

HourGlass



# Usage and Installation Guide

*Version 7 Release 1*

**Note**

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 103.

**First Edition (December 2013)**

This edition applies to Version 7 Release 1 Mod 0 of IBM® HourGlass (program number 5655-U59) and to all subsequent releases and modifications until otherwise indicated in new editions.

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## About this manual

This manual describes how to install and use HourGlass.

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### Organization

This document has these chapters:

**Chapter 1, “Introduction,” on page 1**

Provides an overview of HourGlass.

**Chapter 2, “Installing HourGlass,” on page 5**

Describes how to unload the tape and install HourGlass.

**Chapter 3, “Using HourGlass,” on page 23**

Discusses methods you can use to specify altered date and time values using HourGlass, and how to control and how to control the operation of HourGlass.

**Note:** This document talks about setting or altering “date and time” values. In fact, you do not have to set or alter both values at once. You can, if you wish, alter just the date, or just the time. So when you read “date and time” remember that it means “date and time or date or time”.

**Chapter 4, “Using the HourGlass Control Center,” on page 41**

Describes how to specify altered date and time values using ISPF dialogs available in HourGlass, known as the HourGlass Control Center (AGGCX).

**Chapter 5, “Managing control elements with AGGCXB and AGGCXI,” on page 67**

Describes how to manage control elements using AGGCXB (the HourGlass Control Center batch utility) And AGGCXI (the HourGlass Control Center for IMS application).

**Chapter 6, “Messages and abend messages,” on page 75**

Lists messages generated by HourGlass.

**Chapter 7, “Troubleshooting,” on page 99**

Discusses how to run environment-specific tests to verify the HourGlass installation and to ensure that the product is working properly

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### Summary of amendments for Version 7.1

These enhancements have been made to HourGlass for Version 7.1:

- Ability to set the HourGlass date-time for a CICS region using the HourGlass CICS Batch Time Management process.
- Validation of user date/time specifications that are input via JCL.
- New and improved messages generated by HourGlass enhancing usability and control.
- Ability to dynamically refresh the HourGlass active control element set to reflect the current state of the control elements maintained in the HourGlass Repository.
- Administer job schedule control elements using the HourGlass Control Center or batch program. Updates are coordinated in order to maintain data integrity.
- Ability to create and maintain IMS time settings from an IMS application using the HourGlass Control Center for IMS.

## Summary of amendments for Version 7.1

- Support for job schedule control elements with DB2<sup>®</sup> time requests.
- Support for CICS Transaction Server V5.1, z/OS V2.1 (including LE) and DB2 V11 is included in this release.
- A new HourGlass customization setting, STCKSYNC=Y|N, is provided to recognize and handle time requests originating from the MVS STCKSYNC service.
- HourGlass provides support for altered time in EXEC CICS START TRANSID(name) TIME(hhmmss), using the TIME(hhmmss) specification on the DELAY, POST or START TRANSID CICS API commands.

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## Chapter 1. Introduction

Many data processing installations have applications that contain time-sensitive logic—special processing that executes at certain intervals such as at the end of a week, month, or quarter. Until now, multiple system Power-On-Reset (POR) procedures were required to reset the MVS™ system clock to a test date and time, and then back to the current date and time. Setting the system clock in this manner affects not only the application being tested, but also other applications and components running on the system. Another drawback to the POR method is that only one test date and time can be in effect at a time.

HourGlass facilitates the testing of your time-sensitive applications by eliminating the POR procedures. Additionally, unlike the POR method, you may set as many altered date and time values as needed, and the altered values affect only the applications you specify. In other words, all other applications and system components such as your tape management system and system catalog are unaffected. With HourGlass, the testing of time-sensitive applications becomes simpler and less disruptive to your operation. So simple, in fact, that such testing becomes a normal day-to-day development activity.

Specifically, HourGlass allows you to temporarily alter the system date or time for one or more application programs to any date and time value supported by the MVS 64-bit time-of-day clock: 1900-01-01, 00:00:00.000000 (midnight) UTC through 2042-09-17, 23:53:47.370495 UTC.

The HourGlass product includes an Audit Trail Facility that aids in the identification of applications that request the system date and time. Audit trail reports display the frequency of requests, organized by job step, and show the date and time actually returned. The Audit Trail Facility can be used to track the job steps that must be tested for date or time compatibility. Later, it can be utilized to report on job steps making use of altered dates via the HourGlass product.

Incorporating HourGlass into your testing procedures can also help to ensure that your test environment is consistent regarding the dimension of time from one testing cycle to the next. This can make regression testing and the auditing of system changes easier and more reliable.

With HourGlass, you can adjust the time of day forward or backward from the current time by as much as 23 hours and 59 minutes. This facility can be used to run time-sensitive applications for users located in a time zone other than that of the data center in which the application runs. You can also simulate start times for specific processing steps as well as force the time to remain constant throughout the life of an application process.

**Note:** Setting date and time values in the past (that is, to a value prior to the current date and time), while extremely useful in a number of situations, may be undesirable at your site due to production control and auditing considerations. If your site prohibits the setting of date and time values in the past, contact Technical Support for a zap to implement this restriction.

HourGlass intercepts all system time-of-day requests that internally issue an SVC 11 instruction (equivalent to the TIME macro with the LINKAGE=SVC parameter) or requests to the PC Time and STCKSYNC system services (equivalent to the

## Introduction

TIME macro with the LINKAGE=SYSTEM parameter). These application-oriented interfaces are commonly used by most software products and programming languages to retrieve the date and time from the operating system.

A new HourGlass customization setting, STCKSYNC=Y|N, is provided in the AGGCUSTM program in the HourGlass SAGGSAMP library dataset. This setting can be used to control enablement or disablement of the HourGlass STCKSYNC support feature. The default setting is STCKSYNC=N. The AGGOPTS program (Options List Utility) has been enhanced to display the status of the STCKSYNC customization setting. The AGGVRFY program (install verification job) has been expanded to provide verification for the HourGlass STCKSYNC support feature. The results of both a 64-bit (STCK) STCKSYNC and a 128-bit (STCKE) STCKSYNC\* time request are displayed. Modifications have been made to the AGGLSPC program (TIME LINKAGE=SYSTEM Support) to recognize and handle time requests originating from the MVS STCKSYNC service.

**Note:** This change only addresses the date and time value returned from the STCKSYNC service request that may be modified by HourGlass. The ETRID value and the CTNID value returned from the STCKSYNC service request are not modified by HourGlass in any way.

HourGlass does not automatically intercept time-of-day requests made via the Store Clock (STCK) instruction since the STCK instruction is purely a hardware function. Nevertheless, HourGlass is able to intercept time-of-day requests when made from one of the several products that normally use the STCK instruction, for which a product-specific interface has been developed. Such interfaces are available for several products including DB2, Enterprise Cobol for z/OS®, Enterprise PL/I for z/OS, and others. For other products containing the STCK instruction for which you have the source, you can reassemble the module using a supplied STCK macro. If the module source is not available, or a module reassembly is undesirable, the STCK instructions in the load module can be patched to allow interception and processing by HourGlass.

HourGlass can be used in both the batch and online environments. Full support for IMS message regions (online IMS) and CICS regions is provided. In an IMS online environment, all transactions running in a message region or group of message regions can receive an altered date and time value that is common to all transactions in the region or group. This is called region-level or global-level control.

Alternatively, individual users can override the region-level date and time value and receive a date and time value unique to their userid. This is called user-level control. Both global-level and user-level control are supported as well in the CICS Transaction Server product, and DC COBOL environments.

In the IMS online environment, HourGlass does not provide support for altering the MFS date keywords, but does provide support for setting the HourGlass-altered date and time value in the IMS IOPCB. See the HourGlass SAGGSAMP library member IMSIOPCB for further information.

In the DB2 environment, HourGlass provides altered date and time values for time requests made via the DB2 special registers CURRENT DATE, CURRENT TIME and CURRENT TIMESTAMP as well as for inserts of DATE, TIME, or TIMESTAMP columns for which no value is specified, and are defined with the "NOT NULL WITH DEFAULT" attribute.

---

## Setting the date and time values

You can set the HourGlass date and time values for a batch job in one of four ways. In the most straightforward method, you add one or two DD statements, specifying the date or time, to the JCL step. You can also change the job statement to affect the entire job.

Using the second method, you can set the dates interactively, using a series of ISPF dialogs, with no JCL changes required. This is the best method for system testing—it is very flexible and provides wildcard capabilities. However, this method does not require a deliberate action to alter a date as the JCL change does. Use the HourGlass Control Center to set dates using ISPF dialogs.

The third method allows for system testing of one or more multi-step jobs to create a continuous 'rolling time' between jobs and job steps. The Scheduling Facility allows a 'schedule' to start at any requested date and time. All date and time requests for any job in the schedule receive a date and time relative in time to this requested date and time.

Lastly, for sites with remote users, the hard-coded date and time method may be useful. In this method, jobs with names matching the listed prefixes automatically receive altered dates and times. This technique is implemented via the HourGlass customization process.

---

## Introducing the HourGlass Repository

The HourGlass Repository is a new feature in IBM HourGlass Version 6, Release 1.0. The Repository and its accompanying applications replace the HG CLIST that was supplied in previous releases of the HourGlass product. The Repository and its supporting software provide about the same functionality that the HG CLIST did previously, but with several enhancements:

- The Repository is designed to make HourGlass date and time settings persistent. If HourGlass or the underlying operating system terminate for any reason, simply restart HourGlass and it will resume its processing from the point of termination, with no loss of settings.
- The limits on the number of settings of various types that were imposed by the HG CLIST previously have been eliminated in the Repository and its supporting software. The HG CLIST, for example, limited the number of batch or TSO entries that could be supported to one thousand entries. The Repository, on the other hand, can contain any number of entries of various types.

Since all the ENABLED entries in the Repository are built into a table of internal information, which occupies storage in the Common Service Area (CSA), care should be taken to manage the number of ENABLED Repository entries so as to limit the amount of CSA storage utilized. The counts of various entry types, and the amount of storage they occupy in the internal settings table are displayed in the MVS system log at HourGlass startup, and again whenever the internal settings table is refreshed.

- The date and time specifications managed by the HourGlass Repository are now searched in order by precision. In previous HourGlass releases, the HG CLIST added new entries to the end of its table of entries and then searched the table from top to bottom, stopping at the first matching entry. HourGlass did not handle the case where there might happen to be an entry further down in the table that more precisely matched the time request.

In HourGlass Version 6 Release 1.0 onwards, the internal table of entries is built from the contents of the Repository dataset. The entries are organized in the

## Introducing the HourGlass Repository

table from greatest precision to least precision. This feature minimizes unintended matches that could occur in previous releases of the HourGlass product.

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## Chapter 2. Installing HourGlass

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### Software requirements

HourGlass requires:

- MVS/ESA Version 4.2.2 or later.
- ISPF Version 3 (5685-054) Release 3 or later.
- An APF Authorized Library from which to activate the software.
- Approximately 185K of available Extended CSA (ECSA) is required to install all options. With STCLINK=N, subtract 26K; with STATS=N, subtract 12K. See “Run the customization job” on page 6 for details.

---

### Installation requirements

To install HourGlass, you need:

1. One 3590 cartridge tape drive to download the HourGlass installation data.
2. The equivalent of four cylinders of 3380 DASD.
3. Authority to run the IBM IEBCOPY Utility program.
4. Authority to run the IBM AMASPZAP Utility to customize HourGlass for your site. AMASPZAP is invoked internally by the HourGlass customization procedure.
5. If installing IMS features, authority to create a new tran code and generate PSBs and MFS.
6. If installing CICS features, authority to define and install new resources (such as programs and transactions) in the CICS regions.
7. The HourGlass install tape.

---

### Migration notes

When migrating from any prior version of HourGlass:

- Review member AGG@IX71 in the HourGlass SAGGSAMP library to familiarize yourself with all examples and utilities.
- Review member AGGLANG in SAGGSAMP library for any newly supported language environments applicable to your installation.
- Always terminate an execution of HourGlass with the same level of the AGGINSTL program from which it was originally initialized.
- When creating new, or modifying existing, startup PROCS (AGGON, AGGOFF, AGGLINK) reference the new execution libraries.

### Migrating from Version 5.2

When migrating from Version 5.2 of HourGlass, consider this point:

- If the optional HourGlass Repository feature is to be implemented, see the “AGGREPO\$” members in the HourGlass SAGGSAMP library for information about how to allocate and initialize the Repository dataset.

## Installation steps

### Perform basic installation process

HourGlass is installed via the SMP/E product. Please refer to the *HourGlass Program Directory* for detailed information about the basic installation procedures for HourGlass.

### Run AGGIREP\$ to set up HourGlass Repository

Perform the initial setup of the Repository dataset. Customize and execute the SAGGSAMP(AGGIREP\$) member to allocate and initialize the HourGlass Repository dataset.

Stop and restart the HourGlass product to perform the initial integration of the HourGlass Repository into the HourGlass product. Subsequent updates made to the Repository dataset may be brought online using the "dynamic refresh" feature, without affecting the operation of the HourGlass product.

**Note:** Be sure to modify job SAGGSAMP(AGGON) and proc SAGGCLIB(AGGCX) to configure them for the defined database. It is important that both AGGON and AGGCX point to the same Control Center repository database.

The HourGlass Repository dataset cannot be shared by multiple instances of HourGlass running on multiple LPARs. Each instance of HourGlass, running in its own LPAR, must have its own unique Repository dataset.

### Run the customization job

To customize HourGlass for your installation, one or more customization zaps must be applied to the HourGlass load modules. For your convenience, these patches are generated automatically and applied by an HourGlass installation job.

**Note:** HourGlass allows you to define the exact jobs that are eligible to have their dates and times altered. This provides maximum protection for your production systems by preventing jobs from inadvertently asking for altered dates. Eligibility can be based on the job name (leftmost 1 to 8 characters) or the job class. Most often, prefixes or job classes for application programmer jobs are specified here, for example, TEST\* or DEV\*. For details, see JOBPREF and JOBCLASS in "Customization options" on page 7.

#### AGGCUSTM

Edit member AGGCUSTM in the HourGlass SAGGSAMP library dataset. Add an appropriate job statement. Alter the STEPLIB DD statement to point to the HourGlass SAGGLOAD library. Save and submit this member. Exit the dataset when finished.

The customization job produces a report showing the options you have specified. Check the report to ensure that the options are correct. Once the AGGCUSTM job has successfully completed, proceed to the next installation step.

**Note:** You can modify and re-execute AGGCUSTM job as necessary.

#### Sample JCL for AGGCUSTM:

```
//STEP01 EXEC PGM=AGGCUST
//STEPLIB DD DSN=AGG.SAGGLOAD,DISP=SHR
//SYSUDUMP DD SYSOUT=*
```

```
//REPORT DD SYSOUT=*
//SYSPRINT DD SYSOUT=*
//SYSLIB DD DSN=AGG.SAGGLOAD,DISP=SHR
//CUSTJOB DD DSN=&&ZAPCTRL,DISP=(,PASS),
// UNIT=SYSDA,SPACE=(TRK,(1,1))
//SYSIN DD *,DCB=BLKSIZE=80
DDPREF=HG
JOBPREF=TEST*
JOBPREF=DEV*
JOBCLASS=ABCD
TSO=NO
```

## Customization options

The SYSIN control statements can be customized using these parameters:

### DDPREF

Edit the DDPREF=HG control statement, if desired, replacing 'HG' with a two-character DDname prefix to be used for the date and time DD statements. Enter DDPREF=NOPREF to disallow the specification of HourGlass-altered date and time values via DD statements, and also via the programmer name field of the JOB statement.

### JOBPREF

It is recommended that you use the JOBPREF control statement during the HourGlass evaluation period. Thereafter, use JOBPREF to limit access to HourGlass. You can create a maximum of 100 JOBPREF=xxx control statements to identify jobs, started tasks, and TSO job names eligible for HourGlass. Only job names that begin with one of the JOBPREF prefixes are eligible to have their internal dates and times altered.

An asterisk (\*) denotes a wildcard meaning "zero or more characters" and may be specified anywhere in the prefix. A question mark (?) denotes a wildcard meaning "exactly one character" and may be specified anywhere in the name. For example, specifying JOBPREF=TEST denotes that a job named TEST is eligible to receive altered dates, whereas specifying JOBPREF=TEST\* denotes that all jobs whose names start with TEST are eligible.

The internal dates are modified only when a JOBPREF match occurs AND the jobstep requests an altered date and time. Jobnames specified in the HourGlass Control Facility must conform to the JOBPREF specifications in order to receive altered dates. To allow all jobs to be eligible to HourGlass, use JOBPREF=\*

**Note:** It is important to include IMS message region names when designing your JOBPREF criteria.

### JOBCLASS

Use the JOBCLASS control statement if you wish to limit by job class the jobs eligible to use HourGlass. Only jobs running in one of the specified job classes are allowed to have their internal dates and times altered.

You can specify a maximum of 36 job classes on the JOBCLASS=xxx control statement. For example, JOBCLASS=ADI4 makes classes A, D, I, and 4 eligible for HourGlass. The internal dates are modified only when a JOBCLASS match occurs AND the jobstep requests an altered date and time. To allow all jobs to be eligible to HourGlass, code JOBCLASS=\*

**Note:** It is important to include IMS message region classes if these tasks are not Started Tasks.

## Customization options

### USERID

For an additional level of security, you may include one or more USERID=xxxxxxx control statements that is validated against the userid that submitted the batch job, or is associated with a started task or TSO user. If any of these control statements are present, HourGlass allows altered dates and times only for jobs that meet all other criteria and have been submitted by one of the userids listed. Userid prefixes may contain an asterisk as the last character of the prefix.

### INCLUDE

AREA (CSA,MLPA,LPA) are by default excluded from being intercepted by HourGlass. This prevents system modules such as the tape management system from receiving altered dates. If you desire a particular module in COMMON to receive an altered date and time, add an INCLUDE PGM=xxxxxxx control statement, where xxxxxxxx is the program name. You may add a maximum of 20 control statements.

### EXCLUDE

Some programs are excluded automatically by HourGlass. These include IMS logging modules, IMS DBRC modules, and SyncSort SMF record cutting modules. If you want to prevent other modules from receiving altered dates and times, you may specify up to 300 EXCLUDE PGM=xxxxxxx control statements.

**Note:** This operand is not supported under MVS/XA.

**TSO** If you would like to prevent TSO users from receiving altered dates, specify a TSO=NO control statement. The default is TSO=YES.

**DATE** To set a hard-coded date that is passed to all eligible jobs, add a DATE=yyyy-mm-dd control statement. (This method does not require the use of a Date DD statement.)

For example:

```
HOURLASS DATE ==> 2012-01-01 (YYYY-MM-DD)
```

See Chapter 3, "Using HourGlass," on page 23 for more details and examples.

**Note:** Use this feature only when all eligible jobs are to automatically receive the same date. An example is for a QA system test. Use the JOBPRES= parameter to specify prefixes for jobs that automatically receive the altered date.

To run a job step in which the date always remains the same, even if the time passes midnight, specify a hard-coded time using the TIME= parameter and a JCL date override.

**TIME** To set a hard-coded time offset that is passed to all eligible jobs, add a TIME=dhmm control statement. (This method does not require the use of the Time DD statement.)

For example:

```
HOURLASS TIME ==> P1200 (DHHMM)
```

See Chapter 3, "Using HourGlass," on page 23 for more details and examples.

**Note:** Use this feature only when all eligible jobs are to automatically receive the same time offset. An example would be for all jobs run on a



remote site in a different time zone. Use the `JOBPRE2=` parameter to specify the prefixes for jobs that receive the altered time.

### JOBPRE2

You can optionally create up to ten `JOBPRE2=xxx` control statements to identify jobs eligible for hard-coded dates and times. Only jobnames that begin with a `JOBPRE2` prefix have their internal date and time revised automatically to hard-coded values without the need for a Date or Time DD statement. The coding rules for this keyword are the same as those for `JOBPREF=`. To allow all jobs to receive the hard-coded date and time, code `JOBPRE2=*`.

### STATS

An Audit Trail Facility is provided with HourGlass. Use of the facility is optional; by default, no statistics are collected. If activated, the facility collects statistics on job steps using altered dates or times and optionally, all job steps that request the system dates and times. To activate the facility, enter `STATS=x` where valid values for `x` are:

- A** Collect statistics for all jobs. `STATS=A` is required for `WTO=Y` and `CUTSMF=Y`.
- H** Collect statistics only for jobs receiving HourGlass altered dates and times. `STATS=H` is required for `WTO=Y` and `CUTSMF=Y`.
- N** Do not collect statistics.

It is recommended that you activate statistics gathering using option A for initial application analysis. Afterwards, use option H for internal reporting on all uses of altered dates via the `WTO` or `CUTSMF` feature.

### STATSTABLE

If you activated the Audit Trail Facility by specifying `STATS=A` or `STATS=H`, an internal table is kept in extended CSA to temporarily store the statistics. The default size of this table is 12K. Each entry is 92 bytes and holds information for one active job step. If HourGlass runs out of available entries, stats are not collected for that job step and therefore, no `WTO` or `SMF` record is produced. To alter the size of this table, code `STATSTABLE=nnn` where `nnn` is the number of K-bytes to allocate for the table in the range of 0 to 999.

**Note:** Increase this parameter accordingly if you have more than 125 batch initiators. For example, 200 initiators \* 92 bytes per entry = 18K.

**WTO** If you activated the Audit Trail Facility by specifying `STATS=A` or `STATS=H`, and the provided `SMF` exit `AGGACTRT` is implemented, HourGlass can write a message to the job log for each batch step that receives an altered date and time. If this feature is desired, code `WTO=Y`. Otherwise, code `WTO=N`. The default value in `AGGACTRT` is `WTO=Y`. `AGGCUSTOM` sets the value `WTO=N` by default.

**Note:** Changes to this option alter the contents of module `AGGACTRT`. If you have copied this module into `LPALIB`, re-copy it after `AGGCUSTOM` is run.

### CUTSMF

HourGlass writes the statistics records to `SMF` using the `SMF` record type specified using the `SMFTYPE` parameter. If a permanent audit trail is

## Customization options

desired, specify CUTSMF=Y; otherwise specify CUTSMF=N. The default value in AGGACTRT is CUTSMF=Y. AGGCUSTOM sets the value CUTSMF=N by default.

**Note:** Changes to this option alter the contents of module AGGACTRT. If you have copied this module into LPALIB, re-copy it after AGGCUSTOM is run.

### SMFTYPE

If STATS=A or STATS=H is specified, CUTSMF=Y is specified, and the provided SMF exit AGGACTRT is implemented, HourGlass writes statistic records to SMF. Specify SMFTYPE=nnn where nnn is the three-digit user SMF record type between 128 and 255. The default value in AGGACTRT is SMFTYPE=200. AGGCUSTOM sets the value SMFTYPE=200 by default.

**Note:** Changes to this option alter the contents of module AGGACTRT. If you have copied this module into LPALIB, re-copy it after AGGCUSTOM is run.

**STC** To prevent HourGlass from altering the date and time for started tasks (even if the required DD statements are included), specify STC=NO. This provides an extra level of protection from accidental use of altered dates. Note that many IMS message regions are started tasks.

### IMUSER

This customization setting is obsolete. HourGlass date and time settings for IMS message regions are now specified using either HourGlass DD statements or the HourGlass Control Center (AGGCX) facility.

### CICSTEST

If you are using the HourGlass CICS Global Control component (HGCC), you may choose a different algorithm for the CICS eligibility test. Specify CICSTEST=1 or 2 or 3 to select one of these algorithms:

**1** "First Test"

This is the default algorithm shipped with HourGlass. CICS User IDs, Transaction IDs, and Terminal IDs are tested in that order but only if valid selection criteria have been specified for any one category. Only one category is tested—the first one containing valid criteria. The result determines eligibility of the current transaction to receive the HourGlass-altered date and time.

**2** "AND Test"

Multiple categories of selection criteria (that is, User IDs, Transaction IDs, Terminal IDs) may be specified. The CICS transaction must pass the test for all specified categories to be eligible to receive the HourGlass-altered date and time.

**3** "OR Test"

Same as for the "AND Test" except if any specified category test is passed, the CICS transaction is eligible to receive the HourGlass-altered date and time.

### LEGACYDB2QUALIFICATION

Beginning with IBM HourGlass Version 6, Release 1.0, DB2 time requests are qualified by different criteria than they were in previous releases of HourGlass. In earlier product releases, time requests were qualified by MVS JOBNAME, USERID, or both for batch jobs and started tasks, and by

USERID for ISPF/TSO SPUFI. In IBM HourGlass Version 6, Release 1.0, DB2 time requests for all environments are qualified by any combination of the following:

- DB2 Sub-System ID
- DB2 Plan Name
- DB2 SQLID

For those HourGlass users who prefer to continue using the older qualification scheme, the LEGACYDB2QUALIFICATION customization option is provided.

This customization option allows HourGlass users to select either the old-style DB2 qualification scheme, called "Legacy DB2 Qualification" or the new-style DB2 qualification scheme, for use in their HourGlass installation. To use the Legacy DB2 Qualification scheme, specify LEGACYDB2QUALIFICATION=YES.

The default specification is LEGACYDB2QUALIFICATION=NO.

### STCLINK

A started task is activated in order to automatically support TIME LINKAGE=SYSTEM time requests. The default name of this started task is AGGLINK. To alter this name, specify STCLINK=name where name is the 1 to 8 character started task name. If you do not wish to activate this support, specify STCLINK=N.

**Note:** This option requires MVS/ESA 4.2.2 or later, and is required for DB2, LE/370, and CICS SVC 11 support.

HourGlass starts and stops this task automatically as it is activated and disabled. It is not recommended that you cancel this task. If you wish to stop LINKAGE=SYSTEM support without shutting down SVC11 support, you may issue the MVS stop command (P taskname). To restart it again later, issue the MVS start command (S taskname).

### STCKSYNC

This setting can be used to control enablement or disablement of the HourGlass STCKSYNC support feature. The default setting is STCKSYNC=N.

### PASSWORD

The PASSWORD customization statement is obsolete and should be removed from your customization statements.

### RLOCNAME

If you plan to use the CICS transaction HGDR, specify a maximum of sixteen characters to identify the DB2 remote location name to which the AGGDR program connects. The DB2 Special Registers are retrieved from this location. This value is inserted into the AGGDR program by the AGGCUSTM process.

### CICSTINT

Use CICSTINT to enable the AGGICGX program on CICS user exit point XICEREQ. CICSTINT=0|1|2.

If the CICSTINT customization parameter value is set to "1" or "2" in the HourGlass customization process, the AGGICGX program is enabled, if not already enabled. If CICSTINT=0 (zero) is specified, or the CICSTINT specification is omitted entirely (the default), the AGGICGX program is not enabled.

## Customization options

The significance of the CICSTINT specifications are as follows:

### **CICSTINT=0**

The AGGICGX exit program is not enabled in CICS.

### **CICSTINT=1**

MODE1: The original time value specified on the CICS command is assumed to have been calculated based on the current system time, and the intent is to apply the HourGlass time offset so that the CICS command time is modified (PLUS or MINUS) by the HourGlass time offset.

### **CICSTINT=2**

MODE2: The original time value specified on the CICS command is assumed to have been calculated from a base time that was already altered by HourGlass (for example, CICS ASKTIME result), and the intent is to post-fix the CICS command time to counteract the HourGlass time offset, so that the CICS command time reflects the actual system time, rather than an HourGlass-modified time value.

**Implementing STCKSYNC support:** The following steps are only necessary if you intend to implement the STCKSYNC feature.

To complete the implementation of this function, after installation by SMP/E, please perform the following steps:

1. Ensure that the new/updated modules and parts are copied to their respective execution libraries.
2. Following the procedure detailed in the SAGGPINT(AGG\$SS) procedure, install the HourGlass integration patch for STCKSYNC support. This will require at least one IPL of MVS.

The HourGlass SAGGPINT distribution library contains the HourGlass Integration Patches, all the AGG\$\* jobs are located here.

For complete details see member AGG\$SS in the HourGlass SAGGPINT distribution library. For systems implementing STCKSYNC (executing AGG\$SS).

### **Warning**

**Note:** An improperly configured or modified nucleus may cause a catastrophic failure in the IPL of the z/OS system.

- a. The sample SAGGPINT(AGG\$SS) job copies the MVS nucleus modules into the specified target load library and makes the modifications necessary for HourGlass STCKSYNC support.
- b. It is strongly recommended that the Hourglass-modified nucleus module be created under an alternate nucleus suffix number. See the description of the NEWSUF= parameter in the SAGGPINT(AGG\$SS) JCL procedure for further information. Having a procedure in place to effect fall-back to the original MVS nucleus from the alternate nucleus modified or created by the SAGGPINT(AGG\$SS) procedure is strongly recommended.
- c. Even though only the IEANUC0x nucleus module is actually updated by this procedure, the corresponding IEANUC1x and IEANUC2x modules are also copied to the specified target library in order to provide a complete set of nucleus modules with the specified nucleus suffix number.
- d. After applying the HourGlass STCKSYNC integration patch, the set of nucleus modules created or modified by this Procedure, IEANUC0x, IEANUC1x and IEANUC2x, need to be copied back to 'SYS1.NUCLEUS'. This can be done via another IEBCOPY job or via ISPF 3.3 (copy utility).

- e. Re-IPL the z/OS system using the patched alternate nucleus above. See b. above. [XXX: What is "b"?]
3. Add a "STCKSYNC=Y" customization setting specification to your HourGlass customization process. Re-execute the HourGlass customization process and restart HourGlass via the AGGOFF/AGGON command sequence.
4. Verify the functionality of the HourGlass STCKSYNC support by executing the AGGSAMP(AGGBVRFY) procedure.

## Make the ISPF interfaces available

### REXX Edit

One method of entering a Date DD statement is to type the statement and specify the date in Julian format, where ddd is the three-digit day (1 to 365). An easier method, however, may be to use the HourGlass REXX ISPF Edit Macro dialog and associated ISPF dialog. These options are provided as an alternative to help you generate the proper Date DD statement. Both dialogs prompt for the date in YYYY-MM-DD format and automatically generate the HourGlass DD statement. The Edit Macro places the generated statement directly in your JCL while the CLIST displays the DD statement to use. See "Using REXX exec AGGDD" on page 26 for details.

To make these dialogs generally available:

1. Edit members AGGDD and AGGDDNAM in the SAGGEXEC library dataset.
2. Follow the directions to alter the ISPEXEC LIBDEF and CALL statements to reference the HourGlass SAGGEXEC library and SAGGLOAD library, respectively.
3. Copy these members into any dataset concatenated to the SYSPROC DD of the TSO logon procedures. Member AGGDD can also be placed in the SYSEXEC DD concatenation. Do not add the entire SAGGEXEC library to the SYSEXEC concatenation (however, it can be on the SYSPROC concatenation).

### HourGlass Control Center

HourGlass includes an ISPF Dialog Manager application, the HourGlass Control Center for TSO/ISPF (AGGCX). Use the Control Center to create date and time settings for selected jobs with no JCL changes required. The HourGlass Control Center has two modes:

1. User Mode, which allows creation and management of settings for jobs owned by the current TSO user.
2. Administrator Mode, which allows creation and management of settings for any job.

The date and time values set via the HourGlass Control Center can be overridden via JCL for specific jobs or steps. Please refer to SAGGSAMP library members AGGCXT\* for further information about how to implement the HourGlass Control Center application. See Chapter 4, "Using the HourGlass Control Center," on page 41 for information on how to use the Control Center.

## APF authorization for HourGlass

To activate or deactivate HourGlass, an APF authorized library is required. Either make the HourGlass SAGGLOAD library APF Authorized, or copy the modules from SAGGLOAD library to an APF Authorized Library. Once HourGlass is activated, application programs and JCL procedures do not need additional JCL to reference the HourGlass load library.

### Prepare the LINKAGE=SYSTEM or Audit Trail Facility

If statistics gathering was chosen during the customization, an SMF exit must be activated either to write the statistics to SMF or to issue the job log message reporting on altered date and time usage. The SMF exit name invoked is IEFACRT, and the HourGlass module name is AGGACTRT (which should be copied to a LINKLST Library). Note that AGGCUSTM options WTO=, SMFTYPE=, and CUTSMF= alter module AGGACTRT, and a fresh copy should be placed in LINKLST after these AGGCUSTM options are changed. The easiest way to activate the exit (if you are using MVS Version 5 or later) is to place an EXIT ADD statement in your PROGnn member of SYS1.PARMLIB. Activation can be performed anytime by issuing the MVS operator command T PROG=nn, where nn is the two-digit suffix of the member name in PARMLIB. The suggested control statement is:

```
EXIT ADD EXITNAME(SYS.IEFACRT) MODNAME(AGGACTRT) ABENDNUM(1)
```

**Note:** If your SYS1.PARMLIB(SMFPRMnn) member contains a SUBSYS parameter that contains JES2 and EXITS(IEFACRT), then the SYS.IEFACRT shown previously should state SYSJES2.IEFACRT.

For MVS versions prior to Version 5, member IEFACRT in SAGGSAMP library contains a sample IEFACRT exit that calls the HourGlass AGGACTRT exit and your existing IEFACRT exit.

If LINKAGE=SYSTEM support was chosen during customization, the started task JCL must be made available in a JES Procedure Library. Default JCL can be found in member AGGLINK of SAGGSAMP library. Follow the directions in AGGLINK to customize the JCL for your site.

It is recommended that you prevent this task from getting cancelled. Add a PPT entry to the appropriate SCHEDnn member of SYS1.PARMLIB (for example, SCHED00). A sample entry contains:

```
PPT PGMNAM(AGGLSSTC) KEY(8) PRIV NOCANCEL SYST NOSWAP
```

### Activate HourGlass

To activate HourGlass, run the JCL supplied in member AGGON, in the HourGlass SAGGSAMP library. This procedure dynamically installs the HourGlass system interfaces:

- The AGGON procedure installs the HourGlass support for the SVC11 service, and subsequently initiates the AGGLINK procedure (also provided in the SAGGSAMP library).
- The AGGLINK procedure installs and monitors the HourGlass PC Time service support.

Once installed, HourGlass continuously monitors time requests that utilize any of the interfaces supported by HourGlass.

**Note:** HourGlass needs to be reactivated after each IPL of the system, since stopping and restarting the operating system effectively removes the HourGlass interfaces from the system. Execute the AGGON procedure as described above.

To deactivate HourGlass, run the JCL procedure supplied in member AGGOFF, in the HourGlass SAGGSAMP library. This JCL completely removes HourGlass from the host system.

## Verify the install

To verify that the install was successful, run the sample job from member AGGBVRFY in SAGGSAMP library. This job contains a date parameter override of February 5, 2000. Modify the HourGlass DD statements to match the DD prefix you specified in the HourGlass customization process before submitting. After executing, the job log contains a display of the current date and time. If successful, the JCL should display the specified date, and the time should be one hour ahead of the actual time, as follows:

```
//STEP01 EXEC PGM=AGGBVRFY
//STEPLIB DD DSN=AGG.SAGGLOAD,DISP=SHR
//SYSUDUMP DD SYSOUT=*
//HG100036 DD DUMMY February 5, 2000
//HGP0100 DD DUMMY Plus one hour
/*
```

---

## CICS setup

Setting up HourGlass for use with CICS Transaction Server is optional. You can make your command level CICS applications eligible to receive an altered date and time for EXEC CICS ASKTIME (including ASKTIME ABSTIME) commands, LE/370 Date/Time functions, COBOL ACCEPTs, and DB2 Date/Time/Timestamp SQL accesses.

HourGlass provides two levels of control in the CICS environment:

1. Global Level or CICS Control causes a single date or time specification to be applied only to groups of users, terminals, or transactions within the CICS region. (DB2 SQL ignores global terminal name specifications.)
2. User Control provides each individual user with the ability to specify an HourGlass date or time that is unique to the user's session. Dates and times entered with User Control always take precedence over Global Control settings.

You can run HourGlass for CICS with currently available versions of CICS Transaction Server. Two SAGGSAMP library members (AGGCRD11 and AGGCRD13) are supplied to define the transactions, programs, mapsets, and files.

### Note:

1. If your CICS TS region specifies RENTPGM=PROTECT, run member AGGAPINL in SAGGSAMP library.
2. If your CICS is using LPA=YES as a SIT parameter, you must specify the appropriate PRVMOD=SIT if transaction HGFE is used. For CICS TS, PRVMOD=DFHAPIN.

This table summarizes the CICS requirements:

Transaction Codes	Programs	Mapsets	Usage
HGCC	AGGCC	HGCCMS	Specify Global Control Values
-----	AGGCCGX		
HGUC	AGGUC	HGUCMS	Specify User Control Values
HGCV	AGGCCVR		Verify Installation
HGFE	AGGFTCH		Enable EIB Priming facility

## CICS setup

Transaction Codes	Programs	Mapsets	Usage
HGFD	AGGFTCH		Disable EIB Priming facility
-----	AGGXPCF		
-----	AGGXTRUE		
HGSC	AGGSC	HGSCMS	HourGlass CICS Settings Control Facility
HGSU	AGGSC		HourGlass CICS Settings Control Facility
HGAE	AGGFTCH		Enable the CICS Audit Trail Facility
HGAD	AGGFTCH		Disable the CICS Audit Trail Facility
-----	AGGAUDIT		
-----	AGGSEC		
-----	AGGCSQL		
HGDL	AGGDL		Verify CICS/DB2 Functionality For Local Access
HGDR	AGGDR		Verify CICS/DB2 Functionality For Remote Access
HGCB	AGGCC		Executes the AGGCC program for the Batch Time Management feature.

### Notes:

- Additional entries may be required for optional HourGlass CICS features.
- Ensure that the modules are in a load library contained in the CICS STEPLIB and DFHRPL DD concatenations.
- Transactions HGFE and HGFD can be used to pre-set the CICS EIB date and time at the beginning of each transaction without requiring an EXEC CICS ASKTIME.
- Transactions HGSC and HGSU allow an installation to create snapshots of Global and User Control CICS settings, and save them to a VSAM KSDS. Add the //AGGSCDS DD containing the Setting Control Dataset to the CICS JCL. This dataset is used by the HGSC transaction to view, update, save, and restore various configurations of date and time settings.
- The HourGlass HGCB transaction for CICS

HourGlass provides a CICS transaction to dynamically modify the date and or time setting. The modified date/time setting is passed into the HourGlass internal processing via a sequential dataset defined in CICS as a transient data queue. The TD Queue is AGGB and is associated to DDname AGGDATE. The date/time specs format is as follows:

```
DATE=yyyy-mm-dd
TIME=dhmm
```



where the DATE and TIME specifications follow the same convention as in the HourGlass //DD format.

An asterisk in column 1 is treated as a comment.

A sample batch job AGGHGCB\$ is provided in SAGGSAMP to dynamically modify the setting without logging into the CICS region. This sample job uses the MVS "modify" command to pass the invocation of the HGCB transaction in the CICS region. The sample job has two IDCAMS steps, as follows:

1. Copy the DATE/TIME setting from SYSIN to the sequential dataset that is defined as the TD Queue in the CICS region.
2. Submit into the internal reader a second batch JOB that only contains the "modify" command. The second job is necessary to ensure the TD Queue gets updated before the "modify" command is processed.

For more details about these transactions, see "Using HourGlass with CICS" on page 27.

## Automatic startup

HourGlass CICS provides an optional but recommended Automatic Startup capability during CICS initialization. Reasons to use this facility include:

- You have a CICS region dedicated to a group of users running in a different time zone. You want the date and time seen by this group of users to always reflect the local date and time at their site. You can use Automatic Startup to specify the time offset between sites each time the CICS region is recycled.
- You want to use User Control but do not want to give users authority to use the Global Control transaction, HGCC. User Control requires HourGlass CICS to have been previously initialized. Initialization can be done either by using transaction HGCC or Automatic Startup. Use of Automatic Startup allows you to initialize HourGlass CICS without giving users access to the HGCC transaction.
- To make LE/370 and LINKAGE=SYSTEM support available immediately at CICS startup.
- To automatically start the CICS Audit Trail Facility at CICS Startup.

## PLT programs

Three PLT programs are provided:

- AGGPLT activates HourGlass in the CICS region and optionally, reads a file in the CICS Startup JCL, allocated via the //AGGDATE DD statement, that can specify the global date and time. You can use the AGGDATE DD statement to coordinate a common date among several CICS regions. See SAGGSAMP library member AGGDATE for details. Use of this PLT program is recommended.
- AGGFTCH enables LE/370 and LINKAGE=SYSTEM support. AGGFTCH also activates the CICS Audit Trail Facility if module AGGAUDIT contains INIT=Y. Use of this PLT program is recommended.
- AGGSC activates a settings group named STARTUP. The STARTUP settings group must be previously created via the HGSC transaction, and is used to initially set the Global and User Controls in the CICS region. AGGSC must run after AGGPLT.

**Note:** Users running the AGGFTCH program in their PLTPI list must include the AGGPLT program in the PLTPI list, preferably just ahead of the AGGFTCH program.

## Installing automatic startup

To install automatic startup:

## Installing automatic startup

1. Add the IBMAGG71 CEDA group to the list of groups automatically installed during CICS initialization.  
Please review the SAGGSAMP library members AGGCRD11 and AGGCRD13 for further details.
2. Add an entry for AGGPLT, AGGFTCH, and AGGSC (optional) to the PLTPI table. For CICS TS, these entries must follow the DFHDELIM entry. AGGPLT must execute during stage 3 of CICS initialization processing and before AGGSC (if specified). All entries should follow any entry already in the PLT for modules DSNCOM1 or DSN2COM0.
3. Optionally, add the AGGDATE DD statement to the CICS Startup JCL.
4. Recycle the CICS region to verify successful installation. HourGlass messages appearing in the CICS message log indicate a successful initialization.

## CICS Audit Trail Facility

Another optional feature, available as part of HourGlass CICS support, is the CICS Audit Trail Facility. Use this facility to track the activation and deactivation of HourGlass in a CICS environment, users changing date and time settings in CICS, and the various uses of date and time in user transactions.

Transactions HGCC, HGUC, HGSC, HGFE, HGFD, HGAE, and HGAD each produce audit records reflecting the changes made with those transactions. Additionally, the PLT programs AGGPLT, AGGFTCH, and AGGSC also produce records. The record layouts of these audit records are available in SAGGSAMP library member AGGAUDRC.

CICS Audit Trail records can be written to any CICS resource. Audit records are written by an audit exit that can be customized by the user. By default, the supplied audit exit writes all audit records to a TD Queue that is directed to a sequential file. To implement the CICS Audit Trail Facility, the Audit Exit program AGGAUDIT must be assembled. Follow the instructions provided in SAGGSAMP library member AGGAUDI\$ for details on this exit. Its purpose is to open the audit dataset, to write audit records to the audit dataset, and to close the audit dataset.

To enable the CICS Audit Trail exit at CICS startup time, enable program AGGFTCH at PLT time and modify the literal near the start of the AGGAUDIT exit to specify a value of 'INIT=Y'. The HGAE transaction enables the Audit Trail Facility at any time. The HGAD transaction disables the Audit Trail Facility at any time. Transaction HGFE or PLT AGGFTCH must be active to run the CICS Audit Trail Facility.

## CICS security

The HGCC and HGSC transactions contain options that you may not wish all users to access. An optional exit is provided that can be implemented to control access to each option. The exit gets control for each selected menu item, and can use any security system to grant or deny access. The default exit allows full access. See SAGGSAMP library member HGSEC\$ for details.

## CICS MRO considerations

HourGlass must be installed in every CICS region where transactions may be expected to receive an altered date and time. This is also true for Multiple Region Option (MRO) configurations.

When multiple CICS MRO regions are in use and HourGlass transactions are defined with unique transaction identifications in each region, it is possible via routing to set the HourGlass date in each region from within the Terminal Owning Region (TOR) without the use of manual routing via the CRTE transaction.

For each HourGlass transaction, you can use a unique numeric identifier to identify each CICS region. Use this identifier in the transaction PCT name, which is routed to the individual CICS Application Owning Regions (AORs). For example:

- TOR PCT entry HGCC routes to AOR1 PCT entry HGCC.
- TOR PCT entry HGUC routes to AOR1 PCT entry HGUC.
- TOR PCT entry H2CC routes to AOR2 PCT entry H2CC.
- TOR PCT entry H2UC routes to AOR2 PCT entry H2UC.

**Note:** When renaming HourGlass transaction codes, do not change the last two characters because HourGlass uses these characters internally.

As an alternative, date and time settings from one CICS region can be copied to one or more CICS regions to coordinate the settings across regions. SAGGSAMP library member AGGETDT contains a sample transaction program that can be customized and implemented to accomplish this task.

---

## IMS DC setup

Setting up HourGlass for use with online IMS transactions is optional. This section provides information on how to implement HourGlass in an IMS online Message Processing environment.

**Note:** Before starting, ensure that the AGGCUSTM JOBPREF=, STC=, and JOBCLASS= parameters are set appropriately.

HourGlass support for IMS has changed significantly in Version 6, Release 1. The way DD statements work in IMS message regions is unchanged. All time requests originating in a message region with an HourGlass date and time value specified via DD statements receive that JCL-specified altered date and time value as in previous versions. The AGGVIMS transaction and program, on the other hand, which were used in previous releases of HourGlass to set a userid-specific date and time value in an IMS message region, have been eliminated. As of Version 6, Release 1, you should use the HourGlass Control Center (AGGCX) application to create settings for IMS time requesters that are specific to userids or regionids. The AGGCX application also provides full support for control values containing placeholder characters (?) and for generic values (values containing a rightmost "\*" character).

---

## HourGlass IMS setup

A new HourGlass program, AGGVIMS, and its corresponding IMS transaction, is provided in HourGlass Version 6, Release 1.0. This program can be used to verify the functionality of the HourGlass support in the IMS environment, including HourGlass support for altered date and time values in the IMS IOPCB date/time fields, including the extended timestamp field in the IOPCB. This new AGGVIMS program does not replace the HGIMS program, which was used in previous HourGlass releases to create and manage date and time specifications for the IMS environment. As of the HourGlass Version 6, Release 1.0 release level, the capability to create and manage non-JCL date and time specifications in the IMS environment is provided by the HourGlass Control Center (AGGCX) application.

### Implementation steps

Here is a checklist of activities to be completed in order to implement the HourGlass IMS Installation Verification Program (IVP) program AGGVIMS in the IMS environment.

1. Add an AGGVIMS Transaction Code and IMS Program Specification Block (PSB) to your IMS sysgen source. Member AGGVITRN in the SAGGSAMP library provides a sample IMS definition. Adjust the class number so that it runs in the message region of your choosing. The transaction name can be altered if desired. Perform an IMS sysgen — a MODBLKS gen is suggested — to define the transaction and PSB to IMS.
2. Generate the AGGVIMS Program Specification Block (PSB). Member AGGVIPSB in the SAGGSAMP library contains a sample PSB definition. The AGGVIGNP member in the SAGGSAMP library contains a sample PSB gen procedure.
3. Generate the AGGVIMS Access Control Block (ACB). The AGGVIGNA member in the SAGGSAMP library contains a sample ACB gen procedure.
4. Generate the IMS Message Formatting Services (MFS) formats used by the AGGVIMS transaction. The AGGVIMFS member in the SAGGSAMP library contains the source for the MFS formats used by the AGGVIMS transaction and a sample MFS gen procedure.
5. Bring the MODBLKS members, ACB members, and MFS members, generated in the previous steps, online by copying them to their respective staging/alternate libraries and activating them via a /MODIFY PREPARE - /MODIFY COMMIT command sequence, INITIATE OLC command, or other appropriate activation procedure.
6. Make module AGGVIMS from the SAGGLOAD library available to the STEPLIB of the IMS message region(s) in which the HourGlass IMS IVP is to be executed.

This completes the process of implementing the HourGlass IMS IVP program in the IMS environment.

### Specifying the HourGlass date and time in an IMS environment

Specify an HourGlass altered date or time value by one of the methods described in “Using HourGlass with IMS message regions” on page 34.

For each IMS message region that is to support altered date and time requests using altered date/time specifications made via the HourGlass Control Center (AGGCX) application, add this special DD statement to the IMS message region JCL:

```
//HGIMSMMSG DD DUMMY
```

where HG is the two-character prefix defined during the HourGlass installation.

---

## DB2 setup

Setting up HourGlass for use with DB2 is optional. To enable HourGlass to intercept DB2 date and time requests when processing SQL Special Registers CURRENT DATE, CURRENT TIME, CURRENT TIMESTAMP, as well as default date and time values when inserting rows, a simple procedure is required. Re-link two DB2 modules and apply a small patch to both modules. Add these altered modules to the DSNDBM1 started task in those DB2 subsystems in which

HourGlass support is required. No other special run-time procedures are required. For complete details, see member AGG\$DB2 in the HourGlass SAGGPINT library.

---

## **Language setup**

If you plan to use HourGlass with programming languages that utilize the STCK instruction to internally retrieve the system date, you must apply a patch or other action to interface that product with HourGlass. Languages include COBOL/370 (also referred to as LE COBOL, COBOL/LE, and COBOL for MVS and VM), C/370<sup>™</sup>, and PLI/370). For details on language issues, see SAGGSAMP library member AGGLANG.



---

## Chapter 3. Using HourGlass

Once you activate HourGlass, it begins intercepting all requests for the system date and time which are made through the interfaces supported by HourGlass. Each date and time request is checked to determine whether it is eligible to receive an HourGlass-altered date and time value. In order to minimize system overhead, this eligibility checking code is highly optimized and designed to use as few system resources as possible. If a date and time request is eligible for an HourGlass-altered date and time value, HourGlass calculates the altered date and time value according to the control information that corresponds to that request. Otherwise, the request is simply handed off to the operating system service that would normally handle that type of request.

The following sections provide detailed information about several methods available to specify an altered date and time value for various environments, and how to control the operation of HourGlass. For information pertaining directly to the HourGlass Control Center, see Chapter 4, "Using the HourGlass Control Center," on page 41.

---

### Specifying the date and time using DD statements

You can set the HourGlass date and time values for a batch job by adding one or two DD statements, specifying the date or time, to the JCL step. You can also change the job statement to affect the entire job.

#### Date specification

You may use one of these formats when generating an HourGlass Date DD statement:

```
//xxcyyddd DD DUMMY
```

**xx** Two-character prefix defined during the HourGlass installation.

**c** Century indicator. Valid values are 0 for the 20th century (before 2000) and 1 for the 21st century (2000 or later).

**yy** Two-digit year without century. Valid values are 00 through 99.

**ddd** Three-digit Julian day. Valid values are 001 through 366.

```
//xxYdnn DD DUMMY
```

**xx** Two-character prefix defined during the HourGlass installation.

**Y** Required literal to designate year offset.

**d** The direction to offset the current date. Valid values are P to increment the date and M to decrement the date.

**nn** The number of years to offset the current date.

#### Examples

```
//HG100001 DD DUMMY
```

Specifies January 1, 2000.

**HG** Statement prefix.

**1** Indicates 21st century.

## Date specification

**00** Year value. Combined with century indicator designates year 2000.

**001** Julian day 001, or January 1st.

### //HG095032 DD DUMMY

Specifies February 1, 1995.

**HG** Statement prefix.

**0** Indicates 20th century.

**95** Year value. Combined with century indicator designates year 1995.

**032** Julian day 032, or February 1st.

### //HGYP05 DD DUMMY

Specifies that 5 years are to be added to the current date.

**HG** Statement prefix.

**Y** Required literal to designate year offset.

**P** Increment the current date.

**05** Number of years to offset the current date.

## Time specification

The format of the HourGlass Time DD statement is:

//xxdhmm DD DUMMY

**xx** Two-character prefix defined during the HourGlass installation.

**d** The direction to offset the current time. Valid values are:

**P** Plus

Increments the HourGlass-altered time value relative to the time requester's actual system time value.

**M** Minus

Decrements the HourGlass-altered time value relative to the time requester's actual system time value.

**F** Fixed-step start time

Sets the time requester's jobstep start time to the specified hour and minute values when the initial time request is processed for the jobstep. Subsequent time requests received from that jobstep receive a time value that is relative to the initial fixed-step start time value. In other words, subsequent time requests receive time values that are incremented from the initial fixed-step start time by the amount of time elapsed since the initial time request in the jobstep.

**A** Absolute static time

Causes HourGlass to return a time value that is equivalent to the specified hour and minute values, with seconds rounded to the minute, for every time request that occurs in that jobstep.

**E** East (plus)

Increments the HourGlass-altered time value relative to the time requester's actual system time value.



- W** West (minus)  
Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- hh** The number of hours to offset the current time, or the actual hour. Valid values are 00 through 23.
- mm** The number of minutes to offset the current time, or the actual minutes. Valid values are 00 through 59.

### Examples

**//HGP0230 DD DUMMY**

Specifies the current time is to be increased by 2 hours and 30 minutes.

**HG** Statement prefix.

**P** Increment the current time.

**02** Number of hours to offset the current time.

**30** Number of minutes to offset the current time.

**//HGF0320 DD DUMMY**

Specifies to start the step at 03:20 AM (current seconds are kept).

**HG** Statement prefix.

**F** Indicates a fixed-step start time.

**Note:** This value is valid only for batch steps.

**03** Time, in hours, to start the step.

**20** Time, in minutes, to start the step.

**//HGA1150 DD DUMMY**

Specifies an absolute or "frozen" time at 11:50 AM.

**HG** Statement prefix.

**A** Indicates an absolute time.

**Note:** This value is valid only for batch steps, CICS, and IMS.

**11** Set hour to 11.

**50** Set minutes to 50.

### Step bypass specification

The format of the HourGlass step bypass DD statement is:

**//xxBYPASS DD DUMMY**

**xx** Two-character prefix defined during the HourGlass installation.

#### **BYPASS**

Required literal to designate the bypass option. Indicates that the current jobstep cannot receive an HourGlass-altered date and time value. The Step Bypass DD statement provides support for bypassing individual job steps of multi-step jobs for which the date and time setting has been specified at the job level (that is, a setting that applies to all steps of a job).

## Example

### Example

```
//HGBYPASS DD DUMMY
```

Specifies the current jobstep is to be bypassed.

```
HG Statement prefix.
```

```
>BYPASS
```

Bypass this jobstep.

## Using REXX exec AGGDD

HourGlass DD statements can be generated automatically using the provided REXX Exec AGGDD. From the EDIT Command line, type:

```
AGGDD
```

after placing an A (after) or B (before) line command designating the desired location for the generated HourGlass DD statement. Optionally, the desired date can be passed on the command line as a parameter in the format CCYY-MM-DD. Without any parameters, an ISPF panel prompting for the desired date is displayed.

To simply display the correct HourGlass DD statement without adding it to your current EDIT session, enter from any ISPF Command Line:

```
TSO %AGGDDNAM
```

The user is prompted for the date in CCYY-MM-DD format and the time in dHHMM format.

```
----- IBM HourGlass: Generate HourGlass DDCard -----  
COMMAND====>  
  
Enter Desired Runtime Date (ccyy-mm-dd): 1997-12-06  
Enter Desired Time: Plus/Minus (P/M): P HoursMinutes (hhmm): 0100  
East/West (E/W)  
Fixed Step Start (F)  
Absolute Constant Time (A)
```

After pressing ENTER, the appropriate HourGlass DD statements are shown.

```
----- IBM HourGlass: Generate HourGlass DDCard -----  
COMMAND====>  
  
Desired Runtime Date (ccyy-mm-dd): 1997-12-06  
DDcard to use: //HG097340 DD DUMMY  
  
Desired Runtime Time (d hhmm): P 0100  
DDcard to use: //HGP0100 DD DUMMY  
  
Hit ENTER to Continue
```

Press PF3 to exit this dialog.

## Job stream example

To demonstrate HourGlass in an actual job stream, assume that HourGlass has been set up to allow only jobnames beginning with TEST to alter their dates. Also assume that the job consists of four steps and that we would like to alter the dates being received by step 1 and step 3. For the first step, we want the date to be February 5, 1998. For the third step, we would like the date to be December 31,

2001. We would also like the first two steps to run with times set ahead one hour. The JCL for our job looks similar to this (HourGlass-dependent JCL is in bold):

```
//TESTX1 JOB 909680300,'MY TEST JOB',
//          CLASS=1,MSGCLASS=L,NOTIFY=OSSGSN
//*
//STEP01 EXEC PGM=P911345,PARM='MONTHLY'
//STEPLIB DD DSN=PROD.SAGGLOAD library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//I911345A DD DSN=FIN.INPUT.DATA,DISP=SHR
//O911345A DD DSN=FIN.OUTPUT.DATA,DISP=(,CATLG,DELETE),
//          UNIT=DISK,SPACE=(CYL,(10,10),RLSE),
//          DCB=(RECFM=FB,LRECL=123,BLKSIZE=26937)
//HG098036 DD DUMMY
//HGP0100 DD DUMMY
//*
//STEP02 EXEC PGM=P912610
//STEPLIB DD DSN=PROD.SAGGLOAD library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//I912610A DD DSN=FIN.DAILY.FILE1,DISP=SHR
//HGP0100 DD DUMMY
//*
//STEP03 EXEC PGM=P52231
//STEPLIB DD DSN=PROD.SAGGLOAD library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//SYSOUT DD SYSOUT=*
//I52231A DD DSN=FIN.PROMO.FILE,DISP=SHR
//O52231A DD DSN=FIN.PROMO.RPT,DISP=(,CATLG,DELETE),
//          UNIT=DISK,SPACE=(CYL,(1,1),RLSE),
//          DCB=(RECFM=FBA,LRECL=133,BLKSIZE=26999)
//HG101365 DD DUMMY
//*
//STEP04 EXEC PGM=P51111
//STEPLIB DD DSN=PROD.SAGGLOAD library,DISP=SHR
//SYSPRINT DD SYSOUT=*
//I51111A DD DSN=FIN.PROMO.FILE,DISP=SHR
//O51111A DD DSN=FIN.PROMO.RPT,DISP=SHR
//*
```

---

## Specifying the date and time at the job level

If desired, HourGlass date and time overrides can be specified at the job level by placing the DD statements within the JOB statement programmer name field. Either the date, the time, or both can be specified here. If overriding both date and time, separate the two with a space. Using this technique alters the date and time for the entire job unless overridden with a step level DD statement.

### Examples

```
//TESTA JOB 909680300,'//HG107015 //HGP0100',CLASS=A,MSGCLASS=Q
//TESTB JOB 909680300,'//HG107215',CLASS=A,MSGCLASS=Q
```

---

## Using HourGlass with CICS

HourGlass CICS supports both Global Control and User Control. Global Control, also called CICS Control, provides the capability to specify an HourGlass date and time value that is in effect for the entire CICS region. If desired, this global date and time value can be restricted to particular users, terminals, or transactions. User Control provides the capability to specify a unique HourGlass date and time value for each individual user within the CICS region.

## Using HourGlass with CICS

The HGCC transaction manages the CICS Global Control facility, while the HGUC transaction manages the CICS User Control facility (hereafter referred to as Global Control and User Control, respectively). Both Global Control and User Control can be active simultaneously in a CICS region. In that case, date and time values specified via User Control take precedence over those specified via Global Control.

HourGlass must first be initialized in a CICS region before User Control can be invoked. This initialization can be accomplished either through use of the HGCC transaction or through the Automatic Startup facility. See “Automatic startup” on page 17 for details.

In a CICS environment, HourGlass affects the system date and time when it is retrieved using any of these interfaces:

- The EIBDATE field
- The EXEC CICS ASKTIME command
- A DB2 SQL Date/Time/Timestamp
- A COBOL or LE/370 Date/Time function
- An SVC 11 request
- A TIME LINKAGE=SYSTEM service request

### Global Control

The HourGlass date and time value set via Global Control can apply to all transactions in the CICS region, or it can be restricted to particular users, terminals or transactions. Wildcards are allowed in the specification of this criteria for maximum flexibility. The eligibility of any particular CICS transaction is dependent on the User IDs, Transaction IDs, and Terminal IDs you enter, and the test algorithm selected during customization. See “Run the customization job” on page 6 for details.

**Note:** Terminal IDs are ignored in Global Control when processing DB2 SQL requests.

If HGCC abends for any reason (for example, automatic logoff from CICS), a temporary storage record may be left pending in the CICS region. This object is used to serialize the execution of the HGCC transaction. In the event this occurs, this message is displayed to any subsequent user of the HGCC transaction:

```
AGGCC18E ONLY ONE ACTIVE USER ALLOWED FOR THIS TRAN. PLEASE TRY LATER
```

If this happens, correct the situation by deleting the pending temporary storage record. Issue this command from a cleared CICS screen:

```
CECI DELETEQ TS QUEUE(AGGCCTSR)
```

To set a global system date for CICS, enter HGCC from a cleared CICS screen. This panel is displayed.

```
----- HOURGLASS CICS CONTROL PRIMARY OPTIONS V7.1 -----
          OPTION ==>
          1 SPECIFY GLOBAL DATE/TIME VALUE
          2 SPECIFY GLOBAL USERID SELECTION CRITERIA
          3 SPECIFY GLOBAL TRANID SELECTION CRITERIA
          4 SPECIFY GLOBAL TERMID SELECTION CRITERIA
          5 ENABLE/UPDATE HOURGLASS CICS CONTROL
          6 DISABLE HOURGLASS CICS CONTROL
          X EXIT
```

As stated above, the HGCC transaction is serialized so as to permit only one user at a time to access the transaction. Select from these options:

- 1 Specify the desired date or time.
- 2 Limit the altered date and time to specific userids. Wildcards are permitted to specify generic ids.
- 3 Limit the altered date and time to specific transaction ids. Wildcards are permitted to specify generic transaction codes.
- 4 Limit the altered date and time to specific global terminal ids. Wildcards are permitted to specify generic terminal codes.
- 5 Activate the HourGlass date and time entered via option 1 and any selection criteria entered via options 2, 3, and 4.
- 6 Disable HourGlass. Use it to reset the date and time back to the current date and time.
- X Exit the HGCC Transaction. If this option is selected, all changes entered via options 1 through 4 are discarded unless option 5 enable/update has been selected first.

**Note:** PF3 or the Clear key may also be used to exit HGCC.

**Notes:**

- Options 1 through 4 allow data entry. Any changes take effect when option 5 is selected.
- It is not necessary to select option 5 after completing each option panel. You may select option 5 after entering all option 1 through 4 changes.

The option panels for the HGCC Transaction are shown below:

**OPTION 1**

```

----- HOURGLASS CICS CONTROL: SPECIFY GLOBAL DATE/TIME VALUE -----
SPECIFY THE HOURGLASS GLOBAL DATE WITH TIME OFFSET. THE DATE APPLIES
TO THE ENTIRE CICS REGION AND TIME VALUES (PLUS OR MINUS) OFFSET THE
CURRENT TIME FOR ALL ELIGIBLE TRANSACTIONS.
  HGCC GLOBAL DATE ==> 1999-12-31
                                     FORMAT IS ccyy-mm-dd, WHERE:
                                     ccyy = FULL 4 DIGIT YEAR
                                     mm = 2 DIGIT MONTH
                                     dd = 2 DIGIT DAY

  HGCC GLOBAL TIME ==> A2359
                                     FORMAT IS dhmm, WHERE:
                                     d = "P" OR "E" FOR PLUS OFFSET
                                     d = "M" OR "W" FOR MINUS OFFSET
                                     d = "A" FOR ABSOLUTE TIME VALUE
                                     hh = HOURS (00-23)
                                     mm = MINUTES (00-59)

```

## OPTION 2

### OPTION 2

```
----- HOURGLASS CICS CONTROL: SPECIFY GLOBAL USERID SELECTION CRITERIA -----  
SPECIFY UP TO 42 ENTRIES, USING WILDCARDS AS NEEDED. USERID ENTRIES  
ARE A MAXIMUM OF 8 CHARACTERS AND PREFIX ENTRIES ARE A MAXIMUM OF  
7 CHARACTERS FOLLOWED BY AN ASTERISK. USERID ELIGIBILITY IS TESTED  
IN THE ORDER OF THE ENTRIES.  
ENTER GLOBAL USERIDS AND/OR PREFIXES:  
01:      02:      03:      04:      05:      06:  
07:      08:      09:      10:      11:      12:  
13:      14:      15:      16:      17:      18:  
19:      20:      21:      22:      23:      24:  
25:      26:      27:      28:      29:      30:  
31:      32:      33:      34:      35:      36:  
37:      38:      39:      40:      41:      42:
```

### OPTION 3

```
----- HOURGLASS CICS CONTROL: SPECIFY GLOBAL TRANID SELECTION CRITERIA -----  
SPECIFY UP TO 42 ENTRIES, USING WILDCARDS AS NEEDED. TRANID ENTRIES  
ARE A MAXIMUM OF 4 CHARACTERS AND PREFIX ENTRIES ARE A MAXIMUM OF  
3 CHARACTERS FOLLOWED BY AN ASTERISK. TRANID ELIGIBILITY IS TESTED  
IN THE ORDER OF THE ENTRIES.  
ENTER GLOBAL TRANIDS AND/OR PREFIXES:  
01:      02:      03:      04:      05:      06:  
07:      08:      09:      10:      11:      12:  
13:      14:      15:      16:      17:      18:  
19:      20:      21:      22:      23:      24:  
25:      26:      27:      28:      29:      30:  
31:      32:      33:      34:      35:      36:  
37:      38:      39:      40:      41:      42:
```

### OPTION 4

```
----- HOURGLASS CICS CONTROL: SPECIFY GLOBAL TERMID SELECTION CRITERIA -----  
SPECIFY UP TO 42 ENTRIES, USING WILDCARDS AS NEEDED. TERMID ENTRIES  
ARE A MAXIMUM OF 4 CHARACTERS AND PREFIX ENTRIES ARE A MAXIMUM OF  
3 CHARACTERS FOLLOWED BY AN ASTERISK. TERMID ELIGIBILITY IS TESTED  
IN THE ORDER OF THE ENTRIES.  
ENTER GLOBAL TERMIDS AND/OR PREFIXES:  
01:      02:      03:      04:      05:      06:  
07:      08:      09:      10:      11:      12:  
13:      14:      15:      16:      17:      18:  
19:      20:      21:      22:      23:      24:  
25:      26:      27:      28:      29:      30:  
31:      32:      33:      34:      35:      36:  
37:      38:      39:      40:      41:      42:
```

### OPTION 5

```
-AGGCC05I ENABLE/UPDATE SUCCESSFUL
```

### OPTION 6

```
AGGCC06I DISABLE SUCCESSFUL
```

### OPTION X

```
-AGGCC12I EXITING HOURGLASS CICS CONTROL. NO CHANGES PROCESSED
```

## User Control

User Control provides the capability to associate an HourGlass date and time value with a particular CICS userid, or group of userids, that is unique to that user or group. Date and time values specified via User Control take precedence over any values specified via Global Control. Global Control must be activated, with or without a date and time value specified, before User Control can be accessed. Global Control is activated via the HGCC transaction or, optionally, at CICS initialization via the AGGPLT program.

To activate Global Control without a date and time value, invoke transaction HGCC, select option 5 to Enable, and then option X to exit.

The HGUC transaction manages User Control. Enter HGUC from a cleared CICS screen. This panel is displayed.

```

----- HOURGLASS USER CONTROL: SPECIFY USER DATE/TIME VALUE V7.1 -----
CICS USERID =====> AGGUSR
ENTER YES TO DELETE PREVIOUSLY ENTERED USER CONTROL INFO ==>

      USER DATE ==>                FORMAT IS ccyymm-dd,  WHERE:
                                      ccyymm = FULL 4 DIGIT YEAR
                                      mm = 2 DIGIT MONTH
                                      dd = 2 DIGIT DAY

      USER TIME ==>                FORMAT IS dhmm,  WHERE:
                                      d = "P" OR "E" FOR PLUS OFFSET
                                      d = "M" OR "W" FOR MINUS OFFSET
                                      d = "A" FOR ABSOLUTE TIME VALUE
                                      hh = HOURS (00-23)
                                      mm = MINUTES (00-59)

ENTER TRANIDS AND/OR PREFIXES (optional):
      01:      02:      03:      04:      05:      06:

```

This panel allows entry of an HourGlass date and time to be used by a specific user or group of users. Optionally, Transaction IDs or prefixes can be entered to control the transactions for this specific user or group eligible to receive the specified HourGlass date and time.

The asterisk (\*) can be used as the last character in the USERID field to specify a wildcard in order to create a group date and time.

To delete a previously-entered entry for a specific user, type the Userid and reply yes where requested on the panel. The user is deleted from User Control and is now eligible for the global date and time if one is present.

Transaction HGCV can be used to verify the correct installation of HourGlass CICS. Enter Trandid HGCV from a cleared CICS screen. If you have previously enabled HourGlass CICS with an HourGlass date or time, these should appear in the screen output returned by HGCV. If HGCV returns the current date or time when it should be returning the HourGlass date or time, make sure that no selection criteria (that is, Termids, Tranids, or Userids) have been specified that would exclude HGCV, and that the HourGlass activation was successful.

## Using the EIB date and time without ASKTIME

Some installations may have applications that do not perform an EXEC CICS ASKTIME before making use of the date and time located in the EIB. For those applications, HourGlass provides a facility known as the EIB Priming facility, which gets control at the start of each task and inserts the HourGlass date and

## Using the EIB date and time without ASKTIME

time value into the EIB date and time fields. Transactions HGFE and HGFD control the operation of this facility, which enable and disable the facility, respectively.

### Special considerations

- If your CICS is using LPA=YES as a SIT parameter, you must also specify the appropriate PRVMOD= SIT parameter, which is PRVMOD=DFHAPIN for CICS TS Versions 1 or 2.
- If your CICS region specifies RENTPGM=PROTECT, ensure that the installer has run the procedure in member AGGAPINL in the SAGGSAMP library before using this facility.

### Enable or disable the EIB Priming facility

To enable the EIB Priming facility many sites place program AGGFTCH in the CICS PLT. Alternatively, invoke the HGFE transaction from a cleared screen. Once activated, the facility primes the EIB with the appropriate HourGlass date and time value, based on the specifications made using the Global Control or User Control facilities.

To disable the EIB Priming facility, invoke the HGFD transaction from a cleared screen. It can be re-enabled at any time by invoking the HGFE transaction.

Executing the HourGlass AGGFTCH program during CICS initialization, in order to enable the HourGlass EIB pre-priming feature, is an option. If the AGGFTCH program is used, the AGGETSS program must be made available to the process via the STEPLIB allocation.

## Using the CICS Settings Control Facility

Often, it may be desirable to display the current Global Control and User Control settings in a CICS region. It may also be useful to save the current Global Control and User Control settings and later restore them. The HourGlass Settings Control Facility provides a mechanism to display the current settings or any set of previously saved settings, save the current settings to an external dataset, or activate a saved set of previously saved settings. When activating a previously saved set, you can restore Global Control settings, User Control settings, or both.

The main menu for the Settings Control Facility is invoked via transaction HGSC. Once invoked, this menu appears:

```
----- HOURGLASS SETTINGS CONTROL PRIMARY OPTIONS V7.1 -----
      OPTION ==>
        1  DISPLAY SETTINGS
        2  SAVE CURRENT SETTINGS
        3  ACTIVATE SAVED SETTINGS
        4  DELETE SAVED SETTINGS
        5  LIST AVAILABLE SETTINGS
        6  MODIFY EXISTING USER SETTINGS
        X  EXIT
```

Select one of these options:

- 1 Display current settings (by entering a key of CURRENT), or display a previously saved set (by entering the key of the saved set).
- 2 Save current settings to a file by specifying the key of the saved set.
- 3 Restore and activate previously saved settings. Any previously saved key can be used. You can choose to activate global settings, user control settings, or both.



- 4 Delete a previously saved set.
- 5 List the keys of all previously saved settings.
- 6 Edit user settings from a previously saved record.
- X Exit the HGSC Transaction.

**Note:** PF3 or Clear may also be used to exit HGCC.

By saving settings to a key of STARTUP, and then specifying program AGGSCn in the CICS PLT (following the AGGPLTn program), HourGlass activates the settings in STARTUP during CICS Initialization.

### Using CICS API commands: DELAY, POST or START TRANSID

HourGlass provides support for altered time in EXEC CICS START TRANSID(name) TIME(hhmmss), using the TIME(hhmmss) specification on the DELAY, POST or START TRANSID CICS API commands.

A new HourGlass program, AGGICGX, is provided. This program can optionally be implemented in a CICS region on the CICS XICEREQ user exit point. If implemented, this program is given control by CICS at the beginning of the CICS time interval processing. If certain conditions in the processing environment are satisfied, the AGGICGX program applies the current HourGlass time offset to the TIME(hhmmss) specification on the subject DELAY, POST or START TRANSID CICS API command.

AGGLSPC handles a special time request from the AGGICGX program, which returns the current CICS time offset to the AGGICGX program.

AGGPLT and AGGCC programs are enhanced to conditionally enable the AGGICGX program on CICS user exit point XICEREQ, depending on the status of a new HourGlass customization option the "CICSTINT=0|1|2" option. See CICSTINT customization option in "Customization options" on page 7.

AGGFRONT contains the new CICSTINT customization parameter. AGGCUST and AGGZAP programs are enhanced to support the new CICSTINT customization option. If the CICSTINT customization parameter value is set to "1" or "2" in the HourGlass customization process, the AGGICGX program is enabled, if not already enabled. If CICSTINT=0 (zero) is specified, or the CICSTINT specification is omitted entirely (the default), the AGGICGX program is not enabled. AGGOPTS can display the status of the CICSTINT customization option in its listing.

AGGCCVR program, the HourGlass CICS verification program, executed as TRANSID HGCV, is enhanced to display the current HourGlass time offset that is applied to any qualifying TIME(hhmmss) specification, as described above. AGGCRD11 and AGGCRD13 SAGGSAMP members, which contain the sample HourGlass CICS Resource Definition statements, include the definition statements for the AGGICGX program.

To implement the HourGlass Time Interval support feature, perform the following steps:

1. Update the HourGlass customization statements to include the statement CICSTINT=1 or CICSTINT=2, depending on the particular requirements of the clients' application environment. Re-execute the HourGlass customization job. Stop and restart HourGlass using the "S AGGOFF/S AGGON" MVS command sequence.

## Using CICS API commands: DELAY, POST or START TRANSID

2. Customize and execute the appropriate AGGCRDxx SAGGSAMP member to define the AGGICGX program in the CICS region environment. Stop and restart the subject CICS regions. Via either the HourGlass AGGPLT program, running as a PLTPI program, or the AGGCC program running as transaction HGCC, set an HourGlass altered time in the subject CICS region(s), with or without an altered date setting.

**Note:** The time setting must be of the form dHHMM, where d is specified as one of the following: P (Plus), E (East), M (Minus), or W (West). The A (Absolute) time setting is not supported in the HourGlass Time Interval support feature. To verify the operation of the HourGlass Time Interval support feature, execute the HGCV transaction. The HGCV display indicates if the HourGlassTime Interval support feature is enabled and operational.

---

## Using the CICS Audit Trail Facility

Use the CICS Audit Trail Facility to track the:

- activation/deactivation of HourGlass in a CICS environment.
- users changing date and time settings in CICS.
- various uses of date and time in user transactions.

If the CICS Audit Trail Facility has not been activated at CICS startup time, use the HGAE transaction to enable the facility. This facility requires transaction HGFE or PLT AGGFTCH to be active. Once active, the Facility LINKs to program AGGAUDIT to write the record out. A supplied exit is provided on SAGGSAMP library in member AGGAUDI\$. The record layouts of the audit records are described in SAGGSAMP library member AGGAUDRC. To disable the facility, use the HGAD transaction.

---

## Using HourGlass with IMS message regions

If an IMS Message Region should have the same altered date and time for every user in the Message Region, then the only task that must be completed is to add the HourGlass DD statement to the Message Region JCL, just as you would with a batch application. However, if it is desired to provide the capability for IMS users to create date and time settings that are unique to themselves, use the HourGlass Control Center (AGGCX) application to create and manage IMS date and time settings that reside in the HourGlass Repository. See Chapter 4, "Using the HourGlass Control Center," on page 41 for further information about creating IMS-type settings with the AGGCX application.

**Note:** Date and time values set via the HourGlass Control Center (AGGCX) application apply to **any** region that contains the HGIMSMMSG DD statement. To limit the effect of an AGGCX IMS-type setting to particular message regions and transactions, use the IMS routing codes to route transactions to particular message regions, and in addition, set up and specify an HourGlass region identifier, which can be used as a qualifier in the IMS-type settings created by the AGGCX application. See the HourGlass SAGGSAMP library member AGGIMSRI for further information.

## HourGlass IOPCB Support

If your IMS COBOL, PL/I, or assembler MPP application programs are retrieving the date and time from the IOPCB instead of issuing a date and time request, it is

still possible to receive an HourGlass-altered date without re-linking your application programs. See the HourGlass SAGGSAMP library member AGGIOPCB for details.

### Running the HourGlass IMS IVP

To verify the HourGlass functionality in an IMS environment, perform this procedure:

1. Make an HourGlass-altered date and time specification, applicable to the IMS message region in which the HourGlass IMS IVP program is to be executed, via one of the methods described in the sections above.

2. Logon to IMS. Clear the IMS screen. Enter this command:

```
/FOR AGGVIMS
```

and press the ENTER key. A screen appears that displays the empty AGGVIMS output format (the DOF).

3. Press the ENTER key a second time to cause the AGGVIMS program itself to be executed. At this point, the display fields are populated on the output display. The date and time fields should display the HourGlass-altered date and time value. If the message region is set up with the HourGlass IOPCB support feature (as described in the following paragraph), the IOPCB date and time fields, including the Extended Time Stamp fields, should display the HourGlass-altered date and time values.

Some IMS application programs retrieve the date or time from date and time fields in the IOPCB. For those installations that have a requirement that the IOPCB date and time fields are modified to contain the HourGlass-altered date and time values, refer to the instructions in the HourGlass SAGGSAMP library member AGGIOPCB.

By default, date and time values set for the IMS environment via the HourGlass Center Control (AGGCX) apply to any message region running in any IMS control region that contains the HGIMSMSG DD statement. To limit the effects of an HourGlass Control Center (AGGCX) IMS-type altered date and time settings to a specific control region, or group of message regions, create one or more HourGlass Region Identifier modules. Refer to member AGGIMSRI of the HourGlass SAGGSAMP library for further information.

**Note:** AGGIMSRI modules must be pre-loaded in the IMS message region.

A sample AGGVIMS transaction output is displayed below:

## Running the HourGlass IMS IVP

```
AGGVIMS      ***** IBM HOURGLASS *****
              VERIFY IMS DATE/TIME SETTINGS

MVS SYSTEM-ID      ==> MVS1          IMS-ID ==> II02
REGION-ID          ==> PAYROLL2      USER-ID ==> OSSGSN
LINKAGE=SVC DATE   ==> 2012-11-05    TIME   ==> 18:49:34.17
LINKAGE=SYS DATE   ==> 2012-11-05    TIME   ==> 18:49:34.17
IOPCB      DATE    ==> 2012-11-05    TIME   ==> 18:49:34.17
EXTENDED TIMESTAMP ==> 2012-11-05.18:49:34.176318
```

Press the CLEAR key to continue

---

## Using HourGlass with DB2 applications

Once the HourGlass installation and DB2 setup has been performed, use HourGlass in the usual manner for the environment you are running (for example, Batch, TSO, IMS, CICS). HourGlass intercepts automatically the SQL CURRENT DATE/TIME/TIMESTAMP special registers and set default values on INSERTS with the HourGlass date and time.

The only exception to this rule is when running applications in a DB2 Distributed Date Facility (DDF) environment, which may consist of two DB2 applications passing information to each other, or applications running on another platform requesting information from DB2. In this environment, the HourGlass date and time should be specified in the HourGlass Control Center on the CPU where the DB2 satisfying the date request runs.

Support for DB2 in HourGlass is limited to DB2 subsystems executing in MVS TCB mode on a z/OS or System 390 processor. HourGlass supports communication to DB2 servers that are "remote" to the local DB2 server via the Distributed Data Facility (DDF) feature of DB2. Specifically, DB2 workloads running on a z/OS or System 390 processor, or a specialty processor, and which execute in SRB mode, or under an enclave SRB, are not supported.

---

## Using HourGlass with the STCK instruction

In-house assembler applications that use the STCK assembler instruction are not intercepted automatically by HourGlass, since it is a CPU instruction rather than a service call. However, HourGlass provides two safe methods of intercepting these. The first is through a simple reassembly procedure to change the STCK instructions to a TIME STCK macro. Often, however, the source code either cannot be changed or is not available (for example, packaged software). Therefore, the second method patches the STCK instructions on a copy of the load module to call an HourGlass provided User SVC that returns a STCK value.

## Method 1 (re-assemble)

To re-assemble code using the STCK instruction to be intercepted by HourGlass, concatenate member AGGSTCK from SAGGSAMP library before your source code on the SYSIN DDname. This causes each occurrence of the STCK instruction to be converted to a format of SVC 11. This returns the TOD value just as the STCK instruction does and HourGlass is able to intercept it.

**Note:** The use of the SVC causes registers 0, 1, 14, and 15 to be altered. If your application requires that these registers remain intact, concatenate member AGGSTCK instead.

Member AGGSTCK contains a non-reentrant version of the replacement macro that saves and restores these registers so that no register alteration is done. For example:

```
//ASM.SYSIN DD DSN=HG55.SAGGSAMP library(STCK),DISP=SHR
//          DD DSN=your.ba1.source,DISP=SHR
```

Applications requiring re-entrance should use Method 2.

## Method 2 (patch load module)

To patch STCK instructions with a user SVC, ensure the supplied HourGlass SVC has been installed (SAGGSAMP library member AGGINSVC) using an available SVC number. A report of available SVCs can be created by running TASID.

**Note:** AGGINSVC must be run after each IPL to ensure that the SVC code is always active. TASID is not delivered with HourGlass but is available to all z/OS users at <http://www-01.ibm.com/support/docview.wss?uid=swg24009131>.

Patch any STCK instructions (x'B205') with an SVC call to the user SVC (x'0Axx', where xx is the hex value of the SVC number chosen). Once the application load module has been patched, the application can be run using HourGlass dates in the normal way. The only restriction is that the application code must not run in AR mode (since SVCs are not allowed in cross-memory mode). The symptom is a system S0F8 abend if you attempt this.

---

## Using the HourGlass Audit Trail Facility

If you requested statistics gathering during the HourGlass customization (via STATS=A or STATS=H, CUTSMF=Y was specified, and the SMF exit AGGACTRT was implemented), HourGlass writes date and time usage statistics out to the SMF datasets. Included in these statistics are the date and time the record was written, job name, job number, step name, proc step name, HourGlass date and time, the number of times the system date and time was requested, and if applicable, a breakdown of these counts by program name. Member AGGCOBRP in SAGGSAMP library contains a sample COBOL program that reports the system date and time usage. Compile this and run the JCL provided in member AGGCOBR\$.

You can terminate statistics collection at any time without disabling HourGlass (for MVS Version 5 and later) by stopping the SMF exit AGGACTRT. Stop the exit by issuing this MVS command:

```
T  PROG=nn
```

nn is the two letter suffix to a SYS1.PARMLIB member PROGnn containing:

```
EXIT DELETE EXITNAME(SYS.IEFACTRT) MODNAME(AGGACTRT)
```

## Using the HourGlass Audit Trail Facility

The statistics record contains this information (this is not a record layout):

Length	Format	Description
8	Char	Jobname
1	Char	Jobtype: J=Job, T=TSO, S=Started
5	Char	JES Job Number
8	Char	Step Name
8	Char	Proc Step Name
10	Char	HourGlass Altered Date (if Job Step was eligible). Format is YYYY MM DD.
5	Char	HourGlass Altered Time offset (if Job Step was eligible). Format is DHHMM.
4	Binary Integer	Total Count Date/Time Requests issued.
8	Char	Name of Program 1 issuing requests.
4	Binary Integer	Total Count of Program 1 Date/Time Requests.
8	Char	Name of Program 2 issuing requests.
4	Binary Integer	Total Count of Program 2 Date/Time Requests
8	Char	Name of Program 3 issuing requests.
4	Binary Integer	Total Count of Program 3 Date/Time Requests.

---

## Understanding HourGlass precedence rules

DD statement settings take precedence over (override) JOB statement settings. JOB statement settings take precedence over (override) control element settings. Control element settings take precedence over (override) Customization settings. See Table 1 on page 39.

A date or time setting with higher precedence can also partially override a date or time setting with lower precedence.

A date and time setting specified at a lower precedence level can be partially overridden by a date or time setting specified at a higher precedence level.

In the case in which a date and a time setting is specified via control element, in combination with a DD statement setting of either a date or a time, whichever value that was left unspecified via JCL would be used from the control element, while the value that was specified via JCL would take precedence over the corresponding control element setting, if present.

## Understanding HourGlass precedence rules

Table 1. Precedence Table

Precedence	Specification	Date or time specified
1	DD statement	Overrides customization, control elements and JOB statement
2	JOB statement	Overrides customization and control elements
3	Control element	Overrides customization
4	Customization	

## Understanding HourGlass precedence rules



---

## Chapter 4. Using the HourGlass Control Center

The HourGlass Control Center (AGGCX) is an ISPF Dialog Manager application you can use to set HourGlass dates and times interactively, with no JCL changes required. This method is especially useful for installations in which access to JCL procedures may be limited, such as in a Production Control environment. The AGGCX application provides greater flexibility of use because changes to date and time specifications can be implemented dynamically. You may use wildcard characters in the qualification values in order to generalize date and time settings. Also use the AGGCX application to view customization settings, and to verify the operational status of the HourGlass service interfaces.

### Repository

The HourGlass Repository is a VSAM KSDS used to permanently store information associated with control elements and control element groups. The HourGlass Control Center is used to manage the contents of the Repository.

### Control element

A control element is an HourGlass setting that allows you to temporarily alter the system date and time for an application program. Five types of control elements are supported:

- MVS Batch/Started Task (STC)
- TSO/ ISPF
- Job Schedule
- IMS Online/BMP
- DB2 Batch, SPUFI, and DDF

You must enable a control element in order for it to be considered activated for processing by HourGlass. You can enable or disable a control element at any time, as necessary.

### Control element group

It may be useful to define control element groups to help you organize control elements. You can create any number of groups, and a single control element can belong to one or more groups.

### Job schedule

A job schedule is a type of control element that includes one or more job names, and an HourGlass-altered date and time specification. The order in which the job names are listed has no effect on processing. Rather, HourGlass handles Job Schedule members in the order in which the jobs execute on the system. For example, JOBA, a member of Job Schedule SCHEDA, requests the time from the system. HourGlass intercepts the time request and recognizes that JOBA is a member of SCHEDA. Since JOBA is the first member in the schedule to make a time request, that first time request "triggers" SCHEDA. The time requester in JOBA receives the HourGlass-altered date and time value corresponding to the date and time specification in SCHEDA. At the same time, the jobstep start date and time for the triggering JOBA jobstep are saved in SCHEDA. All subsequent time requests made by other members of SCHEDA receive an HourGlass-altered date and time value that is calculated relative to the date and time specification in SCHEDA and the start date and time of the triggering

## Using the HourGlass Control Center

jobstep. The effect is that the HourGlass-altered date and time value, specified in Job Schedule, appears to “roll” through the member jobs of the Job Schedule as they execute.

### Job schedule control elements with DB2 time requests

Job schedules have been enhanced so as to provide support for allowing DB2 time requests to participate in job schedule control elements, and use the HourGlass Start Date as a reference when calculating the HourGlass-altered date and time value with reference to passing of the midnight boundary, as other job schedule members do. If a DB2 control element contains a logical jobname, and a matching job schedule is found, the DB2 time request participates in the job schedule, and receives the HourGlass-altered date and time value associated with the job schedule control element. Since the job schedule has an associated *Job Schedule Initiation Date*, the HourGlass date and time value returned to the DB2 time requester is calculated in HourGlass “batch” processing mode. As with any batch process, the resulting date value is incremented as the underlying DB2 process executes across the midnight boundary. The date value associated with the job schedule continues to increment as long as the job schedule control element remains in the HourGlass Active Control Element Set (ACES) data area. The job schedule initiation date associated with the job schedule is reset, however, whenever HourGlass is stopped and restarted.

---

## Control elements

This section discusses how to:

- Invoke the HourGlass Control Center.
- Specify selection criteria for displaying control elements.
- Create a control element.
- Display properties for a control element.
- Create a control element.
- Delete a control element.

## Invoking the HourGlass Control Center

To invoke the HourGlass Control Center, enter TSO AGGCX from any ISPF command line. The Option Menu is displayed.

```
----- IBM HourGlass: Option Menu -----  
COMMAND===>  
  
Date/Time Controls:  
 1) View User      View controls owned by current user  
 2) View All       View all controls  
 3) Modify User    Create or modify controls owned by current user  
 4) Modify All     Create or modify all controls  
  
Product Status:  
 5) View Settings  View HourGlass Customization Settings  
 6) Verify Status  Verify HourGlass operational status  
 X) Exit
```

### Panel

To select an option, type the one-character identifier that corresponds to the function and press ENTER.

- 1 VIEW USER  
View control elements defined by the current user.
- 2 VIEW ALL  
Administrator mode. View control elements defined by all users.
- 3 MODIFY USER  
Create and modify control elements for the current user.
- 4 MODIFY ALL  
Administrator mode. Create and modify control elements for all users. Enables setting date and time criteria for any job (a security exit can control the entries that each user is allowed to edit). Care should be taken in using this option.
- 5 VIEW SETTINGS  
Display customization settings for the current version of HourGlass.
- 6 VERIFY STATUS  
Verify the operational status of SVC11 and PC Time Service support.
- X EXIT  
Terminate HourGlass.

### Specifying selection criteria

When you select Options 1, 2, 3, and 4 from the Option Menu panel, the Selection Criteria pop-up is displayed. Use this window to limit the list of control elements displayed in the Controls Overview panel. By specifying criteria, you can list entries for control elements that meet the criteria.

```

----- IBM HourGlass: Option Menu -----
C +-----+
D | Command ==>
  |
  | Selection Criteria:
  |
  |   CE Name ==> * _____
  |   Owner-ID ==> * _____
  |
P | Control Type: (Enter "/" to select option)
  | / ALL
  | - MVS Batch
  | - TSO/ISPF
  | - JOB Schedule
  | - IMS Online/BMP
  | - DB2 Batch, SPUFI & DDF
  |
  | F1=HELP  F2=SPLIT  F3=END  F4=RETURN  F5=RFIND  F6=RCHANGE
  | F7=UP    F8=DOWN   F9=SWAP  F10=LEFT  F11=RIGHT
  |
+-----+
  
```

#### CE Name

Enter an explicit control element name or wildcard pattern using the \* (asterisk).

#### Owner-ID

Enter an explicit Owner-ID or wildcard pattern using the \* (asterisk).

## Specifying selection criteria

**Note:** Owner is populated automatically by HourGlass with the current User ID when Options 1 and 3 are selected on the Options Menu.

### Control Type

Select one or more Control Types for display. Enter "/" next to each option.

When finished, press ENTER to display the Controls Overview panel.

**Note:** If no control elements exist for a selected control type, the Control Type panel prompts you to create a new control element. See "Creating a control element" on page 45 for details.

## Viewing control elements

The Control Overview panel lists the control elements in the HourGlass Repository that are selected for display.

```
----- IBM HourGlass: Control Overview -----1 of 1000
Command ==>

```

Cmd	Sel/Stat/Disp	Type	Name	Owner	Job/name	User-ID	Date	Time	
---		DISA	DB2	CEDB001	AGGUSR	PLAN1	USRDEV	2006-01-01	M0100
---		ENAB	DB2	CEDB002	AGGUSR	PLAN2	TSNAM	2006-02-01	M0100
---		ENAB	IMS	CEIM001	AGGUSR	REG1	USRDEV1	2006-01-01	P0100
---		DISA	IMS	CEIM002	AGGUSR	REG2	USRDEV2	2006-02-01	M0200
---		DISA	JSCD	CEJS001	AGGUSR			2006-01-01	M0400
---		DISA	JSCD	CEJS002	AGGUSR			2006-02-01	A1600
---		ENAB	MBAT	CEMB001	AGGUSR	USRJOB1		2007-01-01	M0100
---		ENAB	MBAT	CEMB002	AGGUSR	USRJOB2		2007-02-01	P0100
---		ENAB	MBAT	CEMB003	AGGUSR	USRJOB3		2007-03-01	M0300
---		ENAB	MBAT	CEMB004	AGGUSR	USRJOB4		2007-04-01	P0200
---		ENAB	MBAT	CEMB005	AGGUSR	USRJOB5		2007-05-01	M0500
---		ENAB	MBAT	CEMB006	AGGUSR	USRJOB6		2007-06-01	M0100
---		ENAB	TSOI	CETI001	AGGUSR		USRDEV	2005-11-30	M0100
---		DISA	TSOI	CETI002	AGGUSR		USRHRQ	2005-05-01	M0400

### Panel

The panel includes:

**Cmd** The line command entry area.

The remaining columns on the panel are read-only:

#### Sel/Stat/Disp

**Sel** The Sel column contains an S when the control element is selected.

**Stat** The Status column contains DISA when the control element is disabled, and ENAB when the control element is enabled.

**Disp** The Disp column displays:

- DLET to indicate a deleted control element.
- NEW to indicate a new control element.
- UPDT to indicate an updated control element.

**Note:** All changes indicated in this column are pending until you make your selections on the Change Disposition Options panel.

**Type** The environment associated with the control element.

**Name** The name of the control element.

**Owner**

The owner of the control element.

**Job/name**

The name of the job associated with the control element.

**User-ID**

The string that represents the TSO ID of the user.

**Date** The date specification for the control element.

**Time** The time specification for the control element.

### Line commands

The Cmd area on the left side of the panel is used to enter line commands. These line commands are available:

**S** Select a control element.

**U** Unselect a control element.

**I** Insert a new control element. The Control Type panel for a new control element is displayed in response to this command. See “Creating a control element” for details.

**P** Display the Control Properties panel for the control element.

### DELETE and UNDELETE commands

Use the DELETE primary command to mark selected control elements for deletion. All deletions are pending until you make your selections on the Change Disposition Options panel. Use the UNDELETE primary command to clear selected control elements that are marked for deletion.

### ENABLE and DISABLE commands

Use the ENABLE primary command to change the disabled status for selected control elements to enabled. Use the DISABLE primary command to change the enabled status for selected control elements to disabled.

### GROUP command

Use the GROUP primary command to display the Control Element Groups panel.

### Primary commands

These commands are available when the Control Overview panel is displayed:

CANCEL	ENABLE	SAVE	UNDELETE
DELETE	END	SELECT ALL	UNSELECT ALL
DISABLE	GROUP	TOGGLE	

## Creating a control element

You can create a new control element from the Controls Overview panel. On the panel, type I in Cmd next to any control element entry and press ENTER. The Control Type panel is displayed.

## Creating a control element

```
Command ===>

Please indicate type of control to be inserted below:

Enter "/" or "S" to select option
_ MVS Batch
_ TSO/ISPF
_ JOB Schedule
_ IMS OnLine/BMP
_ DB2 Batch, SPUFI & DDF

Press ENTER to process, END to Exit

F1=HELP  F2=SPLIT  F3=END  F4=RETURN  F5=RFIND  F6=RCHANGE
F7=UP    F8=DOWN  F9=SWAP  F10=LEFT  F11=RIGHT
```

**Note:** This panel is also displayed if no control elements exist for a control type chosen from the Selection Criteria panel.

Select a control type from the panel and press ENTER. The Control Properties panel for the selected type is displayed. Use the panel to define the new control element. For information on how to complete the panel prompts, see “Displaying properties for a control element.”

If you exit the window without selecting a control type, the Controls Overview panel is redisplayed.

## Displaying properties for a control element

You can display the properties for a control element listed on the Control Overview panel. To view or modify the properties, type P in Cmd next to the entry and press ENTER to display the Control Properties panel. The following figures show the Control Properties panel displayed for each type of application environment.

### Control properties: MVS Batch/STC

This panel displays the control properties of the MVS Batch/STC control element.

```
----- IBM HourGlass: Control Properties -----
COMMAND===>

Type      : MVS BATCH/STC
Status    : ENABLED
Name      : CEMB001
Owner     : AGGUSR

Jobname   : USRJOB1
Userid    :

Date      : 2007-01-01
Time      : M0100
```

### Panel

The panel includes these parameters:

**Type** The designation 'MVS BATCH/STC' is displayed in this read-only prompt.

**Status** Indicates whether the control element is enabled or disabled. Status is

populated automatically with DISABLED when a control element is created and cannot be modified from this panel.

**Note:** Use the ENABLE and DISABLE primary commands from the Control Overview panel to change the status for a listed control element.

**Name** Enter a descriptive name for the control element (1 to 12 characters). When you create control elements, it is helpful to use a logical set of naming conventions for easy identification.

**Owner**

The owner of the control element.

**Jobname**

Enter the name of the job associated with the control element (1 to 8 characters).

**Note:** Jobnames may contain wildcard characters to represent groups of jobs. The question mark (?) can be used as a single character place holder, while the asterisk (\*) can be used to signify 'zero to many characters'. For example, '???E\*' could be used to specify that the 4th character of a jobname must equal 'E'. The asterisk may only appear as the right-most character of a specification.

**Userid**

Enter the User ID associated with the control element (1 to 8 characters).

**Date** Enter the date specification for the control element. Valid formats are YYYY-MM-DD or YDyy.

YYYY-MM-DD

**YYYY** Four-digit year.

**MM** Two-digit month.

**DD** Two-digit day.

YDyy

**Y** Literal that designates "jump year" format.

**D** The direction to offset the current date. Valid values are P to increment the date and M to decrement the date.

**yy** The number of years to offset the current date.

**Time** Enter the time specification for the control element. The format is DHHMM.

**D** The direction to offset the time. Valid values are:

**P** Plus

Increments the HourGlass-altered time value relative to the time requester's actual system time value.

**M** Minus

Decrements the HourGlass-altered time value relative to the time requester's actual system time value.

**F** Fixed-step start time

Sets the time requester's jobstep start time to the specified hour and minute values when the initial time request is

## Control properties: MVS Batch/STC

processed for the jobstep. Subsequent time requests received from that jobstep receive a time value that is relative to the initial fixed-step start time value. In other words, subsequent time requests receive time values that are incremented from the initial fixed-step start time by the amount of time elapsed since the initial time request in the jobstep.

**A** Absolute static time

Causes HourGlass to return a time value that is equivalent to the specified hour and minute values, with seconds rounded to the minute, for every time request that occurs in that jobstep.

**E** East (plus)

Increments the HourGlass-altered time value relative to the time requester's actual system time value.

**W** West (minus)

Decrements the HourGlass-altered time value relative to the time requester's actual system time value.

**HH** The number of hours to offset the current time. Valid values are 00 through 23.

**MM** The number of minutes to offset the current time. Valid values are 00 through 59.

### GROUP command

Use the GROUP primary command to display the Groups Participated In By CE panel. The panel lists the groups to which the control element belongs. See "Display groups for a control element" on page 62 for details.

### Primary commands

These commands are available when the Control Properties panel is displayed:

CANCEL END GROUP

### Control properties: TSO/ISPF

This panel displays the control properties of the TSO/ISPF control element.

```
----- IBM HourGlass: Control Properties -----
COMMAND====>
Type      : TSO/ISPF
Status    : ENABLED
Name      : CETI001
Owner     : AGGUSR

Userid    : USRDEV

Date      : 2005-11-30
Time      : M0100
```

### Panel

The panel includes these parameters:



- Type** The designation 'TSO/ISPF' is displayed in this read-only prompt.
- Status** Indicates whether the control element is enabled or disabled. Status is populated automatically with DISABLED when a control element is created and cannot be modified from this panel.
- Note:** Use the ENABLE and DISABLE primary commands from the Control Overview panel to change the status for a listed control element.
- Name** Enter a descriptive name for the control element (1 to 12 characters). When you create control elements, it is helpful to use a logical set of naming conventions for easy identification.
- Owner**  
The owner of the control element.
- Userid**  
Enter the User ID associated with the control element (1 to 8 characters).
- Note:** Individual TSO users can set date and time criteria for jobs they submit or if the jobname begins with their TSO ID.
- Date** Enter the date specification for the control element. Valid formats are YYYY-MM-DD or YDyy.
- YYYY-MM-DD
- YYYY** Four-digit year.
- MM** Two-digit month.
- DD** Two-digit day.
- YDyy
- Y** Literal that designates "jump year" format.
- D** The direction to offset the current date. Valid values are P to increment the date and M to decrement the date.
- yy** The number of years to offset the current date.
- Time** Enter the time specification for the control element. The format is DHHMM.
- D** The direction to offset the time. Valid values are:
- P** Plus  
Increments the HourGlass-altered time value relative to the time requester's actual system time value.
- M** Minus  
Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- F** Fixed-step start time  
Sets the time requester's jobstep start time to the specified hour and minute values when the initial time request is processed for the jobstep. Subsequent time requests received from that jobstep receive a time value that is relative to the initial fixed-step start time value. In other words, subsequent time requests receive time values that

## Control properties: TSO/ISPF

are incremented from the initial fixed-step start time by the amount of time elapsed since the initial time request in the jobstep.

**A** Absolute static time

Causes HourGlass to return a time value that is equivalent to the specified hour and minute values, with seconds rounded to the minute, for every time request that occurs in that jobstep.

**E** East (plus)

Increments the HourGlass-altered time value relative to the time requester's actual system time value.

**W** West (minus)

Decrements the HourGlass-altered time value relative to the time requester's actual system time value.

**HH** The number of hours to offset the current time. Valid values are 00 through 23.

**MM** The number of minutes to offset the current time. Valid values are 00 through 59.

## GROUP command

Use the GROUP primary command to display the Groups Participated In By CE panel. The panel lists the groups to which the control element belongs. See "Display groups for a control element" on page 62 for details.

## Primary commands

These commands are available when the Control Properties panel is displayed:

CANCEL END GROUP

## Control properties: IMS Online/BMP

This panel displays the control properties of the IMS Online/BMP control element.

```
----- IBM HourGlass: Control Properties -----
COMMAND==>

Type      : IMS ONLINE/BMP
Status    : ENABLED
Name      : CEIM001
Owner     : AGGUSR

Region-ID : REG1
Userid    : USRDEV1

Date      : 2006-01-01
Time      : P0100
```

## Panel

The panel includes these parameters:

**Type** The designation 'IMS ONLINE/BMP' is displayed in this read-only prompt.

**Status** Indicates whether the control element is enabled or disabled. Status is populated automatically with DISABLED when a control element is created and cannot be modified from this panel.

**Note:** Use the ENABLE and DISABLE primary commands from the Control Overview panel to change the status for a listed control element.

**Name** Enter a descriptive name for the control element (1 to 12 characters). When you create control elements, it is helpful to use a logical set of naming conventions for easy identification.

**Owner**

The owner of the control element.

**Region-ID**

Enter the Region ID associated with the control element (1 to 8 characters).

**Userid**

Enter the User ID associated with the control element (1 to 8 characters).

**Date** Enter the date specification for the control element. Valid formats are YYYY-MM-DD or YDyy.

YYYY-MM-DD

YYYY Four-digit year.

MM Two-digit month.

DD Two-digit day.

YDyy

Y Literal that designates "jump year" format.

D The direction to offset the current date. Valid values are P to increment the date and M to decrement the date.

yy The number of years to offset the current date.

**Time** Enter the time specification for the control element. The format is DHHMM.

D The direction to offset the time. Valid values are:

P Plus

Increments the HourGlass-altered time value relative to the time requester's actual system time value.

M Minus

Decrements the HourGlass-altered time value relative to the time requester's actual system time value.

F Fixed-step start time

Sets the time requester's jobstep start time to the specified hour and minute values when the initial time request is processed for the jobstep. Subsequent time requests received from that jobstep receive a time value that is relative to the initial fixed-step start time value. In other words, subsequent time requests receive time values that are incremented from the initial fixed-step start time by the amount of time elapsed since the initial time request in the jobstep.

## Control properties: IMS Online/BMP

- A** Absolute static time  
Causes HourGlass to return a time value that is equivalent to the specified hour and minute values, with seconds rounded to the minute, for every time request that occurs in that jobstep.
- E** East (plus)  
Increments the HourGlass-altered time value relative to the time requester's actual system time value.
- W** West (minus)  
Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- HH** The number of hours to offset the current time. Valid values are 00 through 23.
- MM** The number of minutes to offset the current time. Valid values are 00 through 59.

### GROUP command

Use the GROUP primary command to display the Groups Participated In By CE panel. The panel lists the groups to which the control element belongs. See "Display groups for a control element" on page 62 for details.

### Primary commands

These commands are available when the Control Properties panel is displayed:

CANCEL END GROUP

## Control properties: DB2 Batch, SPUFI and DDF

This panel displays the control properties of the DB2 Batch, SPUFI and DDF control element.

```
----- IBM HourGlass: Control Properties -----  
COMMAND===>  
  
Type      : DB2 BATCH,SPUFI & DDF  
Status    : ENABLED  
Name      : CEDB002  
Owner     : AGGUSR  
  
DB2 SSID  : DBAA  
Plan Name : DEMOPLN1  
SQL-ID    : DEMOUSR3  
Logical Jobname : DBJOB4  
  
Date      : 2006-02-01  
Time      : M0100
```

### Panel

The panel includes these parameters:

**Type** The designation 'DB2 BATCH, SPUFI & DDF' is displayed in this read-only prompt.

**Status** Indicates whether the control element is enabled or disabled. Status is

## Control properties: DB2 Batch, SPUFI and DDF

populated automatically with DISABLED when a control element is created and cannot be modified from this panel.

**Note:** Use the ENABLE and DISABLE primary commands from the Control Overview panel to change the status for a listed control element.

**Name** Enter a descriptive name for the control element (1 to 12 characters). When you create control elements, it is helpful to use a logical set of naming conventions for easy identification.

**Owner**

The owner of the control element.

**DB2 SSID**

Enter the DB2 subsystem (1 to 4 characters).

**Plan Name**

Enter the name of the plan associated with the control element (1 to 8 characters).

**SQL-ID**

Enter the SQLID associated with the control element (1 to 8 characters).

**Logical Jobname**

Enter a descriptive logical jobname for a control element to be used in a job schedule (1 to 8 characters).

The DB2 time request must match a new-style qualified DB2 control element. If the DB2 control element contains a Logical jobname specification, the logical jobname is subsequently used to attempt to match the DB2 time request to an HourGlass job schedule. The DB2 time request must match a new-style qualified DB2 control element. The logical jobname is a new data element added to the DB2 control element. (See Job schedule control elements with DB2 time requests.)

**Date** Enter the date specification for the control element. Valid formats are YYYY-MM-DD or YDyy.

YYYY-MM-DD

YYYY Four-digit year.

MM Two-digit month.

DD Two-digit day.

YDyy

Y Literal that designates "jump year" format.

D The direction to offset the current date. Valid values are P to increment the date and M to decrement the date.

yy The number of years to offset the current date.

**Time** Enter the time specification for the control element. The format is DHHMM.

D The direction to offset the time. Valid values are:

P Plus

Increments the HourGlass-altered time value relative to the time requester's actual system time value.

M Minus

## Control properties: DB2 Batch, SPUFI and DDF

- Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- F** Fixed-step start time
- Sets the time requester's jobstep start time to the specified hour and minute values when the initial time request is processed for the jobstep. Subsequent time requests received from that jobstep receive a time value that is relative to the initial fixed-step start time value. In other words, subsequent time requests receive time values that are incremented from the initial fixed-step start time by the amount of time elapsed since the initial time request in the jobstep.
- A** Absolute static time
- Causes HourGlass to return a time value that is equivalent to the specified hour and minute values, with seconds rounded to the minute, for every time request that occurs in that jobstep.
- E** East (plus)
- Increments the HourGlass-altered time value relative to the time requester's actual system time value.
- W** West (minus)
- Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- HH** The number of hours to offset the current time. Valid values are 00 through 23.
- MM** The number of minutes to offset the current time. Valid values are 00 through 59.

### GROUP command

Use the GROUP primary command to display the Groups Participated In By CE panel. The panel lists the groups to which the control element belongs. See "Display groups for a control element" on page 62 for details.

### Primary commands

These commands are available when the Control Properties panel is displayed:

CANCEL END GROUP

### Control properties: Job Schedule

It may be useful to create a Job Schedule to perform system testing where multiple jobs or a multi-step job requires the simulated date and time to continuously "roll". This panel displays the control properties of the Job Schedule control element.



## Control properties: Job Schedule

- P** Plus  
Increments the HourGlass-altered time value relative to the time requester's actual system time value.
- M** Minus  
Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- F** Fixed-step start time  
Sets the time requester's jobstep start time to the specified hour and minute values when the initial time request is processed for the jobstep. Subsequent time requests received from that jobstep receive a time value that is relative to the initial fixed-step start time value. In other words, subsequent time requests receive time values that are incremented from the initial fixed-step start time by the amount of time elapsed since the initial time request in the jobstep.
- A** Absolute static time  
Causes HourGlass to return a time value that is equivalent to the specified hour and minute values, with seconds rounded to the minute, for every time request that occurs in that jobstep.
- E** East (plus)  
Increments the HourGlass-altered time value relative to the time requester's actual system time value.
- W** West (minus)  
Decrements the HourGlass-altered time value relative to the time requester's actual system time value.
- HH** The number of hours to offset the current time. Valid values are 00 through 23.
- MM** The number of minutes to offset the current time, or the actual minutes. Valid values are 00 through 59.

### Jobnames

Enter the names of the jobs participating in the schedule (1 to 8 characters). You can enter a maximum of 70 job names for a job schedule.

**Note:** Jobnames may contain wildcard characters to represent groups of jobs. The question mark (?) can be used as a single character place holder, while the asterisk (\*) can be used to signify 'zero to many characters'. For example, '???E\*' could be used to specify that the 4th character of a jobname must equal 'E'. The asterisk, generally meant to be placed on the end of a specification, may be placed in the beginning or middle with one limitation: the search continues only until the character after the asterisk is found. For example, if '\*AB' was specified, and the jobname was 'DACAB', the test would fail due to the fact that an 'A' was found that was not followed immediately by a 'B'.



**GROUP command**

Use the GROUP primary command to display the Groups Participated In By CE panel. The panel lists the groups to which the control element belongs. See “Display groups for a control element” on page 62 for details.

**Primary commands**

These commands are available when the Control Properties panel is displayed:

CANCEL END GROUP

**Delete a control element**

You can delete a control element listed on the Control Overview panel. In Cmd, type S next to the control element you want to delete and press ENTER. Then use the DELETE command and press ENTER.

```

----- IBM HourGlass: Control Overview -----1 of 1000
Command ==>>

Cmd Sel/Stat/Disp Type Name Owner Job/name User-ID Date Time
----
___ DISA DB2 CEDB001 AGGUSR PLAN1 USRDEV 2006-01-01 M0100
___ ENAB DB2 CEDB002 AGGUSR PLAN2 TSONAM 2006-02-01 M0100
___ ENAB IMS CEIM001 AGGUSR REG1 USRDEV1 2006-01-01 P0100
___ S DISA DLET IMS CEIM002 AGGUSR REG2 USRDEV2 2006-02-01 M0200
___ DISA JSCD CEJS001 AGGUSR 2006-01-01 M0400
___ DISA JSCD CEJS002 AGGUSR 2006-02-01 A1600
___ ENAB MBAT CEMB001 AGGUSR USRJ0B1 2007-01-01 M0100
___ ENAB MBAT CEMB002 AGGUSR USRJ0B2 2007-02-01 P0100
___ ENAB MBAT CEMB003 AGGUSR USRJ0B3 2007-03-01 M0300
___ ENAB MBAT CEMB004 AGGUSR USRJ0B4 2007-04-01 P0200
___ ENAB MBAT CEMB005 AGGUSR USRJ0B5 2007-05-01 M0500
___ ENAB MBAT CEMB006 AGGUSR USRJ0B6 2007-06-01 M0100
___ ENAB TS0I CETI001 AGGUSR USRDEV 2005-11-30 M0100
___ DISA TS0I CETI002 AGGUSR USRHRQ 2005-05-01 M0400

```

The Disp column displays DLET to indicate that the deletion is pending. Finalize the deletion using the Change Disposition Options panel, discussed in “Change disposition options.”

**Change disposition options**

After modifying or deleting a control element using the HourGlass Control Center, you are prompted automatically to save changes using the Change Disposition Options panel.

```

----- IBM HourGlass: Change Disposition Options -----
Command==>>

Date/Time Controls:

 1 Save          Saves your changes to the HourGlass Repository
                  without activating them. Changes will become
                  effective at the next activation cycle.

 2 Save/Activate Saves your changes to the HourGlass Repository
                  and initiates an activation cycle. You will be
                  notified when the activation cycle has completed.

 3 Discard       Discards your changes.

Press ENTER to process, END to Exit (Discards your changes).

```

## Panel options

**Panel options:** To select an option, type the one-character identifier that corresponds to the function and press ENTER.

- 1** Save  
Save changes to the HourGlass Repository without activating. Changes become effective at the next activation cycle.
- 2** Save/Activate  
Saves your changes to the HourGlass Repository and initiates an activation cycle. You will be notified when the activation cycle has completed.
- 3** Discard  
Discard changes without saving to the HourGlass Repository.

---

## Control element groups

It may be useful to define control element groups to help you organize control elements. Any number of groups may be created, and a control element can belong to any number of groups. This section discusses how to:

- View control element groups.
- Display properties for a group.
- Create a new group.
- Add a control element to a group.
- Remove a control element from a group.
- Display groups for a control element.
- Delete a group.

## View control element groups

To display a list of control element groups defined in the HourGlass Repository, use the GROUP primary command from the Controls Overview panel. The Control Element Groups panel is displayed.

```
----- IBM HourGlass: Control Element Groups ----- Row 1 of 3
COMMAND====>

Cmd Sel/Disp Name      Owner
---          -
TEST GROUP #01      TESTGRP01  AGGUSR
TEST GROUP #02      TESTGRP02  AGGUSR
TEST GROUP #03      TESTGRP03  AGGUSR
```

### Panel

The panel includes:

**Cmd** The line command entry area.

#### Sel/Disp

**Sel** The Sel column displays an S when the control element group is selected.

**Disp** The Disp column displays:

- DLET to indicate a deleted control element group.

- NEW to indicate a new control element group.
- UPDT to indicate an updated control element group.

All changes indicated in this column are pending until you use END to exit this panel.

**Name** The name of the control element group. The second line of an entry displays a description of the group, if a description is included on the Group Properties panel.

**Owner**

The owner of the control element group.

### Line commands

The Cmd area on the left side of the panel is used to enter line commands. These line commands are available:

**S** Select a control element group.

**U** Unselect a control element group.

**I** Insert a new control element group. The Define New Group panel is displayed in response to this command. See “Create a new group” on page 61 for details.

**P** Display the Group Properties panel for the control element group.

### CONNECT command

Use the CONNECT primary command to add control elements selected on the Controls Overview panel to one or more selected control element groups. See “Add a control element to a group” on page 61 for details.

### DELETE and UNDELETE commands

Use the DELETE primary command to mark selected control element groups for deletion. All deletions are pending until you use END to exit this panel. Use the UNDELETE primary command to clear selected control element groups that are marked for deletion.

### Primary commands

These commands are available when the Control Element Groups panel is displayed:

CANCEL	DELETE	SELECT ALL	UNDELETE
CONNECT	END	TOGGLE	UNSELECT ALL

## Display properties for a group

You can display properties for a control element group. From the Control Element Groups panel, type P in Cmd next to the group name and press ENTER. The Group Properties panel is displayed.

## Display properties for a group

```
----- IBM HourGlass: Group Properties ----- Row 1 of 6
COMMAND==>

      Type: GROUP-ID
      Name: TESTGRP01  Owner: AGGUSR
Description:
      TEST GROUP #01

Press END to Update or CANCEL to Undo Changes

Group Members:
Cmd Sel/Disp Type  Name          Owner
-----
      MBAT  CEMB001     AGGUSR
      MBAT  CEMB002     AGGUSR
      MBAT  CEMB003     AGGUSR
      MBAT  CEMB004     AGGUSR
      MBAT  CEMB005     AGGUSR
      MBAT  CEMB006     AGGUSR
```

### Panel

The panel includes:

**Type** The designation 'GROUP-ID' is displayed in this read-only prompt.

**Name** The name of the control element group.

**Owner**

The owner of the control element group.

**Description**

A description of the purpose of the control element group.

**Group Members**

Lists all control elements that are included in the group.

**Cmd** The line command entry area.

**Sel/Disp**

**Sel** The Sel column displays an S to indicate the control element is selected.

**Disp** The Disp column displays DLET to indicate a control element is deleted from the group. Any changes indicated in this column are pending until you use END to exit this panel.

**Type** The type of environment associated with the control element.

**Name** The name of the control element.

**Owner**

The owner of the control element.

### Line command

The Cmd area on the left side of the panel is used to enter line commands. This line command is available:

**S** Select a control element.

### DELETE command

Use the DELETE primary command to delete one or more selected control elements from the group. Use END to finalize the deletion.

## Primary commands

These commands are available when the Group Properties panel is displayed:

```
CANCEL  END          TOGGLE  UNSELECT ALL
DELETE  SELECT ALL
```

## Create a new group

You can create a new control element group. From the Control Element Groups panel, type I in Cmd and press ENTER. The Define New Group panel is displayed.

```
----- IBM HourGlass: Define New Group -----
COMMAND===>

      Type:  GROUP-ID
      Name:  TESTGRP01  Owner:  AGGUSR
Description:
      TEST GROUP #01
```

## Panel

The panel includes:

**Type** The designation 'GROUP-ID' is displayed in this read-only prompt.

**Name** Enter a descriptive name for the control element group (1 to 12 characters). When you create control element groups, it is helpful to use a logical set of naming conventions for easy identification.

**Owner**

The owner of the control element group. Owner is populated automatically by HourGlass.

**Description**

Enter text to describe the purpose of the control element group (1 to 72 characters).

Use END or press ENTER to redisplay the Control Element Groups panel with the name of the group added to the list. New appears in the Disp column to indicate the new entry. Any changes indicated in this column are pending until you use END to exit this panel.

## Add a control element to a group

You can add one or more control elements to one or more groups using a two-step process. First, on the Controls Overview panel, use the S line command to select the control element(s) for inclusion in a group. Then use the GROUP primary command to display the Control Element Groups panel.

In the second step, use the S line command to select one or more groups on the control elements Group panel. Then use the CONNECT primary command to add the selected control element(s) to the group. A message at the bottom of the panel alerts you to the status of the connection:

## Add a control element to a group

```
----- IBM HourGlass: Control Element Groups ----- Row 1 of 3
COMMAND====>

Cmd Sel/Disp Name      Owner
-----
TEST GROUP #01      TESTGRP01  AGGUSR
TEST GROUP #02      TESTGRP02  AGGUSR
TEST GROUP #03      TESTGRP03  AGGUSR

+-----+
| Group connections created. Press END or CANCEL to finalize disposition |
+-----+
```

Use END to commit the connection to the group and redisplay the Controls Overview panel. To verify the new addition to the group, use the GROUP command to redisplay the control elements Group panel. In Cmd, type P next to the group with the new addition to display the Group Properties panel. The control element should appear on the panel in the Group Member list.

## Remove a control element from a group

From the Control Element Groups panel, type P in Cmd next to the group name. The Group Properties panel is displayed. In Cmd, type S next to the control element you want to remove from the group. Use the DELETE command and press ENTER.

```
----- IBM HourGlass: Group Properties ----- Row 1 of 6
COMMAND====>

Type: GROUP-ID
Name: TESTGRP01  Owner: AGGUSR
Description:
TEST GROUP #01

Press END to Update or CANCEL to Undo Changes

Group Members:
Cmd Sel/Disp Type Name      Owner
-----
MBAT CEMB001  AGGUSR
S DLET MBAT CEMB002  AGGUSR
MBAT CEMB003  AGGUSR
MBAT CEMB004  AGGUSR
MBAT CEMB005  AGGUSR
MBAT CEMB006  AGGUSR
```

The Disp column displays DLET to indicate that the deletion is pending. Use END to finalize the deletion.

**Note:** An alternate method of deleting a control element from a group is discussed in “Display groups for a control element.”

## Display groups for a control element

You can display all groups to which a control element belongs. On the Control Overview panel, type P in Cmd line next to the control element to display the Control Properties panel. Then use the GROUP command to display the Groups Participated In By CE panel.

```

----- IBM HourGlass: Groups Participated In By CE ----- Row 1 of 3
COMMAND====>

control element:
  Type ==> MBAT
  Name ==> CEMB001

Cmd Sel/Disp Name      Owner
---
TEST GROUP #01      TESTGRP01  AGGUSR
TEST GROUP #02      TESTGRP02  AGGUSR

```

### Panel

The panel includes:

**Type** The environment associated with the control element.

**Name** The name of the control element for which groups are listed.

**Cmd** The line command entry area.

#### Sel/Disp

**Sel** The Sel column displays an S indicate the control element group is selected.

**Disp** The Disp column displays DLET to indicate a control element group is deleted. Any changes indicated in this column are pending until you use END to exit this panel.

**Name** The name of the control element group. The second line of an entry displays a description of the group, if a description is entered on the Group Properties panel.

#### Owner

The owner of the control element group.

### Line command

The Cmd area on the left side of the panel is used to enter line commands. This line command is available:

**S** Select a control element group.

### DELETE command

Use the DELETE primary command to delete one or more selected control element groups from the list. This command is useful for quickly removing the connection between a control element and one or more groups at one time. Use END to finalize the deletion.

### Primary commands

These commands are available when the Groups Participated In By CE panel is displayed:

```

CANCEL  END          TOGGLE  UNSELECT ALL
DELETE  SELECT ALL

```

## Delete a group

### Delete a group

You can delete a group listed on the Control Element Groups panel. In Cmd, type S next to the group you want to delete and press ENTER. Use the DELETE command and press ENTER.

```
----- IBM HourGlass: Control Element Groups ----- Row 1 of 3
COMMAND===>

Cmd Sel/Disp Name      Owner
--- S  DLET TESTGRP01  AGGUSR
    TEST GROUP #01
    TESTGRP02          AGGUSR
--- TEST GROUP #02
    TESTGRP03          AGGUSR
--- TEST GROUP #03
```

The Disp column displays DLET to indicate that the deletion is pending. Use END to finalize the deletion.

---

## View HourGlass customization settings

On the HourGlass Option Menu, select Option 5 View Settings to display the customization options selected during the HourGlass installation. This panel is read-only. Refer to “Run the customization job” on page 6 for information on the parameters you can specify to customize HourGlass for your installation.



## View HourGlass customization settings

```
***** Top of Data *****
IBM HOURGLASS V7.1 CUSTOMIZATION OPTIONS      RUN OPTION=MEMORY
TRACE=N   CSA=N   TSO=Y   STC=Y   EXCL=Y   INCL=N   OLD=Y
JOBPREF=*
DDPPREF=HG
          EXCLUDE  PROG=DFSXLGI0
          EXCLUDE  PROG=DFSXBAT0
          EXCLUDE  PROG=DFSDLB*
          EXCLUDE  PROG=DFSPCC30
          EXCLUDE  PROG=SYNCSMF
          EXCLUDE  PROG=DSNUTILB
          EXCLUDE  PROG=DFSFTIM0
          EXCLUDE  PROG=IDCSAT0?
          EXCLUDE  PROG=IDMSDBIO
          EXCLUDE  PROG=IDCAMS
          EXCLUDE  PROG=AMSCPY
          EXCLUDE  PROG=GVEXPORT
          EXCLUDE  PROG=GVRESTOR
          EXCLUDE  PROG=DSPUR*
          EXCLUDE  PROG=DSPCINT0
          EXCLUDE  PROG=DFSBB000
          EXCLUDE  PROG=DFSBCKI0
          EXCLUDE  PROG=DFSUCUM0
          EXCLUDE  PROG=DFSUDMP0
          EXCLUDE  PROG=DFSURDB0
          INCLUDE  PROG=ISPCAL
          INCLUDE  PROG=IRXJCL
          INCLUDE  PROG=DFSREXX0
          INCLUDE  PROG=IVPREXX
          INCLUDE  PROG=ICEINPUT
          INCLUDE  PROG=SORT*
JOB CLASSES=*
STCNAME=HGSTATS
STCLINK=AGGLINK
SMFTYPE=200
CUTSMF=N
WTO=N     IMSROLL=N     LQUALDB2=N
          PCRTN=FF LINKSYS=Y CICSNONE=N EXITEACH=N CICSLINK=Y
AGGACTRT 20030626 100500 #000016
AGGCC    20030818 144933 #000033
AGGCUST  20101117 155632 #000004
AGGDD    20090120 115628 #000001
F1=Help   F2=Split  F3=Exit   F5=Rfind  F7=Up    F8=Down  F9=Swap
F10=Left  F11=Right F12=Cancel
```

**Note:** This is only a partial screen capture of the HourGlass customization settings.

## View HourGlass operational status

HourGlass intercepts all system time-of-day requests that internally issue SVC 11 or PC Time Service instructions. These application-oriented interfaces are commonly used by most software products and programming languages to retrieve the date and time from the operating system.

On the HourGlass Option Menu, select Option 6 Verify Status to display the operational status of SVC 11 and the PC Time Service.

## View HourGlass operational status

```
----- IBM HourGlass: Option Menu -----
C +-----+
  | Command ==>                               |
D  | Operational Status:                       |
  |                                             |
P  |          SVC11 Support ==> ACTIVE         |
  | PC Time Service Support ==> ACTIVE        |
  |                                             |
  | F1=HELP  F2=SPLIT  F3=END  F4=RETURN  F5=RFIND  F6=RCHANGE |
  | F7=UP    F8=DOWN   F9=SWAP  F10=LEFT  F11=RIGHT |
  +-----+
+-----+
```

### Panel

The panel includes:

#### **SVC11 Support**

Indicates whether SVC 11 support is active or inactive.

#### **PC Time Service Support**

Indicates whether PC Time Service support is active or inactive.

---

## Chapter 5. Managing control elements with AGGCXB and AGGCXI

Here are details on how to manage control elements with AGGCXB (the HourGlass Control Center batch utility), and AGGCXI (the HourGlass Control Center for IMS application, provided in HourGlass Version 6, Release 1.0).

---

### Managing control elements with AGGCXB

The HourGlass Control Center batch utility (AGGCXB) program supports operations that are analogous to functions provided in the existing HourGlass Control Center application for TSO/ISPF, running in the MVS batch environment.

The AGGCXB program runs against an existing active HourGlass Repository dataset. The scope of this offering is limited to operations on existing control elements. The capability to create new control elements is not currently provided.

The processing of the AGGCXB program is controlled by control statements that are retrieved from a dataset allocated to the process:

- The control statements are free form.
- Statements can be coded in any column between 2 and 72 (inclusive).
- Control statements can be continued onto multiple lines.
- If a list of values, separated by commas, is coded, it may be continued on multiple lines, but keywords and values cannot be split onto multiple lines.

### Control statement syntax

You can write AGGCXB program control statements in free form in columns 2 through 72 (inclusive). Any character in column 1 or beyond column 72 is ignored.

Syntax requirements are:

#### Commands

A command must appear first, followed by its keywords and sub-keywords. Each command must take up only one line, unless a continuation character is used to indicate continuation of the command on the next line. A command is separated from its keywords by one or more blanks, a comment, or both. For example:

```
FETCH CENAME(CENAME1,CENAME2,CENAME3);
```

or

```
/* comment */FETCH /* THIS IS A COMMENT */ +  
CENAME /* comment */ ( /* comment */ CENAME1, +  
/* COMMENT FOR CENAME1 */ +  
CENAME2, /* COMMENT FOR CENAME2 */ +  
CENAME3) ; /* COMMENT FOR CENAME3 */
```

#### Comments

Two forms of comments are supported:

##### Inline comments

A string of characters that begins with “/\*” and ends with “\*/” is an inline comment. For example:

```
/* THIS IS AN INLINE COMMENT */
```

## Control statement syntax

Inline comments must begin and end on the same line. Inline comments may not be terminated on one line with a continuation character and continued on the next line, or a syntax error will result.

### Comment statement

An asterisk character ("\*") appearing in column 1 designates that the entire control statement is to be considered a comment. Any other value appearing in column 1 is invalid, and is ignored.

### Separators

A separator can be a comma (,), one or more blanks, or an inline comment ("/\* COMMENT \*/"). Where space permits, an inline comment may be substituted for a blank character anywhere a blank character can be coded. If used, comma characters are limited to functioning as separators in multi-value sub-keyword lists. Separators shown in the sample syntax diagrams in this document are always commas, but any of the three types can be used.

### Keywords

Keywords are parameters separated by one or more separators.

### Sub-keywords

Sub-keywords follow their associated keyword and are separated from them by a pair of enclosing parentheses. One or more blanks can precede and follow each parenthesis in the pair. For example:

```
SET STATUS( ENABLE )
SET STATUS (ENABLE)
```

If two or more sub-keywords are permissible for a single keyword, they are separated from one another by one or more blanks or by commas. Each comma can be preceded and followed by one or more blanks. For example:

```
FETCH CENAME(CENAME1 , CENAME2 , CENAME3);
FETCH CENAME(CENAME1,CENAME2,CENAME3);
FETCH CENAME(CENAME1 CENAME2 CENAME3);
```

### Continuation

Continuation of a command is specified by placing a plus-sign (+) as the right-most nonblank character, preceded by one or more blanks. If a continuation character is used, the following line is read as if it were part of the previous line. Since only one command is allowed per line, no additional commands may be included on the continued line. If no continuation character is used, the first word on the following line must be a command. For example:

```
FETCH /* THIS IS A COMMENT */ +
      CENAME(CENAME1, /* COMMENT FOR CENAME1 */ +
            CENAME2, /* COMMENT FOR CENAME2 */ +
            CENAME3); /* COMMENT FOR CENAME3 */
```

### End of a command

The end of a command is indicated by a semicolon (;). Everything to the right of the semicolon is ignored.

## Commands

Here are the commands supported by the AGGCXB utility program:

### FETCH

Use this command to retrieve control elements (CE's), by CE name, CE type, or CE USER-ID, from the HourGlass Repository dataset, to one or more internal data structures known as Repository Queues. Only control

elements that have been thus “enqueued” to a Repository Queue with the FETCH command may be altered in subsequent operations.

An input stream may contain multiple FETCH commands, but each FETCH command initiates a new session. That is, the Repository Queues are reinitiated for each FETCH command.

Any pending CE updates not processed with the SAVE command are lost when a FETCH command is subsequently encountered in the input stream.

**SELECT**

This command operates on enqueued control elements, and can be used to change the selection status of specified control elements from the “UNSELECTED” status to the “SELECTED” status. The SET and LIST commands only apply to enqueued control elements in “SELECTED” status.

**UNSELECT**

This command operates on enqueued control elements, and can be used to change the selection status of specified control elements from the “SELECTED” status to the “UNSELECTED” status.

**SET** This command operates on enqueued and selected control elements to effect modifications to the enablement status and the date and time values of control elements, or both. The STATUS keyword, the CEDATE keyword and the CETIME keyword may be used together in any combination. At least one of the associated keywords must appear with the SET command.

**SAVE** This command causes any modified control elements currently in the Repository Queues to be permanently stored in the HourGlass Repository dataset.

**REFRESH**

This command initiates the process of bringing on-line all modifications made to the HourGlass Repository dataset since the startup of the HourGlass product, or the latest Refresh operation, whichever is most recent. The refresh process rebuilds the Active Control Element Set (ACES) from the updated contents of the HourGlass Repository dataset.

**LIST** This command operates on enqueued and selected control elements, and can be used to list control elements and a sub-set of their properties. The resulting listing is written to the SYSPRINT dataset.

## **Keywords and sub-keywords**

Here are the keywords and sub-keywords that are supported by the AGGCXB program:

## Keywords and sub-keywords

Table 2. Keywords and Sub-Keywords

Command	Keyword/Sub-Keyword	Description
FETCH	CENAME(n1,n2,n3,...) CETYPE(t1,t2,t3,...) CEUSERID(userid)	<p>The CENAME keyword, with at least one CENAME sub-keyword value, is required with the FETCH command. One or more CENAME sub-keyword values, consisting of fully-or partially-qualified CENAME values, may be coded. Partially-qualified CENAME sub-keyword values are designated by coding an asterisk (“*”) as the right-most character of the value. The specification CENAME(ALL) or CENAME(*) is supported.</p> <p>For the CETYPE keyword, one or more of the following sub-keyword values may be coded:</p> <p><b>MB</b> MVS Batch  <b>TI</b> TSO/ISPF  <b>JS</b> Job Schedule  <b>IM</b> IMS Online  <b>DB</b> DB2  <b>ALL</b> Select all control element types.</p> <p>If no CETYPE keyword is supplied, the specification “CETYPE(ALL)” is assumed.</p> <p>For the CEUSERID keyword, one CEUSERID sub-keyword value, consisting of a fully-or partially-qualified CEUSERID value, may be coded in each FETCH command. A partially-qualified CEUSERID sub-keyword value is designated by coding an asterisk (“*”) as the right-most character of the value. If no CEUSERID keyword is supplied, the specification “CEUSERID(ALL)” is assumed.</p> <p>The CENAME, CETYPE and CEUSERID keyword may be used together in any combination.</p>
SELECT or UNSELECT	CENAME(...)	Used to specify the selection status of a list of one or more control element names previously retrieved using the FETCH command. The special value “CENAME(ALL)” or “CENAME(*)” may be specified for the SELECT and UNSELECT commands.
SET	STATUS(“status value”)	<p>Used to modify the enablement status of currently retrieved and selected control elements. The valid sub-keyword values are:</p> <ul style="list-style-type: none"> <li>• ENABLED</li> <li>• DISABLED</li> <li>• TOGGLE</li> </ul> <p>ENABLE and DISABLE set the enablement status of the currently selected control elements. TOGGLE resets the selected control element enablement status to the opposite of its current value. The status takes effect once the element changes are saved and refreshed.</p>

Table 2. Keywords and Sub-Keywords (continued)

Command	Keyword/Sub-Keyword	Description
SET	CEDATE("date value")	Used to modify the date value of currently selected control elements. Any date value supported by the HourGlass Control Center for TSO/ISPF (AGGCXT) may be specified. See Date, for a description of valid date specification values.  In addition, there is the special value "CURRENT". Specifying the "CURRENT" value causes any HourGlass-altered date values previously specified in the affected control elements to be cleared. The updates take effect once the changed control elements are saved and refreshed.
SET	CETIME("time value")	Used to modify the time value of currently selected control elements. Any time value supported by the HourGlass Control Center for TSO/ISPF (AGGCXT) may be specified. See Time for a description of valid time specification values.  You can also specify the special value "CURRENT". Specifying the "CURRENT" value causes any HourGlass-altered date values previously specified in the affected control elements to be cleared. The updates take effect once the changed control elements are saved and refreshed.
SAVE		Modified control elements currently in the Repository Queues are permanently stored in the HourGlass Repository dataset. <b>Note:</b> A SAVE command must be executed prior to any subsequent FETCH command, or changes made prior to the subsequent FETCH command are lost.
REFRESH		All modifications made to the HourGlass Repository dataset since the last startup of the HourGlass product are retrieved and activated for date and time processing.
LIST		For control elements that are currently in SELECT status, the control elements and a sub-set of their properties are listed. The resulting listing is written to the AGGPRINT dataset.

## Command examples

```

FETCH CENAME(job1, job2, job3, job4); /* retrieve elements by name */
FETCH CENAME(jobab*) CETYPE(DB); /* retrieve elements by type, "jobab" */
/* and CETYPE, "DB". */
FETCH CENAME(job*) CETYPE(DB) CEUSERID(K202*); /* retrieve elements by CENAME, CETYPE and CEUSERID*/

SELECT CENAME(JOB*); /* SELECT all "JOB*" CE's for processing */
SET STATUS(ENABLE); /* enable job1 and job2 for use upon next save/refresh */
SELECT CENAME(job3 job4); /* select elements to be modified without ", " */
SET STATUS(DISABLE); /* disable job3 and job4 usage upon next save/refresh */

UNSELECT CENAME(ALL); /* unselect all currently selected control elements */
SELECT CENAME(job1, job2, job5); /* select control elements to be modified */

SET CETIME(P0100); /* set time for job1, job2, job5 */
SET CEDATE(2010-12-01); /* set date for job1, job2, job5 */

```

## Command examples

```
SAVE; /* saves job1, job2, job3, job4 and job5 elements */
REFRESH; /* job1, job 2 and job5 are now utilize for date/time transactions
          job3 and job4 are no longer utilized for date/time transactions */
LIST; /* shows currently selected control elements job1,
        job2, job5 but not job3 and job4 which are not currently selected */
```

## Modes of execution

The AGGCXB program accepts an optional execution parameter via the PARM keyword on the EXEC JCL statement. If the input parameter is specified, it is expected to be in the form of one RUNTYPE() parameter specifying the type of execution to be performed. The valid RUNTYPE values are:

### RUNTYPE(VVALIDATE)

The AGGIN dataset is read and the contents are validated but not actuated;

### RUNTYPE(EXECUTE)

The AGGIN dataset is read and the contents are validated and actuated.

The default action is RUNTYPE(VVALIDATE).

## Return codes

- |   |   |
|---|---|
| 0 | Success;  |
| 8 | An error has occurred. Look for error messages in the AGGCXB listing for an explanation of the nature of the error. |

See SAGGSAMP(AGGCXB\$) for execution examples and further information.

## Required RACF authorization

To successfully run the HourGlass Control Center Batch Utility application in full EXECUTE mode, the batch process must be permitted for Update Access on the HOURGLASS\_CX\_ADMIN resource. This is equivalent to Administrator/Update access in the HourGlass Control Center for TSO/ISPF application. Also, if the REFRESH command is used, the batch process must also be permitted for Update Access on the HOURGLASS\_CX\_REFR resource.

All users or admins who need to do a Save and Active via the Control Center or the Batch Interface need authority to OPERCMDS. Please refer to SAGGSAMP library member AGGCXT1 for further information about how to implement the RACF resources and HourGlass Control Center application.

---

## Managing control elements with AGGCXI

A new HourGlass application, AGGCXI, the HourGlass Control Center for IMS application, is provided in HourGlass Version 6, Release 1.0. This program runs as an IMS online transaction program and provides capability similar to the HGIMS application program that was provided in previous HourGlass releases. The new AGGCXI application is fully compatible with the HourGlass Repository dataset. The control elements created and maintained by the AGGCXI application are fully compatible with the existing HourGlass Control Center programs:

- AGGCXT, the HourGlass Control Center for TSO/ISPF application
- AGGCXB, the HourGlass Control Center for Batch application



## Managing control elements with AGGCXI

In addition to the AGGCXI program, new SAGGSAMP library members (AGGCXMFS, AGGCXPSB, and AGGCXTRN) are provided. These document how to define and implement the elements of AGGCXI application in the IMS online transaction processing environment.

When you run "/FOR AGGCX" press ENTER and it retrieves the control element and populates the panel as shown below:

```
***** IBM HOURGLASS *****      IMS SYSTEM-ID: IMS1
MANAGE IMS DATE/TIME SETTINGS      USER-ID:  USRDEV

REGION-ID          ==> REG1          CE NAME ==> IMS1USRDEV
HOURGLASS DATE     ==> 2012-01-01   (YYYY-MM-DD)
HOURGLASS TIME     ==> P1200        (DHHMM)
ENABLEMENT STATUS  ==> ENABLE       (E, ENABLE, D, DISABLE)
DISPOSITION:      ( '/' TO SELECT)
SAVE AND ACTIVATE ==>
SAVE ONLY         ==>

AGGCX17I EXISTING CONTROL ELEMENT RETRIEVED. UPDATE AS NEEDED.
```

The IMS Control Center interface is designed to work with control elements that have a name of "SystemidUserid". For example, if the System id is IMS1 and the userid is JSMITH, then the control element name that can be accessed must be named IMS1JSMITH.

If no control element exists with the expected name, then the Create panel is shown, to allow you to create a new control element. Once created, it has a name of SystemidUserid.

Only one IMS control element can be modified by a particular user using this interface. The control element that can be modified has a name of SystemidUserid.

Any IMS Control Elements that have wild cards in the RegionID and UserID are ignored.



---

## Chapter 6. Messages and abend messages

This appendix discusses the various messages and abends generated by HourGlass.

---

### Messages

An identifier precedes each message text. The format of the identifier is *AGGmmmt*. In the identifier, *mm* identifies the module from which the message originates, *m* is the message sequence number, and *t* is the message type.

### Module identifiers

HourGlass module identifiers are classified as follows:

Mod ID	Module Name	HourGlass Component
AU	AGGAUDIT	CICS HourGlass Audit User Exit
BU	AGGCXB	Control Center Batch Utility
CC	AGGCC	CICS Control
CO	AGGOPTS	Options List Utility
CU	AGGCUST	Customization
CX	AGGCX	HourGlass Control Center
DL	AGGDL	DB2 Local Support Verification
DR	AGGDR	DB2 Remote Support Verification
FE	AGGFTCH	CICS EIB Priming
GD	AGGETDT	CICS Date/Time Propagation
IN	AGGINSTL	MVS Support Activation
PI	AGGPINS	Patch Installer
PL	AGGPLT	CICS Support Activation
PR	AGGPRIME	CICS Support Activation
RC	AGGIMSLI	IMS IOPCB Support
RI	AGGIRIM	Internal Repository Image Manager
RV	AGGVIMS	IMS Support Verification
SC	AGGSC	CICS Settings Control
SI	AGGINSVC	STCK Replacement Support
ST	AGGLSSTC	MVS Support Activation
SY	AGGACTRT	MVS Statistics Processing
SY	Miscellaneous	Generic Error Messages
TS	AGGTSUA	SCDS Conversion Utility
UC	AGGUC	CICS User Control
VR	AGGVRFY	MVS Support Verification
XT	AGGCXT	HourGlass CICS Task Support

## Message types

HourGlass message types are:

- E Error message
- S Severe error message
- I Informational message

Error and informational messages generally provide information needed to determine a response. Severe error messages usually indicate an internal HourGlass or system error. In the case of severe error messages, contact Technical Support for assistance.

## CICS HourGlass Audit User Exit (AGGAUDIT) messages

---

**AGGAU01S AN INVALID FUNCTION REQUEST WAS RECEIVED FUNCTION CODE=*fc*.**

**Explanation:** *fc* is the AGGAUDIT function code received in error.

---

**AGGAU03S WRITE TO HOURGLASS AUDIT DATASET FAILED, EIBRESP=*eibr*c.**

**Explanation:** *eibr*c is the CICS Exec Interface Block (EIB) response code.

---

**AGGAU02S OPEN OF HOURGLASS AUDIT DATASET FAILED, EIBRESP=*eibr*c.**

**Explanation:** *eibr*c is the CICS Exec Interface Block (EIB) response code.

---

**AGGAU04S CLOSE OF HOURGLASS AUDIT DATASET FAILED, EIBRESP=*eibr*c.**

**Explanation:** *eibr*c is the CICS Exec Interface Block (EIB) response code.

## Control Center Batch Utility (AGGCXB) messages

---

**AGGBU01E A LOGICAL ERROR OCCURRED IN MODULE *module*, RETURN CODE=*rc*, REASON CODE=*reason*.**

**Explanation:** A logical error occurred in the indicated module *module*. The return code *rc* and reason code *reason* further describe the error.

---

**Explanation:** The RUNTYPE specification, supplied via the PARM= parameter on the EXEC JCL statement, is invalid. The valid values are "VALIDATE" or "EXECUTE". If the RUNTYPE specification is omitted, "VALIDATE" is the default value.

---

**AGGBU02E REQUIRED AGGIN DD STATEMENT IS NOT ALLOCATED.**

**Explanation:** The required AGGIN file is not allocated in the current execution of the program.

---

**AGGBU06I THE RUNTYPE SPECIFICATION IS OMITTED. DEFAULTING TO OPTION RUNTYPE(VVALIDATE).**

**Explanation:** This message provides notification that the default "VALIDATE" value has been used for the RUNTYPE option.

---

**AGGBU03E REQUIRED AGGPRINT DD STATEMENT IS NOT ALLOCATED.**

**Explanation:** The required AGGPRINT file is not allocated in the current execution of the program.

---

**AGGBU08E NEW COMMAND FOUND WHILE PREVIOUS COMMAND NOT TERMINATED. MISSING COMMAND TERMINATOR.**

**Explanation:** A COMMAND keyword was found in the current input record while a previous COMMAND keyword had not been terminated. COMMAND keywords are terminated with a semi-colon character (";").

---

**AGGBU04E DCB OPEN ERROR. MODULE=*module*, DDNAME=*ddname* FOR *access*, DCBADDR=*addr*, RC=*rc*.**

**Explanation:** While attempting to open a DCB in module *module*, at location *addr*, with DD name *ddname*, for access *access*, the OPEN service request returned a non-zero return code *rc*.

---

**AGGBU09E BEGIN INLINE COMMENT DELIMITER FOUND WITH NO MATCHING ENDING INLINE COMMENT DELIMITER.**

**Explanation:** The beginning delimiter for an inline comment was found in an input record, but the ending

delimiter was not found on the same input record. Inline comments must begin and end in the same input record.

---

**AGGBU11E** CENAME SUB-KEYWORD LIST BEGINNING DELIMITER FOUND WHILE PREVIOUS CENAME LIST IN PROGRESS.

**Explanation:** While processing a CE name list, the beginning delimiter for a second CE name list was found.

---

**AGGBU12E** CETYPE SUB-KEYWORD LIST BEGINNING DELIMITER FOUND WHILE PREVIOUS CETYPE LIST IN PROGRESS.

**Explanation:** While processing a CETYPE list, the beginning delimiter for a second CETYPE list was found.

---

**AGGBU13E** STATUS SUB-KEYWORD BEGINNING DELIMITER FOUND WHILE PREVIOUS STATUS SUB-KEYWORD IN PROGRESS.

**Explanation:** While processing a STATUS sub-keyword, the beginning delimiter for a second STATUS sub-keyword was found.

---

**AGGBU14E** CEDATE SUB-KEYWORD BEGINNING DELIMITER FOUND WHILE PREVIOUS CEDATE SUB-KEYWORD IN PROGRESS.

**Explanation:** While processing a CEDATE sub-keyword, the beginning delimiter for a second CEDATE sub-keyword was found.

---

**AGGBU15E** CETIME SUB-KEYWORD BEGINNING DELIMITER FOUND WHILE PREVIOUS CETIME SUB-KEYWORD IN PROGRESS.

**Explanation:** While processing a CETIME sub-keyword, the beginning delimiter for a second CETIME sub-keyword was found.

---

**AGGBU16E** ENDING DELIMITER OF SUB-KEYWORD LIST FOUND. SUB-KEYWORD LIST HAS NO MEMBERS.

**Explanation:** A sub-keyword list with no members has been found.

---

**AGGBU17E** ENDING DELIMITER OF SUB-KEYWORD FOUND. SUB-KEYWORD IS MISSING/NOT SPECIFIED.

**Explanation:** A sub-keyword expecting to receive a single value specification, but the specification is missing, has been encountered in the current input record.

---

**AGGBU18E** CONTEXT LEVEL IS INCORRECT FOR THIS COMMAND/KEYWORD. A CONTROL SEQUENCE ERROR HAS OCCURRED.

**Explanation:** A COMMAND or KEYWORD has been found for which the current context level is incorrect.

---

**AGGBU19E** EXPECTING COMMAND SPECIFICATION: INPUT IS NOT A VALID COMMAND.

**Explanation:** The current context indicates that the current input should be a COMMAND, but the current input is not a valid COMMAND.

---

**AGGBU20E** EXPECTING KEYWORD SPECIFICATION: INPUT IS NOT A VALID KEYWORD.

**Explanation:** The current context indicates that the current input should be a KEYWORD, but the current input is not a valid KEYWORD.

---

**AGGBU21E** END OF INPUT OCCURRED WHILE COMMAND IS NOT TERMINATED.

**Explanation:** The end-of-file was found in the AGGIN file while the COMMAND that is being processed has not been terminated with the termination character.

---

**AGGBU22E** CENAME KEYWORD NOT APPLICABLE TO CURRENT COMMAND.

**Explanation:** The CENAME KEYWORD being processed is not applicable to the COMMAND being processed.

---

**AGGBU23E** CETYPE KEYWORD NOT APPLICABLE TO CURRENT COMMAND.

**Explanation:** The CETYPE KEYWORD being processed is not applicable to the COMMAND being processed.

---

**AGGBU24E STATUS KEYWORD NOT APPLICABLE TO CURRENT COMMAND.**

**Explanation:** The STATUS KEYWORD being processed is not applicable to the COMMAND being processed.

---

**AGGBU25E CEDATE KEYWORD NOT APPLICABLE TO CURRENT COMMAND.**

**Explanation:** The CEDATE KEYWORD being processed is not applicable to the COMMAND being processed.

---

**AGGBU26E CETIME KEYWORD NOT APPLICABLE TO CURRENT COMMAND.**

**Explanation:** The CETIME KEYWORD being processed is not applicable to the COMMAND being processed.

---

**AGGBU27E ENABLE SUB-KEYWORD NOT APPLICABLE TO CURRENT COMMAND/KEYWORD COMBINATION.**

**Explanation:** The ENABLE sub-keyword being processed is not applicable to the current COMMAND/KEYWORD combination.

---

**AGGBU28E DISABLE SUB-KEYWORD NOT APPLICABLE TO CURRENT COMMAND/KEYWORD COMBINATION.**

**Explanation:** The DISABLE sub-keyword being processed is not applicable to the current COMMAND/KEYWORD combination.

---

**AGGBU29E TOGGLE SUB-KEYWORD NOT APPLICABLE TO CURRENT COMMAND/KEYWORD COMBINATION.**

**Explanation:** The TOGGLE sub-keyword being processed is not applicable to the current COMMAND/KEYWORD combination.

---

**AGGBU30E SUB-KEYWORD "ALL" NOT APPLICABLE TO CURRENT COMMAND/KEYWORD COMBINATION.**

**Explanation:** The ALL sub-keyword being processed is not applicable to the current COMMAND/KEYWORD combination.

---

**AGGBU31E CETYPE SUB-KEYWORD SPECIFICATION NOT APPLICABLE TO CURRENT COMMAND.**

**Explanation:** The CETYPE sub-keyword being processed is not applicable to the current COMMAND.

---

**AGGBU32E EXPECTING SUB-KEYWORD SPECIFICATION: INPUT IS NOT A VALID SUB-KEYWORD SPECIFICATION.**

**Explanation:** The current context indicates that the current input should be a SUB-KEYWORD, but the current input is not a valid SUB-KEYWORD.

---

**AGGBU33E COMMAND IS NEITHER CONTINUED NOR TERMINATED IN THIS INPUT RECORD. A CONTROL SEQUENCE ERROR HAS OCCURRED.**

**Explanation:** The current COMMAND is neither terminated nor continued in the current input record. A control sequence error has occurred.

---

**AGGBU34E UNEXPECTED DELIMITER FOUND. UNABLE TO PROCESS THIS INPUT RECORD.**

**Explanation:** A delimiter was found in the input record that is not correct in the current context. The remainder of the current input record will be bypassed.

---

**AGGBU35E CENAME SUB-KEYWORD SPECIFICATION EXPECTED, BUT A VALID CENAME SUB-KEYWORD VALUE COULD NOT BE FOUND.**

**Explanation:** The current context indicates that a CENAME sub-keyword specification is expected, but a valid CENAME value cannot be found.

---

**AGGBU36E CEDATE SUB-KEYWORD SPECIFICATION EXPECTED, BUT A VALID CEDATE SUB-KEYWORD VALUE COULD NOT BE FOUND.**

**Explanation:** The current context indicates that a CEDATE sub-keyword specification is expected, but a valid CEDATE value cannot be found.

---

**AGGBU37E CETIME SUB-KEYWORD SPECIFICATION EXPECTED, BUT A VALID CETIME SUB-KEYWORD VALUE COULD NOT BE FOUND.**

**Explanation:** The current context indicates that a CETIME sub-keyword specification is expected, but a valid CETIME value cannot be found.

---

**AGGBU38E** NEW FETCH COMMAND BEING ACTUATED WHILE UPDATES ARE PENDING. PENDING UPDATES WILL BE DISCARDED.

**Explanation:** While pending updates from a previous FETCH command have yet to be stored to the Repository dataset, a new FETCH command is being processed. The new FETCH command will cause any pending updates to be lost.

---

**AGGBU39I** CETYPE NOT SPECIFIED ON FETCH COMMAND. DEFAULTING TO "CETYPE=(ALL)".

**Explanation:** No CETYPE keyword was specified for the current FETCH command. Defaulting to CETYPE(ALL).

---

**AGGBU40E** CENAME KEYWORD IS REQUIRED FOR FETCH COMMAND. FETCH COMMAND IS MISSING REQUIRED KEYWORD.

**Explanation:** While processing the current FETCH command it was determined that no CENAME keyword specification was specified. The CENAME keyword specification is required for the FETCH command and does not have a default value. A required keyword has been omitted.

---

**AGGBU41E** CEUSERID KEYWORD NOT APPLICABLE TO CURRENT COMMAND.

**Explanation:** A CEUSERID specification was found in the current input record but the CEUSERID keyword is not applicable in the current COMMAND context.

---

**AGGBU42E** ENDING DELIMITER OF CEUSERID SUB-KEYWORD FOUND. SUB-KEYWORD CONTAINS NO VALUE.

**Explanation:** A CEUSERID KEYWORD specification is being processed but the specification contained no CEUSERID values.

---

**AGGBU43E** CEUSERID SUB-KEYWORD BEGINNING DELIMITER FOUND WHILE PREVIOUS CEUSERID VALUE IN PROGRESS.

**Explanation:** While a CEUSERID sub-keyword specification was being processed, a sub-keyword list beginning delimiter was found.

---

**AGGBU44E** CEUSERID SUB-KEYWORD SPECIFICATION EXPECTED, BUT A VALID CEUSERID SUB-KEYWORD VALUE COULD NOT BE FOUND.

**Explanation:** The current context indicates that a CEUSERID sub-keyword specification is expected, but a valid CEUSERID value cannot be found.

---

**AGGBU45E** COMMA DELIMITER FOUND. EXPECTING SINGLE-VALUE SUB-KEYWORD SPECIFICATION. SKIPPING TO NEXT INPUT RECORD.

**Explanation:** The current context indicates that a single-value sub-keyword specification is expected, but a comma was found in the sub-keyword specification.

---

**AGGBU46E** THE LIMITS OF THE CONTROL ELEMENT NAME TABLE HAVE BEEN EXCEEDED. MAXIMUM CE NAME SPECIFICATIONS PER FETCH IS 1000.

**Explanation:** When specifying the CENAME keyword for the FETCH command, not more than 1000 CENAME sub-keywords may be specified.

---

**AGGBU47E** UNEXPECTED CETYPE SUB-KEYWORD SPECIFICATION ENCOUNTERED. VALUE IS BYPASSED.

**Explanation:** An unexpected CETYPE sub-keyword specification has been encountered in the current input record. The CETYPE sub-keyword value will be bypassed.

---

**AGGBU48E** THE CONTROL ELEMENT INDEX TABLE HAS BEEN EXCEEDED. THE PROCESS WILL ABEND.

**Explanation:** The count of control elements retrieved by the current FETCH command has exceeded 65,535, which is the maximum number that can be handled in one FETCH command.

---

**AGGBU49E** STATUS ENABLE IS MUTUALLY EXCLUSIVE WITH DISABLE AND TOGGLE.

**Explanation:** A keyword STATUS with sub-keyword ENABLE has been found, but another mutually-exclusive sub-keyword DISABLE or sub-keyword TOGGLE are already indicated.

---

**AGGBU50E** STATUS DISABLE IS MUTUALLY EXCLUSIVE WITH ENABLE AND TOGGLE.

**Explanation:** A keyword STATUS with sub-keyword DISABLE has been found, but another

## AGGBU51E • AGGBU62E

mutually-exclusive sub-keyword ENABLE or sub-keyword TOGGLE are already indicated.

---

**AGGBU51E STATUS TOGGLE IS MUTUALLY EXCLUSIVE WITH ENABLE AND DISABLE.**

**Explanation:** A keyword STATUS with sub-keyword TOGGLE has been found, but another mutually-exclusive sub-keyword ENABLE or sub-keyword DISABLE are already indicated.

---

**AGGBU52E CENAME KEYWORD IS REQUIRED FOR SELECT COMMAND. SELECT COMMAND IS MISSING REQUIRED KEYWORD.**

**Explanation:** The CENAME keyword is required for the SELECT command. A required keyword specification has been omitted.

---

**AGGBU53E CENAME KEYWORD IS REQUIRED FOR UNSELECT COMMAND. UNSELECT COMMAND IS MISSING REQUIRED KEYWORD.**

**Explanation:** The CENAME keyword is required for the UNSELECT command. A required keyword has been omitted.

---

**AGGBU54E STATUS, CEDATE OR CETIME KEYWORD IS REQUIRED FOR SET COMMAND. SET COMMAND IS MISSING REQUIRED KEYWORD.**

**Explanation:** One of the following keywords is required for the SET command: STATUS, CEDATE or CETIME. None of these keywords were specified in the current SET command. A required keyword has been omitted.

---

**AGGBU55E CENAME(\*) SPECIFICATION CONTAINED UNEXPECTED CHARACTERS. BYPASSING REMAINDER OF THIS INPUT RECORD.**

**Explanation:** A "CENAME(\*)" specification was found in the current input record, but this specification conflicted with specifications processed earlier in the current command.

---

**AGGBU56E THIS PROCESS WAS UNABLE TO OBTAIN THE HOURGLASS REPOSITORY RESOURCE WITHIN THE ALLOTTED TIME SPAN (FIVE MINUTES).**

**Explanation:** In multiple attempts over a five minute time span, the current process was unable to successfully enqueue on the HourGlass Repository

resource. Re-execute the process when the HourGlass Repository resource is available.

---

**AGGBU57I THE HOURGLASS DYNAMIC REFRESH PROCESS HAS BEEN INITIATED SUCCESSFULLY.**

**Explanation:** An HourGlass REFRESH command has been actuated by the current process and a REFRESH request has been successfully initiated.

---

**AGGBU58E THE HOURGLASS DYNAMIC REFRESH CANNOT BE INITIATED BECAUSE THE HOURGLASS AGGLINK PROCESS IS NOT ACTIVE.**

**Explanation:** An HourGlass REFRESH command has been actuated by the current process, but the HourGlass AGGLINK started task is not active in the system. HourGlass is unable to process the REFRESH request.

---

**AGGBU59E THE BATCH USERID OF THE CURRENT JOB IS NOT AUTHORIZED TO MAKE AN HOURGLASS DYNAMIC REFRESH REQUEST.**

**Explanation:** In order to successfully initiate a Dynamic Refresh request from the HourGlass Control Center for Batch utility program, the batch user-id associated with the JOB must be permitted for UPDATE access to the following RACF resource: the 'HOURGLASS\_CX\_REFR' resource, defined in the FACILITY class.

---

**AGGBU60E A RACROUTE SERVICE REQUEST FAILED. SEE THE ACCOMPANYING ABEND FOR FURTHER INFORMATION.**

**Explanation:** A RACROUTE service request failed. See the accompanying ABEND for additional information.

---

**AGGBU62E THE BATCH USERID OF THE CURRENT JOB IS NOT AUTHORIZED TO UPDATE THE HOURGLASS REPOSITORY VIA THE AGGCXB PROGRAM.**

**Explanation:** In order to execute with the RUNTYPE(EXECUTE) option, the batch user-id associated with the JOB executing the HourGlass Control Center for Batch utility program must be permitted for UPDATE access to the following RACF resource: the 'HOURGLASS\_CX\_ADMIN' resource, defined in the FACILITY class.



---

**AGGBU63I EXECUTION MODE RESET TO VALIDATE FROM EXECUTE DUE TO INSUFFICIENT AUTHORIZATION.**

**Explanation:** The RUNTYPE(EXECUTE) option is indicated but the user-id associated with the current JOB is not RACF authorized for the RUNTYPE(EXECUTE) option. The RUNTYPE option has been changed to RUNTYPE(VVALIDATE).

---

**AGGBU64I COMMAND COMPLETED: *command*. CONTROL ELEMENTS PROCESSED BY THIS COMMAND: *count*.**

**Explanation:** The indicated command, *command*, has

been completed. *count* control elements were processed by this command.

---

**AGGBU66E NO CONTROL ELEMENTS HAVE BEEN FETCHED PRIOR TO THE CURRENT SELECT COMMAND. A COMMAND SEQUENCE ERROR HAS OCCURRED.**

**Explanation:** A SELECT command is being processed, but no control elements have been previously retrieved via a FETCH command. This is a command sequence error.

## CICS Global Control Activation (AGGCC) messages

---

**AGGCC01I DATE AND/OR TIME CHANGES ACCEPTED.**

---

**AGGCC02I USERID CHANGES ACCEPTED.**

---

**AGGCC03I TRANID CHANGES ACCEPTED.**

---

**AGGCC04I TERMID CHANGES ACCEPTED.**

---

**AGGCC05I ENABLE/UPDATE SUCCESSFUL.**

---

**AGGCC06I DISABLE SUCCESSFUL.**

---

**AGGCC07I DISABLE NOT PERFORMED: HOURGLASS CICS CONTROL NOT CURRENTLY ENABLED.**

---

**AGGCC08I DISABLE CANCELLED.**

---

**AGGCC09I NO DATA ENTERED.**

---

**AGGCC10E USER NOT AUTHORIZED.**

---

**AGGCC11I NO DATE OR TIME OFFSET PRESENT. AT LEAST ONE REQUIRED FOR ENABLE.**

---

**AGGCC12I EXITING HOURGLASS CICS CONTROL. NO CHANGES PROCESSED.**

---

**AGGCC13E INVALID MAIN MENU OPTION ENTERED.**

---

**AGGCC14E INVALID DATE ENTERED.**

---

**AGGCC15E INVALID TIME OFFSET ENTERED.**

---

**AGGCC16E INVALID DATE AND TIME OFFSET ENTERED.**

---

**AGGCC17E INVALID RESPONSE.**

---

**AGGCC18E ONLY ONE ACTIVE USER ALLOWED FOR THIS TRAN. PLEASE TRY LATER.**

---

**AGGCC19E AGGCCGX GWA IS INVALID.**

---

**AGGCC20I AGGCSQL EXIT HAS BEEN DEACTIVATED DUE TO USER REQUEST TO DISABLE HOURGLASS CICS CONTROL.**

---

**AGGCC21I AGGCSQL EXIT WILL BE ACTIVATED DUE TO USER REQUEST TO ENABLE HOURGLASS CICS CONTROL.**

---

**AGGCC22S *tran* TRAN RECOVERY ROUTINE INTERCEPTED AN ABEND. ABEND CODE=*ac*.**

**Explanation:**

*tran* is the name of the transaction in which the error occurred.

*ac* is the CICS abend code for the error.

---

**AGGCC23S HOURGLASS CICS CONTROL: CICS ERROR OCCURRED IN SERVICE CALL #*csc*.**

**Explanation:** *csc* is the CICS service call that incurred the error.

## AGGCC24E • AGGCC40I

---

AGGCC24E CICS SYSTEM VERIFICATION  
FAILED: EPF DISABLE.

---

AGGCC25E OPEN REQUEST FAILED FOR  
TDQUEUE AGGB, EIBRESP=eibresp.

---

AGGCC26E READ REQUEST FAILED FOR  
TDQUEUE AGGB, EIBRESP=eibresp.

---

AGGCC27E CLOSE REQUEST FAILED FOR  
TDQUEUE AGGB, EIBRESP=eibresp.

---

AGGCC28E AN ERROR OCCURRED IN THE  
DATE=yyyy-mm-dd CONVERSION  
ROUTINE. DATE IGNORED.

---

AGGCC29E INVALID FORMAT  
DATE=yyyymmhddx SPECIFICATION  
IGNORED.

---

AGGCC30E INVALID FORMAT TIME=dhhmmx  
SPECIFICATION IGNORED.

---

AGGCC31E HOURGLASS IS NOT ACTIVE IN  
THIS CICS REGION.

---

AGGCC32I BATCH TIME MANAGEMENT  
FOUND NEITHER VALID DATE NOR  
VALID TIME,

**Explanation:** The HGCB transaction found that the  
PDS/PDSE member or dataset used to provide data for  
the TDQueue AGGB, typically called AGGDATE in our  
SAMPLIB, contains no valid DATE= or TIME=.

---

AGGCC33I DATE=yyyy-mm-dd PRIOR TO  
CURRENT DISALLOWED BY  
CUSTOMIZATION SETTING.

---

AGGCC34I DATE SETTING ALREADY FOUND.  
SUPERFLUOUS DATE=ddddddddd  
SETTING IGNORED,

**Explanation:** Multiple DATE= lines were found in the  
AGGB TD Queue/"AGGDATE" file.

---

AGGCC35I TIME SETTING ALREADY FOUND.  
SUPERFLUOUS TIME=ttttt SETTING  
IGNORED,

**Explanation:** Multiple TIME= lines were found in the  
AGGB TD Queue/"AGGDATE" file.

---

AGGCC36I TIME=dhhmm SETTING RESULTS IN  
DATE/TIME VALUE OUT OF RANGE.  
SETTING IGNORED.

---

AGGCC37I AN HOURGLASS BATCH CONTROL  
OPERATION HAS BEEN INITIATED.

---

AGGCC38I AN HOURGLASS BATCH CONTROL  
OPERATION HAS TERMINATED.

---

AGGCC39I VALID DATE VALUE FOUND:  
DATE=Ydyd or yyyy-mm-dd.

---

AGGCC40I VALID TIME VALUE FOUND:  
TIME=dhhmm'

## Options List Utility (AGGOPTS) messages

---

AGGCO01E ERROR-REQUIRED EXECUTION  
PARAMETER MISSING.

---

AGGCO05E ERROR-"FLAG" COULD NOT BE  
LOCATED.

---

AGGCO02E ERROR-INVALID EXECUTION  
PARAMETER.

---

AGGCO06E ERROR-"STCNAME" COULD NOT BE  
LOCATED.

---

AGGCO03E ERROR-MEMORY RUNTYPE INVALID  
- HOURGLASS IS NOT INSTALLED.

---

AGGCO07E AGGTBLS DATA AREA FAILED  
VALIDATION CHECK.

---

AGGCO04E ERROR-"ADDR" COULD NOT BE  
LOCATED.

## Customization (AGGCUST) messages

---

AGGCU01I IBM HOURGLASS CUSTOMIZATION  
SUCCESSFUL.

---

AGGCU14E INVALID TIME SYNTAX.

---

AGGCU02E IBM HOURGLASS CUSTOMIZATION  
FAILED DUE TO ERRORS. SEE  
ERROR(S) DETAIL BELOW.

---

AGGCU15E AT LEAST 1 JOBPREF ENTRY MUST  
BE CODED WITH DATE AND/OR  
TIME.

---

AGGCU03E TSO PARAMETER MUST BE Y OR N.

---

AGGCU16E MAX OF 100 JOBPREF ENTRIES HAS  
BEEN EXCEEDED.

---

AGGCU04E INVALID OR MISSING CHAR(S) IN  
DDNAME PREFIX.

---

AGGCU17E MAX OF 30 JOBPREF ENTRIES HAS  
BEEN EXCEEDED.

---

AGGCU05E INVALID OR MISSING CHAR(S) IN  
JOBNAME PREFIX.

---

AGGCU18E MAX LENGTH OF JOBPREF IS 8  
CHARS.

---

AGGCU06E REQUIRED DDPREF CARD NOT  
PROVIDED.

---

AGGCU19E MAX LENGTH OF JOBPREF IS 8  
CHARS.

---

AGGCU07E MINIMUM OF 1 JOBPREF CARD  
MUST BE PROVIDED.

---

AGGCU20E MAX OF 284 AVAILABLE EXCLUDE  
PGM ENTRIES EXCEEDED.

---

AGGCU08E "JOBPRE=\*" MUST BE FIRST AND  
ONLY JOBPREF CARD.

---

AGGCU21E MAX OF 34 AVAILABLE INCLUDE  
PGM ENTRIES EXCEEDED.

---

AGGCU09E INVALID EXCLUDE/INCLUDE PGM  
SYNTAX.

---

AGGCU22E MAX OF 36 JOB CLASSES HAS BEEN  
EXCEEDED.

---

AGGCU10E SAME PROGRAM REQUESTED FOR  
BOTH EXCLUDE AND INCLUDE.

---

AGGCU23E "JOBPRE2=\*" MUST BE FIRST AND  
ONLY JOBPREF2 CARD.

---

AGGCU11E INVALID JOBCLASS SYNTAX.

---

AGGCU24E INVALID CSA VALUE.

---

AGGCU12E INVALID DATE SYNTAX.

---

AGGCU25E JOBPREF2 CARDS ARE INVALID  
WHEN NO DATE OR TIME PARMS  
ARE PRESENT.

---

AGGCU13E UNRECOGNIZABLE KEYWORD.

## AGGCU26E • AGGCU52E

---

AGGCU26E INVALID USERID SYNTAX.

---

AGGCU27E MAXIMUM OF 30 USERID TABLE ENTRIES EXCEEDED.

---

AGGCU28E MAXIMUM JOBNAME PREFIX LENGTH IS 7 CHARS.

---

AGGCU29E MAXIMUM EXCLUDE/INCLUDE PROGRAM NAME PREFIX LENGTH IS 7 CHARS.

---

AGGCU30E MAXIMUM USERID PREFIX LENGTH IS 7 CHARS.

---

AGGCU31E INVALID STATS VALUE.

---

AGGCU32E MAXIMUM STCNAME LENGTH IS 8 CHARS.

---

AGGCU33E INVALID CHARACTER(S) FOR STCNAME.

---

AGGCU34E STATSTABLE VALUE MUST BE 1-3 DIGITS.

---

AGGCU35E INVALID VALUE FOR STATSTABLE - MUST BE 1-3 NUMERIC DIGITS.

---

AGGCU36E ONLY THE STATSTABLE AND TSO PARAMETERS ARE VALID IN "STATS ONLY" MODE.

---

AGGCU37E MAX LENGTH OF DDNAME PREFIX IS 2 CHARS.

---

AGGCU38E INVALID STC VALUE.

---

AGGCU39E INVALID CICSTEST VALUE - MUST BE 1, 2, OR 3.

---

AGGCU40E EXCLUDE PGM=\* OR INCLUDE PGM=\* IS INVALID.

---

AGGCU41E USERID=\* IS INVALID.

---

AGGCU42E INVALID IMSUSER= CARD SYNTAX.

---

AGGCU43E IMSUSER=\* IS INVALID.

---

AGGCU44E IMSUSER TABLE SIZE EXCEEDED.

---

AGGCU46E CUTSMF PARAMETER MUST BE Y OR N.

---

AGGCU47E WTO PARAMETER MUST BE Y OR N.

---

AGGCU48E ZAP PROCESSING FAILED. PLEASE SEE SYSPRINT FOR ERROR INFORMATION.

---

AGGCU49E LEGACYDB2QUALIFICATION MUST BE Y OR N.

---

AGGCU50E STCKSYNC MUST BE Y OR N.

---

AGGCU51E CICSTINT MUST BE 0, 1, OR 2.

---

AGGCU52E SMF RECORD TYPE NOT 3 DIGITS FROM 128-255.

## HourGlass Control Center (AGGCX) messages

---

**AGGCX01E** A LOGICAL ERROR OCCURRED IN  
MODULE *module*, RETURN CODE=*rc*,  
REASON CODE=*reason*

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the return code.  
*reason* is the reason code.

---

**AGGCX02E** DIALOG ERROR IN MODULE *module*,  
SERVICE=*service*, AT OFFSET *offset*,  
RETURN CODE=*rc*

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*service* is the name of the ISPF  
service being invoked at the time of the error.  
*offset* is the offset into the module (in  
hexadecimal) where the call to the ISPF service  
occurred.  
*rc* is the return code received from the  
ISPF service.

---

**AGGCX03E** VSAM CONTROL BLOCK  
MANIPULATION ERROR OCCURRED  
IN MODULE *module*. RETURN  
CODE=*rc*, REASON CODE=*reason*.

**Explanation:**

*module* is the name of the module in which  
the error occurred.

## DB2 Local Support Verification (AGGDL) messages

---

**AGGDL01E** DB2 CONNECTION NOT ACTIVE.

---

**AGGDL02E** DB2 ERROR. SQL CALL NUMBER=*cn*,  
ERRCODE=*errc*.

**Explanation:**

*cn* is the internal SQL call number.  
*errc* is the SQL error code expressed as a  
two's-complement 32-bit binary value.

The ERRCODE value equates to a -805, which is a Bind  
error. You should run the bind utilities in  
SAGGSAMP(AGGDNDL) and (if needed)  
SAGGSAMP(AGGDNDDR).

## DB2 Remote Support Verification (AGGDR) messages

---

**AGGDR01E** CICS INQUIRE EXITPROGRAM

*rc* is the return code from the service request.  
*reason* is the reason code from the service request.

---

**AGGCX04E** VSAM OPEN/CLOSE ERROR  
OCCURRED IN MODULE *module*.  
RETURN CODE=*rc*, REASON  
CODE=*reason*.

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the return code from the service request.  
*reason* is the reason code from the service request.

---

**AGGCX05E** VSAM RECORD MANAGEMENT  
ERROR OCCURRED IN MODULE  
*module*. RETURN CODE=*rc*, REASON  
CODE=*reason*.

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the return code from the service request.  
*reason* is the reason code from the service request.

---

**AGGCX06E** I/O ERROR INFORMATION - *errinf*.

**Explanation:** *errinf* contains either valid SYNADAF  
error information or the message "SYNADAF DID NOT  
RETURN VALID ERROR INFORMATION".

---

**AGGDL03E** CICS INQUIRE DB2CONN REQUEST  
FAILED. EIBRESP=*eibrc*.

**Explanation:** *eibrc* is the CICS Exec Interface Block  
(EIB) response code.

---

**AGGDL04E** CICS INQUIRE EXITPROGRAM  
REQUEST FAILED. EIBRESP=*eibrc*.

**Explanation:** *eibrc* is the CICS Exec Interface Block  
(EIB) response code.

REQUEST FAILED. EIBRESP=*eibrc*.

## AGGDR02E • AGGFE18S

**Explanation:** *eibr*c is the CICS Exec Interface Block (EIB) response code.

---

AGGDR02E DB2 CONNECTION NOT ACTIVE.

---

AGGDR03E DB2 ERROR. SQL CALL NUMBER=*cn*,  
ERRCODE=*errc*.

**Explanation:**

*cn* is the internal SQL call number.  
*errc* is the SQL error code expressed as a  
two's-complement 32-bit binary value.

The ERRCODE value equates to a -805, which is a Bind error. You should run the bind utilities in SAGGSAMP(AGGDNDL) and (if needed) SAGGSAMP(AGGDNDLDR).

---

AGGDR04E CICS INQUIRE DB2CONN REQUEST  
FAILED. EIBRESP=*eibr*c.

**Explanation:** *eibr*c is the CICS Exec Interface Block (EIB) response code.

---

AGGDR05E HGCCGX GWA NOT FOUND.  
HourGlass NOT ACTIVE.

## CICS EIB Priming (AGGFTCH) messages

---

AGGFE01I HOURGLASS EIB DATE/TIME  
PRIMING FACILITY WILL BE  
ENABLED.

---

AGGFE02I HOURGLASS EIB DATE/TIME  
PRIMING FACILITY WILL BE  
DISABLED.

---

AGGFE03E INVALID TRANSACTION CODE.

---

AGGFE04E ENABLE FAILED FOR HOURGLASS  
CICS AUDIT: AGGAUDIT ERROR.

---

AGGFE05I HOURGLASS CICS AUDIT FACILITY  
SUCCESSFULLY ENABLED.

---

AGGFE06I HOURGLASS CICS AUDIT FACILITY  
SUCCESSFULLY DISABLED.

---

AGGFE07E HOURGLASS EIB PRIMING FACILITY  
NOT ENABLED: WAS ALREADY  
ENABLED.

---

AGGFE08E HOURGLASS EIB PRIMING FACILITY  
NOT DISABLED: WAS ALREADY  
DISABLED.

---

AGGFE09E HOURGLASS AUDIT FACILITY NOT  
ENABLED: WAS ALREADY ENABLED.

---

AGGFE10E HOURGLASS AUDIT FACILITY NOT  
DISABLED: WAS ALREADY  
DISABLED.

---

AGGFE11E ENABLE FAILED FOR HOURGLASS  
CICS AUDIT: HG CICS CONTROL  
NOT ACTIVE.

---

AGGFE12E DISABLE FAILED FOR HOURGLASS  
CICS AUDIT: HG CICS CONTROL  
NOT ACTIVE.

---

AGGFE13S HOURGLASS CICS SYSTEM  
VERIFICATION FAILED.

---

AGGFE14E DISABLE FAILED FOR HOURGLASS  
CICS AUDIT: AGGAUDIT ERROR.

---

AGGFE15S HOURGLASS CICS CONTROL: CICS  
ERROR OCCURRED IN SERVICE  
CALL #*sc*.

**Explanation:** *sc* is an internal identifier for the CICS service call that incurred the error.

---

AGGFE16S CICS ERROR INFORMATION:  
EIBRCODE=*eibr*c, EIBFN=*eibf*c.

**Explanation:**

*eibr*c is the CICS Exec Interface Block (EIB)  
response code.  
*eibf*c is the CICS EIB function code.

---

AGGFE17S CICS ERROR INFORMATION:  
EIBRESP=*eibcc*, EIBRESP2=*eibcc*2.

**Explanation:**

*eibcc* is the CICS Exec Interface Block (EIB)  
internal condition code.  
*eibcc*2 is the CICS EIB internal condition code 2.

---

AGGFE18S *terr* TRAN RECOVERY ROUTINE  
INTERCEPTED AN ABEND. ABEND  
CODE=*ac*.

**Explanation:**

*terr* is name of the transaction in which the error occurred.

*ac* is the CICS abend code for the error.

---

**AGGFE19E** ENABLE FAILED FOR EIB PRIMING FACILITY: HG CICS CONTROL NOT ACTIVE.

---

**AGGFE20E** DISABLE FAILED FOR EIB PRIMING FACILITY: HG CICS CONTROL NOT ACTIVE.

---

**AGGFE21E** PLTPS EXIT SYNCHRONIZATION FAILED, RC=*rc*. AGGFTCH WILL TERMINATE.

**Explanation:** *rc* is the return code returned from the exit synchronization process.

---

**AGGFE22I** PLTPS EXIT SYNCHRONIZATION COMPLETED SUCCESSFULLY, C1=*sph1*, C2=*sph2*.

### CICS date and time propagation (AGGGETDT) messages

---

**AGGGD01I** PROPAGATION OF SETTINGS HAS BEEN EFFECTED IN *region* REGIONS WITH *error* ERRORS.

**Explanation:**

*region* is the count of AOR regions in which settings propagation was attempted.

*error* is the count of errors that occurred during settings propagation.

---

**AGGGD02S** CICS EXTRACT REQUEST FOR AGGCCGX GWA FAILED.

---

**AGGGD03S** VALIDATION OF AGGCCGX GWA FAILED.

### MVS Support Activation (AGGINSTL) messages

---

**AGGIN01I** HOURGLASS FOR MVS ACTIVATED SUCCESSFULLY. *vernum*

**Explanation:** *vernum* is the HourGlass version.release number for the executing product.

---

**AGGIN02I** HOURGLASS FOR MVS DEACTIVATED SUCCESSFULLY. *relnum*

**Explanation:** *relno\um* is the HourGlass version.release number for the executing product.

**Explanation:**

*sph1* is the synchronization phase 1 counter.

Should normally contain a value of 1.

*sph2* is the synchronization phase 2 counter.

Should normally contain a value of 0.

---

**AGGFE23S** AN ERROR OCCURRED IN TIMER SERVICES. RETURN CODE=*rc*, REASON CODE=*reason*.

**Explanation:**

*rc* is the return code returned from timer services.

*reason* is the reason code returned from timer services.

---

**AGGGD04S** CICS GETMAIN FOR SCREC DATA AREA FAILED.

---

**AGGGD05S** *terr* TRAN RECOVERY ROUTINE INTERCEPTED AN ABEND. ABEND CODE=*ac*.

**Explanation:**

*terr* is name of the transaction in which the error occurred.

*ac* is the CICS abend code for the error.

---

**AGGIN03S** HOURGLASS FOR MVS: AGGINSTL RECEIVED INVALID EXECUTION PARAMETER.

---

**AGGIN04S** HOURGLASS FOR MVS ACTIVATION FAILED, RC=*reason*.

**Explanation:** *reason* is the activation failure reason code:

**0011** HourGlass for MVS support is already active in this system.

**0012** Release mismatch. The version of the AGGINSTL module referenced by the AGGON

- process does not match the HourGlass MVS support modules being activated.
- 0013** Another product may be active. Verification of the MVS-supplied time request processor was unsuccessful.
- 0014** The OPEN request for the HourGlass load library failed.

---

**AGGIN05S HOURGLASS FOR MVS DEACTIVATION FAILED, RC=*reason***

**Explanation:** *reason* is the deactivation failure reason code:

## Patch Installer (AGGPINS) messages

---

**AGGP101S PERMANENT I/O ERROR OCCURRED DURING PROCESSING FOR MEMBER *module*, MEMBER BYPASSED.**

**Explanation:** *module* is the name of the module in which the error occurred.

---

**AGGP102S ERROR OCCURRED IN MODULE *module*, WHILE CLOSING DCB AT *address* WITH *offset* OPTION, RC=*rc*.**

**Explanation:**

*module* is the name of the module in which the error occurred.  
*address* is the address of the DCB.  
*offset* is the data management option for which the DCB is being opened.  
*rc* is the return code returned from Data Management CLOSE processing.

---

**AGGP103S ERROR OCCURRED IN MODULE *module*, WHILE OPENING DCB AT *address* FOR *offset* PROCESSING, RC=*rc*.**

**Explanation:**

*module* is the name of the module in which the error occurred.  
*address* is the address of the DCB.  
*offset* is the data management option for which the DCB is being opened.  
*rc* is the return code returned from Data Management OPEN processing.

---

**AGGP104S *module*.@OPCL: STORAGE OBTAIN FOR I/O BUFFER STORAGE FAILED.**

**Explanation:** *module* is the name of the module in which the error occurred.

---

**AGGP105S I/O ERROR INFO - *errinf*.**

**Explanation:** *errinf* contains either valid SYNADAF

**0021** HourGlass for MVS support is not currently active in this system.

**0022** Release mismatch. The version of the AGGINSTL module referenced by the AGGOFF process does not match the HourGlass MVS support modules being deactivated.

**0023** Another product may be active. Verification of the HourGlass time request processor was unsuccessful.

---

error information or the message: "SYNADAF DID NOT RETURN VALID ERROR INFORMATION".

---

**AGGP106S AGGPIND INPUT PARAMETER STRING IS MISSING OR INVALID.**

---

**AGGP107S AGGPIND PCT() KEYWORD STRING IS MISSING OR INVALID.**

---

**AGGP108S *module*.@OSTS: STORAGE OBTAIN FOR SYMBOL TABLE STORAGE FAILED.**

**Explanation:** *module* is the name of the module in which the error occurred.

---

**AGGP109S CALCULATED LENGTH OF PROCESS CONTROL TOKEN NOT GREATER THAN ZERO.**

---

**AGGP110S *module*.@SOST: AN ERROR OCCURRED DURING THE SORT OF THE SYMBOL TABLE. SEE SORT LISTING IN PINSLIST.**

**Explanation:** *module* is the name of the module in which the error occurred.

---

**AGGP111S PERMANENT I/O ERROR OCCURRED DURING READ OPERATION IN SYSLIB LIBRARY.**

---

**AGGP112S DYNAMIC ALLOCATION REQUEST FAILED IN MODULE *module*, RC=*rc*, DYNERROR=*errc*, DYNINFO=*infoc*.**

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code returned from DYNALLOC.



*errc* is the error code returned from DYNALLOC.  
*infoc* is the info code returned from DYNALLOC.

---

**AGGPI13S** *module*.@OSDT: STORAGE OBTAIN FOR I/O BUFFER STORAGE FAILED.

---

**AGGPI14S** LOAD REQUEST FAILED FOR MODULE *module*, ABEND CODE=*ac*, REASON CODE=*reason*.

**Explanation:** *module* is the name of the module in which the error occurred.

---

**AGGPI15S** IEWBIND REQUEST FAILED IN MODULE *module*, RETURN CODE=*rc*, REASON CODE=*reason*, FUNC=*fname*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*cc* is the return code from the function request.  
*reason* is the reason code from the function request.  
*fname* is the name of the function.

---

**AGGPI16S** HGDDST INPUT PARAMETER STRING IS MISSING OR INVALID.

---

**AGGPI17S** HGDDST DDN() PARAMETER STRING IS MISSING OR INVALID.

## CICS Support Activation (AGGPLT) messages

---

**AGGPL01I** HOURGLASS CICS CONTROL INITIALIZATION COMPLETED SUCCESSFULLY.

---

**AGGPL02E** UNABLE TO OPEN HOURGLASS AUDIT DATASET, HGPLT WILL CONTINUE.

---

**AGGPL03S** HOURGLASS CICS CONTROL NOT ACTIVATED: AN ERROR OCCURRED IN SERVICE CALL #*sc*.

**Explanation:** *sc* is an internal identifier for the CICS service call that incurred the error.

---

**AGGPL04S** CSA DATE/TIME NOT SET: AFCB LOCATE FAILED.

---

**AGGPL05I** CSA DATE/TIME HAS BEEN RESET SUCCESSFULLY.

---

**AGGPL06E** CICS ERROR INFORMATION: EIBRCODE=*eibrc*, EIBFN=*eibfc*, EIBRESP=*eibcc*, EIBRESP2=*eibcc2*.

---

**AGGPI18S** MVS RELEASE MIS-MATCH. ESA V4R2M2 MINIMUM REQUIRED.

---

**AGGPI19S** AN ERROR OCCURRED IN ISITMGD REQUEST. RETURN CODE=*rc*, REASON CODE=*reason*.

**Explanation:**

*rc* is the return code from the ISITMGD request.  
*reason* is the reason code from the ISITMGD request.

---

**AGGPI20I** SOURCE LIBRARY IS EMPTY PDSE OR CONTAINS OTHER THAN PROGRAM OBJECT(S).

---

**AGGPI22S** LOGICAL ERROR OCCURRED IN MODULE *module*, RETURN CODE=*rc*, REASON CODE=*reason*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code.  
*reason* is the reason code.

**Explanation:**

*eibrc* is the CICS Exec Interface Block (EIB) response code.  
*eibfc* is the CICS EIB function code.  
*eibcc* is the CICS EIB internal condition code.  
*eibcc2* is the CICS EIB internal condition code2.

---

**AGGPL07I** HOURGLASS CICS CONTROL COULD NOT BE ACTIVATED BECAUSE IT IS ALREADY ACTIVE. AGGPLT WILL TERMINATE.

## CICS Support Activation (AGGPRIME) messages

---

AGGPR01E AGGPRIME RECEIVED AN INVALID  
PARAMETER.

---



---

AGGPR03E AGGPRIME CANNOT EXECUTE.  
SPLVL ERROR.

---



---

AGGPR02E AGGPRIME DATE CONVERSION  
ERROR.

---

## IMS IOPCB Support (AGGRRRC00, AGGRRRC01 & AGGIMSLI) messages

---

AGGRC01I HOURGLASS IMS IOPCB SUPPORT  
IMPLEMENTED SUCCESSFULLY.

---

REQUEST HANDLER HOOK STATUS.

**Explanation:** Periodically (several times per second), HourGlass checks that the IMS request handler pointer is still hooked by HourGlass.

---

AGGRC02E AN ERROR OCCURRED  
ATTEMPTING TO IMPLEMENT  
HOURGLASS IMS IOPCB SUPPORT,  
RTRNCD=*rc*, REASCD=*reason*.

---

**Explanation:**

*rc* is the return code from the request.  
*reason* is the reason code from the request.

---

AGGRC09I RE-HOOKING HOURGLASS IMS  
REQUEST HANDLER.

---

**Explanation:** The IMS request handler pointer no longer points to the HourGlass IMS request handler (AGGIMSLI), and HourGlass is about to restore the hook done during initialization (Message AGGRC07I)

---

AGGRC03I HOURGLASS IMS IOPCB SUPPORT IS  
TERMINATING.

---



---

AGGRC10I AGGRRRC01 TERMINATION CLEANUP.

---



---

AGGRC04I HOURGLASS REQUEST HANDLER  
POINTER HAS BEEN RE-HOOKED.

---



---

AGGRC11I AGGRRRC01 NORMAL TERMINATION.

---

**Explanation:** AGGRRRC01 is terminating normally. No abnormal conditions were found.

---

AGGRC05S COUNT OF RE-HOOKING  
OCCURRANCES HAS EXCEEDED THE  
SPECIFIED LIMIT.

---



---

AGGRC12E AGGRRRC01 ABNORMAL  
TERMINATION.

---

**Explanation:** AGGRRRC01 is terminating abnormally. An ABEND message should have preceded this message.

---

AGGRC06I HOURGLASS IMS ATTACHMENT  
HAS BEEN SUCCESSFULLY  
INITIATED.

---



---

AGGRC13E HOURGLASS IMS REQUEST  
HANDLER POINTER IS INVALID.

---

**Explanation:** The AGGRRRC00 HourGlass IMS request handler pointer should point to the HourGlass AGGIMSLI module entry point.

---

AGGRC07I CO-OPTING IMS REQUEST  
HANDLER PTR.

---



---

AGGRC08I MONITORING HOURGLASS IMS

---

## Repository Image Manager (AGGIRIM) messages

---

AGGRI01S A LOGICAL ERROR OCCURRED IN  
MODULE *module*, RETURN CODE=*rc*,  
REASON CODE=*reason*.

---

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the return code.  
*reason* is the reason code.

---

AGGRI02I COUNT OF TYPE *cetype* CONTROL  
ELEMENTS = *ccount*, OCCUPYING  
*bytestore* BYTES OF STORAGE.

---

**Explanation:**

*cetype* is a two-character code that designates  
a control element type.  
*bytestore* is the number of bytes, in  
hexadecimal occupied by the control elements of  
the designated type.

*ccount* is the number of times a *cetype* control element has appeared in the repository.

---

**AGGRI03I CONTROL ELEMENT TABLE**  
**SIZE=*numb* BYTES. CONTROL VALUE**  
**TABLE SIZE=*numbvc* BYTES.**

**Explanation:**

*numb* is the total number of bytes, in hexadecimal, occupied by the control element table.

*numbvc* is the total number of bytes, in hexadecimal, occupied by the Control Value table.

## IMS Support Verification (AGGVIMS) messages

---

**AGGRV01I HOURGLASS IMS VERIFICATION.**  
**IMS=*ims*, SYSID=*mvs*.**

**Explanation:**

*ism* is the IMS identifier retrieved from the IMS PARMBLKS data area.

*mvs* is the MVS system identifier.

---

**AGGRV02I TIME LINKAGE=*SVC***  
**DATE=*YYYY-MM-DD*,**  
**TIME=*HH:MM:SS.TH*.**

---

**AGGRV03I TIME LINKAGE=*SYS***  
**DATE=*YYYY-MM-DD*,**  
**TIME=*HH:MM:SS.TH*.**

## CICS Settings Control (AGGSC) messages

---

**AGGSC01S HOURGLASS SETTINGS CONTROL**  
**INITIALIZATION ERROR. ERROR**  
**CODE = *ec*.**

**Explanation:** *ec* is the error code that corresponds to the initialization error.

---

**AGGSC02S SETTINGS CONTROL USER IS NOT**  
**AUTHORIZED. SECURITY OPTION=*o*.**

---

**AGGSC03I PLEASE ENTER OPTION.**

---

**AGGSC04I OPTION ENTERED IS INVALID.**

---

**AGGSC05I ENTER NAME OF SETTINGS GROUP**  
**TO DISPLAY.**

---

**AGGSC06I HOURGLASS CICS CONTROL IS NOT**  
**ACTIVE.**

---

**AGGRI04I CONTROL ELEMENT TABLE**  
**FINALIZED AT *storeloc*, SYSTEM=*i*.**

**Explanation:**

*storeloc* is the storage location, in hexadecimal, of the finalized control element table.

*i* is an indicator, either "Y" or "N", that indicates whether or not the control element table was allocated in MVS Common Service Area storage.

---

**AGGRV04I IOPCB DATE=*YYYY-MM-DD*,**  
**TIME=*HH:MM:SS.TH*, ETS=*XXXXXXXX*.**

---

**AGGRV06S A LOGICAL ERROR OCCURRED IN**  
**MODULE *module*, RETURN CODE=*rc*,**  
**REASON CODE=*reason*.**

**Explanation:**

*module* is the name of the module in which the error occurred.

*rc* is the return code.

*reason* is the reason code.

---

**AGGSC07I THE SPECIFIED SETTINGS GROUP IS**  
**NOT FOUND.**

---

**AGGSC08I THE SPECIFIED OPTION IS NOT**  
**AVAILABLE.**

---

**AGGSC09I ENTER A NAME FOR THE SETTINGS**  
**GROUP BEING SAVED.**

---

**AGGSC10E WRITE OPERATION TO FILE**  
**AGGSCDS FAILED.**

---

**AGGSC11I SETTINGS GROUP *group* ALREADY**  
**EXISTS**

**Explanation:** *group* is the settings group name specified by the user.

---

**AGGSC12I SETTINGS MAY NOT BE SAVED AS**  
**NAME "CURRENT".**

## AGGSC13I • AGGSC36S

---

AGGSC13I ENTER NAME OF SAVED SETTINGS GROUP TO ACTIVATE.

---

AGGSC14S READ OPERATION FROM FILE AGGSCDS FAILED.

---

AGGSC15E UNABLE TO UPDATE SETTINGS AT THIS TIME, TRY LATER.

---

AGGSC16I ACTIVATION TYPE IS INVALID. PLEASE RE-ENTER.

---

AGGSC17I ENTER NAME OF SETTINGS GROUP TO BE DELETED.

---

AGGSC18E DELETE OPERATION FROM FILE AGGSCDS FAILED.

---

AGGSC19S UNABLE TO BROWSE FILE AGGSCDS.

---

AGGSC20E NO DATE OR TIME VALUES ENTERED. PRESS PF3 TO EXIT.

---

AGGSC21I CURRENT SETTINGS SAVED AS *group*

**Explanation:** *group* is the settings group name specified by the user.

---

AGGSC22I SETTINGS GROUP ACTIVATED: *group*

**Explanation:** *group* is the settings group name specified by the user.

---

AGGSC23I SETTINGS GROUP DELETED: *group*

**Explanation:** *group* is the settings group name specified by the user.

---

AGGSC24I SETTINGS GROUP UPDATED: *group*

**Explanation:** *group* is the settings group name specified by the user.

---

AGGSC25I SETTINGS FOR USER-ID *user-id* NOT FOUND

**Explanation:** *user-id* is the userid specified by the user.

---

AGGSC26I SETTINGS GROUP NOT FOUND:  
*group*

**Explanation:** *group* is the settings group name specified by the user.

---

---

AGGSC27I PLEASE ENTER REQUIRED USERID.

---

AGGSC28I HOURGLASS SETTINGS CONTROL EXECUTING AS PLTPI PROGRAM.

---

AGGSC29I HOURGLASS SETTINGS CONTROL: DEFAULT SETTINGS GROUP ACTIVATED.

---

AGGSC30I HOURGLASS CICS CONTROL NOT ACTIVE. NO SETTINGS ACTIVATED.

---

AGGSC31I SCDS NOT DEFINED OR NO DEFAULT SETTINGS GROUP EXISTS TO ACTIVATE.

---

AGGSC32S HOURGLASS SETTINGS CONTROL: CICS ERROR OCCURRED IN SERVICE CALL #*cc*.

**Explanation:** *cc* is an internal identifier for the CICS service call that incurred the error.

---

AGGSC35S *tname* TRAN RECOVERY ROUTINE INTERCEPTED AN ABEND. ABEND CODE=*ac*.

**Explanation:**

*tname* is name of the transaction in which the error occurred.

*ac* is the CICS abend code for the error.

---

AGGSC36S SCDS FORMAT VERIFICATION FAILED. SCDS MAY REQUIRE FORMAT CONVERSION.

---

## STCK Replacement Support (AGGINSVC) messages

---

AGGSI01I HOURGLASS SVC INSTALLED SUCCESSFULLY.

---

AGGSI02E LOAD REQUEST FAILED FOR MODULE AGGSVC.

---

AGGSI03E SVCTABLE ENQUEUE REQUEST FAILED.

---

AGGSI04E SVCUPDT REQUEST FAILED.

---

AGGSI05E AN ERROR OCCURRED OPENING THE HOURGLASS AUTHORIZED LOAD LIBRARY.

---

AGGSI06E INVALID INPUT PARAMETER FOUND. SPECIFY IN FORM SVC=NNN. NNN=200 THROUGH 255.

---

AGGSI07E MVS LEVEL CONFLICT. PRE-XA MVS LEVEL DETECTED, OPERATION WILL TERMINATE.

---

AGGSI08E SIZE ERROR. AGGSVC MODULE LARGER THAN AREA OBTAINED TO CONTAIN IT.

## MVS support activation (AGGLSSTC) messages

---

AGGST01I HOURGLASS PC TIME SERVICE SUPPORT ACTIVATED SUCCESSFULLY. *verrel*

**Explanation:** *verrel* is the HourGlass version.release number for the executing product.

---

AGGST02I HOURGLASS PC TIME SERVICE SUPPORT DEACTIVATED SUCCESSFULLY. *verrel*

**Explanation:** *verrel* is the HourGlass version.release number for the executing product.

---

AGGST03S HOURGLASS PC TIME SERVICE SUPPORT ACTIVATION FAILED. RC=*retc*

**Explanation:** *retc* is the activation failure reason code:

- 0004 The HourGlass PC Time Service support (AGGLINK) is already active.
- 0008 The HourGlass SVC11 support (AGGON) is not active. The PC Time Service support cannot be activated unless the SVC11 support is already active.
- 0012 Verification of the MVS SVC11 support module was unsuccessful. This could be because another time manipulation product is active in the system.
- 0016 The AGGLINK Load PDS (DDNAME LPDS) could not be opened successfully.
- 0020 The AGGFRONT module contains unexpected content.
- 0024 HourGlass cannot be activated. The MVS host system is at a level prior to ESA Version 4, Release 2, Modification 2.
- 0028 The System Vector Table slot for the PC Time Service contains an LX/EX value other than the expected value for the native MVS service: X'000321'. HourGlass cannot install its version

of PC Time Service support on top of an unknown service provider.

---

AGGST04S HOURGLASS PC TIME SERVICE SUPPORT TERMINATED UNEXPECTEDLY.

---

AGGST05I LSPC=*amod*, SLOT TABLE=*aslot*.

**Explanation:**

*amod* is the address of the AGGLSPC module.  
*aslot* is the address of the AGGLSPC task-related slot table.

---

AGGST06I PC TIME SERVICE COMMAND: STOP ACKNOWLEDGED.

---

AGGST07I PC TIME SERVICE COMMAND: SNAP SLOTS ACKNOWLEDGED.

---

AGGST08E PC TIME SERVICE COMMAND: INVALID MODIFY COMMAND - IGNORED.

---

AGGST09I LSPC SLOT TABLE UTILIZATION HAS REACHED *perc*%

**Explanation:** *perc* is the percentage utilization of the AGGLSPC task-related slot table.

---

AGGST10I PC TIME SERVICE COMMAND: REFRESH ACKNOWLEDGED. REQUESTER=*user\_id*

**Explanation:** The repository refresh requested by user *user\_id* has been completed.

---

AGGST11I PC TIME SERVICE COMMAND: SNAP  
ACES ACKNOWLEDGED

**Explanation:** The in-memory copy of the repository (called Active Control Element Set or ACES) has been refreshed.

---

AGGST14E REFRESH REQUEST ABORTED DUE  
TO NO-SLOT CONDITION IN  
AGGLSPC

**Explanation:** A dynamic refresh operation failed due to a no-slot condition in HourGlass module AGGLSPC.

This error indicates that the dynamic refresh request could not be processed because the internal "slot" table, which is maintained by the AGGLSPC program, is full. This message is accompanied by additional messages that further describe the "no-slot" condition. Correcting the "no-slot" condition allows dynamic refresh requests to complete normally.

## MVS Statistics Processing (AGGACTRT) messages

---

AGGSY01I JOBNAME .STEPNAME.PROCSTEP  
RUN WITH DATE=YYYY-MM-DD  
TIME=P0000, REQUESTCNT=99999999'

## Generic error (miscellaneous) messages

---

AGGSY02I *title*.

**Explanation:** *title* is the Snap Dump title for the dump about to be taken.

---

AGGSY03E A LOGICAL ERROR OCCURRED IN  
MODULE *module*, RETURN CODE=*rc*,  
REASON CODE=*reason*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code.  
*reason* is the reason code.

---

AGGSY04E DYNAMIC ALLOCATION REQUEST  
FAILED IN MODULE *module*, RC=*rc*,  
DYNERROR=*ec*, DYNINFO=*ic*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code returned from DYNALLOC.  
*ec* is the error code returned from DYNALLOC.  
*ic* is the info code returned from DYNALLOC.

---

AGGSY05E VSAM CONTROL BLOCK  
MANIPULATION ERROR OCCURRED  
IN MODULE *module*. RETURN  
CODE=*rc*, REASON CODE=*reason*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code from the service request.  
*reason* is the reason code from the service request.

---

AGGSY06E VSAM OPEN/CLOSE ERROR  
OCCURRED IN MODULE *module*.  
RETURN CODE=*rc*, REASON  
CODE=*reason*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code from the service request.  
*reason* is the reason code from the service request.

---

AGGSY07E VSAM RECORD MANAGEMENT  
ERROR OCCURRED IN MODULE  
*module*. RETURN CODE=*rc*, REASON  
CODE=*reason*.

**Explanation:**

*module* is the name of the module in which the error occurred.  
*rc* is the return code from the service request.  
*reason* is the reason code from the service request.

---

AGGSY08E I/O ERROR INFORMATION - *errinf*.

**Explanation:** *errinf* contains either valid SYNADAF error information or the message "SYNADAF DID NOT RETURN VALID ERROR INFORMATION".

---

AGGSY09E DB2 ERROR. SQL CALL NUMBER=*cn*,  
ERRCODE=*ec*.

**Explanation:**

*cn* is the internal SQL call number.  
*ec* is the SQL error code expressed as a two's-complement 32-bit binary value.

## SCDS Conversion Utility (AGGTSUA) messages

---

AGGTS01I AGGTSUA HOURGLASS  
TRANSFORM SCDS UTILITY  
STARTING.

*module* is the name of the module in which  
the error occurred.  
*rc* is the VSAM return code.  
*reason* is the VSAM reason code.

---

AGGTS02S A LOGICAL ERROR OCCURRED IN  
MODULE *module*, RETURN CODE=*rc*,  
REASON CODE=*reason*.

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the return code.  
*reason* is the reason code.

---

AGGTS05S VSAM RECORD MANAGEMENT  
ERROR OCCURRED IN MODULE  
*module*, RETURN CODE=*rc*, REASON  
CODE=*reason*.

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the VSAM return code.  
*reason* is the VSAM reason code.

---

AGGTS03S VSAM CONTROL BLOCK  
MANIPULATION ERROR OCCURRED  
IN MODULE *module*, RETURN  
CODE=*rc*, REASON CODE=*reason*.

**Explanation:**

*module* is the name of the module in which  
the error occurred.  
*rc* is the VSAM return code.  
*reason* is the VSAM reason code.

---

AGGTS06I TRANSFORM SCDS UTILITY  
COMPLETED. *count* SCDS ENTRIES  
WERE PROCESSED

**Explanation:** *count* is the total count of SCDS records  
converted and written to the output AGGSCDS dataset.

---

AGGTS04S VSAM OPEN/CLOSE ERROR  
OCCURRED IN MODULE *module*,  
RETURN CODE=*rc*, REASON  
CODE=*reason*.

**Explanation:**

---

AGGTS07E INPUT PARAMETER IS INVALID.

---

AGGTS08S INPUT SCDS RECORD FAILED  
FORMAT VERIFICATION. AGGTSUA  
IS TERMINATING.

## CICS User Control (AGGUC) messages

---

AGGUC01I TRANSACTION ENDED.

---

AGGUC02I USER DELETE SUCCESSFUL.

---

AGGUC03I USER DOES NOT CURRENTLY EXIST.

---

AGGUC04I USER UPDATE SUCCESSFUL.

---

AGGUC05I USER ADD SUCCESSFUL.

---

AGGUC06E INVALID PF KEY USED.

---

AGGUC07E NO DATA ENTERED.

---

AGGUC08E USERID IS REQUIRED.

---

AGGUC09I CURRENTLY IN UPDATE MODE. USE  
PF3 OR CLEAR TO CANCEL.

---

AGGUC10E SPECIFYING A USERID OTHER  
THAN YOUR OWN IS NOT  
ALLOWED.

---

AGGUC11E USERID CANNOT BE DELETED  
BECAUSE IT DOES NOT CURRENTLY  
EXIST.

---

AGGUC12E INVALID VALUE ENTERED FOR  
DELETE REQUEST.

---

AGGUC13E INVALID DATE ENTERED.

---

AGGUC14E INVALID TIME OFFSET ENTERED.

---

AGGUC15E INVALID DATE AND TIME OFFSET  
ENTERED.

## AGGUC16E • AGGVR09S

---

AGGUC16E VALID DATE AND/OR TIME  
REQUIRED FOR A NEW ENTRY.

---

AGGUC17E HOURGLASS CICS CONTROL HAS  
BEEN DISABLED. DELETE REQUEST  
CANCELLED.

---

AGGUC18E HOURGLASS CICS CONTROL HAS  
BEEN DISABLED. ADD REQUEST  
CANCELLED.

---

AGGUC19E HOURGLASS CICS CONTROL HAS  
BEEN DISABLED. UPDATE REQUEST  
CANCELLED.

---

AGGUC20S AGGCCGX GWA IS INVALID.

---

AGGUC21S ADD FAILED: NO AVAILABLE USER  
CONTROL SLOTS.

---

AGGUC22S HOURGLASS USER CONTROL: CICS  
ERROR OCCURRED IN SERVICE  
CALL #*sc*.

**Explanation:** *sc* is an internal identifier for the CICS

service call that incurred the error.

---

AGGUC23S LOCATE OF AFCB FAILED.

---

AGGUC24E BOTH DATE AND TIME OFFSET  
CANNOT BE CLEARED.

---

AGGUC25E DATE CANNOT BE CLEARED: TIME  
OFFSET IS MISSING/INVALID.

---

AGGUC26E TIME OFFSET CANNOT BE CLEARED:  
DATE IS MISSING/INVALID.

---

AGGUC27S *tname* TRAN RECOVERY ROUTINE  
INTERCEPTED AN ABEND. ABEND  
CODE=*ac*.

**Explanation:**

*tname* is name of the transaction in which  
the error occurred.

*ac* is the CICS abend code for the error.

---

AGGUC28E HOURGLASS CICS CONTROL NOT  
YET ENABLED. USE TRAN AGGCC.

## MVS Support Verification (AGGBVRFY) messages

---

AGGVR01I LINKAGE=*SVC* DATE=*date*, TIME=*time*.

**Explanation:** The date and time as returned from a  
TIME LINKAGE=*SVC* request:

*date* is the date value, in yyyy-mm-dd format.

*time* is the time value, in hh:mm:ss:th format.

---

AGGVR02I LINKAGE=*SYS* DATE=*date*, TIME=*time*.

**Explanation:** The date and time as returned from a  
TIME LINKAGE=*SYSTEM* request:

*date* is the date value, in yyyy-mm-dd format.

*time* is the time value, in hh:mm:ss:th format.

---

AGGVR03I COBOL/LE370 DATE=*date*, TIME=*time*.

**Explanation:** The date and time as returned from a  
COBOL MOVE FUNCTION CURRENT DATE request:

*date* is the date value, in yyyy-mm-dd format.

*time* is the time value, in hh:mm:ss:th format.

---

AGGVR04I ACTUAL STCK DATE=*date*, TIME=*time*.

**Explanation:** The actual local date and time as  
returned from a STCK/STCKCONV service request:

*date* is the date value, in yyyy-mm-dd format.

*time* is the time value, in hh:mm:ss:th format.

---

AGGVR05E HOURGLASS FOR MVS SUPPORT  
NOT ACTIVATED.

---

AGGVR06E HOURGLASS PC TIME SERVICE  
SUPPORT NOT ACTIVATED.

---

AGGVR07S OSLVL ERROR: MVS V4R2.2 OR  
HIGHER REQUIRED FOR  
LINKAGE=*sys* FUNCTIONALITY.

---

AGGVR08E LE370 ENVIRONMENT NOT FOUND  
IN STEPLIB. LE370 SUPPORT  
VERIFICATION WILL BE BYPASSED.

**Explanation:** The AGGBVRFY program requires the  
LE system library to be part of the STEPLIB  
concatenation if LE support verification is required. The  
solution is to add the system LE SCEERUN library in  
the STEPLIB concatenation.

---

AGGVR09S VERIFICATION OF HOURGLASS MVS  
SUPPORT MODULE FAILED. UNABLE  
TO CONTINUE.



---

AGGVR10S A NON-ZERO CONDITION CODE RESULTED FROM A STCK (STORE CLOCK) INSTRUCTION.

---

Explanation: See "Implementing STCKSYNC support" on page 12.

---



---

AGGVR11S A NON-ZERO RETURN CODE RESULTED FROM A STCKCONV SERVICE REQUEST.

---



---

AGGVR19I STCKSYNC 64-BIT DATE=YYYY-MM-DD, TIME=hh:mm:ss.dd.

---



---

AGGVR18I HOURGLASS STCKSYNC SUPPORT NOT ACTIVATED

---



---

AGGVR20I STCKSYNC 128-BIT DATE=YYYY-MM-DD, TIME=hh:mm:ss.dd

---

## HourGlass CICS Task Support (AGGXTRUE) messages

---

AGGXT01E NO UNUSED TASK SLOTS.

Explanation: An HourGlass internal data area has been exhausted and HourGlass CICS support cannot continue. Please contact IBM HourGlass support for assistance.

---



---

AGGXT06E CICS SYSTEM VERIFICATION FAILED: EPF DISABLE.

---



---

AGGXT02E CICS SERVICE ERROR. CALL NUMBER=99.

---



---

AGGXT07I AGGCSQL EXIT ACTIVATED SUCCESSFULLY.

---



---

AGGXT03E CICS ERROR INFORMATION: EIBRCODE=XXXXXXXXXXXX, EIBFN=XXXX.

---



---

AGGXT08I AGGCSQL EXIT DEACTIVATED SUCCESSFULLY.

---



---

AGGXT04E CICS ERROR INFORMATION: EIBRESP=XXXXXXXX, EIBRESP2=XXXXXXXX.

---



---

AGGXT09I AGGCSQL EXIT DEACTIVATED DUE TO LOSS OF CONNECTION.

---



---

AGGXT05E CICS SYSTEM VERIFICATION FAILED: EPF ENABLE.

---



---

AGGXT10E CICS INQUIRE EXITPROGRAM REQUEST FAILED. EIBRESP=XXXXXXXX.

---

## Abend messages

Generally, you should contact Technical Support after receiving any of these abend messages:

---

ABEND U0002.HourGlass could not load the AGGFRONT module. Look for other error messages that may indicate why the load failed.

---



---

ABEND U0006.HourGlass was unable to successfully remove the SVC interception. Contact Support.

---



---

ABEND U0003.HourGlass was unable to perform a successful ENQ on the SVC Table. Retry.

---



---

ABEND U0007.Message text varies.

---



---

ABEND U0004.HourGlass was unable to successfully install the SVC interception. Contact Support.

---



---

ABEND U0009.Customer is running on an unsupported level of MVS.

---



---

ABEND U0005. OPEN FAILED FOR AUTHORIZED SAGGLOAD LIBRARY. The OPEN failed for the STEPLIB dataset containing AGGFRONT.

---



---

ABEND U0010.Message text varies.

---

## ABEND

---

**ABEND** U0011.An internal GETMAIN was too small to load the current copy of AGGFRONT. This abend may be due to a mismatch between HourGlass releases (modules AGGINSTL and AGGFRONT).

---

**ABEND** U0012.An internal GETMAIN was too small to load the current copy of AGGTBLS. This abend may be due to a mismatch between HourGlass releases (modules AGGINSTL and AGGTBLS).

---

**ABEND** U0013.A mismatch of releases between module AGGFRONT and AGGINSTL was detected.

---

**ABEND** U0014.HourGlass could not load module AGGTBLS. Ensure that it resides in the STEPLIB, that the module is not damaged, and that the release levels of AGGINSTL and AGGTBLS match.

---

**ABEND** U01xx.Repository Support.

---

**ABEND** U02xx.Batch Utility.

---

**ABEND** U03xx.Control Center Application.

---

**ABEND** U04xx.CICS Support.

---

**ABEND** U05xx.IMS Support

---

**ABEND** U09xx.System/Miscellaneous

---

## Chapter 7. Troubleshooting

You can run environment-specific tests to verify the HourGlass installation and to ensure that the product is working properly.

---

### Environment verification

#### TSO

1. Log on to TSO and ISPF.
2. Type in "TSO alloc ddn(hg111001) dummy" on the TSO command line.
3. On the TSO command line enter  
TSO Time

This should get the altered date of January 1, 2011.

#### DB2

1. Log on to TSO.
2. From ISPF choose Option 14 - DB2.  
It will display DB2I PRIMARY OPTION MENU screen.
3. Choose Option 1 - SPUFI.  
It will display SPUFI screen.
4. Execute a SPUFI Query that reads 'SELECT CURRENT DATE FROM SYSIBM.SYSDATABASE;'

The resulting report should contain the altered date.

#### CICS

1. Log on to CICS using your userid.
2. From a cleared screen, type HGCC.
3. Select Option 5 to activate HourGlass.
4. From a cleared screen, type HGUC.
5. Type your userid in the userid field and a date of '2005-01-01'. Press ENTER.
6. From a cleared screen, type HGCV.

The resulting display should contain the altered date.

#### CICS/DB2

1. Log on to CICS using your Userid.
2. Set up and run CICS transaction programs HGDL and HGDR which provide verification for local and remote DB2 functionality, respectively.

The resulting report should contain the altered date.

**Note:** SAGGSAMP library members AGGBNDDR and AGGBNDDL contain sample DB2 BIND jobstreams for these programs.

## BATCH

### BATCH

1. Log on to TSO.
2. Member AGGBVRFY in the SAGGSAMP library can be used for testing. Modify as appropriate and submit.

The job output should contain a message showing the TEST DATE.

The date should be the altered date requested by the DD statement //HGCYYDD.

### IMS/DC

1. Log on to IMS using your userid and password.
2. From a cleared screen, type `//FOR AGGVIMS` (without the quotes) and press ENTER.
3. The initial panel returned shows the field names, but is not populated with data. Press ENTER again to populate the panel.

The panel should show the altered date and time if HourGlass is active and a valid IMS Control Element is enabled.

---

## Altered date does not appear

If the altered date does not appear, first determine whether HourGlass is installed. Run SAGGSAMP library member AGGGOPTS\$ to print options. Ensure that the subsystem is active and the EXEC PARM is set to PARM=MEMORY. If this fails, HourGlass is not up. Otherwise, it produces a report containing the current options, needed for later diagnosis. When reviewing the report, consider these points before contacting Technical Support:

### TSO

- Does the JOBPREF= parameters include your userid?
- Is TSO=Y?
- If the USERID= parameter was specified, does it include your userid?

### DB2

- Does the JOBPREF= parameters include your userid?
- Is TSO=Y?
- Is STCLINK=Y or STCLINK=AGGLINK? If not, this is required for DB2 Support. Recustomize, run AGGOFF, and then AGGON. Ensure that the started task AGGLINK is now running.
- Has the member AGG\$DB2 from SAGGPINT library been run to create the two new DB2 load modules, DSNUTILA and DSNXGRDS? Have these modules been placed in the top of the STEPLIB of the DB2 DBM1 started task for the DB2 to which you are connecting? Has DB2 been cycled since the modules were made available?
- If the USERID= parameter was specified, does it include your userid?

### CICS

- Have the PPT and PCT entries been created as specified in STEP 8 of the INSTALL? Also ensure that the modules activated match your release of CICS (for example, suffix 3 for version 3 of CICS)

- If running STORAGE PROTECT in your CICS, make sure that the HGCCn and HGUCn programs are defined with CICSKEY.
- If running CICS Version 4 or 5, and CICS RENTPGM=PROTECT is specified, be sure you have run member AGGAPINL from SAGGSAMP library.
- Has the HourGlass Loadlib been added to the DFHRPL?
- If your application is DB2 or LE/370, is the AGGLINK started task active?
- Is AGGFTCH in the CICS PLT or have you run the HGFE transaction?
- Is the program name in the CICS startup DFHSIP or start with DFHSIP?
- Use the HGCV transaction to verify that the various date settings work
- Use the HGSC transaction to verify the CURRENT date and time settings.

## Batch

- Does JOBPREF= include this job?
- Does JOBCLASS= include the class this job was run under?
- If the USERID= parameter was specified, did one of these users submit the job?

## IMS message region

- Have the message regions been altered to contain the //HGIMSMMSG DD DUMMY DD statement? Include all message regions in the control region that could possibly run transactions you wish to provide altered dates.
- Does the JOBPREF= include the IMS message region jobs?
- If the Message Regions are jobs, does the JOBCLASS= include the message region jobs?
- If the Message Regions are started tasks, is the STC=Y parameter set?

## Programming language

- If this language required special install considerations (member AGGLANG in the HourGlass SAGGSAMP library), have these procedures been followed?
- If a separate STEPLIB is required for the language, is this at the top of list?



---

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