUNS           0.00         0         0         0     0.00|
C495SS1X IPO1 09.181 15:40:17   112     0.90        33         0         0    25.80|
         IPO1 09.181 15:41:57    64     0.19        18         0         0     5.90|     0.09        0         0         0    1.89
                         TOTALS:         1.09        51         0         0    31.70|     0.09        0         0         0    1
                            % :                                                    |    08.25%   00.00%  ********  ********  05
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUNS           1.09        51         0         0    31.70|     0.09        0         0         0    1.86
**          1 ASSOCIATED RERUNS                                                    |    08.25%   00.00%  ********  ********  05.86%
DITMSVAL      09.181  7:01:33     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     DITMSVAL
**          1 PRODUCTION RUNS           0.00         0         0         0     0.00|
ISBACKUP      09.180 21:19:07     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     ISBACKUP
**          1 PRODUCTION RUNS           0.00         0         0         0     0.00|
TMONHIST      09.180 21:19:09     0     0.00         0         0         0     0.00|
**  TOTALS FOR JOBNAME     TMONHIST
**          1 PRODUCTION RUNS           0.00         0         0         0     0.00|
```

A sample page follows. In all cases where reruns occur, there is associated spoilage.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R  C O M P A N Y  N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 28 - SPOILAGE REPORT: JOBS WITH RERUNS  GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
                                                                                                      SPOILAGE
JOBNAME  SYS        START      CORE    CPU             TOTAL I/O COUNTS          |    CPU          TOTAL I/O COUNTS
         ID     DATE   TIME    USED    TIME      DISK      TAPE     OTHER    SRU'S |    TIME     DISK      TAPE     OTHER    SRU'S

C495SS1A IPO1 09.181 15:39:52    80     0.60        26         0         0    16.76|
         IPO1 09.181 15:42:50    64     0.18        17         0         0     5.52|     0.09        0         0         0    1.99
         IPO1 09.181 15:44:06    88     0.85        44         0         0    24.96|     0.18       17         0         0    5.52
                         TOTALS:         1.63        90         0         0    47.24|     0.27       17         0         0    7
                            % :                                                    |    16.56%   19.54%  ********  ********  15
**  TOTALS FOR JOBNAME     C495SS1A
**          1 PRODUCTION RUNS           1.63        90         0         0    47.24|     0.27       17         0         0    7.51
**          2 ASSOCIATED RERUNS                                                    |    16.56%   19.54%  ********  ********  15.89%
C495SS1X IPO1 09.181 15:40:17   112     0.90        33         0         0    25.80|
         IPO1 09.181 15:41:57    64     0.19        18         0         0     5.90|     0.09        0         0         0    1.89
                         TOTALS:         1.09        51         0         0    31.70|     0.09        0         0         0    1
                            % :                                                    |    08.25%   00.00%  ********  ********  05
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUNS           1.09        51         0         0    31.70|     0.09        0         0         0    1.86
**          1 ASSOCIATED RERUNS                                                    |    08.25%   00.00%  ********  ********  09.86%
```

U11RCP Omitted Reason Report

This report shows specific records in which a reason-for-rerun could exist but does not. The report is used to find cases where the reason-for-rerun has been omitted but needs to be added. This report does not indicate, however, what the reason-for-rerun should be. Its primary usefulness is assisting the user with tracking down the causes of reruns and aiding in the input of this information to CA WA Restart Option.

The report shows the following:

- Job name—Name of job.
- Record type (P=production, R=rerun)—Type of record.
- Reader date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time when job was submitted.
- Execution start date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time job began execution.
- System ID—ID of CPU where job executed.
- Terminating step—Name of step with which job terminated.
- Terminating program—Name of program with which job terminated.
- Return code—Highest return code of any step or abend code.
- Reason-for-rerun—Space to record a reason-for-rerun prior to manually updating the JEHF.

For an example, see this sample page from an Omitted Reason Report. The report shows all occurrences, within the controlling parameters specified, where a reason-for-rerun could exist but does not.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                        Y O U R   C O M P A N Y   N A M E                                  PAGE=00001
CA WA RESTART OPTION REPORT 31 - OMITTED REASON REPORT             GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME  T   PROD. READER        JOB START       SYS     TERMINATING                          REASON FOR RERUN
         Y  DATE      TIME     DATE      TIME     ID    STEP   PROGRAM   RTCD
-------------------------------------------------------------------------------------------------------------------------------

C495SS1A P 09.181 15:39:50:28 09.181 15:39:52:48 IPO1 PRINT001 IEFBR15  S/806
C495SS1X P 09.181 15:40:05:90 09.181 15:40:17:17 IPO1 PRINT001 IEFBR15  S/806
```

U11RCP Elapsed Time Reports

The elapsed time reports show the result of analysis of times for jobs in the system. Turnaround time for submitted jobs is calculated and reported. The reports also shows the time taken for restarts to be resubmitted to the system. Times are reported in hours, minutes, seconds, and hundredths of a second. The reports available are for all jobs, jobs without abends, jobs with abends, and jobs with reruns.

These reports show the following:

- Job name—Name of job.
- System ID—ID of CPU where job executed.
- Submit date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time job was submitted.
- Start date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time job began execution.
- End date and time—(*yy.ddd.hh:mm:ss:hh*) Julian date and clock time job completed execution.
- Queue time—(*h:mm:ss:hh*) Difference between submit date and time and start date and time.
- Execution time—(*h:mm:ss:hh*) Difference between start date and time and end date and time.
- Time until resubmittal—Difference between end date and time and the submit date and time for the next rerun.
- Total elapsed time—Difference between the submit date and time of the production run and the end date and time of the last rerun.

The report contains sort break totals, group subtotals at each group break, and totals for combined groups.

For examples of the U11RCP Elapsed Time reports, see the following.

The following shows a sample page of an Elapsed Time report. Reruns are shown underneath the associated production run and can be identified by the lack of a job name. Time until resubmittal is only present when a rerun situation occurs.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 41 - ELAPSED TIME REPORT              GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME  SYS  C       SUBMIT               START                END             QUEUE        EXECUTION   TIME UNTIL       TOTAL
          ID  L   DATE      TIME      DATE      TIME      DATE      TIME         TIME          TIME      RESUBMITAL        TIME
-------------------------------------------------------------------------------------------------------------------------------

C345MS18         09.180 18:00:33:10  09.180 18:00:33:10  09.180 18:00:33:10    0:00:00:00    0:00:00:00                 0:00:00:00
**  TOTALS FOR JOBNAME     C345MS18
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                 0:00:00:00
C495SS1A         09.181 15:15:32:00  09.181 15:15:32:00  09.181 15:15:32:00    0:00:00:00    0:00:00:00                 0:00:00:00
C495SS1A IPO1 O  09.181 15:39:50:28  09.181 15:39:52:48  09.181 15:40:13:17    0:00:02:20    0:00:20:69                 0:00:22:89
         IPO1 O  09.181 15:42:48:37  09.181 15:42:50:77  09.181 15:42:56:06    0:00:02:40    0:00:05:29    0:02:35:20   0:02:42:89
         IPO1 O  09.181 15:44:02:30  09.181 15:44:06:03  09.181 15:44:28:26    0:00:03:73    0:00:22:23    0:01:06:24   0:01:32:89
     TOTALS:                                                                  0:00:08:33    0:00:48:21    0:03:41:44   0:04:37
C495SS1A IPO1 O  09.181 15:46:13:89  09.181 15:54:38:07  09.181 15:55:07:19    0:08:24:21    0:00:29:12                 0:08:53:33
**  TOTALS FOR JOBNAME     C495SS1A
**          3 PRODUCTION RUN(S)          2 ASSOCIATED RERUN(S)                0:08:32:54    0:01:17:33    0:03:41:44   0:13:31:31
C495SS1B         09.181 14:15:16:00  09.181 14:15:16:00  09.181 14:15:16:00    0:00:00:00    0:00:00:00                 0:00:00:00
C495SS1B         09.181 14:48:22:10  09.181 14:48:22:10  09.181 14:48:22:10    0:00:00:00    0:00:00:00                 0:00:00:00
**  TOTALS FOR JOBNAME     C495SS1B
**          2 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                 0:00:00:00
C495SS1G IPO1 O  09.181 16:02:09:27  09.181 16:02:11:68  09.181 16:02:38:61    0:00:02:41    0:00:26:93                 0:00:29:34
**  TOTALS FOR JOBNAME     C495SS1G
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:02:41    0:00:26:93                 0:00:29:34
C495SS1H IPO1 O  09.181 16:02:24:38  09.181 16:02:42:33  09.181 16:03:03:18    0:00:17:95    0:00:20:85                 0:00:38:80
**  TOTALS FOR JOBNAME     C495SS1H
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:17:95    0:00:20:85                 0:00:38:80
C495SS1X IPO1 O  09.181 15:40:05:90  09.181 15:40:17:17  09.181 15:40:38:49    0:00:11:27    0:00:21:32                 0:00:32:59
         IPO1 O  09.181 15:41:55:41  09.181 15:41:57:92  09.181 15:42:04:68    0:00:02:51    0:00:06:76    0:01:16:92   0:01:26:19
     TOTALS:                                                                  0:00:13:78    0:00:28:08    0:01:16:92   0:01:58
C495SS1X IPO1 O  09.181 15:46:44:69  09.181 15:55:10:17  09.181 15:55:28:93    0:08:25:48    0:00:18:76                 0:08:44:24
**  TOTALS FOR JOBNAME     C495SS1X
**          2 PRODUCTION RUN(S)          1 ASSOCIATED RERUN(S)                0:08:39:26    0:00:46:84    0:01:16:92   0:10:43:02
DITMSVAL         09.181  7:01:33:10  09.181  7:01:33:10  09.181  7:01:33:10    0:00:00:00    0:00:00:00                 0:00:00:00
**  TOTALS FOR JOBNAME     DITMSVAL
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                 0:00:00:00
```

The following shows a sample page from an Elapsed Time Report - Jobs Without Abends. It is a variant of the basic Elapsed Time report.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R   C O M P A N Y   N A M E                                    PAGE=00001
CA WA RESTART OPTION REPORT 42 - ELAPSED TIME RPT: JOBS W/O ABENDS  GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME  SYS  C       SUBMIT               START                END             QUEUE        EXECUTION   TIME UNTIL       TOTAL
          ID  L   DATE      TIME      DATE      TIME      DATE      TIME         TIME          TIME      RESUBMITAL        TIME
-------------------------------------------------------------------------------------------------------------------------------

C495SS1A IPO1 O  09.181 15:46:13:89  09.181 15:54:38:07  09.181 15:55:07:19    0:08:24:21    0:00:29:12                 0:08:53:33
**  TOTALS FOR JOBNAME     C495SS1A
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:08:24:21    0:00:29:12                 0:08:53:33
C495SS1G IPO1 O  09.181 16:02:09:27  09.181 16:02:11:68  09.181 16:02:38:61    0:00:02:41    0:00:26:93                 0:00:29:34
**  TOTALS FOR JOBNAME     C495SS1G
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:02:41    0:00:26:93                 0:00:29:34
C495SS1H IPO1 O  09.181 16:02:24:38  09.181 16:02:42:33  09.181 16:03:03:18    0:00:17:95    0:00:20:85                 0:00:38:80
**  TOTALS FOR JOBNAME     C495SS1H
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:17:95    0:00:20:85                 0:00:38:80
C495SS1X IPO1 O  09.181 15:46:44:69  09.181 15:55:10:17  09.181 15:55:28:93    0:08:25:48    0:00:18:76                 0:08:44:24
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:08:25:48    0:00:18:76                 0:08:44:24
```

The following shows a sample page of the Elapsed Time Report - Jobs with Abends. As its name indicates, only abended jobs are reported. Reruns are reported only when the job abended.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R   C O M P A N Y   N A M E                                          PAGE=00001
CA WA RESTART OPTION REPORT 43 - ELAPSED TIME RPT: JOBS W/ ABENDS   GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME  SYS  C       SUBMIT              START               END             QUEUE        EXECUTION   TIME UNTIL       TOTAL
          ID  L   DATE      TIME      DATE      TIME      DATE      TIME         TIME          TIME      RESUBMITAL        TIME
-------------------------------------------------------------------------------------------------------------------------------

C345MS18         09..180 18:00:33:10  09.180 18:00:33:10  09.180 18:00:33:10    0:00:00:00    0:00:00:00                0:00:00:00
**  TOTALS FOR JOBNAME     C345MS18
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                0:00:00:00
C495SS1A         09.181 15:15:32:00  09.181 15:15:32:00  09.181 15:15:32:00    0:00:00:00    0:00:00:00                0:00:00:00
C495SS1A IPO1 O  09.181 15:39:50:28  09.181 15:39:52:48  09.181 15:40:13:17    0:00:02:20    0:00:20:69                0:00:22:89
         IPO1 O  09.181 15:42:48:37  09.181 15:42:50:77  09.181 15:42:56:06    0:00:02:40    0:00:05:29    0:02:35:20  0:02:42:89
         IPO1 O  09.181 15:44:02:30  09.181 15:44:06:03  09.181 15:44:28:26    0:00:03:73    0:00:22:23    0:01:06:24  0:01:32:20
     TOTALS:                                                                  0:00:08:33    0:00:48:21    0:03:41:44  0:04:37
**  TOTALS FOR JOBNAME     C495SS1A
**          2 PRODUCTION RUN(S)          2 ASSOCIATED RERUN(S)                0:00:08:33    0:00:48:21    0:03:41:44  0:04:37:98
C495SS1B         09.181 14:15:16:00  09.181 14:15:16:00  09.181 14:15:16:00    0:00:00:00    0:00:00:00                0:00:00:00
C495SS1B         09.181 14:48:22:10  09.181 14:48:22:10  09.181 14:48:22:10    0:00:00:00    0:00:00:00                0:00:00:00
**  TOTALS FOR JOBNAME     C495SS1B
**          2 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                0:00:00:00
C495SS1X IPO1 O  09.181 15:40:05:90  09.181 15:40:17:17  09.181 15:40:38:49    0:00:11:27    0:00:21:32                0:00:32:59
         IPO1 O  09.181 15:41:55:41  09.181 15:41:57:92  09.181 15:42:04:68    0:00:02:51    0:00:06:76    0:01:16:92  0:01:26:19
     TOTALS:                                                                  0:00:13:78    0:00:28:08    0:01:16:92  0:01:58
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUN(S)          1 ASSOCIATED RERUN(S)                0:00:13:78    0:00:28:08    0:01:16:92  0:01:58:78
DITMSVAL         09.181  7:01:33:10  09.181  7:01:33:10  09.181  7:01:33:10    0:00:00:00    0:00:00:00                0:00:00:00
**  TOTALS FOR JOBNAME     DITMSVAL
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                0:00:00:00
ISBACKUP         09.180 21:19:07:10  09.180 21:19:07:10  09.180 21:19:07:10    0:00:00:00    0:00:00:00                0:00:00:00
**  TOTALS FOR JOBNAME     ISBACKUP
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                0:00:00:00
TMONHIST         09.180 21:19:09:10  09.180 21:19:09:10  09.180 21:19:09:10    0:00:00:00    0:00:00:00                0:00:00:00
**  TOTALS FOR JOBNAME     TMONHIST
**          1 PRODUCTION RUN(S)          0 ASSOCIATED RERUN(S)                0:00:00:00    0:00:00:00                0:00:00:00
TMONNETM         09.180 21:23:14:10  09.180 21:23:14:10  09.180 21:23:14:10    0:00:00:00    0:00:00:00                0:00:00:00
**  TOTALS FOR JOBNAME     TMONNETM
```

The following is a sample page from an Elapsed Time Report - Jobs with Reruns. As stated, all jobs with reruns that meet the selection criteria are reported. Unsuccessful production cycles are only reported here if at least one rerun occurred.

```
DATES=mm/dd/yyyy.jjj/hh:mm:ss                 Y O U R   C O M P A N Y   N A M E                                          PAGE=00001
CA WA RESTART OPTION REPORT 44 - ELAPSED TIME RPT: JOBS W/ RERUNS   GRP=*SYSTEM* SRT=JOBNAME     RNG=09.156/00000000-09.163/00000000
JOBNAME  SYS  C       SUBMIT              START               END             QUEUE        EXECUTION   TIME UNTIL       TOTAL
          ID  L   DATE      TIME      DATE      TIME      DATE      TIME         TIME          TIME      RESUBMITAL        TIME
-------------------------------------------------------------------------------------------------------------------------------
C495SS1A IPO1 O  09.181 15:39:50:28  09.181 15:39:52:48  09.181 15:40:13:17    0:00:02:20    0:00:20:69    0:00:22:89
         IPO1 O  09.181 15:42:48:37  09.181 15:42:50:77  09.181 15:42:56:06    0:00:02:40    0:00:05:29    0:02:35:20  0:02:42:89
         IPO1 O  09.181 15:44:02:30  09.181 15:44:06:03  09.181 15:44:28:26    0:00:03:73    0:00:22:23    0:01:06:24  0:01:32:20
     TOTALS:                                                                  0:00:08:33    0:00:48:21    0:03:41:44  0:04:37
**  TOTALS FOR JOBNAME     C495SS1A
**          1 PRODUCTION RUN(S)          2 ASSOCIATED RERUN(S)                0:00:08:33    0:00:48:21    0:03:41:44  0:04:37:98
C495SS1X IPO1 O  09.181 15:40:05:90  09.181 15:40:17:17  09.181 15:40:38:49    0:00:11:27    0:00:21:32    0:00:32:59
         IPO1 O  09.181 15:41:55:41  09.181 15:41:57:92  09.181 15:42:04:68    0:00:02:51    0:00:06:76    0:01:16:92  0:01:26:19
     TOTALS:                                                                  0:00:13:78    0:00:28:08    0:01:16:92  0:01:58
**  TOTALS FOR JOBNAME     C495SS1X
**          1 PRODUCTION RUN(S)          1 ASSOCIATED RERUN(S)                0:00:13:78    0:00:28:08    0:01:16:92  0:01:58:78
```

U11PJQ Printing Job Queue Records

U11PJQ prints specific records from the system job queue. The records printed are the system control blocks JCT, ACT, SCT, SIOT, and JFCB. U11PJQ prints the current contents of these control blocks for the job within which it is executed. Information detailing specific format of the control blocks can be found in the appropriate IBM Debugging handbook.

Typical Use

The report is useful in CA WA Restart Option system debugging.

U11PJQ JCL Requirements

The JCL required to execute U11PJQ is as follows:

```
//stepname  EXEC  PGM=U11PJQ
//STEPLIB   DD    DSN=CAI.CAL7LOAD,DISP=SHR
//RMSRPT    DD    SYSOUT=A
```

stepname

Indicates any stepname.

CAI.CAL7LOAD

Indicates the data set name of the CA Common Target Library for executable load modules.

Note: We recommend that you have this library in your LNKLST concatenation. If it is, no STEPLIB DD is necessary.

CAL7SAMP member AL7JPJQ contains a sample job to run U11PJQ.

U11ARP Audit Reporting

The U11ARP program produces reports from the selected audit data showing the controlled changes made to CA WA Restart Option data.

The JCL to execute the List Audit Report program is AL7ARP in the CAL7SAMP library. This JCL member contains a SYSIN DD statement that specifies the CAL7SRC member U11ARP as input.

The Input Control, Report Selection, Report Section Control, and Filtering Control Options are specified in the U11ARP program source. The keywords that control the report content are listed in the following topics. The data field names in the U11ARP program are shown in parentheses.

CA Datacom Database ID Option

DATABASE ID (AUD1-O-DBID)

Specifies the CA Datacom database ID that uniquely identifies the CA WA Restart Option database. Specify three digits.

Default: 601

Input Control Options

These input control options control which input sources the reporting program uses.

DATABASE (AUD1-O-INPDB)

Specifies whether the CA WA Restart Option database is an input source to the reporting program.

Y

Uses the database as an input source. This is the default.

N

Does not use the database as an input source.

PURGE FILE (AUD1-O-INPPURG)

Specifies whether CA WA Restart Option purge data sets are an input source to the reporting program. Specify a data set concatenation to read multiple purge data sets.

N

Does not use a purge data set as an input source. This is the default.

Y

Uses purge data sets as an input source.

Report Selection Options

These options control which reports the reporting program produces.

BY TIME (AUD1-O-RPTTIME)

Specifies whether the reporting program produces Report 52 - List Audit Report: by Time.

Y

Produces the report. This is the default.

N

Does not produce the report.

BY SUBSYSTEM (AUD1-O-RPTSSYS)

Specifies whether the reporting program produces Report 53 - List Audit Report: by Subsystem.

Y

Produces the report. This is the default.

N

Does not produce the report.

BY JOBNAME (AUD1-O-RPTJOBN)

Specifies whether the reporting program produces Report 54 - List Audit Report: by Jobname.

Y

Produces the report. This is the default.

N

Does not produce the report.

BY NODE ID (AUD1-O-RPTNODE)

Specifies whether the reporting program produces Report 55 - List Audit Report: by Node ID.

Y

Produces the report. This is the default.

N

Does not produce the report.

BY FACILITY (AUD1-O-RPTFAC)

Specifies whether the reporting program produces Report 56 - List Audit Report: by Facility.

Y

Produces the report. This is the default.

N

Does not produce the report.

BY USER ID (AUD1-O-RPTUSER)

Specifies whether the reporting program produces Report 57 - List Audit Report: by User ID.

Y

Produces the report. This is the default.

N

Does not produce the report.

Report Selection Control Options

The audit report is comprised of the following three sections:

- Processing options
- Report detail
- Summary totals

These options control which report sections are produced.

PROCESSING OPTIONS (AUD1-O-RPTOPTS)

Specifies whether to produce the audit processing options report, Report 50 - List Audit Report Processing Options.

Y

Produces the report. This is the default.

N

Does not produce the report.

REPORT DETAIL (AUD1-O-RPTDETL)

Specifies whether to produce the audit detail reports, Reports 52 - 57.

Y

Produces the reports. This is the default.

N

Does not produce the report.

SUMMARY TOTALS (AUD1-O-RPTSUMM)

Specifies whether to produce the audit summary totals, Report 51 - List Audit Report Totals.

Y

Produces the reports. This is the default.

N

Does not produce the report.

Filtering Control Options

These options specify the selection criteria to use when determining which audit records to select for reporting.

SUBSYSTEM (AUD1-F-SUBSYS)

(Required) Defines the four-character CA WA Restart Option subsystem name or * for all subsystems.

Default: * (all subsystems)

JOB NAME (AUD1-F-JOBNAME)

(Optional) Defines one- to eight-characters of a name or a name prefix ended by * as in *, ABC*, or xyz123*.

Default: * (all job names)

NODE ID (AUD1-F-NODEID)

(Optional) Defines a one- to eight-character JES node ID.

Default: * (all node IDs)

FACILITY (AUD1-F-FACILITY)

(Optional) Defines a one- to eight-character facility code.

Default: * (all facilities)

USER ID (AUD1-F-USERID)

(Optional) Defines a one- to eight-character operator name.

Default: * (all user IDs)

DATE FORMAT (AUD1-F-DATEFM)

(Optional) Specifies the format of printed dates:

A

Specifies the American format of YYYY/MM/DD. This is the default.

I

Specifies the international format of YYYY/DD/MM.

AUDIT (AUD1-F-AUDFDAT, AUD1-F-AUDFTIM, AUD1-F-AUDTDAT, AUD1-F-AUDTTIM)

(Optional) Defines a range for date and time selection. The parameters are FROM and THRU limits for selection of data meeting all the preceding selection criteria. The date fields can be TODAY or * to specify today's date (the date of the report execution). Relative dates in the form TODAY+*nnn*, TODAY-*nnn*, *+*nnn*, and *-*nnn* are also permitted (where *nnn* is an integer in the range 1 - 999). Leaving the field blank is treated as choosing any date/time. Dates are in *yyyy/mm/dd* format. Times are in *hh:mm:ss* format.

Report 50 - List Audit Report Processing Options

The following is a sample Report 50 - List Audit Report Processing Options report.

```
yyyy/mm/dd                    CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                    PAGE      1
                                   REPORT 50 - LIST AUDIT REPORT PROCESSING OPTIONS

       OPTION/FILTER          FILTER/     OPTIONAL    OPTIONAL    OPTIONAL          DESCRIPTION/COMMENT/ERROR MESSAGE
          TYPE                  FROM        FROM        THRU        THRU
                                DATE        TIME        DATE        TIME

  PRINT REPORT OPTIONS        Y                                              - PRINT REPORT OPTIONS SECTION ?

  PRINT REPORT DETAIL         Y                                              - PRINT REPORT DETAIL SECTIONS ?

  PRINT REPORT SUMMARY        Y                                              - PRINT REPORT SUMMARY SECTION ?

  DATABASE ID                 601                                            - CA DATACOM DATABASE ID FOR CA 11

  INPUT DATABASE              Y                                              - IS DATABASE AN INPUT SOURCE ?

  INPUT PURGE FILE            N                                              - IS PURGE FILE AN INPUT SOURCE ?

  REPORT BY TIME              Y                                              - PRODUCE REPORT BY TIME ?

  REPORT BY SUBSYSTEM         Y                                              - PRODUCE REPORT BY SUBSYSTEM ?

  REPORT BY JOB NAME          Y                                              - PRODUCE REPORT BY JOB NAME ?

  REPORT BY NODE ID           Y                                              - PRODUCE REPORT BY NODE ID ?

  REPORT BY FACILITY          Y                                              - PRODUCE REPORT BY FACILITY ?

  REPORT BY USER ID           Y                                              - PRODUCE REPORT BY USER ID ?

  SUBSYSTEM                   *                                              - CA 11 SUBSYSTEM NAME

  JOB NAME                    *                                              - JOB NAME AUDITED

  NODE ID                     *                                              - NODE ID AUDITED

  FACILITY                    *                                              - FACILITY AUDITED

  USER ID                     *                                              - USER ID MAKING CHANGE

  REPORT DATE FORMAT          A                                              - INTERNATIONAL OR AMERICAN DATE FORMAT

  CHANGE DATE/TIME            TODAY-7                 TODAY                  - DATE / TIME FILE CHANGE WAS MADE
                              yyyy/mm/dd                                   NOTE - RELATIVE DATE USED AS FROM DATE
                                                      yyyy/mm/dd           NOTE - TODAYS DATE USED AS THRU DATE
```

Report 51 - List Audit Report Totals

The following is a sample Report 51 - List Audit Report Totals report.

```
yyyy/mm/hh/yy                 CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                    PAGE      1
                                        REPORT 51 - LIST AUDIT REPORT TOTALS

                                          TOTAL       ACTIVE      ARCHIVED
                                         RECORDS      RECORDS      RECORDS
                                          READ       SELECTED     SELECTED
                                            242          242            0
```

Report 52 - List Audit Report: By Time

The following is a sample Report 52 - List Audit Report: By Time report.

```
 yyyy/mm/dd                          CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                          PAGE      1
                                               REPORT 52 - LIST AUDIT REPORT: BY TIME

                                                                               DESCRIPTION/                              BEFORE IMAGE/
  CHANGE OCCURRED   SUB    JOB    NODE ID  FACILITY USER ID  DB          SQL_FIELD_NAME                          AFTER IMAGE
    DATE   TIME     SYS    NAME                              TBL :-------------------------------:    :----------------------------
yyyy/01/09 12:53:15 CAL7 TSOUSR1A USI279ME TSO      TSOUSR1       TSO       CHANGED   CMT

                                                             JOB BATCH_ID                         B> +255
                                                                                                  A> +110

                                                                 C_YEAR_TOTAL_P_RUN               B> +1
                                                                                                  A> +2

                                                                 CURRENT_YEAR                     B> 2008
                                                                                                  A> 2007

yyyy/01/09 16:16:47 CAL7 A161647$ USI279ME U11DPDST TSOUSR1  JOB  U11DPDST  DELETED   CMT

yyyy/01/09 16:16:48 CAL7 CA11TSTA USI279ME U11DVSMT TSOUSR1  JOB  U11DVSMT  ADDED     JEHF

yyyy/01/09 16:16:48 CAL7 CA11TSTA USI279ME U11DVSMT TSOUSR1  JOB  U11DVSMT  DELETED   JEHF

yyyy/01/10 10:58:04 CAL7 DBAS     USI279ME CONSOLE  INTERNAL      CONSOLE   ISSUED DBAS COMMAND      SHUTDOWN MANT

yyyy/01/10 11:14:18 CAL7 DBAS     USI279ME CONSOLE  GRP900        CONSOLE   ISSUED DBAS COMMAND      SUSPEND

yyyy/01/10 12:43:16 CAL7 DBAS     USI279ME CONSOLE  GRP900        CONSOLE   ISSUED DBAS COMMAND      RESUME

yyyy/01/11 09:10:43 CAL7 DBAS     USI279ME INTERNAL EOTEXIT       INTERNAL  ISSUED DBAS COMMAND      ABTERM ASID=0027,TCB=007D1C48,
                                                                                                     CMT

yyyy/01/11 14:25:42 CAL7 TSOUSR3A USI279ME TSO      TSOUSR3       TSO       CHANGED   CMT

                                                             JOB BYPASS_GDG_NOT_OK                B>
                                                                                                  A> Y

                                                                 ENDING_STEP                      B>
                                                                                                  A> STEP2

                                                             STP  SEQ=001, NAME=STEP2

                                                                 RANGE_EXECUTION_FLAG             B> Y
                                                                                                  A> N

yyyy/01/14 11:39:12 CAL7 TSOUSR3A USI279ME TSO      TSOUSR3       TSO       CHANGED   CMT

                                                             HST TOTAL_JOBS1                      B> +10
                                                                                                  A> +11

                                                                 TOTAL_PROD_RUNS1                 B> +42
                                                                                                  A> +43
```

Report 53 - List Audit Report: By Subsystem

The following is a sample Report 53 - List Audit Report: By Subsystem report.

```
 yyyy/mm/dd                        CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                        PAGE      1
                                          REPORT 53 - LIST AUDIT REPORT: BY SUBSYSTEM

                                                                          DESCRIPTION/                    BEFORE IMAGE/
SUB    CHANGE OCCURRED     JOB    NODE ID  FACILITY USER ID  DB          SQL_FIELD_NAME                   AFTER IMAGE
SYS      DATE   TIME       NAME                              TBL :-------------------------------:    :------------------------------
CAL7 yyyy/01/09 12:53:15 TSOUSR1A USI279ME TSO      TSOUSR1       TSO       CHANGED   CMT


                                                    JOB BATCH_ID                      B> +255
                                                                                      A> +110

                                                        C_YEAR_TOTAL_P_RUN            B> +1
                                                                                      A> +2

CAL7 yyyy/01/09 16:16:47 A161647$ USI279ME U11DPDST TSOUSR1  JOB  U11DPDST  DELETED   CMT

CAL7 yyyy/01/09 16:16:48 CA11TSTA USI279ME U11DVSMT TSOUSR1  JOB  U11DVSMT  ADDED     JEHF

CAL7 yyyy/01/09 16:16:48 CA11TSTA USI279ME U11DVSMT TSOUSR1  JOB  U11DVSMT  DELETED   JEHF

CAL7 yyyy/01/10 10:58:04 DBAS     USI279ME CONSOLE  INTERNAL      CONSOLE   ISSUED DBAS COMMAND      SHUTDOWN MANT

CAL7 yyyy/01/10 11:14:18 DBAS     USI279ME CONSOLE  GRP900        CONSOLE   ISSUED DBAS COMMAND      SUSPEND

CAL7 yyyy/01/10 16:21:09 DBAS     USI279ME INTERNAL EOTEXIT       INTERNAL  ISSUED DBAS COMMAND      ABTERM ASID=0027,TCB=007D1C48,
                                                                                                       CMT

CAL7 yyyy/01/10 17:46:44 DBAS     USI279ME CONSOLE  GRP900        CONSOLE   ISSUED DBAS COMMAND      SHUTDOWN NOW

CAL7 yyyy/01/11 14:26:13 TSOUSR3A USI279ME TSO      TSOUSR3       TSO       CHANGED   CMT

                                                    JOB BYPASS_GDG_NOT_OK             B> Y
                                                                                      A>

                                                        ENDING_STEP                   B> STEP2
                                                                                      A>

                                                        JOB_TO_RESTART                B> Y
                                                                                      A>

                                                        STARTING_STEP                 B> STEP1
                                                                                      A>


                                                    STP  SEQ=001, NAME=STEP2

                                                        RANGE_EXECUTION_FLAG          B> Y
                                                                                      A> N
```

Report 54 - List Audit Report: By Job Name

The following a sample Report 54 - List Audit Report: By Job Name report.

```
 yyyy/mm/dd                        CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                        PAGE      1
                                          REPORT 54 - LIST AUDIT REPORT: BY JOB NAME

                                                                    DESCRIPTION/                    BEFORE IMAGE/
  JOB      CHANGE OCCURRED   SUB  NODE ID  FACILITY USER ID  DB          SQL_FIELD_NAME                 AFTER IMAGE
  NAME       DATE   TIME     SYS                             TBL :-------------------------------:   :-----------------------------
#SCHCC   yyyy/01/09 16:16:47 CAL7 USI279ME U11DPDST TSOUSR1      U11DPDST  CHANGED   CMT

                                                          JOB SCHED_CC                      B> Y
                                                                                            A>

#SCHCC2  yyyy/01/15 07:08:12 CAL7 USI279ME TSO      TSOUSR2      TSO       CHANGED   CMT

                                                          JOB BYPASS_GDG_NOT_OK             B>
                                                                                            A> Y

                                                              COND_CODE_SPEC                B>
                                                                                            A> Y

                                                              JOB_TO_RESTART                B>
                                                                                            A> Y

                                                              RESTART11_CONDCODE            B> 0
                                                                                            A> +5


                                                          STP  SEQ=001, NAME=STEP2

                                                              RANGE_EXECUTION_FLAG          B> Y
                                                                                            A> N

APAY210A yyyy/01/11 13:58:02 CAL7 USI279ME TSO      TSOUSR3      TSO       CHANGED   CMT

                                                          JOB STARTING_PROCSTEP             B>
                                                                                            A> MAIN

                                                              STARTING_STEP                 B>
                                                                                            A> STEP2

DBAS     yyyy/01/10 10:56:01 CAL7 USI279ME CONSOLE  INTERNAL     CONSOLE   ISSUED DBAS COMMAND     DISPLAY STATUS

DBAS     yyyy/01/10 12:42:02 CAL7 USI279ME CONSOLE  GRP900       CONSOLE   ISSUED DBAS COMMAND     SUSPEND

TSOUSR1A yyyy/01/09 12:53:15 CAL7 USI279ME TSO      TSOUSR1      TSO       CHANGED   CMT

                                                          JOB BATCH_ID                      B> +255
                                                                                            A> +110

                                                              C_YEAR_TOTAL_P_RUN            B> +1
                                                                                            A> +2
```

Report 55 - List Audit Report: By Node ID

The following a sample Report 55 - List Audit Report: By Node ID report.

```
 yyyy/mm/dd                        CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                        PAGE      1
                                          REPORT 55 - LIST AUDIT REPORT: BY NODE ID

                                                                                DESCRIPTION/                    BEFORE IMAGE/
NODE ID    CHANGE OCCURRED   SUB    JOB    FACILITY USER ID  DB          SQL_FIELD_NAME                      AFTER IMAGE
             DATE   TIME     SYS    NAME                     TBL :-------------------------------:    :------------------------------
USI279ME yyyy/01/09 05:05:45 CAL7 GHIRTCD  TSO      TSOUSR2       TSO       CHANGED   CMT


                                                    JOB BATCH_ID                      B> +255
                                                                                      A> +110

                                                        SCHED_CC                      B> Y
                                                                                      A>

USI279ME yyyy/01/10 10:58:04 CAL7 DBAS     CONSOLE  INTERNAL      CONSOLE   ISSUED DBAS COMMAND      SHUTDOWN MANT

USI279ME yyyy/01/10 16:21:09 CAL7 DBAS     INTERNAL EOTEXIT       INTERNAL  ISSUED DBAS COMMAND      ABTERM ASID=0027,TCB=007D1C48,
                                                                                                      CMT

USI279ME yyyy/01/10 12:22:36 CAL7 DBAS     INTERNAL DBAS          INTERNAL  ISSUED DBAS COMMAND      SHUTDOWN ALL

USI279ME yyyy/01/11 14:26:13 CAL7 TSOUSR3A TSO      TSOUSR3       TSO       CHANGED   CMT

                                                    JOB BYPASS_GDG_NOT_OK             B> Y
                                                                                      A>

                                                        ENDING_STEP                   B> STEP2
                                                                                      A>

                                                        JOB_TO_RESTART                B> Y
                                                                                      A>

                                                        STARTING_STEP                 B> STEP1
                                                                                      A>

                                                    STP  SEQ=001, NAME=STEP2

                                                        RANGE_EXECUTION_FLAG          B> Y
                                                                                      A> N

USI279ME yyyy/01/11 18:54:49 CAL7 DBAS     CONSOLE  GRP900        CONSOLE   ISSUED DBAS COMMAND      SHUTDOWN NOW

USI279ME yyyy/01/14 11:39:12 CAL7 TSOUSR3A TSO      TSOUSR3       TSO       CHANGED   CMT

                                                    HST TOTAL_JOBS1                   B> +10
                                                                                      A> +11

                                                        TOTAL_PROD_RUNS1              B> +42
                                                                                      A> +43

USI279ME yyyy/01/14 11:39:12 CAL7 TSOUSR3A TSO      TSOUSR3  JOB  TSO       DELETED   CMT
```

Report 56 - List Audit Report: By Facility

The following a sample Report 56 - List Audit Report: By Facility report.

```
 yyyy/mm/dd                        CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                        PAGE      1
                                          REPORT 56 - LIST AUDIT REPORT: BY FACILITY

                                                                                 DESCRIPTION/                    BEFORE IMAGE/
FACILITY   CHANGE OCCURRED   SUB    JOB    NODE ID  USER ID  DB          SQL_FIELD_NAME                          AFTER IMAGE
             DATE   TIME     SYS    NAME                     TBL :-------------------------------:    :-----------------------------
CONSOLE  yyyy/01/10 10:56:01 CAL7 DBAS     USI279ME INTERNAL      CONSOLE   ISSUED DBAS COMMAND      DISPLAY STATUS

CONSOLE  yyyy/01/10 10:58:04 CAL7 DBAS     USI279ME INTERNAL      CONSOLE   ISSUED DBAS COMMAND      SHUTDOWN MANT

CONSOLE  yyyy/01/10 11:14:18 CAL7 DBAS     USI279ME GRP900        CONSOLE   ISSUED DBAS COMMAND      SUSPEND

INTERNAL yyyy/01/10 16:21:09 CAL7 DBAS     USI279ME EOTEXIT       INTERNAL  ISSUED DBAS COMMAND      ABTERM ASID=0027,TCB=007D1C48,
                                                                                                     CMT

TSO      yyyy/01/11 14:26:13 CAL7 TSOUSR3A USI279ME TSOUSR3       TSO       CHANGED   CMT

                                                              JOB BYPASS_GDG_NOT_OK               B> Y
                                                                                                  A>

                                                                  ENDING_STEP                     B> STEP2
                                                                                                  A>

                                                                  JOB_TO_RESTART                  B> Y
                                                                                                  A>


                                                                  STARTING_STEP                   B> STEP1
                                                                                                  A>

                                                              STP  SEQ=001, NAME=STEP2

                                                                  RANGE_EXECUTION_FLAG            B> Y
                                                                                                  A> N

U11DPDST yyyy/01/09 16:16:47 CAL7 A161647$ USI279ME TSOUSR1  JOB  U11DPDST  DELETED   CMT

U11DVSMT yyyy/01/09 16:16:48 CAL7 CA11TSTA USI279ME TSOUSR1  JOB  U11DVSMT  ADDED     JEHF

U11DVSMT yyyy/01/09 16:16:48 CAL7 CA11TSTA USI279ME TSOUSR1  JOB  U11DVSMT  DELETED   JEHF
```

Report 57 - List Audit Report: By User ID

The following a sample Report 57 - List Audit Report: By User ID report.

```
 yyyy/mm/dd                        CA WORKLOAD AUTOMATION RESTART OPTION FOR Z/OS SCHEDULERS                        PAGE      1
                                          REPORT 57 - LIST AUDIT REPORT: BY USER ID

                                                                                DESCRIPTION/                    BEFORE IMAGE/
USER ID    CHANGE OCCURRED   SUB    JOB    NODE ID  FACILITY DB          SQL_FIELD_NAME                    AFTER IMAGE
             DATE    TIME    SYS    NAME                     TBL :-------------------------------:    :------------------------------
BUSER01  yyyy/01/10 12:30:09 CAL7 BUSER01A USI279ME TSO          TSO       CHANGED   CMT

                                                          JOB BATCH_ID                      B> +103
                                                                                            A> +110

                                                              C_YEAR_TOTAL_R_RUN            B> 0
                                                                                            A> +1

                                                              CURRENT_YEAR                  B> 2008
                                                                                            A> 2007

DBAS     yyyy/01/10 12:22:36 CAL7 DBAS     USI279ME INTERNAL     INTERNAL  ISSUED DBAS COMMAND     SHUTDOWN ALL

EOMEXIT  yyyy/01/14 11:53:00 CAL7 DBAS     USI279ME INTERNAL     INTERNAL  ISSUED DBAS COMMAND     ABTERM ASID=0018,CMT

GRP900   yyyy/01/10 12:42:02 CAL7 DBAS     USI279ME CONSOLE      CONSOLE   ISSUED DBAS COMMAND     SUSPEND

GRP900   yyyy/01/10 12:43:16 CAL7 DBAS     USI279ME CONSOLE      CONSOLE   ISSUED DBAS COMMAND     RESUME

INTERNAL yyyy/01/10 10:58:04 CAL7 DBAS     USI279ME CONSOLE      CONSOLE   ISSUED DBAS COMMAND     SHUTDOWN MANT

MUSER01  yyyy/01/09 16:16:47 CAL7 A161647$ USI279ME U11DPDST JOB  U11DPDST  DELETED   CMT

SUSER01  yyyy/01/15 07:08:12 CAL7 #SCHCC2  USI279ME TSO          TSO       CHANGED   CMT

                                                          JOB COND_CODE_SPEC                B>
                                                                                            A> Y

                                                              JOB_TO_RESTART                B>
                                                                                            A> Y

                                                              RESTART11_CONDCODE            B> 0
                                                                                            A> +5

                                                          STP  SEQ=001, NAME=STEP2

                                                              RANGE_EXECUTION_FLAG          B> Y
                                                                                            A> N


SUSER01  yyyy/01/15 07:09:23 CAL7 #SCHCC2  USI279ME TSO      JOB  TSO       CHANGED   CMT

                                                              JOB_TO_RESTART                B>
                                                                                            A> Y
```

Appendix A: Summary of User Installation Options

Installation Options

The following table contains the name of the parameter that represents the option, the value chosen, and a description of the option. If the value must be one of a set recognized by CA WA Restart Option, all values are shown and the user should circle the one selected. Default values are underlined. If the value is completely user-defined, a blank is provided in which the user should enter the value selected. The OINQ transaction displays these installation options.

Parameter	Values	Meaning
AUTOF	YES/NO	Automatic F processing
AUTOS	YES/NO	Automatic Setup
BIAS	JOB/STEP	GDG bias resetting scheme
BYPGDG	NO/YES/VER/CAT	Bypass GDG logic
CA1	YES/NO	CA 1 interface wanted
DEVLCNT	055/_____	Actual device line count
HISTNM	HISTORY/_____	Name of CA WA Restart Option CMT history record
INSRTOP	NO/YES	Insert U11RMS step into all jobs using an IEFUJV exit
INSRTPC	AL7RMS	PROC name used by IEFUJV exit
INSRTPM	P,PSEUDO=YES/P	Default U11RMS parameter to be used by IEFUJV exit
LOGO	YES/NO/BATCH	Print logo
MAXDAY	60/_____	Maximum JEHF retention period
MAXOLD	50/_____	Maximum data sets with DISP=OLD/SHR/MOD per job
MAXPASS	50/_____	Maximum passed data sets per job
MAXUGDG	50/_____	Maximum number of GDGs per job

Parameter	Values	Meaning
MINCNT	5/_____	Minimum number of production JEHF entries per job
OLMAINT	NO/YES	Online data set/catalog maintenance will be performed using the PRE R command
OPCORCT	NO/YES	Operator correct invalid PARM
OPVER	NO/YES	Require operator verification of rerun
PRANGEB	1W/_____	PRANGE default for batch
PRANGEO	18H/ _____	PRANGE default for online
REASON	NO/ABEND/PROMPT	Reason-for-rerun required
RETCODE	0/_____	U11RMS return code
SVC	169/200-255	Number of CA WA Restart Option SVC
SYSLCNT	055/_____	SYSOUT line count
TLMS	NO/YES	CA/DYNAM/TLMS interface wanted
TRACK	CA-11/ALL/STEP	Jobs to track
TRKSTP	CA07RMS/_____	STEPNAME executing RMS PROC
UNCDASD	YES/NO	Uncatalog if scratch fails
USAGE	NO/YES/RESTART	Usage code required

Glossary

3850 Mass Storage System (MSS)
A system that extends the virtual storage concept to direct-access storage and extends user online data storage capacity to as much as 472 billion characters of information.

3851 Mass Storage Facility (MSF)
The component of a 3850 Mass Storage System that contains the storage media and facilities for accessing the media.

A

abend
See Abnormal end of task.

abnormal end of task (ABEND)
Termination of a task prior to its completion because of an error condition that cannot be resolved by recovery facilities while the task is executing.

ACT
Accounting Control Table.

active volume
In MSS, a mass storage volume residing within the mass storage facility and available for mounting by the operating system.

ADCON
Address Constant.

address
A reference to a storage location where information or an instruction resides.

application program
A program written to accomplish a function for an end user.

application programmer
One whose primary function is to develop and maintain programs for end users.

ARTS
Automated Rerun and Tracking System, that is, CA WA Restart Option.

Auto Setup
CA WA Restart Option facility which automatically determines where to restart an abended job, without requiring JCL changes.

auxiliary storage

Data storage other than main storage; for example, storage on magnetic tape or direct-access devices. Synonymous with external storage, secondary storage.

B

backward reference

The ability of relating a JCL parameter in one step to a like JCL parameter in another (previous) job step. (For example, a data set name or a volume serial number.)

batch processing

The processing of batches of data. That processing which is not done online.

C

CA Datacom/AD

A common component version of CA Datacom/DB that is included with the products that require it. This version is restricted for use only by those products.

CA Datacom/DB

A high-performance, relational database management system (DBMS) used to organize, store, update, and retrieve your corporate information.

catalog

A system data set used to keep track of the tape or disk volume serial numbers on which the data sets exist. It provides these volume serial numbers to the operating system to effect the proper volume mount or volume allocation for the requested data sets. This allows the program to reference the data set by name only, with the catalog providing the volume serial number. Use of the catalog minimizes the need for JCL changes. The term catalog is functionally the same as catalog and VSAM master catalog.

cataloged data set

Any data set (tape or disk) which has its name and volume serial number recorded in the catalog is a cataloged data set. Cataloging allows the user to not keep track of the volume serial numbers of data sets. They can be referred to by data set name.

cataloged procedure

A set of control statements that has been placed in a library and can be retrieved by name.

checkpoint restart

An operating system facility which provides the ability to begin the processing of a job step at a point other than the beginning of the program or job step.

CMT

Catalog Management Table. A set of tables in a CA Datacom database appearing as a Partitioned Data Set (PDS) having the information necessary for the handling facility of CA WA Restart Option. An entry is automatically created for each job under CA WA Restart Option handling control.

CMT inquiry/update (CINQ, CUPD)

Inquiry and update on the CMT (Catalog Management Table) is supported by the Online System. Of primary importance is the ability to maintain the nonrestartable indicators for job steps. All transactions are keyword driven.

completion code

Code indicating the success, relative success, or failure of a processing step. See Condition Code.

condition code (return code)

A means of using the operating system to communicate status from one step of a job to another. Checking a condition code of a previous step in the JCL determines if the current step (program) is to be bypassed or executed.

CPU time

The amount of time devoted by the processing unit to the execution of instructions. Synonymous with CPU busy time.

CSECT

An assembler instruction used to initiate an executable control section or indicate continuation of an executable control section.

D

DASD

A Direct-Access Storage Device. A device in which the access time is effectively independent of the location of the data, unlike a tape that must be processed sequentially.

data communications

The transmission and reception of data over one or more data links according to a link protocol.

data entry

The act of preparing data for entry into a computer system. In some environments, entry is actually made directly into the system.

data migration

See Migrate.

data set

The major unit of data storage and retrieval in the operating system, consisting of a collection of data in one of several arrangements.

data set control block (DSCB)

A data set label contained in the VTOC for a data set on a direct-access device.

Data Set Report

Generates a list of all output data sets and optionally input data sets for any job under CA WA Restart Option control.

data space

A storage area defined in the volume table of contents of a direct-access volume for the exclusive use of VSAM to store files, indexes and catalogs. A data space may contain one or more clusters.

Database Address Space

An I/O address space designed for the sole purpose of servicing I/O requests on behalf of user address spaces in an asynchronous manner.

DBAS

See Database Address Space.

DCB

Data Control Block.

DD statement

A JCL statement which relates the application program to the data set it reads or creates.

DISP

A keyword parameter of the DD statement which reflects the status of a data set at the beginning of the step and the actions to be taken when the step ends either normally or abnormally.

distribution

An activity within a data center, often handled by a formalized group, which involves all the steps required to make computer produced output available to the end user in its required format.

DSCB

See Data Set Control Block.

DSECT

An assembler instruction used to initiate a dummy control section or to indicate its continuation.

E

ECB

Event Control Block.

end user

A person in an organization who uses data in meeting organizational responsibilities. An end user is typically without data processing skills.

Execute (EXEC) statement

JCL statement that marks the beginning of a job step and identifies the program to be executed or the cataloged or in-stream procedure to be used.

execution JCL

Sets of JCL statements that cause the processing of a CPU job.

EXPDT

A keyword parameter of the LABEL keyword of the DD statement. This parameter specifies the date on which a data set may be scratched. Attempting to scratch a data set (or reuse a tape) before the expiration date has been reached causes the operating system to display a warning message which requires operator action.

extent

A continuous space on a direct-access storage device occupied by or reserved for a particular data set, data space, or file.

F

file name

A name assigned to a set of input data or output data.

G

GDG

See Generation Data Group.

GDG bias number

This number is used as part of the data set name in JCL to determine which relative generation of the GDG is being referenced (grandfather-father-son concept).

generation data group (GDG)

This is a type of catalog data entry. It provides a method of keeping track of grandfather, father, son cyclic type data sets. Each data set which is part of the group is referred to as a generation data set.

generation data set

One generation of a generation data group.

generic key

A high-order portion of a key containing characters that are significant for a certain application.

global processor

Under JES, the processor that controls job scheduling and device allocation for a complex of processors. See also Local Processor.

group

A user-defined subset of jobs. Groups may be defined based on job name, programmer name, accounting/user information, or substrings thereof. A job may belong to more than one group. Groups are used to provide meaningful reports.

H

handling

The handling facility is designed to automate the manual tasks normally associated with rerun setup and execution.

hardware

Physical equipment used in data processing, as opposed to computer programs, procedures, rules and associated documentation.

HELP

An Online command that provides a tutorial guide to the use of the Online System.

host computer

The primary or controlling computer in a multiple computer operation.

I

IEFACTRT

The data for the JEHF is gathered at step and job termination through the SMF accounting exit, IEFACTRT.

IEFBR14

A very simple utility program that is used to allocate, catalog, or scratch data sets based on JCL DD statements.

IEFUSI

Optionally, the Run Handler can perform data set cleanup actions in the SMF Step Initiation exit IEFUSI.

IEHPROGM

The IBM utility that, among other things, performs maintenance against the catalog and scratches disk data sets.

implementation

The act of performing the task necessary to gain the intended use of a product. Contrast with installation.

initiator/terminator

The job scheduler function that selects jobs and job steps to be executed, allocates input/output devices for them, places them under task control, and at completion of the job, supplies control information for writing job output on a system output unit.

installation

The act of making a system ready for use. For a software system, this includes allocation of required data sets, restoration of the system from tape to disk and selection of any system options.

internal reader

A facility that transfers jobs to the job entry subsystem (JES2 or JES3).

IPL

Initial Program Load.

IXX

In CA Datacom/DB, the Index Area (IXX) is the area of the database that contains the index for tables in that database.

J

JCL

See Job Control Language.

JEHF

Job Execution History File. This is the set of CA Datacom/DB tables used by CA WA Restart Option to store job tracking information.

JEHF Inquiry/Update (JINQ, JUPD)

The JEHF is accessible for inquiry or update through the Online System. All transactions are keyword driven.

JES

See Job Entry Subsystem.

JES2

A subsystem that provides users with supplementary functions such as control of job flow, ordering of tasks and spooling.

JES3

A subsystem that provides increased automation of computer operations for large scale data processing installations. In addition to spooling functions, JES3 provides support for resource management, preexecution mounting of volumes and control of job flow through multiple CPUs.

job

A job or production cycle begins with the initial attempt to execute the job's JCL and ends when that JCL has completed successfully.

Job Control Language (JCL)

Control statements that are necessary to execute a job. JCL statements describe the job and programs to be executed and what input and output the programs requires.

job control statement

A statement in a job that is used in identifying the job or describing its requirements to the operating system.

job entry subsystem

A system facility for spooling, job queuing, and managing I/O. See also JES2 and JES3.

job inquiry (LJOB)

The job inquiry provides the restartability of jobs being handled by CA WA Restart Option. Additionally, historical information is displayed for each job.

job recovery

Includes both job rerun and job restart. In many instances, the term rerun is used to encompass both the rerun and restart situation.

job report

The report reveals which jobs have reruns (and which do not), why jobs have reruns, and provides a statistical picture of production jobs.

job rerun

A term used when a job needs to be reexecuted due to bad input/output data, lost reports, and so forth. Used to refer to both rerun and restart.

job restart

A term used when a job needs to be reexecuted due to job or system failure.

job status

All jobs under CA WA Restart Option tracking control are assigned one of four statuses. The status changes dynamically as attempts are made to process the job. The four possible statuses are:

- A = Unresolved abend
- C = Completed
- E = Executing
- S = Set-for-Rerun

job status inquiry (DIS)

The Job Status Inquiry displays either summary information on a user-defined number of production cycles for the job or detailed information on one particular production cycle.

K

KB

When referring to storage capacity, 2 to the 10th power or 1024 in decimal notation.

keyword parameter

A parameter consisting of a keyword followed by one or more values. See also positional parameter.

L

library

A repository for recorded media, such as magnetic disk packs and magnetic tapes.

load module library

The data library facility into which programs are entered and drawn from for execution.

local processor

In a complex of processors under JES3, a processor that executes user jobs and that can assume global functions in the event of failure of the global processor.

log data set

A data set used to create a record of events that have taken place within a system or subsystem.

logical terminal

A logical terminal is a name that is related to a physical terminal. One physical terminal can have one or more logical terminals associated with it. The user references the logical terminal in transmission of messages, thus not having to be concerned with such things as the physical terminal address.

loosely coupled

Pertaining to processing units that are connected by means of channel-to-channel adapters that are used to pass control information between the processors. See also Tightly Coupled.

M

macro

A set of Assembler language statements that defines the name of, format of, and conditions for generating a sequence of Assembler language statements from a single source statement.

MANX/MANY

Data sets used by the operating system to record SMF information.

Mass Storage System (MSS)

A system that extends the virtual storage concept to direct-access storage and extends user online data storage capacity.

mass storage volume

In MSS, a direct-access storage volume residing on two associated data cartridges.

master console

In a system with multiple consoles, the basic console used for communication between the operator and the system.

MCS

See Multiple Control Support.

Mega (MB)

1,000,000 in decimal notation. When referring to storage capacity, 2 to the 20th power or 1,048,576 in decimal notation.

member

An independent portion of a partitioned data set identified by a unique name in the data set directory.

message

A communication from the CA WA Restart Option system that informs, warns, or prompts action.

MFT

Multiprogramming with a fixed number of tasks.

migrate

Moving selected data sets from valuable DASD space to a less expensive storage medium (normally tape). After migration, these data sets are scratched from disk.

module

A program unit that is discrete and identifiable with respect to compiling, combining with other units, and loading, for example, the input to or output from an assembler, compiler, or linkage editor.

MSS

See 3850 Mass Storage System.

Multiple Control Support (MCS)

An optional feature that permits selective message routing (up to 32 operator consoles).

N

nonrestartable step

A step is deemed nonrestartable by CA WA Restart Option if it:

- Uses a temporary or passed data set for input.
- Contains a backward volume reference to a previous step.

Additionally the user may flag any step as nonrestartable, for example, a database update step.

nonspecific volume request

In Job Control Language (JCL), a request that allows the system to select suitable volumes.

nontemporary data set

Data sets which are retained beyond the creating job.

O

Option Table Inquiry (OINQ)

The Option Table Inquiry allows the user to verify the CA WA Restart Option options that are currently in effect for the system.

P

PARM

Parameter information can be passed to a program using the PARM field on the JCL Execute (EXEC) statement.

performance

Together with facility, one of the two major factors on which the total productivity of a system depends. Performance is largely determined by a combination of three other factors: throughput, response time, and availability.

permanent data set

A nontemporary data set which has an expiration date in the future.

positional parameter

A parameter that must appear in a specific location relative to other parameters. See also keyword parameter.

preprocessor

The preprocessor function accommodates the unique requirements of JES3 and also provides a central point to set up reruns if the Auto Setup facility is not used. Available online and in batch.

prestaging

The process of pulling all tapes necessary for a production job before it is scheduled to run.

problem program

Any program that is executed when the processing unit is in the problem state; that is, any program that does not contain privileged instructions. This includes IBM-distributed programs, such as language translators and service programs, and programs written by a user.

procedure library (PROCLIB)

System library used to store the user's cataloged JCL procedures.

processing codes

A CA WA Restart Option term that indicates the type of action CA WA Restart Option is to take when it gains control.

R

Restart processing code

P

Production processing code

N

CA WA Restart Option processing is bypassed

F

Used when JCL changes are made and a new CMT entry is to be created

O

Operator supplies CA WA Restart Option PARM information

A

Add

B

Backout processing

C

Current processing

PROCLIB

See Procedure Library.

PROCs

Cataloged procedures composed of JCL which executes one or more programs in a specific sequence. PROCs are generally referenced by execution JCL.

production control

An activity within a data center, often handled by a formalized group, which involves all steps necessary to schedule, monitor, and ensure the accuracy of day-to-day production processing.

Production Status Inquiry (STA)

The Production Status Inquiry reports on shop-wide production over a user-defined time period. The period may range from 1 to 99 hours. The response shows all jobs in the time frame and indicates their status. The response may be limited only to jobs with a specific status.

program

A series of instructions or statements in a form acceptable to a computer, prepared to achieve a specific result.

Pull List

A list of tapes to be pulled (prestaged) for a particular job or shift. The Pull List facility (PULL) lists data sets and volumes for steps to be executed. For production all steps are used to generate the list. For reruns only the steps to be rerun are considered when generating the list.

Q

queue

A line or list formed by items in a system waiting for service; for example, tasks to be performed or messages to be transmitted in a message switching system.

R

Reason Update (RUPD)

This function allows the user to easily add or update a reason-for-rerun.

Reason-for-Rerun

A 40-byte user-supplied field.

refer backs

The ability of relating a JCL parameter in one step to a like JCL parameter in another (previous) job step; for example, a data set name or a volume serial number.

register

An internal counter facility of the hardware.

Remote Job Entry (RJE)

Submission of a job through an input unit that has access to a computer through a data link.

rerun

A term normally used to refer to the restarting of a job or system from the beginning. Sometimes used to refer to restarting at some point other than the beginning.

rerun retention

A default that designates the number of days a tape volume is protected after CA WA Restart Option determines the data set is to be recreated during a restart or rerun.

resource

Any facility of the computing system or operating system required by a job or task, and including main storage input/output devices, the processing unit, data sets, and control or processing programs.

resource allocation

The assignment of the facilities of a data processing system for the accomplishment of jobs; for example, the assignment of main storage, input/output devices, files.

resource management

The activities involved with manipulating the scheduling of work based on availability of machine resources with the intent of making the most efficient use of those resources.

restart

A term normally used to refer to the restarting of a job or system at some point other than the beginning.

restore

Process of restoring a migrated or backup data set from tape to disk.

RETPD

A keyword parameter of the LABEL keyword of the DD statement. This parameter specifies the length of time to keep the data set being created. Attempting to scratch a data set or reuse a tape volume before the specified number of days has passed causes the operating system to display a warning message and requires operator action.

retrieve

See restore.

return code

See condition code.

Run Handler

At the heart of the handling facilities is the CA WA Restart Option Run Handler. The Run Handler is a program, U11RMS, which must be executed as the first step in a job being handled by CA WA Restart Option. The Run Handler controls job execution in either production or rerun mode and posts the most current information to the CMT.

S

security

The Online System has a built-in security interface. Access to the system and its various functions is controlled by user-defined security profiles, external security definitions, or User Exit routines.

SMF

See System Management Facility.

spoilage

Measurement of the amount of System Resource Units (SRUs) used due to reruns.

Spoilage Report

This report is designed to quantify the impact reruns have on resource utilization.

SRU

System Resource Unit. A standard IBM measurement of system resources used by a job.

staging

An activity within a data center, often handled by a formalized group, which involves all the steps necessary to prepare production CPU work for execution.

step inquiry (LSTP)

This inquiry provides information about each step within a job.

step restart

A facility which provides the ability to begin processing a job at a specified step. No data set or catalog maintenance is performed. GDG bias numbers are not adjusted.

Supervisor Call (SVC)

A module which handles services requested by application programs or other modules.

SVC

See Supervisor Call.

SVC Interrupt

An interruption caused by the execution of a supervisor call instruction, causing control to be passed to the supervisor.

SYSGEN

See System Generation.

System Generation (SYSGEN)

System generation function or system definition that allows the user to specify options for a particular environment. SYSGENs are performed for all IBM operating systems, for IMS and for several other components.

System Management Facility (SMF)

IBM's System Management Facility. Part of the operating system. SMF data records are written to SMF log files gathering data set information, error statistics, job accounting statistics, and so forth. Amount of data collected and the processing techniques used are installation options.

Also user SMF exits allow user programs to gain control when various types of the SMF records are being built. This allows the user access to information normally available only to the operating system. Exits function regardless of whether SMF data is being collected or processed.

T

table

A table is a named data object consisting of a specific number of columns (fields) and a variable number of unordered rows (records).

Although the order of columns in a table is fixed, there is no conceptual significance to the order of columns. In CA Datacom/DB, a table is stored in an area within a database.

temporary data set

Data sets which are only needed for the life of the job. These data sets are deleted automatically by the operating system.

throughput

A measure of the amount of work performed by a computer system over a given period of time, for example, jobs per day.

tightly coupled

Pertaining to processing units that share main storage, that are controlled by the same control program, and can communicate directly with each other. See also Loosely Coupled.

TMC

Tape Management Catalog, an integral component of CA 1.

Tracking System

The Tracking System is designed to generate meaningful and useful information regarding the jobs in the user's shop.

turnaround time

The elapsed time between submission of a job and return of the complete output.

tutorial (HELP)

The Online System supports the HELP command which instructs the user on the Online System itself. Formats and explanations for all the Online System commands are available.

U

UCB

Unit Control Block.

usage code

An additional code used with the processing code to eliminate inadvertent reruns of reruns.

User Option Table

A table that contains the specific or ongoing system features selected by the user. The options permit tailoring of the system to the user's needs.

User Requirements Table (URT)

In CA Datacom/DB, describes the resources the application program needs for execution and specifies processing options. Each batch application program must be linked to User Requirements Tables which identify options for each of the tables to be accessed.

USI

See IEFUSI.

V

VCB

Volume Control Block.

virtual drive

In MSS, a direct-access storage device that does not physically exist. It exists logically on one or more staging drives.

VMF

Volume Master File. The tape management database of CA TLMS.

VSAM

Virtual Storage Access Method. The JEHF appears as a VSAM data set.

VSN

Volume Serial Number. Employed to uniquely designate a portion of an auxiliary storage device that is accessible to a single read/write mechanism.

W

WTO

Write-To-Operator. A system message generator that sends a message to the console operator.

WTOR

Write-To-Operator with Reply. A system message generator that sends a message to the console operator requiring a reply.

X

XREF

A reference to a symbol that is defined as an external name in another module.

Index

D

E

F

G

H

I

J

K

L

M

N

O

P

Q

R

S

T

U

V

W