HourGlass

IBM

Usage and Installation Guide

Version 6 Release 1

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> **Note!**
>
> Before using this information and the product it supports, be sure to read the general information under "Notices" on page 81.

Contents

About this manual

This manual describes how to install and use HourGlass.

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 21
> 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 37
> Describes how to specify altered date and time values using new ISPF dialogs available in HourGlass Version 6.1 know as the HourGlass Control Center (AGGCX).

Chapter 5, "Messages and abend messages," on page 61
> Lists messages generated by HourGlass.

Chapter 6, "Troubleshooting," on page 77
> Discusses how to run environment-specific tests to verify the HourGlass installation and to ensure that the product is working properly

Summary of amendments for Version 6.1

These enhancements have been made to HourGlass for Version 6.1:

- A new HourGlass Repository provides the capability to save and manage HourGlass date and time settings in a permanent storage facility. Date and time settings are preserved across executions of the product. You can store these types of settings in the Repository: MVS Batch/STC, TSO/ISPF, Job Schedule, IMS Online and DB2 Batch, SPUFI and DDF. Arbitrary limits on those settings occurring in prior version of HourGlass have been eliminated.

- To help you manage the contents of the Repository, a new interactive ISPF Dialog Manager facility called the HourGlass Control Center (AGGCX), and a new set of batch utilities, have been provided.

- An enhanced specification search algorithm, which supports searching specifications from most precise to least precise, is provided. Generic and placeholder specifications are now fully supported.

- Support has been added for qualifying date and time specifications in the DB2® environment by the DB2 subsystem name.

Summary of amendments for Version 6.1

- Support for CICS® Transaction Server Version 3, Version 2.0 is included in this release.

Summary of amendments for Version 5.2

These enhancements have been made to HourGlass for Version 5.2:
- The CICS support facilities have been updated so that all modules adhere to the CICS Threadsafe coding standard.
- Support for CICS Transaction Server Version 2.2 has been added.
- Many HourGlass messages have been re-numbered and undergone editorial changes to make them easier to understand.
- Two new CICS transaction programs have been added: HGDL6 and HGDR6. These programs provide functional verification for HourGlass in the CICS/DB2 environment.

Summary of amendments for Version 5.1

These enhancements have been made to HourGlass for Version 5.1:
- Enhanced IMS IOPCB support no longer requires application re-linking.
- Easier interfaces to third-party products with new patch installer.

Summary of amendments for Version 5.0

Version 5.0 of HourGlass includes these features:
- New Scheduling Facility to create multi-step/job rolling dates (Relative Time Manager).
- Support for DB2 DDF applications.
- User-level support for IDMS V12/V14 ADS/O and DC COBOL applications.
- Support for IMS 6.1 Expanded IOPCB date field.
- Support for CICS Transaction Manager Version 1.2.
- Added CANCEL command ability in the HG ISPF Dialog.
- Added 'ADD' and 'DEL' functions in the HGBCUST utility. Also added calls to the HGTSOSEC security exit.
- New callable routine to manage date requests from user applications.
- Additional security exit capabilities in HGRCHECK to return current date and call external security managers.

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 showing 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 system service (equivalent to the 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.

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® and OS/390®, Enterprise PL/I for z/OS and OS/390, NATURAL, IDEAL, IEF, 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), CICS, IDMS and COM-PLETE 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.

Alternately, 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 in the COM-PLETE, IDMS/CV, and ADS/O 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 and/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.

Chapter 2. Installing HourGlass

Software requirements

HourGlass requires:

- MVS/ESA™ Version 4.2.2 or later.
- ISPF Version 3 (5685-054) Release 3 or later.
- If using OS/390 R4, IBM PTF UW41132 is required. Later versions do not require a PTF.
- 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 7 for details.

Installation requirements

To install HourGlass, you need:

1. One 3490 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 create new resources (such as PPT, PCT).
7. The HourGlass install tape, VOLSER=HG550.

Migration notes

When migrating from any prior version of HourGlass:

- Review member AGG@IX61 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.

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.

Migrating from Version 5.1

When migrating from Version 5.1 of HourGlass, consider these points:

- If the optional CICS support feature is to be used, review the SAGGSAMP library members AGGCRD11 and AGGCRD13. These members contain sample CICS System Definition Utility jobstreams with the resource definitions necessary for HourGlass, for non-Threadsafe implementation, or for Threadsafe implementation, respectively.
- The file size for the AGGSCDS has changed from RECZ(22500,22500) to RECZ(28665,28665). A SAGGSAMP library member, MIGHGSC2, has been supplied to convert an existing AGGSCDS with RECSZ(22500,22500) to the new format. The supplied jobstream allocates the new VSAM KSDS file and converts the contents of an existing AGGSCDS into the new VSAM KSDS in the new format.

Note: To determine if the above job needs to be run, check the record size of your existing AGGSCDS file.

Migrating from Version 5.0

When migrating from Version 5.0 of HourGlass, consider these points:

- This release cannot be run at the same time on the same LPAR with any other version of HourGlass. In other words, all components of HourGlass must be upgraded together.
- All HourGlass CICS PLT entries should follow any entry already in the PLT for modules DSNCOM1 or DSN2COM0.

Migrating from Version 4.1

When migrating from Version 4.1 of HourGlass, consider these points:

- CICS PPT/PCT/FCT entries may have been added or changed. Ensure that all entries are included/merged.
- This release cannot be run at the same time on the same LPAR as any other version of HourGlass. In other words, all components of HourGlass must be upgraded together.
- All HourGlass CICS PLT entries should follow any entry already in the PLT for modules DSNCOM1 or DSN2COM0.
- If you have implemented the HGRCHECK security exit, this exit has changed to expand its capabilities. Please review SAGGSAMP library member HGRCHECK for details.

Migrating from Version 3.3

When migrating from Version 3.3 of HourGlass, consider these points:

- CICS PPT/PCT/FCT entries may have been added or changed. Ensure that all entries are included/merged.
- Ensure that your applied DB2 patch expands the CSECT by 320 bytes. If your patch expands CSECT by 256 bytes, reapply the newest patch. See member AGG$DB2 in the HourGlass SAGGPINT library for details.
- You no longer need to run CICS with a normal batch HourGlass DD statement (for example, //HG103365) in order to successfully intercept SVC 11 instructions. HourGlass now honors the CICS HGCC and HGUC date settings for SVC 11 instructions in CICS.
- You no longer need to use the HourGlass DD statement or the HourGlass HG CLIST to set date and time values in a CICS environment. CICS support has been enhanced to support the specification of date and time values by User ID.

- Note that some message numbers have changed to assist with Automated Operations packages.
- The file size for the AGGSCDS has changed from RECZ(6500,6500) to RECZ(28865,28865). For an HGGSCDS dataset with a RECZ(6500,6500), it is necessary to execute SAGGSAMP library member AGGHGSC1 to convert to RECSZ(22500,22500) and then execute SAGGSAMP library member SAGGHGSC2 to convert to the RECSZ(28865,28865) format.
- You cannot run this version of HourGlass at the same time on the same LPAR as any other version. All components of HourGlass must be upgraded together.
- All HourGlass CICS PLT entries should follow any entry already in the PLT for modules DSNCOM1 or DSN2COM0.

Installation steps

Perform basic installation process

As of Version 6, Release 1, HourGlass is installed via the SMP/E product. Please refer to the HourGlass Version 6, Release 1 Program Directory for detailed information about the basic installation procedures for HourGlass.

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) and/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 8.

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
```

Sample JCL for AGGCUSTM

```
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 use of DD statements by HourGlass.

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.

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=xxxxxxxx control statement, where xxxxxxxx is the program name. You may add a maximum of 20 control statements.

Additionally, the INCLUDE control statement is used to include DB2 subsystems in the DB2 DDF support. The format in this case is INCLUDE PGM=@DB2nnnn, where nnnn is the one to four character DB2 subsystem name that is allowed to participate in HourGlass date and time setting in a DDF environment.

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=xxxxxxxx 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.)

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 JOBPRE2= 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=dhhmm control statement. (This method does not require the use of the Time DD statement.)

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=*.

Customization options

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 and/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 HGACTRT 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.

Note: Changes to this option alter the contents of module HGACTRT. If you have copied this module into LPALIB, re-copy it after AGGCUSTM 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 desired, specify CUTSMF=Y; otherwise specify CUTSMF=N.

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

SMFTYPE

If STATS=A or STATS=H is specified, CUTSMF=Y is specified, and the provided SMF exit HGACTRT 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.

Note: Changes to this option alter the contents of module HGACTRT. If you have copied this module into LPALIB, re-copy it after AGGCUSTM 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.

IMSUSER

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.

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, NATURAL, IEF, SAP, 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).

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.

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 24 for details.

To make these dialogs generally available:

1. Edit members AGGDD and AGGDDNAME in the SAGGSAMP library dataset.
2. Follow the directions to alter the ISPEXEC LIBDEF and CALL statements to reference the HourGlass SAGGSAMP 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 SAGGSAMP 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 by 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 37 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 Facilities

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

IEFACTRT, and the HourGlass module name is HGACTRT (which should be copied to a LINKLST Library). Note that AGGCUSTM options WTO=, SMFTYPE=, and CUTSMF= alter module HGACTRT, 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.IEFACTRT) MODNAME(AGGACTRT) ABENDNUM(1)
```

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

For MVS versions prior to Version 5, member IEFACTRT in SAGGSAMP library contains a sample IEFACTRT exit that calls the HourGlass AGGACTRT exit and your existing IEFACTRT 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(0) PRIV NOCANCEL SYST NOSWAP
```

Activate HourGlass

To activate HourGlass, run the jobstep supplied in member AGGON, in the HourGlass SAGGSAMP library. This JCL dynamically installs the HourGlass system interfaces. Once installed, HourGlass continuously monitors time requests that utilize either of the interfaces supported by HourGlass. When a time requester makes a time request and the requester is eligible according to the HourGlass customization parameters, HourGlass checks the method used to specify an altered date and time value. Acceptable methods are:

- A "hard coded" date and time value specified via an HourGlass JOBPRE2 customization statement.
- An HourGlass date or time DD statement in the current job step, a date specification in the programmer name field of the JOB statement.
- A date and time setting retrieved from the HourGlass Control Center Repository.

When these onditions are met, HourGlass substitutes the requested altered date and time for that time request.

AGGON automatically starts the AGGLINK started task. For multiple MVS systems with shared DASD, it may be necessary to pass a parameter to the AGGLINK task to ensure that the SAVELINK dataset is unique between systems. Sample JCL for AGGON is:

```
//STEP01   EXEC PGM=AGGINSTL,PARM='INSTALL'
//STEPLIB  DD   DSN=AGG.SAGGLOAD,DISP=SHR
//SYSUDUMP DD   SYSOUT=*
```

> **Note:** AGGON needs to be run after each IPL to activate it, since stopping and restarting the operating system effectively removes the HourGlass interfaces from the system.

To deactivate HourGlass, run the jobstep supplied in member AGGOFF. This JCL completely removes HourGlass from your system. Sample JCL for AGGOFF is:

```
//STEP01   EXEC PGM=AGGINSTL,PARM='REMOVE'
//STEPLIB  DD   DSN=AGG.SAGGLOAD,DISP=SHR
//SYSUDUMP DD   SYSOUT=*
```

Verify the install

To verify that the install was successful, run the sample job from member AGGBYRFY 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=AGGVRFY
//STEPLIB  DD   DSN=AGG.SAGGLOAD,DISP=SHR
//SYSUDUMP DD   SYSOUT=*
//HG100036 DD   DUMMY        February 5, 2000
//HGP0100  DD   DUMMY        Plus one hour
/*
```

CICS setup

HourGlass for CICS 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, NATURAL support, 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 and/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 and/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 CICS Transaction Server Version 1.1 or higher. Two SAGGSAMP library members are supplied to define the transactions, programs, mapsets, and files.

Notes:

1. If your CICS TS V1 or V2 region specifies RENTPGM=PROTECT, run member APINLNK 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 V1 or V2, PRVMOD=DFHAPIN.

This table summarizes the CICS requirements:

Transaction Codes	V1/2 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
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

Notes:

- Additional entries may be required for optional HourGlass CICS features.
- Ensure that the modules are in a load library contained in the CICS DFHRPL DD concatenation.
- 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.

For more details about these transactions, see "Using HourGlass with CICS" on page 25.

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 NATURAL and/or 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 NATURAL and/or 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.

Installing automatic startup

To install automatic startup:

1. Add the IBMAGG61 CEDA group to the list of groups automatically installed
   during CICS initialization.
2. Add an entry for AGGPLT, AGGFTCH, and AGGSC (optional) to the PLTPI
   table. For CICS TS V1 or V2, 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 AGGAUDIT 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 HGGETDT 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/time value specified via DD statements receive that JCL-specified altered date/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/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 and/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 functional verification

A new IMS transaction, AGGVIMS, is provided in Version 6, Release 1, which can be used to verify the functionality of the HourGlass IMS support, including the HourGlass IOPCB time fields support:

1. Add an AGGVIMS Transaction Code and IMS Program Specification Block (PSB) to your IMS Sysgen. Member ATTVITRN in SAGGSAMP library shows a sample IMS definition. Adjust the class number so that it runs in the message region of your choosing. The tran name can be altered if desired. Perform an IMS Sysgen to make this transaction and PSB known to IMS.

2. Generate the AGGVIMS PSB and Access Control Block (ACB). Member AGGVIPSB in SAGGSAMP library contains a sample PSB to use.

3. Generate the Message Formatting Services (MFS) screen used by HourGlass by running member AGGTVIMFS in SAGGSAMP library after customizing the JCL for your site.

4. Make module AGGVIMS from SAGGLOAD library available to the STEPLIB of the IMS message region in which HourGlass-altered date and time values are desired. For each message region that is to support altered date and time requests, add this special DD statement to the JCL:

   ```
   //HGIMSMSG DD DUMMY
   ```

   HG is the two-character prefix defined during the HourGlass installation. [NEIL: This looks a bit suspect - since we seem to be using AGG instead of HG.]

5. To verify the HourGlass date and time, clear the IMS screen and type AGGVIMS followed by a space and press ENTER. A screen appears that displays the date and time resulting from a time request via an SVC11 request, and the time fields from the IOPCB, including the Extended Time Stamp fields.

For those installations that have a requirement that the IOPCB date and time fields are modified to contain the HourGlass-altered date/time values, refer to the instructions in the HourGlass SAGGSAMP library member AGGIOPCB.

Note: By default, date/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.

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 a single DB2 module and apply a small patch to that module. Add this altered module to the DSNDBM1 regions of the DB2 subsystems in which you intend HourGlass to operate. No other special run-time procedures are required. For complete details, see member AGG$DB2 in the HourGlass SAGGPINT library.

COM-PLETE setup

Setting up HourGlass for use with the Teleprocessing (TP) monitor COM-PLETE from Software AG is optional. To do so, add the DD statement `// HGCOMPLT DD DUMMY` to the COM-PLETE region JCL participating in HourGlass altered date and time values. In the previous statement, HG is the two-character DD prefix defined during the HourGlass installation.

HourGlass intercepts calls to COM-PLETE (for example, CALL DATEJ) and COBOL or NATURAL language date and time verb requests (for example, COBOL ACCEPT, COBOL FUNCTION CURRENT DATE, NATURAL *DATE).

IDMS setup

Setting up HourGlass for use in an IDMS CV (Central Version) environment is optional. With IDMS Version 12 or Version 14, you can allow each user to control his own date and time value using variable HG2000.

To add HourGlass support, IDMS must have the appropriate maintenance level that creates a user exit called EXIT24. To add EXIT24 support, see SAGGSAMP library member AGGLAND, the "IDMS V12 Support" section for Version 12, or SAGGSAMP library member AGGLAND, the "IDMS V14 Support" section for Version 14.

Next, create a system or user profile containing the attribute HG2000 in a system directory using the Online Command Facility. You need SYSADM and security ADMIN privileges to accomplish this task. Activate the profile using the DCUF SET PROFILE newname command. This profile allows users to enter the DCUF SET HG2000 command in order to set requested date and time values. For example:

```
DCUF SET HG2000 'DATE=2000-01-31,TIME=P0100'
```

Finally, implement an IDMS EXIT24. Instructions are provided in the IDMS documentation. For further information, see SAGGSAMP library member AGGLANG, the "IDMS Support" section.

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™, PLI/370, NATURAL, IDEAL on-line, and IEF). 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 37.

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 and/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.

Examples

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:

`//xxdhhmm  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

`//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 %AGGDDNAME
```

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.

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 16 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/or Terminal IDs you enter, and the test algorithm selected during customization. See "Run the customization job" on page 7 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:

```
HGCC18E 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(HGCCTSR1)
```

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

```
--------------  HOURGLASS CICS CONTROL PRIMARY OPTIONS V6.1  ----------------
         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 and/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   Activate the HourGlass date and time entered via option 1 and any selection criteria entered via options 2, 3, and 4.

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 dhhmm,  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

```
-----   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

```
-HGCC05I ENABLE/UPDATE SUCCESSFUL
```

OPTION 6

```
HGCC06I DISABLE SUCCESSFUL
```

OPTION X

```
-HGCC12I 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 V6.1  ---------
          CICS USERID ========> AGGUSR
          ENTER YES TO DELETE PREVIOUSLY ENTERED USER CONTROL INFO ==>

                 USER DATE ===>                 FORMAT IS ccyy-mm-dd,  WHERE:
                                                   ccyy = FULL 4 DIGIT YEAR
                                                   mm = 2 DIGIT MONTH
                                                   dd = 2 DIGIT DAY
                 USER TIME ===>                 FORMAT IS dhhmm,  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 Tranid HGCV from a cleared CICS screen. If you have previously enabled HourGlass CICS with an HourGlass date and/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 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.

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 V6.1  -------------
           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 HGSCn in the CICS PLT (following the HGPLTn program), HourGlass activates the settings in STARTUP during CICS Initialization.

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 AGGAUDIT. 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/time settings that are unique to themselves, use the HourGlass Control Center (AGGCX) application to create and manage IMS date/time settings that reside in the HourGlass repository. See Chapter 4, "Using the HourGlass Control Center," on page 37 for further information about creating IMS-type settings with the AGGCX application.

Note: Date/time values s set via the HourGlass Control Center (AGGCX) application apply to **any** region that contains the HGIMSMSG 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.

HourGlass IMS verification program

A new IMS transaction and program is introduced in HourGlass Version 6, Release 1.0, the AGGVIMS transaction and program. The purpose of this application is to provide functional verification for the HourGlass IMS support, including the HourGlass IOPCB support. See the HourGlass SAGGSAMP library members AGGVI* for information about how to define this application to IMS.

A sample AGGVIMS transaction output is displayed below:

HourGlass IMS verification program

```
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. The JOBNAME column should contain the DB2 plan name. The USERID column should contain the DB2 SQLID (often your userid). No wildcards are allowed in these columns.

In previous versions of HourGlass, each DB2 subsystem which participated with HourGlass via DDF had to be pre-identified in the HourGlass customization settings. A special form of the INCLUDE PGM statement was used for this purpose, as follows:

INCLUDE PGM=@DB2ssss

where ssss is the DB2 subsystem name. The requirement of pre-identifying remote DB2 time requesters has been eliminated in HourGlass Version 6, Release 1. You should remove any INCLUDE PGM=@DB2ssss statements from your HourGlass customization process.

Using HourGlass with COM-PLETE

HourGlass allows users running in Software AG COM-PLETE regions to each receive their own altered date and time for COBOL and NATURAL applications requesting the date and time from COM-PLETE or the programming language. The HourGlass Control Center is used to set the date for each user, where the jobname equals the COM-PLETE region job name and the userid equals the COM-PLETE userid.

Each COM-PLETE region participating in possible HourGlass date alterations must have a special DD statement added to the JCL, as follows:

```
//HGCOMPLT DD DUMMY
```

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

For Assembler TIME macro support in a COM-PLETE region, add this line of code immediately after each TIME macro to be intercepted:

```
DC  5X'0700'
```

Then reassemble the module.

Using HourGlass with IDMS

HourGlass works normally with IDMS batch applications (single user) where the date and time is being requested by the programming language (for example, COBOL).

When running CV (Central Version), such as in ADS/O or DC COBOL, all applications that internally use the GETTIME macro receive HourGlass-altered date and time values specified via the User Control facility, provided the supplied IDMS EXIT24 has been implemented as a part of the HourGlass installation process. The install process allows certain task codes to be given the current date.

To initially set or change a date and/or time, simply issue the IDMS command:

```
DCUF SET HOURGLASS 'DATE=yyyy-mm-dd,TIME=dhhmm'
```

where the date and time operands are HourGlass date and time specifications.

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.

Method 1 (re-assemble)

> **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.bal.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 SAGGSAMP library member AGGSVCRP.

> **Note:** AGGINSVC must be run after each IPL to ensure that the SVC code is always active.

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 HGACTRT 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 AGGCOBRP$.

You can terminate statistics collection at any time without disabling HourGlass (for MVS Version 5 and later) by stopping the SMF exit HGACTRT. 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)
```

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.

Using the HourGlass Audit Trail Facility

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

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.

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  +-----------------------------------------------------------------------+
   |    Command ===>                                                        |
D  |                                                                        |
   |    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).
>
> **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 41 for details.

Viewing control elements

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

Viewing control elements

```
------------------ 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
___      DISA      IMS   CEIM002  AGGUSR REG2     USRDEV2  2006-02-01 MO200
___      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.
> - UPTD 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 Control Overview panel. On the panel, type I in Cmd next to any control element entry and press ENTER. The Control Type panel is displayed.

```
---------------------- IBM HourGlass: Option Menu  ----------------------
C +-----------------------------------------------------------------------+
  |    Command ===>                                                        |
D |                                                                        |
  |    Please indicate type of control to be inserted below:               |
  |                                                                        |
P |    Enter "/" or "S" to select option                                   |
  |    _ MVS Batch                                                         |
  |    _ TSO/ISPF                                                          |
  |    _ JOB Schedule                                                      |
  |    _ IMS Online/BMP                                                    |
  |    _ DB2 Batch, SPUFI & DDF                                            |
  |                                                                        |
  |    Press 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 Control 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 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 57 for details.

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

CANCEL	END	GROUP	

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 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 list the groups to which the Control Element belongs. See "Display groups for a control element" on page 57 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.

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 57 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

```
------------------  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

  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 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).

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.

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 list the groups to which the Control
Element belongs. See "Display groups for a control element" on page 57 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

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

  Type    : JOB SCHEDULE            Schedule Name: CEJS001
  Status  : DISABLED                Initial Date: 2006-01-01
  Owner   : AGGUSR                  Initial Time: M0400



Jobnames:
T?G4*___   WFT?GA*_   UNV*____   FIFTU*__   NEH?G*__   STR?A*__   STR?B*__
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
———————    ——————     ——————     ——————     ——————     ——————     ——————
```

Panel: The panel includes these parameters:

Type The designation JOB SCHEDULE is displayed in this read-only prompt.

Status Indicates whether the schedule is enabled or disabled. Status is populated automatically with DISABLED when a schedule 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.

Owner
The owner of the schedule.

Schedule Name
Enter a descriptive name to identify the schedule (1 to 8 characters).

Initial Date
Enter the date the schedule is to begin. Valid formats are YYYY-MM-DD and 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.

Initial Time
Enter the time the schedule is to begin (DHHMM). Valid values are:

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.

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 list the groups to which the Control Element belongs. See "Display groups for a control element" on page 57 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 MO200
___      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     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 Discard       Discards your changes.
```

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	ACTIVATE
	Save changes to the HourGlass Repository for immediate activation.
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
            TESTGRP01    AGGUSR
    TEST GROUP #01
            TESTGRP02    AGGUSR
    TEST GROUP #02
            TESTGRP03    AGGUSR
    TEST GROUP #03
```

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.
> - UPTD 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 55 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 56 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.

```
------------  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 elements Group 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:

```
-----------  IBM HourGlass: control element groups  ------------ Row 1 of 3
COMMAND===>

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




+----------------------------------------------------------------------------+
| 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
___          TESTGRP01   AGGUSR
   TEST GROUP #01
___          TESTGRP02   AGGUSR
   TEST GROUP #02
```

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

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 7 for information on the
parameters you can specify to customize HourGlass for your installation.

```
****************************** Top of Data ******************************
     HOURGLASS V6.1 CUSTOMIZATION OPTIONS                RUN OPTION=MEMORY

     TRACE=D  CSA=N    TSO=Y    STC=Y    EXCL=Y   INCL=Y    OLD=Y
     JOBPREF=*
     DDPREF=HG
     INTERNAL EXCLUDE PROG=DFSXLGIO
     INTERNAL EXCLUDE PROG=DFSXBATO
     INTERNAL EXCLUDE PROG=DFSDLB*
     INTERNAL EXCLUDE PROG=AMSCPY
              INCLUDE PROG=ISPYVI
              INCLUDE PROG=ISREDIT
              INCLUDE PROG=ISRPTC
              INCLUDE PROG=ISRUDL
     JOB CLASSES=*
     STCNAME=HGSTATS
     STCLINK=HGLINKB
     SMFTYPE=200
     CUTSMF=Y
     WTO=Y
     PCRTN=. LINKSYS=Y   CICSNONE=N      EXITEACH=N  CICSLINK=Y
HGACTRT  20030626 100500 #000016
HGBLMRU  20030716 145300 #000004
AGGCC    20030818 144933 #000033
HGCOPE   20030702 202500 #000007


F1=Help    F2=Split    F3=Exit    F5=Rfind    F7=Up    F8=Down    F9=Swap
F10=Left   F11=Right   F12=Cancel
```

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.

```
---------------------- IBM HourGlass: Option Menu ----------------------
C +----------------------------------------------------------------------+
  |    Command ===>                                                      |
D |                                                                      |
  |    Operational Status:                                              |
  |                                                                      |
P |           SVC11 Support ===> INACTIVE                               |
  |    PC Time Service Support ===> INACTIVE                            |
  |                                                                      |
  |                                                                      |
  |                                                                      |
  |    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.

Panel

Chapter 5. 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 AGG*mmnnt*. In the identifier, *mm* identifies the module from which the message originates, *nn* 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
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	AGGGETDT	CICS Date/Time Propagation
IN	AGGINSTL	MVS Support Activation
PI	AGGPINS	Patch Installer
PL	AGGPLT	CICS Support Activation
PN	AGGPLTN	CICS Support Activation (NATURAL)
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

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 and 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=*f*.

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

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

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

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

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

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

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

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	*tttt* **TRAN RECOVERY ROUTINE INTERCEPTED AN ABEND. ABEND CODE=***cccc***.**

Explanation:

tttt is the name of the transaction in which the error occurred.
cccc is the CICS abend code for the error.

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

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

Options List Utility (AGGOPTS) messages

AGGCO01E	**ERROR-REQUIRED EXECUTION PARAMETER MISSING.**

AGGCO02E	**ERROR-INVALID EXECUTION PARAMETER.**

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

AGGCO04E	**ERROR-"ADDR" COULD NOT BE LOCATED.**

AGGCO05E	**ERROR-"FLAG" COULD NOT BE LOCATED.**

AGGCO06E	**ERROR-"STCNAME" COULD NOT BE LOCATED.**

AGGCO07E	**AGGTBLS DATA AREA FAILED VALIDATION CHECK.**

Customization (AGGCUST) messages

AGGCU01I	**IBM HOURGLASS CUSTOMIZATION SUCCESSFUL.**

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

AGGCU03E	**TSO PARAMETER MUST BE Y OR N.**

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

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

AGGCU06E	**REQUIRED DDPREF CARD NOT PROVIDED.**

AGGCU07E	**MINIMUM OF 1 JOBPREF CARD MUST BE PROVIDED.**

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

AGGCU09E	**INVALID EXCLUDE/INCLUDE PGM SYNTAX.**

AGGCU10E	**SAME PROGRAM REQUESTED FOR BOTH EXCLUDE AND INCLUDE.**

AGGCU11E	**INVALID JOBCLASS SYNTAX.**

AGGCU12E	**INVALID DATE SYNTAX.**

AGGCU13E	**UNRECOGNIZABLE KEYWORD.**

AGGCU14E	**INVALID TIME SYNTAX.**

AGGCU15E	**AT LEAST 1 JOBPRE2 ENTRY MUST BE CODED WITH DATE AND/OR TIME.**

AGGCU16E	**MAX OF 100 JOBPREF ENTRIES HAS BEEN EXCEEDED.**

AGGCU17E	**MAX OF 30 JOBPRE2 ENTRIES HAS BEEN EXCEEDED.**

Customization (AGGCUST) messages

AGGCU18E	MAX LENGTH OF JOBPREF IS 8 CHARS.
AGGCU19E	MAX LENGTH OF JOBPRE2 IS 8 CHARS.
AGGCU20E	MAX OF 284 AVAILABLE EXCLUDE PGM ENTRIES EXCEEDED.
AGGCU21E	MAX OF 34 AVAILABLE INCLUDE PGM ENTRIES EXCEEDED.
AGGCU22E	MAX OF 36 JOB CLASSES HAS BEEN EXCEEDED.
AGGCU23E	"JOBPRE2=*" MUST BE FIRST AND ONLY JOBPRE2 CARD.
AGGCU24E	INVALID CSA VALUE.
AGGCU25E	JOBPRE2 CARDS ARE INVALID WHEN NO DATE OR TIME PARMS ARE PRESENT.
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.
AGGCU45E	SMF RECORD TYPE NOT 3 DIGITS FROM 128-255.
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.

HourGlass Control Center (AGGCX) messages

AGGCX01E   **A LOGICAL ERROR OCCURRED IN MODULE** *mmmmmmmm*, **RETURN CODE=***rrrr*, **REASON CODE=***ssss*.**/msgtext>**

Explanation:

mmmmmmmm is the name of the module in which the error occurred.
rrrr is the return code.
ssss is the reason code.

AGGCX02E   **DYNAMIC ALLOCATION REQUEST FAILED IN MODULE** *mmmmmmmm*, **RC=***cc*, **DYNERROR=***eeee*, **DYNINFO=***iiii*.

Explanation:

mmmmmmmm is the name of the module in which the error occurred.
cc is the return code returned from DYNALLOC.
eeee is the error code returned from DYNALLOC.
iiii is the info code returned from DYNALLOC.

AGGCX03E   **VSAM CONTROL BLOCK MANIPULATION ERROR OCCURRED IN MODULE** *mmmmmmmm*. **RETURN CODE=***rrrr*, **REASON CODE=***ssss*.

Explanation:

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

rrrr is the return code from the service request.
ssss is the reason code from the service request.

AGGCX04E   **VSAM OPEN/CLOSE ERROR OCCURRED IN MODULE** *mmmmmmmm*. **RETURN CODE=***rrrr*, **REASON CODE=***ssss*.

Explanation:

mmmmmmmm is the name of the module in which the error occurred.
rrrr is the return code from the service request.
ssss is the reason code from the service request.

AGGCX05E   **VSAM RECORD MANAGEMENT ERROR OCCURRED IN MODULE** *mmmmmmmm*. **RETURN CODE=***rrrr*, **REASON CODE=***ssss*.

Explanation:

mmmmmmmm is the name of the module in which the error occurred.
rrrr is the return code from the service request.
ssss is the reason code from the service request.

AGGCX06E   **I/O ERROR INFORMATION -** *iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii*.

Explanation: *iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii* contains either valid SYNADAF error information or the message "SYNADAF DID NOT RETURN VALID ERROR INFORMATION".

DB2 Local Support Verification (AGGDL) messages

AGGDL01E   **DB2 CONNECTION NOT ACTIVE.**

AGGDL02E   **DB2 ERROR. SQL CALL NUMBER=***cc*, **ERRCODE=***eeeeeee*.

Explanation:

cc is the internal SQL call number.
eeeeeee is the SQL error code expressed as a two's-compliment 32-bit binary value.

AGGDL03E   **CICS INQUIRE DB2CONN REQUEST FAILED. EIBRESP=***rrrrrrrr*.

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

AGGDL04E   **CICS INQUIRE EXITPROGRAM REQUEST FAILED. EIBRESP=***rrrrrrrr*.

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

DB2 Remote Support Verification (AGGDR) messages

AGGDR01E   **CICS INQUIRE EXITPROGRAM REQUEST FAILED. EIBRESP=***rrrrrrrr*.

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

AGGDR02E   **DB2 CONNECTION NOT ACTIVE.**

AGGDR03E   **DB2 ERROR. SQL CALL NUMBER=***cc*, **ERRCODE=***eeeeeee*.

Explanation:

cc is the internal SQL call number.
eeeeeee is the SQL error code expressed as a two's-compliment 32-bit binary value.

DB2 Remote Support Verification (AGGDR) messages

AGGDR04E **CICS INQUIRE DB2CONN REQUEST FAILED. EIBRESP=***eeeeeeee***.**

Explanation: *rrrrrrrr* 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 #***cc***.**

Explanation: *cc* is an internal identifier for the CICS service call that incurred the error.

AGGFE16S **CICS ERROR INFORMATION: EIBRCODE=***cccccccccccc***, EIBFN=***ffff***.**

Explanation:

cccccccccccc is the CICS Exec Interface Block (EIB) response code.
ffff is the CICS EIB function code.

AGGFE17S **CICS ERROR INFORMATION: EIBRESP=***rrrrrrrr***, EIBRESP2=***ssssssss***.**

Explanation:

rrrrrrrr is the CICS Exec Interface Block (EIB) internal condition code.
ssssssss is the CICS EIB internal condition code2.

AGGFE18S ***tttt* TRAN RECOVERY ROUTINE INTERCEPTED AN ABEND. ABEND CODE=***cccc***.**

Explanation:

tttt is name of the transaction in which the error occurred.
cccc 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=***cccc***. AGGFTCH WILL TERMINATE.**

Explanation: *cccc* is the return code returned from the

exit synchronization process.

**AGGFE22I   PLTPS EXIT SYNCHRONIZATION
COMPLETED SUCCESSFULLY, C1=*cccc*,
C2=*dddd*.**

Explanation:

cccc is the synchronization phase 1 counter.
Should normally contain a value of 1.
dddd is the synchronization phase 2 counter.
Should normally contain a value of 0.

**AGGFE23S   AN ERROR OCCURRED IN TIMER
SERVICES. RETURN CODE=*cccc*,
REASON CODE=*rrrr*.**

Explanation:

cccc is the return code returned from timer services.
rrrr is the reason code returned from timer services.

CICS Date/Time Propagation (AGGGETDT) messages

**AGGGD01I   PROPAGATION OF SETTINGS HAS
BEEN EFFECTED IN *rr* REGIONS
WITH *ee* ERRORS.**

Explanation:

rr is the count of AOR regions in which
settings propagation was attempted.
ee is the count of errors that occurred
during settings propagation.

**AGGGD02S   CICS EXTRACT REQUEST FOR
AGGCCGX GWA FAILED.**

**AGGGD03S   VALIDATION OF AGGCCGX GWA
FAILED.**

**AGGGD04S   CICS GETMAIN FOR SCREC DATA
AREA FAILED.**

**AGGGD05S   *tttt* TRAN RECOVERY ROUTINE
INTERCEPTED AN ABEND. ABEND
CODE=*cccc*.**

Explanation:

tttt is name of the transaction in which
the error occurred.
cccc is the CICS abend code for the error.

MVS Support Activation (AGGINSTL) messages

**AGGIN01I   HOURGLASS FOR MVS ACTIVATED
SUCCESSFULLY. *vvvvv***

Explanation: *vvvvv* is the HourGlass version.release
number for the executing product.

**AGGIN02I   HOURGLASS FOR MVS
DEACTIVATED SUCCESSFULLY. *vvvvv***

Explanation: *vvvvv* is the HourGlass version.release
number for the executing product.

**AGGIN03S   HOURGLASS FOR MVS: AGGINSTL
RECEIVED INVALID EXECUTION
PARAMETER.**

**AGGIN04S   HOURGLASS FOR MVS ACTIVATION
FAILED, RC=*cccc*.**

Explanation: *cccc* 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=*cccc*./msgtext>**

Explanation: *cccc* is the deactivation failure reason
code:

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.

Patch Installer (AGGPINS) messages

AGGPI01S **PERMANENT I/O ERROR OCCURRED DURING PROCESSING FOR MEMBER** *mmmmmmmmm*, **MEMBER BYPASSED.**

Explanation: *mmmmmmmmm* is the name of the module in which the error occurred.

AGGPI02S **ERROR OCCURRED IN MODULE** *mmmmmmmmm*, **WHILE CLOSING DCB AT** *aaaaaaaa* **WITH** *oooooooo* **OPTION, RC=***rc*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
aaaaaaaa is the address of the DCB.
oooooooo is the data management option for which the DCB is being opened.
rc is the return code returned from Data Management CLOSE processing.

AGGPI03S **ERROR OCCURRED IN MODULE** *mmmmmmmmm*, **WHILE OPENING DCB AT** *aaaaaaaa* **FOR** *oooooooo* **PROCESSING, RC=***rc*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
aaaaaaaa is the address of the DCB.
oooooooo is the data management option for which the DCB is being opened.
rc is the return code returned from Data Management OPEN processing.

AGGPI04S *mmmmmmmmm*.**@OPCL: STORAGE OBTAIN FOR I/O BUFFER STORAGE FAILED.**

Explanation: *mmmmmmmmm* is the name of the module in which the error occurred.

AGGPI05S **I/O ERROR INFO -** *iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii*.

Explanation: *iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii* contains either valid SYNADAF error information or the message: "SYNADAF DID NOT RETURN VALID ERROR INFORMATION".

AGGPI06S **AGGPIND INPUT PARAMETER STRING IS MISSING OR INVALID.**

AGGPI07S **AGGPIND PCT() KEYWORD STRING IS MISSING OR INVALID.**

AGGPI08S *mmmmmmmmm*.**@OSTS: STORAGE OBTAIN FOR SYMBOL TABLE STORAGE FAILED.**

Explanation: *mmmmmmmmm* is the name of the module in which the error occurred.

AGGPI09S **CALCULATED LENGTH OF PROCESS CONTROL TOKEN NOT GREATER THAN ZERO.**

AGGPI10S *mmmmmmmmm*.**@SOST: AN ERROR OCCURRED DURING THE SORT OF THE SYMBOL TABLE. SEE SORT LISTING IN PINSLIST.**

Explanation: *mmmmmmmmm* is the name of the module in which the error occurred.

AGGPI11S **PERMANENT I/O ERROR OCCURRED DURING READ OPERATION IN SYSLIB LIBRARY.**

AGGPI12S **DYNAMIC ALLOCATION REQUEST FAILED IN MODULE** *mmmmmmmmm*, **RC=***cc*, **DYNERROR=***eeee*, **DYNINFO=***iiii*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
cc is the return code returned from DYNALLOC.
eeee is the error code returned from DYNALLOC.
iiii is the info code returned from DYNALLOC.

AGGPI13S *mmmmmmmmm*.**@OSDT: STORAGE OBTAIN FOR I/O BUFFER STORAGE FAILED.**

AGGPI14S **LOAD REQUEST FAILED FOR MODULE** *mmmmmmmmm*, **ABEND CODE=***aaaa*, **REASON CODE=***rrrr*.

Explanation: *mmmmmmmmm* is the name of the module in which the error occurred.

AGGPI15S **IEWBIND REQUEST FAILED IN MODULE** *mmmmmmmmm*, **RETURN CODE=***cc*, **REASON CODE=***rrrrrrrr*, **FUNC=***ffff*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
cc is the return code from the function request.
rrrrrrrr is the reason code from the function request.
ffff is the name of the function.

AGGPI16S   **HGDDST INPUT PARAMETER STRING IS MISSING OR INVALID.**

AGGPI17S   **HGDDST DDN() PARAMETER STRING IS MISSING OR INVALID.**

AGGPI18S   **MVS RELEASE MIS-MATCH. ESA V4R2M2 MINIMUM REQUIRED.**

AGGPI19S   **AN ERROR OCCURRED IN ISITMGD REQUEST. RETURN CODE=*rrrr*, REASON CODE=*ssss*.**

Explanation:

rrrr is the return code from the ISITMGD request.
ssss 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 *mmmmmmmmm*, RETURN CODE=*rrrr*, REASON CODE=*ssss*.**

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
rrrr is the return code.
ssss is the reason code.

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 #*cc*.**

Explanation: *cc* 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=*cccccccccccc*, EIBFN=*ffff*, EIBRESP=*rrrrrrrr*, EIBRESP2=*ssssssss*.**

Explanation:

cccccccccccc is the CICS Exec Interface Block (EIB) response code.
ffff is the CICS EIB function code.
rrrrrrrr is the CICS EIB internal condition code.
ssssssss 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 (NATURAL) (AGGPLTN) messages

AGGPN01I   **HOURGLASS NATURAL SUPPORT ACTIVATED SUCCESSFULLY.**

AGGPN02E   **HOURGLASS NATURAL ACTIVATION FAILED.**

CICS Support Activation (AGGPRIME) messages

AGGPR01E   **AGGPRIME RECEIVED AN INVALID PARAMETER.**

AGGPR02E   **AGGPRIME DATE CONVERSION ERROR.**

AGGPR03E   **AGGPRIME CANNOT EXECUTE. SPLVL ERROR.**

IMS IOPCB Support (AGGRRC00, AGGRRC01 & AGGIMSLI) messages

AGGRC02E AN ERROR OCCURRED ATTEMPTING TO IMPLEMENT HOURGLASS IMS IOPCB SUPPORT, RTRNCD=*rrrr*, REASCD=*ssss*.

Explanation:

rrrr is the return code from the request.
ssss is the reason code from the request.

AGGRC03I HOURGLASS IMS IOPCB SUPPORT IS TERMINATING.

AGGRC04I HOURGLASS REQUEST HANDLER POINTER HAS BEEN RE-HOOKED.

AGGRC05S COUNT OF RE-HOOKING OCCURRANCES HAS EXCEEDED THE SPECIFIED LIMIT.

AGGRC06I HOURGLASS IMS ATTACHMENT HAS BEEN SUCCESSFULLY INITIATED.

Repository Image Manager (AGGIRIM) messages

AGGRI01S A LOGICAL ERROR OCCURRED IN MODULE *mmmmmmmmm*, RETURN CODE=*rrrr*, REASON CODE=*ssss*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
rrrr is the return code.
ssss is the reason code.

AGGRI02I COUNT OF TYPE *tt* CONTROL ELEMENTS = 999,999, OCCUPYING *bbbbbbbb* BYTES OF STORAGE.

Explanation:

tt is a two-character code that designates a Control Element type.
bbbbbbbb is the number of bytes, in hexadecimal, occupied by the Control Elements of the designated type.

AGGRI03I CONTROL ELEMENT TABLE SIZE=*eeeeeee* BYTES. CONTROL VALUE TABLE SIZE=*vvvvvvvv* BYTES.

Explanation:

eeeeeee is the total number of bytes, in hexadecimal, occupied by the Control Element table.
vvvvvvvv is the total number of bytes, in hexadecimal, occupied by the Control Value table.

AGGRI04I CONTROL ELEMENT TABLE FINALIZED AT *tttttttt*, SYSTEM=*x*.

Explanation:

tttttttt is the storage location, in hexadecimal, of the finalized Control Element table.
x is an indicator, either "Y" or "N", that indicates whether or not the Control Element table was allocated in MVS Common Service Area storage.

IMS Support Verification (AGGVIMS) messages

AGGRV01I HOURGLASS IMS VERIFICATION. IMS=*iiii*, SYSID=*mmmm*.

Explanation:

iiii is the IMS identifier retrieved from the IMS PARMBLKS data area.
mmmm 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.

AGGRV04I IOPCB DATE=*YYYY-MM-DD*, TIME=*HH:MM:SS*.TH, ETS=*XXXXXXXXXXXXXXXXXXXXXXXX*.

AGGRV06S A LOGICAL ERROR OCCURRED IN MODULE *mmmmmmmmm*, RETURN CODE=*rrrr*, REASON CODE=*ssss*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
rrrr is the return code.
ssss is the reason code.

CICS Settings Control (AGGSC) messages

AGGSC01S HOURGLASS SETTINGS CONTROL INITIALIZATION ERROR. ERROR CODE = *cc*.

Explanation: *cc* 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.

AGGSC07I THE SPECIFIED SETTINGS GROUP IS NOT FOUND.

AGGSC08I THE SPECIFIED OPTION IS NOT AVAVILABLE.

AGGSC09I ENTER A NAME FOR THE SETTINGS GROUP BEING SAVED.

AGGSC10E WRITE OPERATION TO FILE AGGSCDS FAILED.

AGGSC11I SETTINGS GROUP *ggggggggggggggggggg* ALREADY EXISTS./msgtext>

Explanation: *ggggggggggggggggggg* is the settings group name specified by the user.

AGGSC12I SETTINGS MAY NOT BE SAVED AS NAME ″CURRENT″.

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 *ggggggggggggggggggg*./msgtext>

Explanation: *ggggggggggggggggggg* is the settings group name specified by the user.

AGGSC22I SETTINGS GROUP ACTIVATED: *ggggggggggggggggggg*./msgtext>

Explanation: *ggggggggggggggggggg* is the settings group name specified by the user.

AGGSC23I SETTINGS GROUP DELETED: *ggggggggggggggggggg*./msgtext>

Explanation: *ggggggggggggggggggg* is the settings group name specified by the user.

AGGSC24I SETTINGS GROUP UPDATED: *ggggggggggggggggggg*./msgtext>

Explanation: *ggggggggggggggggggg* is the settings group name specified by the user.

AGGSC25I SETTINGS FOR USER-ID *uuuuuuuu* NOT FOUND./msgtext>

Explanation: *uuuuuuuu* is the userid specified by the user.

AGGSC26I SETTINGS GROUP NOT FOUND: *ggggggggggggggggggg*./msgtext>

Explanation: *ggggggggggggggggggg* is the settings group name specified by the user.

AGGSC27I PLEASE ENTER REQUIRED USERID.

CICS Settings Control (AGGSC) messages

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	*tttt* **TRAN RECOVERY ROUTINE INTERCEPTED AN ABEND. ABEND CODE=*cccc*.**

Explanation:

tttt is name of the transaction in which
   the error occurred.
cccc 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 OBTTAINED TO CONTAIN IT.**

MVS support activation (AGGLSSTC) messages

AGGST01I	**HOURGLASS PC TIME SERVICE SUPPORT ACTIVATED SUCCESSFULLY.** *vvvvv*

Explanation: *vvvvv* is the HourGlass version.release number for the executing product.

AGGST02I	**HOURGLASS PC TIME SERVICE SUPPORT DEACTIVATED SUCCESSFULLY.** *vvvvv*

Explanation: *vvvvv* is the HourGlass version.release number for the executing product.

AGGST03S	**HOURGLASS PC TIME SERVICE SUPPORT ACTIVATION FAILED. RC=*cccc*./msgtext>**

Explanation: *cccc* is the activation failure reason code:

0011	HourGlass PC Time Service support is already active in this system.
0012	HourGlass for MVS (SVC11) support not active. The PC Time Service support cannot be activated unless the HourGlass for MVS (SVC11) support is already active.
0015	Verification of the HourGlass for MVS (SVC11) support module was unsuccessful.
0016	OSLVL error. MVS V4R2.2 or higher required for activation of the HourGlass PC Time Service support.
0017	Another product may be active. The LX/EX value for the PC Time Service was not the expected value. This indicates that another software product may have already co-opted the PC Time Service PC number.

AGGST04S HOURGLASS PC TIME SERVICE SUPPORT TERMINATED UNEXPECTEDLY.

AGGST05I LSPC=*aaaaaaaa*, SLOT TABLE=*ssssssss*.

Explanation:

aaaaaaaa is the address of the AGGLSPC module.
ssssssss 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 *pp*%./msgtext>

Explanation: *pp* is the percentage utilization of the AGGLSPC task-related slot table.

MVS Statistics Processing (AGGACTRT) messages

AGGSY01I JOBNAME .STEPNAME.PROCSTEP RUN WITH DATE=*YYYY-MM-DD* TIME=*P0000*, REQUESTCNT=99999999'

Generic error (miscellaneous) messages

AGGSY02I *vvv...vvv*.

Explanation: *vvv...vvv* is the Snap Dump title for the dump about to be taken.

AGGSY03E A LOGICAL ERROR OCCURRED IN MODULE *mmmmmmmm*, RETURN CODE=*rrrr*, REASON CODE=*ssss*.

Explanation:

mmmmmmmm is the name of the module in which
    the error occurred.
rrrr is the return code.
ssss is the reason code.

AGGSY04E DYNAMIC ALLOCATION REQUEST FAILED IN MODULE *mmmmmmmm*, RC=*cc*, DYNERROR=*eeee*, DYNINFO=*iiii*.

Explanation:

mmmmmmmm is the name of the module in which
    the error occurred.
cc is the return code returned from DYNALLOC.
eeee is the error code returned from DYNALLOC.
iiii is the info code returned from DYNALLOC.

AGGSY05E VSAM CONTROL BLOCK MANIPULATION ERROR OCCURRED IN MODULE *mmmmmmmm*. RETURN CODE=*rrrr*, REASON CODE=*ssss*.

Explanation:

mmmmmmmm is the name of the module in which
    the error occurred.
rrrr is the return code from the service request.
ssss is the reason code from the service request.

AGGSY06E VSAM OPEN/CLOSE ERROR OCCURRED IN MODULE *mmmmmmmm*. RETURN CODE=*rrrr*, REASON CODE=*ssss*.

Explanation:

mmmmmmmm is the name of the module in which
    the error occurred.
rrrr is the return code from the service request.
ssss is the reason code from the service request.

AGGSY07E VSAM RECORD MANAGEMENT ERROR OCCURRED IN MODULE *mmmmmmmm*. RETURN CODE=*rrrr*, REASON CODE=*ssss*.

Explanation:

mmmmmmmm is the name of the module in which
    the error occurred.
rrrr is the return code from the service request.
ssss is the reason code from the service request.

AGGSY08E I/O ERROR INFORMATION - *iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii*.

Explanation: *iiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiiii* contains either valid SYNADAF error information or the message ʺSYNADAF DID NOT RETURN VALID ERROR INFORMATIONʺ.

Generic error (miscellaneous) messages

AGGSY09E DB2 ERROR. SQL CALL NUMBER=*cc*, ERRCODE=*eeeeeee*.

Explanation:

cc is the internal SQL call number.
eeeeeee is the SQL error code expressed as a two's-compliment 32-bit binary value.

SCDS Conversion Utility (AGGTSUA) messages

AGGTS01I AGGTSUA HOURGLASS TRANSFORM SCDS UTILITY STARTING.

AGGTS02S A LOGICAL ERROR OCCURRED IN MODULE *mmmmmmmmm*, RETURN CODE=*cccc*, REASON CODE=*rrrr*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
cccc is the return code.
rrrr is the reason code.

AGGTS03S VSAM CONTROL BLOCK MANIPULATION ERROR OCCURRED IN MODULE *mmmmmmmmm*, RETURN CODE=*cccc*, REASON CODE=*rrrr*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
cccc is the VSAM return code.
rrrr is the VSAM reason code.

AGGTS04S VSAM OPEN/CLOSE ERROR OCCURRED IN MODULE *mmmmmmmmm*, RETURN CODE=*cccc*, REASON CODE=*rrrr*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
cccc is the VSAM return code.
rrrr is the VSAM reason code.

AGGTS05S VSAM RECORD MANAGEMENT ERROR OCCURRED IN MODULE *mmmmmmmmm*, RETURN CODE=*cccc*, REASON CODE=*rrrr*.

Explanation:

mmmmmmmmm is the name of the module in which the error occurred.
cccc is the VSAM return code.
rrrr is the VSAM reason code.

AGGTS06I TRANSFORM SCDS UTILITY COMPLETED. *cccccccccc* SCDS ENTRIES WERE PROCESSED./msgtext>

Explanation: *cccccccccc* is the total count of SCDS records converted and written to the output AGGSCDS dataset.

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 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 #*cc*.

Explanation: *cc* 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 *tttt* TRAN RECOVERY ROUTINE
INTERCEPTED AN ABEND. ABEND
CODE=*cccc*.

Explanation:

tttt is name of the transaction in which
the error occurred.
cccc 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=*dddddddddd*,
TIME=*tttttttttt*.

Explanation: The date and time as returned from a
TIME LINKAGE=*SVC* request:

dddddddddd is the date value, in yyyy-mm-dd format.
tttttttttt is the time value, in hh:mm:ss:th format.

AGGVR02I LINKAGE=*SYS* DATE=*dddddddddd*,
TIME=*tttttttttt*.

Explanation: The date and time as returned from a
TIME LINKAGE=*SYSTEM* request:

dddddddddd is the date value, in yyyy-mm-dd format.
tttttttttt is the time value, in hh:mm:ss:th format.

AGGVR03I COBOL/LE370 DATE=*dddddddddd*,
TIME=*tttttttttt*.

Explanation: The date and time as returned from a
COBOL MOVE FUNCTION CURRENT DATE request:

dddddddddd is the date value, in yyyy-mm-dd format.
tttttttttt is the time value, in hh:mm:ss:th format.

AGGVR04I ACTUAL STCK DATE=*dddddddddd*,
TIME=*tttttttttt*.

Explanation: The actual local date and time as
returned from a STCK/STCKCONV service request:

dddddddddd is the date value, in yyyy-mm-dd format.
tttttttttt 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* FUNCTI0NALITY.

MVS Support Verification (AGGBVRFY) messages

AGGVR08E	**LE370 ENVIRONMENT NOT FOUND IN STEPLIB. LE370 SUPPORT VERIFICATION WILL BE BYPASSED.**
AGGVR09S	**VERIFICATION OF HOURGLASS MVS SUPPORT MODULE FAILED. UNABLE TO CONTINUE.**

AGGVR10S	**A NON-ZERO CONDITION CODE RESULTED FROM A STCK (STORE CLOCK) INSTRUCTION.**
AGGVR11S	**A NON-ZERO RETURN CODE RESULTED FROM A STCKCONV SERVICE REQUEST.**

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	**U0003.HourGlass was unable to perform a successful ENQ on the SVC Table. Retry.**
ABEND	**U0004.HourGlass was unable to successfully install the SVC interception. Contact Support.**
ABEND	**U0005. OPEN FAILED FOR AUTHORIZED SAGGLOAD LIBRARY. The OPEN failed for the STEPLIB dataset containing AGGFRONT.**
ABEND	**U0006.HourGlass was unable to successfully remove the SVC interception. Contact Support.**
ABEND	**U0007.Message text varies.**
ABEND	**U0009.Customer is running on an unsupported level of MVS.**
ABEND	**U0010.Message text varies.**
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 6. 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.
2. Type TSO HG on the command line to display the HourGlass interface.
3. Using option 1, type a jobname consisting of your full userid, a userid of '*', and a date of '2005-01-01'. Press ENTER, and the press PF3. Select ACTIVATE CHANGES. Continue pressing PF3 until you are out of the HourGlass interface.
4. From a TSO command line, issue TSO TIME.

This should get the altered date.

DB2

1. From the same TSO session above (or repeat steps 1-3 of TSO ENVIRONMENT), go into DB2 INTERACTIVE and select the SPUFI option.
2. 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. Set up and run CICS transaction programs HGDL6 and HGDR6 which provide verification for local and remote DB2 functionality, respectively.

   Note: SAGGSAMP library members BINDHGDL and BINDHGDR contain sample DB2 BIND jobstreams for these programs.

   Note: SAGGSAMP library members BINDHGDL and BINDHGDR contain sample DB2 BIND jobstreams for these programs.

BATCH

1. Submit member AGGBYRFY from SAGGSAMP library.
2. 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.
2. From a cleared screen, type AGGVIMS followed by a space. Press ENTER.

   Your userid should appear in the USERID field unless your site does not use signon security, in which case it should contain your lterm name.
3. In the date field, enter a date of '2005-01-01'. Press ENTER.

   The screen reappears. The bottom line should show the altered date.

Altered date does not appear

If the altered date does not appear, first determine whether HourGlass is installed. Run SAGGSAMP library member HGOPTS$ 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 DB2 from SAGGSAMP library been run to create a new DB2 load module? Has this module 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 module was 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 APINLNK from SAGGSAMP library.
- Has the HourGlass Loadlib been added to the DFHRPL?

- If your application is DB2, NATURAL 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 `//HGIMSMSG 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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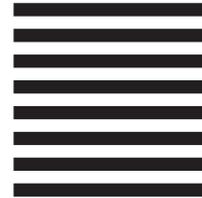Fold and Tape   **Please do not staple**   Fold and Tape

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