HourGlass
for MPE

Reference Manual

HourGlass Support
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Introduction

HourGlass for MPE is an essential testing tool in the quest for Year 2000 compliance of all your in-house and third-party applications, utilities, and system software.

HourGlass for MPE allows the creation of "private clocks" which may be set to any MPE-supported date and time -- past, present, or future. Any job, session, or program may then be "attached" to these private clocks.

When a process that is attached to a private clock asks for the system date and/or time (from her forward referred to simply as a "date/time"), it receives whatever date/time that private clock currently says.

Private clocks are created and attached to jobs/sessions/programs in one of two ways:

1) Via a set of rules, permitting you to *automatically* attach private clocks to all programs run by specific users (specified by jobname, userid, account, group and/or ldev), specific programs run by all users, or specific programs run by specific users;

2) By executing a command within a job or session which creates a private clock that is attached to all programs run in that job or session.

HourGlass for MPE is simple to use (much simpler than it may sound at this point), safe, and thorough. Using advanced, proprietary technology, **all** attempts to get the current date/time by any process on the system, no matter what mechanism is used, are intercepted and given altered date/times. (Again, only those processes that you specify are affected.) HourGlass works with all MPE programs, POSIX programs, HP system utilities, and third-party applications and utilities (such as POWERHOUSE, ADAGER, SUPRTOOL, MPEX, MANMAN, etc.).

Some of the uses of HourGlass for MPE include:

- Discovering which applications call system date INTRINSICs

- Testing in-house software

- Testing third-party applications and utilities

- Running non-year-2000-compliant applications after 2000-01-01

- Re-running month- or year-end jobs at other times

- Testing modified month- or year-end jobs in advance

Overview

HourGlass for MPE consists of the following components:

- The HOURGLAS.PUB.SYS control program, used to start/stop the HourGlass intercept routine, start/stop logging, and issue other commands to HourGlass.

- The HGDATE.PUB.SYS command file, used to create private clocks "on-the-fly" for entire jobs or sessions.

- The HGCONFIG.PUB.SYS configuration file, used to create rule-based automatic private clocks.

- The EVENTS and INTRINS log files in the HGLOG.ALLEGRO group.

- The FIXFDATE.HOURGLAS.ALLEGRO utility program, used to reset "future" file label dates resulting from your year-2000 testing.

- HGCGIBIN.HOURGLAS.ALLEGRO, an optional cgi-bin program for use with a web server.

How to Install HourGlass for MPE

Note: Currently, HourGlass for MPE is only supported on MPE/iX 5.0 and later.

HourGlass for MPE can either be downloaded from our web site
(http://www.allegro.com/products/hourglass/hp3000), or loaded from tape. If you download the
software the installation instructions are on the web page. If you received a tape, there are
installation instructions included with the tape. Installation instructions are not included in the
manual because they are dependent upon how you receive the product.

Starting and Stopping HourGlass for MPE

After you have installed HourGlass for MPE, you must start the HourGlass for MPE intercept routine before any private clocks can be created and attached to processes.

1. Log on to a user.account with SM capability (if you haven't already):

    ```
    :HELLO MANAGER.SYS
    ```

2. Start the HourGlass for MPE intercept routine:

    ```
    :HOURGLASS START
    ```

(The installation job sets up a system-wide UDC for the :HOURGLASS command)

HourGlass for MPE will now intercept all system date/time calls from all desired processes until you STOP HourGlass or re-boot the system; however, it <u>won't</u> attach any processes to private clocks (i.e. it won't change any dates/times) until you use the :HGDATE command and/or the HGCONFIG.PUB.SYS file, described later.

To stop the HourGlass for MPE intercept routine:

```
:HOURGLASS STOP
```

To check the status of HourGlass for MPE:

```
:HOURGLASS STATUS
```

We also provide a cgi-bin program to display HourGlass status and statistics. It can be used by any web server running on your HP 3000. If you have the OMI or Apache web server, our install job attempts to install the cgi-bin program into the appropriate directory for you; otherwise, just copy HGCGIBIN.HOURGLAS.ALLEGRO to the file /your-cgi-bin-path/hourglass.cgi. Then try pointing your web browser at http://your.web.server/cgi-bin/hourglass.cgi.

Quick Start Guide to HourGlass for MPE

This section is intended to give you a quick demonstration of some of the features of HourGlass for MPE. More information, details, and complete syntax can be found in the rest of the manual, in the file README.HOURGLAS.ALLEGRO, and in the online help of the HOURGLAS program.

After you have installed and started HourGlass for MPE, type in the commands shown below (you can, of course, leave out the explanatory comments).

```
:comment --- Check the current "real date/time":
:
:showtime
MON, JUN  1, 1998,  2:52 PM

:comment --- First, a demonstration of a "Relative Constant Time" private clock
:comment --- (this is the default date calculation method); this tells HourGlass
:comment --- to set the private clock for my session to a specified date/time,
:comment --- and then let it advance normally.
:
:hgdate 05/14/2002
:showtime
TUE, MAY 14, 2002,  2:52 PM
:
:comment (Wait 1 minute, and see what time it is)
:
:pause 60
:showtime
TUE, MAY 14, 2002,  2:53 PM

:comment --- "ACT" stands for "Absolute Constant Time"; this tells
:comment --- HourGlass to set a private clock to a specified date/time,
:comment --- and then stop the clock.
:
:hgdate act 05/14/2002 10:30
:showtime
TUE, MAY 14, 2002, 10:30 AM
:
:comment (Wait 1 minute, and see what time it is)
:
:pause 60
:showtime
TUE, MAY 14, 2002, 10:30 AM
```

```
:comment --- To switch my session back to the system clock (so that it gets
:comment --- the "original" or "real" date/time), use this command:
:
:hgdate orig
:showtime
MON, JUN  1, 1998,  2:57 PM
:comment --- Now a quick demonstration of "Delta Time"; this tells
:comment --- HourGlass to set the private clock to the "real" date/time
:comment --- plus or minus a fixed offset:
:
:showtime
MON, JUN  1, 1998,  2:57 PM
:hgdate delta 2 years
:showtime
THU, JUN  1, 2000,  2:57 PM


:comment --- Because of our use of advanced, proprietary technology,
:comment --- HourGlass for MPE is the *only* product
:comment --- for MPE that catches *all* date/time requests.
:
:hgdate 05/14/2003
:
:showvar hpdate@
HPDATE = 14
HPDATEF = WED, MAY 14, 2003
:
:showtime >FOO
:print FOO
WED, MAY 14, 2003,  2:58 PM
:
:if 1=0 then
*** EXPRESSION FALSE: COMMANDS IGNORED UNTIL MATCHING ELSEIF/ELSE/ENDIF
:showtime
:else
*** RESUME EXECUTION OF COMMANDS
:showtime
WED, MAY 14, 2003,  2:59 PM
:endif
:
:showclock
SYSTEM TIME: WED, MAY 14, 2003,  2:59:33 PM
CURRENT TIME CORRECTION:             0 SECONDS
TIME ZONE:    7 HOURS  0 MINUTES WESTERN HEMISPHERE
:
:sh.hpbin.sys -L
$date
Wed May 14 15:00:33 PDT 2003
$exit


:comment --- Finally, switch the session back to the "real" date/time:
:
:hgdate orig
MON, JUN  1, 1998,  3:01 PM
```

Definitions

Before we go any further, a few definitions are necessary:

Private clocks

Private clocks are created two ways:

1. By a rule in the HGCONFIG.PUB.SYS file, which attaches a private clock to all processes matching the criteria in the rule;

2. By the :HGDATE command, which attaches private clock to all processes created by the job or session that issued the command.

Process

The unique execution of a program (each time you run a program, you create a new process).

Private Clock

An altered date/time given to a job/session/process which may be (and usually is) different from the real date/time of the system clock.

Real date/time

The system clock's current date/time, also known as the "original" date/time.

HGCONFIG.PUB.SYS file

The HourGlass configuration file, used to create private clocks and associate them with processes based on logon (jobname, userid, account, and/or group), program name, or ldev number.

:HGDATE command

A command file in the PUB.SYS group used to create a private clock for an entire job or session.

Date calculation method

When a private clock is created, HourGlass for MPE provides four methods for calculating what date/time to use, and how the clock will run:

A. **Relative Constant**: Start a private clock at a specific date/time, and let it run normally.

B. **Absolute Constant**: Set a private clock to a specific date/time, and freeze it.

C. **Delta**: Start a private clock at the real date/time (or altered date/time) plus or minus any number of years, hours, etc., and let it run normally.

D. **Original**: Use the system clock instead of a private clock.

Date and Time Formats

Many HourGlass for MPE commands require you to enter a date/time. HourGlass accepts the date/time in any of several different formats, all of which may optionally be delimited by "-", "_", or "/":

Format	Example 1	Example 2	Example 3
`yyyymmdd[hhmm[ss]]`	20010514	19991022	19991231235959
`mmdd[yy]yy [timespec]`	05/14/2001	10-22-99	12/31/99 23:59:59
`[yy]yymmdd [timespec]`	2001/05/14	99-10-22	99-12-31 23:59
`ddmm[yy]yy [timespec]`	14/05/2001	22-10-99	31_12_99 2359

- The [timespec] format is hh:mm[:ss] or hhmm[ss]. If you don't specify a time the current time is assumed.

- Only dates from 1970-01-01 through 2027-12-31 are valid. This is an MPE restriction. These are the only dates the CALENDAR INTRINSIC format supports. Because of this, HourGlass assumes that 2-digit years from 00 through 27 are 21st century (2000-2027). 2-digit years from 28 through 69 are invalid.

- If the date is ambiguous, "mm/dd/yy" is assumed; e.g. 01/02/03 is January 02, 2003.

The "Delta" date calculation method requires an offset, which is entered in the following format:

    [*] [nn YEARS] [nn WEEKS] [nn DAYS] [nn HOURS]

For example:

- DELTA 5 YEARS
  means "add 5 years to the current private clock date/time"

- DELTA -7 YEARS
  means "subtract 7 years from the current private clock date/time"

- DELTA * 4 YEARS
  means "set the private clock to the system clock date/time plus 4 years"

- DELTA * 5 YEARS 2 HOURS
  means "set the private clock to the system clock plus 5 years and 2 hours"

As you can see from the examples, the "*" means set the private clock to the system clock +/- the offset; without the "*", the offset is added to the current private clock date/time.

Executing HourGlass for MPE Commands

Throughout the rest of this manual, you will see references to the ":HOURGLASS" and ":HGDATE" commands. HourGlass for MPE consists of a single program, HOURGLAS.PUB.SYS and several support files. To make it easier to use, we also provide a UDC file named UDC.HOURGLAS.ALLEGRO, which contains the HOURGLASS UDC, and a command file named HGDATE.PUB.SYS, which executes the HOURGLAS SETDATE command.

You may also ":RUN HOURGLAS.PUB.SYS", and enter commands interactively. This will give you the "HourGlass: " prompt. Help is available by typing "HELP"; exit by typing "EXIT".

The following examples illustrate several different ways to perform the same task: attach my session to a private clock set to January 1st, 2000.

- Using the HGDATE command file

  ```
  :HGDATE 2000-01-01
  ```

- Using the HOURGLASS UDC

  ```
  :HOURGLASS SETDATE 2000/01/01
  ```

- Using an *implied run* of the HOURGLAS.PUB.SYS program

  ```
  :HOURGLAS SETDATE 2000/01/01
  ```

- Passing the command to HOURGLAS using an INFO string

  ```
  :RUN HOURGLAS.HOURGLAS.ALLEGRO; INFO="SETDATE 1/1/2000"
  ```

- Running the HOURGLAS program interactively

  ```
  :RUN HOURGLAS.HOURGLAS.ALLEGRO
  HourGlass: SETDATE 2000-1-1
  HourGlass: EXIT
  ```

Rather than showing all of the different ways to execute every command, the rest of the manual will use the ":HOURGLASS" and ":HGDATE" commands, which will work if:

A. UDC.HOURGLAS.ALLEGRO is one of your system-wide UDC catalogs (we :SETCATALOG UDC.HOURGLAS.ALLEGRO;SYSTEM;APPEND during installation for you), and

B. HGDATE.PUB.SYS is in your current HPPATH (normally, it is by default).

If you choose to delete the UDCs, you can still use the *implied run* by typing "HOURGLAS" with one "s" instead of two.

Private Clocks

As we mentioned before, there are two ways to create private clocks:

1. The HGCONFIG.PUB.SYS configuration file; and

2. The :HGDATE command.

The **HGCONFIG.PUB.SYS** file is used to associate private clocks with processes based on rules. These rules allow you to specify what processes an automatic private clock should be created for. You might use this to

1. Test jobs without having to modify the individual job streams;

2. Set up a "YEAR2000" test account so that anyone who logs into that account (via a job or session) will automatically get a private clock;

3. Set up a test userid (either by job/session name, or username) that automatically gets a private clock;

4. Force certain programs to **always** use a private clock (or the system clock). One example: if your copy of SUPRTOOL expires on 12/31/99, you can tell HourGlass that SUPRTOOL should always use the system clock so that you can run it from your YEAR2000 test account.

The **:HGDATE** command is used to attach your entire job or session to a private clock. When you enter the :HGDATE command, a new private clock is created and starts running. From then on, all of the programs you run in your session will use that same private clock. (There is an exception, explained in step 1 below.)

Order of Precedence

With the possibility that a given process may qualify for multiple private clocks, it's important to know how HourGlass for MPE decides which clock to attach it to. HourGlass for MPE follows these four steps in order, and stops as soon as a qualifying private clock is found:

1. Search the config file for the first "ALWAYS" private clock matching the new process. If none is found,

2. Use the private clock to which the current job or session is attached. If none is found,

3. Search the config file for the first non-"ALWAYS" private clock matching the new process. If none is found,

4. Use the system clock.

HGCONFIG.PUB.SYS:
Creating Private Clocks Automatically

Whenever HourGlass for MPE is started (via the :HOURGLASS START command), it looks for a file named HGCONFIG.PUB.SYS (:FILE-equates are permitted). Each line of this file is a "rule" describing automatic private clocks, and specifying what processes will be attached to them. When a new process is created, HourGlass checks the rules in this file to decide whether the process should automatically be attached to a private clock.

The HGCONFIG.PUB.SYS file also has rules to create "ALWAYS" private clocks. Private clocks created via the ":HGDATE" command take precedence over rules in the HGCONFIG file, **unless** the HGCONFIG file rule has the "ALWAYS" option (see "Order of Precedence", above).

Private clocks may be created for, and attached to, particular processes based on:

1. The process type (job, session, or system)

2. The logon of the job or session that created the process (job/session name, username, accountname, and/or groupname)

3. The process's program name (filename, groupname, and/or accountname)

4. The LDEV number of the session that created the process

For each rule, you specify:

>   The Date Calculation Method,

>   the Date/Time (for ACT and RCT rules) or Offset (for DT rules), and

>   if that rule should be an "ALWAYS" rule, overriding :HGDATE-created private clocks.

Since "an example is worth a thousand syntax diagrams", here is the syntax diagram for the rules in the HGCONFIG file, followed by some examples and a discussion of what they mean.

Syntax:

```
#x Jobnam,Usr.Acct,Grp  PFile.PGrp.PAcct  LDEV  Method  DateTime  ALWAYS
```

Notes on syntax:

*   "#x" and "ALWAYS" are optional; everything else is required.

*   Lines beginning with "!" are ignored.

*   "#x" is the process type:
    #J = Job processes
    #S = Session processes
    #Y = System processes

- If no "#x" option is included, the rule applies to both job and session (but not system) processes.

- The "@" wildcard may be used, but must be the last character of any particular "thing" (username, filename, group, account, etc.).

  - For example, here are a few **valid** program names:

    ```
    @.PUB.REGO
    QEDIT.PUB@.ROBELLE
    ```

  - And here are a few **invalid** program names:

    ```
    A@R.PUB.REGO
    QEDIT.@PUB@.ROBELLE
    ```

- The "ALWAYS" option means: "use the automatic private clock created by this rule instead of any job/session private clock created by an :HGDATE command".

Some example rules:

```
    @,@.@,@                  TEST2000.PROG.FOO   20   ABSOLUTE  2000-1-1
    Y2020,STAN.SIELER,PUB    @.@.SIELER          @    RELATIVE  2020
    ACT,@.@,@                @.@.@               @    ABSOLUTE  2000-1-1
    RCT,@.@,@                @.@.@               @    RELATIVE  2000-1-1  12:34
    DT,@.@,@                 @.@.@               @    DELTA     1 YEAR
    ORIG,@.@,@               @.@.@               @    ORIGINAL
    @,@.@,@                  EDIT2000.PUB.SYS    20   ABSOLUTE  2000-1-1
#J MICHAELH,MGR.HENSLEY,@    @.@.@               @    ABSOLUTE  1960-05-14
#S MICHAELH,MGR.HENSLEY,@    @.@.@               @    ABSOLUTE  2001-05-14
    @,@.PUB.ROBELLE,@        @.@.@               @    ORIGINAL  ALWAYS
```

Here is an explanation of the first two sample rules:

> Rule: `@,@.@,@              TEST2000.PROG.FOO   20    ABSOLUTE   2000-1-1`

Any process which is running the test2000.prog.foo file and is part of a session logged on to LDEV 20 will be given a private clock, which is fixed at 2000-01-01. Note: if an HGDATE command was done within the session, it overrides this rule (because ALWAYS was not specified).

> Rule: `Y2020,STAN.SIELER,PUB   @.@.SIELER        @     RELATIVE  2020/03/04`

Any process (other than the one described above) run from a job or session whose job name is Y2020, and is logged in as STAN.SIELER, with a logon group of pub, and is running a program residing in the SIELER account will be given a private clock starting at 2020-03-04. Note: if an HGDATE command was done within the session, it overrides this rule (because ALWAYS was not specified).

The HGCONFIG file is read when you start HourGlass for MPE via the ":HOURGLASS START" command. If you make changes to HGCONFIG after you start HourGlass for MPE, you can use the following commands to load your changed rules immediately:

```
:RUN HOURGLAS.PUB.SYS
HourGlass: CONFIG LOAD
HourGlass: EXIT
```

The "CONFIG LOAD" reads the modified config file, checks the syntax, and loads the new rules into HourGlass.

The new rules will only be applied to processes created <u>after</u> the new rules are loaded. To have the new rules immediately applied to processes that already exist, type:

```
:HOURGLASS CONFIG REEVALUATE
```

NOTE: For RELATIVE date/times in the CONFIG file, the clock starts "ticking" when the rules are loaded. This means that if a rule has the RELATIVE date of 2000-02-03 02:00, and a process covered by that rule starts one hour after the rules are loaded, then that process is given the time 2000-02-03 03:00.

The :HGDATE Command: Creating Private Clocks for Entire Jobs/Sessions

Using the :HGDATE command at the MPE prompt is a shortcut for running HOURGLAS.PUB.SYS and using the SETDATE command.

The ":HGDATE" command tells HourGlass for MPE to create and set a private clock, and then attach that private clock to all processes created by your job or session. It doesn't affect any other jobs or sessions on the system.

There are four versions of the ":HGDATE" command, one for each of the four "date modification methods" (see "Definitions" for details on what each method does). The method name may be abbreviated to the portion in capitals (e.g., "ABS" instead of "ABSOLUTE"). If no method is specified, "RELative" is assumed.

```
:HGDATE ORIGinal
:HGDATE DELTA nnn YEARS
:HGDATE ABSolute date
:HGDATE [RELative] date
```

(DT is a synonym for DELTA, ACT for ABSOLUTE, and RCT for RELATIVE)

Examples:

```
:HGDATE ORIGINAL
:HGDATE DELTA 5 YEARS
:HGDATE ABSOLUTE 2000/1/1
:HGDATE RCT 2025/05/14
:HGDATE 2025/05/14               (note: RELATIVE is assumed)
```

After you enter the ":HGDATE" command, any program or command within your job or session that asks for the current date/time from MPE will get your private clocks date/time.

To change your session back to the system clock (the "real" date/time), simply type:

```
:HGDATE ORIGINAL
```

Important Technical Note

> To keep the documentation simple, all references to ":HGDATE" in this manual assume that you are typing the command at your "top-level" or "root" command interpreter. However, programs like VESOFT's MPEX and Robelle's QEDIT allow you to run other programs within them. In addition, you could run CI.PUB.SYS (the MPE command interpreter) under the top-level CI or the POSIX shell. If you execute an :HGDATE command (or run the HOURGLAS.PUB.SYS program and do a SETDATE command) within another program, only dates for that program (and new processes created later under that program) will be affected.

Here is one example (edited for brevity), showing the "nesting" of private clocks:

```
:showtime
MON, JUN  1, 1998,  3:10 PM
:
:mpex
%showtime
MON, JUN  1, 1998,  3:10 PM
%hgdate 2004/11/05
%showtime
FRI, NOV  5, 2004,  3:10 PM
%exit
:
:showtime
MON, JUN  1, 1998,  3:10 PM
```

Here is an example of using HGDATE from the POSIX shell:

```
$ date
Fri May 22 16:03:25 PDT 1998
$ /SYS/PUB/HOURGLAS  setdate  1/1/2000
$ date
Sat Jan  1 15:03:43 PST 2000
$ /SYS/PUB/HOURGLAS  setdate  orig
$ date
Fri May 22 16:03:55 PDT 1998
```

Job Inheritance

In order to perform thorough year 2000 testing, it may sometimes be desirable for a job to "inherit" the private clock to which its "parent" job or session is attached. This would allow a sequence of jobs to share the same altered time environment without having to edit each job individually to insert the appropriate HGDATE commands. HourGlass for MPE accomplishes this via a command in the system wide logon UDC and the JINHERIT option of the :HGDATE command.

IMPORTANT NOTE: To use the job inheritance functionality of HourGlass, **you must** place the following commands in your system wide logon UDC:

```
:CONTINUE
:XEQ HGDATE.PUB.SYS JINHERITINIT
```

To start job inheritance within your job or session, simply issue a normal HGDATE command and add the keyword JINHERIT; for example:

```
:HGDATE 5/14/2000 JINHERIT
```

or use a combination of commands:

```
:HGDATE 5/14/2000
:HGDATE JINHERIT ON
```

After you issue the above commands, any jobs that you stream will be attached to the same private clock that your current job or session is attached to.

Here's how it works: The HGDATE command attaches the current job or session to a private clock. The JINHERIT parameter causes a special inheritance log record to be written which identifies the job/session and its private clock. Then, when the current job/session streams another job, the logon UDC causes that job to read the log file, find its parent record and attach itself to its parent's private clock. In addition, the child job writes an inheritance log record identifying itself so that any jobs it streams will also inherit the same private clock, and so on.

To illustrate, let us assume that an interactive user wishes to test a particular sequence of jobs for Y2K compliance. She would begin by doing something like:

```
:HGDATE 5/14/2000 JINHERIT
```

Then she might stream a couple of jobs:

```
:STREAM A1.JOBS
 #J423
:STREAM B1.JOBS
 #J424
```

Jobs A1 and B1 inherit the private clock (set to 5/14/2000) of the streaming session. Likewise, if job A1 streams A2 and B1 streams B2, then A2 and B2 also inherit the same private clock.

Our user is finished with Y2K testing for now and wishes to cancel her private clock and the inheritance she has set up, and continue with her normal day of processing. She issues the command

```
:HGDATE ORIG JINHERIT
```

and streams another job:

```
:STREAM C1.JOBS
 #J427
```

This time, job C1 does not find its parent in the inheritance log file and therefore runs under the normal system clock.

Meanwhile, jobs A2 and B2, which are running under a private clock, stream jobs A3 and B3. These new jobs continue to inherit the private clock set up by our interactive user even though she has returned to normal time.

Please Note:

• If jobs A1 and B1 have not yet logged on by the time our user returns to normal time (for example, if they are scheduled to run later, or are in the WAIT state in the job queue), then they will *not* inherit the private clock.

• Conversely, if the user does not use the JINHERIT option upon returning to normal time, then the inheritance for her private clock is still in effect when job C1 logs on. In this case, job C1 *does* run under the private clock.

• A variant of the HGDATE command is available that allows the user to cancel job inheritance, but continue operating under the private clock:

```
:HGDATE JINHERIT OFF
```

In this case, the user's interactive session still gets an altered date/time from her private clock, but any jobs she streams will run under the normal system clock.

Logging Date INTRINSIC Calls

The HourGlass for MPE logging facility provides the ability via the LOGGING command to determine what jobs, sessions, and programs call the standard system date INTRINSICs (CALENDAR, CLOCK, DATELINE, and HPGMTSECS). A record can be written to the log file for each INTRINSIC call, or a single summary record can be written at process termination time, or both. The LOGGING command has no effect on whether or not an altered date is returned to a process.

There are two HourGlass commands related to logging: "LOGGING" and "SHOWLOG".

The full syntax of the "LOGGING" command is:

```
LOGGING [STATUS]
LOGGING CLEAR
LOGGING [ME] OFF
LOGGING <scope> <call-type> [level]
    scope     ::= <ALL | JOBs | SESsions | ME>
    call-type ::= <ALTered | UNALTered | ALLcalls>
    level     ::= [EACHcall | SUMMARY | BOTH]  (default: SUMMARY)
```

(The full syntax of the "SHOWLOG" command is in the section on "Viewing log files", below.)

To check the current status of logging:

```
:HOURGLASS LOGGING
    or
:HOURGLASS LOGGING STATUS
```

In the sections below, we will discuss how to use this command to start, stop, and configuring logging.

Starting and stopping logging

Logging is independent of HourGlass for MPE's private clocks. Although you must do an ":HOURGLASS START" before you can start logging, ":HOURGLASS ENABLE" and ":HOURGLASS DISABLE" have no effect on logging once it has been started.

To enable logging, you specify:
    1) scope: what processes you want to log;
    2) call-type: whether to log altered calls, unaltered calls, or both;
    3) level: whether to log each separate call, or a per-process summary, or both.

Here are a few examples to help make this clearer:

● To log each intrinsic call, for all jobs and sessions:

```
:HOURGLASS LOGGING ALL ALLCALLS EACHCALL
```

In addition to logging a single record to the log file for each call to the instrumented intrinsics, the "LOGGING…EACHCALL" command also logs one record at process startup.

- To log a summary of intrinsic calls at process termination, for all jobs and sessions:

  ```
  :HOURGLASS LOGGING JOBS ALLCALLS SUMMARY
  ```

- To combine both of the above, logging each intrinsic call as well as a summary:

  ```
  :HOURGLASS LOGGING ALL ALLCALLS BOTH
  ```

- To log only ALTERED calls (calls from processes attached to private clocks), for all jobs (but not sessions), summary only:

  ```
  :HOURGLASS JOBS ALTERED SUMMARY
  ```

- To log just ALTERED calls made by your own session:

  ```
  :HOURGLASS LOGGING ME ALTERED BOTH
  ```

- Finally, to stop logging:

  ```
  :HOURGLASS LOGGING OFF
  ```

The log file used by LOGGING is INTRINS.HGLOG.ALLEGRO and is a binary file. The SHOWLOG command (see below) is used to display data from the log file. The layout of the log file is available upon request.

You can erase all entries in the log file by using the command

```
:HOURGLASS LOGGING CLEAR
```

If the log file is not currently in use, it may be purged or renamed and optionally rebuilt via the BUILDLOG command:

```
:HOURGLASS BUILDLOG
```

Note: If no log file exists, the logging function will be disabled and no log records will be created. However, errors will not be reported because doing so could interfere with whatever program is calling the date intrinsics.

Viewing log files

The :HOURGLASS SHOWLOG command can display records from the EVENTS and INTRINS log files, both of which reside in the HGLOG.ALLEGRO group.

The EVENTS file records the last 20000 HourGlass commands, including START, STOP, DISABLE, ENABLE, and ALLOW. To see who entered these commands and when, use the SHOWLOG EVENTS command (see also the HISTORY command):

```
:HOURGLASS SHOWLOG EVENTS
```

The INTRINS log file contains INTRINSIC call detail and/or process summary records, as discussed above. To view these records, use the ":HOURGLASS SHOWLOG [filter] [format]" version of the SHOWLOG command. The general syntax for the SHOWLOG command is as follows:

```
SHOWLOG [ <filter> ] [ <DETAIL | SUMMARY | LONGSUMMARY> ]
```

where

```
filter = < ALL | #Jnnn | #Snnn | #Pnnn | JOBS | SESSIONS | PINS |
    PROGRAMS | PROGRAM file.group.account >
```

Here are a few examples:

- To show all INTRINS log file entries, in chronological order, followed by a table showing the number of altered and un-altered calls to each logged INTRINSIC (this filter option is the default):

```
:SHOWLOG
    or
:SHOWLOG ALL
```

- To display log records for a given job, session, pin, or program:

```
:SHOWLOG #J123
:SHOWLOG #S456
:SHOWLOG #P789 SUMMARY
:SHOWLOG PROGRAM MYPROG.MYGRP.MYACCT SUMMARY
```

The default is to show all of the selected log records; the SUMMARY option shows a table of altered and un-altered calls from the selected job/session/pin/program to a logged date intrinsic. The program filename, groupname, and/or account name may have a trailing "@" wildcard symbol.

- To display log records for all jobs, sessions, pins, or programs:

```
:SHOWLOG JOBS
:SHOWLOG SESSIONS
:SHOWLOG PINS      SUMMARY
:SHOWLOG PROGRAMS LONGSUMMARY
```

The default is to show all of the selected log records. SUMMARY shows one line per job/session/pin/program. LONGSUMMARY shows a summary table of call counts per job/session/pin/program.

Re-setting File Label Dates

Because HourGlass for MPE intercepts **all** date/time requests, files created (or modified or accessed) by processes which are attached to private clocks will have their creation (or last modified, or last accessed) date set to match the date/time of the current private clock.

This is **essential** during testing. Many applications make use of file label dates, and even if you don't think your application (or utility) does, you can't really be **sure** how it will be affected by file dates after the year 2000 until you test it.

Another possible use of "future file dates" is that it allows you to easily identify all of the files which were opened by your testing. If you are testing applications that you aren't completely familiar with, or that you don't have the source code to, this could prove quite useful.

After you have completed your testing, your test account will have files with future dates in them. HourGlass for MPE comes with an easy-to-use utility called "FIXFDATE.HOURGLAS.ALLEGRO". To find and reset all files on the system that have "future" dates, just type:

```
:RUN FIXFDATE.HOURGLAS.ALLEGRO; INFO="/"
```

For more information (and more options of FIXFDATE), type:

```
:RUN FIXFDATE.HOURGLAS.ALLEGRO,HELP
```

Logon Security Considerations

Many sites employ third-party logon security packages that utilize password "aging" schemes. It is conceivable that such a system, in combination with preset HourGlass rules that advance the date, could cause all passwords to expire and create a situation in which no one can log on to the system.

Any of the following measures can prevent this from happening:

- Add an initial HGCONFIG rule for MANAGER.SYS on LDEV 20:

  `@,MANAGER.SYS,@  @.@.@  20  ORIGINAL`

  If this is the first rule in the HGCONFIG file, then the system manager will always be able to log on to LDEV 20 and get the real date/time.

- Set up new configuration rules in HGCONFIG *without* logging off the MANAGER.SYS session which set them up. Then test the results of the new rules from a *different* terminal. If the results are undesirable, MANAGER.SYS is still logged on and can do an `:HOURGLASS DISABLE`.

- Before adding `:HOURGLASS    START`   to a system startup job that gets run by SYSSTART.PUB.SYS, make sure that all configured HourGlass rules have been thoroughly tested against any password aging code.

- Make sure the system is configured so that MANAGER.SYS can always log on, regardless of any logon security.

MPE comes shipped with the ability for MANAGER.SYS (or any other SM user, for that matter) to bypass all "option logon" UDCs by using the "`;PARM=-1`" option of the "`HELLO`" command. This should not be considered a compromise of security since MPE passwords can (and should) be set for MANAGER.SYS (perhaps even for the SYS account itself) regardless of whether or not additional logon security is in place.

However, some users have chosen to disable the "`;PARM=-1`" feature. For the purposes of HourGlass testing it would be advisable to re-enable it. To accomplish this, follow the steps on the next page.

To enable the "`;PARM=-1`" option of the "`HELLO`" command:

```
:hello manager.sys
:sysgen
 sysgen> misc
   misc> show system

       SYSTEM command             parameter            VALUE
       ----------------           -----------          -----
       USER VERSION               userversion          C.55.00
       LOGON PROMPT               logonprompt          MPE/iX:
       CI PROMPT                  ciprompt             :
       RELEASE                                         C.55.00
       ENFORCE LOGON UDCS         enforcelogonudcs     ON

   misc> sy enforcelogonudcs=off
   misc> hold
   misc> exit
 sysgen> keep
        keeping to group CONFIG.SYS
        Purge old configuration (yes/no)?y
        ** configuration files successfully saved **
 sysgen> exit
```

Then reboot the system, and at the ISL prompt use

```
ISL> start norecovery group=config
                         ^^^^^^
```

("config" is the MPE group into which sysgen kept the configuration changes)

Additional HOURGLASS Commands

The section contains brief notes on a number of less important (but still useful) HourGlass for MPE commands.

Once HourGlass for MPE has been started, you may disable all private clocks without turning off the INTRINSIC logging by typing:

```
:HOURGLASS DISABLE
```

To re-enable date-altering, type:

```
:HOURGLASS ENABLE
```

Normally, only users with SM capability can START, STOP, ENABLE, and DISABLE HourGlass for MPE. If you would like to allow users with OP capability to do so, type:

```
:HOURGLASS ALLOW OP
```

To allow **all** users to start, stop, enable, and disable HourGlass for MPE, type:

```
:HOURGLASS ALLOW ANY
```

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The :HGDATE command is actually a command file that runs the HOURGLAS program and passes it a simplified SETDATE command. The full syntax for the ":HOURGLASS SETDATE" command is

```
SETDATE  [*]  [ME | MYJOB | MYSESsion | PIN nn | #Jnnn | #Snnn]  <date>
```

While the SETDATE command allows you to create private clocks for other jobs/sessions (or even specific processes) on the system (provided you have SM capability), the :HGDATE command file only affects your own job/session (it uses :SETDATE ME).

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HourGlass for MPE keeps a log file of all commands it executes. To see a list of all state-change commands (START, STOP, CONFIG REEVAL, etc.), type:

```
:HOURGLASS HISTORY
```

To see a list of ALL commands (including all SETDATE commands), type:

```
:HOURGLASS SHOWLOG EVENT
```

To list the intrinsic log file (if you've enabled INTRINSIC logging), type:

```
:HOURGLASS SHOWLOG
```

For your convenience in testing, HourGlass for MPE can call the CLOCK or CALENDAR INTRINSICs and display the results for you:

```
:HOURGLASS CALENDAR
:HOURGLASS CLOCK
```

You may run HourGlass for MPE interactively by typing

```
:RUN HOURGLAS.PUB.SYS
```

This will give you the "HourGlass: " prompt. You can then enter any of the commands described in this manual, as well as a few others designed to make interactive use easier. For more information, type "HELP" at the "HourGlass: " prompt.

HourGlass Command Syntax

This section contains the syntax diagrams for all HourGlass for MPE commands. It is provided as a quick reference. More detailed information can be found in the online help, and for certain commands, in the earlier sections of this manual.

```
ALLOW
```

(see [DIS]ALLOW)

```
BUILDLOG
```

Builds new log files, if necessary

```
CALENDAR
```

Calls the CALENDAR INTRINSIC; useful for testing.

```
CLOCK
```

Calls the CLOCK INTRINSIC; useful for testing.

```
CONFIG    <LOAD [filename] | REEVALuate | SHOW>
```

load/reevaluate/display configuration rules

```
CONTACT
```

Displays Allegro contact information.

```
DATELINE
```

Calls the DATELINE INSTRINSIC; useful for testing.

```
DISABLE
```

Temporarily disables HourGlass for MPE date-altering (doesn't affect INTRINSIC logging).

```
[DIS]ALLOW    [ <ANY | OP | SM | STATUS> ]
```

Controls who can START/STOP/DISABLE/ENABLE.

```
ENABLE
```

Re-enables HourGlass date-altering (after a DISABLE).

```
EXIT | //
```

Two ways to exit the HourGlass for MPE program.

```
Help  [topic]
?     [topic]
```

Two ways to get help on HourGlass for MPE commands.

```
HISTORY
```

Shows who executed major HourGlass for MPE commands.

```
INSTALL
```

Used to install a license.

```
JINHERIT [ SHOW | OFF | ON | CLEAR ]
```

Used to control or display job inheritance of private clocks.

```
LOGGING [STATUS]
LOGGING CLEAR
LOGGING [ME] OFF
LOGGING <scope> <call-type> [level]
    scope     ::= <ALL | JOBs | SESsions | ME>
    call-type ::= <ALTered | UNALTered | ALLcalls>
    level     ::= [EACHcall | SUMMARY | BOTH]  (default: SUMMARY)
```

Turn INTRINSIC logging on/off.

```
[RE]SET  [option [option...]]

option ::=  <80 | 132 | AUTOMPE | COLumns # | ROWS #>
```

Set various options for the HourGlass for MPE program.

```
SETDATE  [*] [who] <altered_date_specification> [JINHERIT]
SETDATE  JINHERITINIT
```

Create private clocks attached to jobs/sessions/processes, and/or initiate job inheritance.

```
who ::= <ME | MYJOB | MYSESsion | PIN # | #Jnnn | #Snnn >

<altered_date_specification> ::=
    ABSolute <date_time> | ACT <date_time> |
    RELative <date_time> | RCT <date_time> |
    DELTA    <date_time> | DT  <date_time> |
    ORIGinal

<date_time> ::=
    mm/dd/[yy]yy [ <time> ]   |
    [yy]yy/mm/dd [ <time> ]   |
    dd/mm/[yy]yy [ <time> ]   |
    yyyymmddhhmm[ss]          |
    yyyy         [ <time> ]   |
    [*] # YEARs  [ <time> ]

<time> ::=
    hh:mm[:ss]   |
    hhmm[ss]     |
    [*] # HOURS [# MINUTES [# SECONDS]]

SHOWLOG EVENTS
```

Displays information from EVENTS (major commands) log files.

```
SHOWLOG [ <which> ] [ <DETAIL | [LONG]SUMMARY> ]
```

   Displays information from INTRINS (logged INTRINSICS) log files.

```
which ::= <#Jnnn | #Snnn    | #Pnnn | PROGRAM file.group.account>
          JOBS  | SESSIONS | PINS |  PROGRAMS>
```

```
START
```

   Begin date-altering and INTRINSIC logging for all processes.

```
STATUS
```

   Show the current HourGlass for MPE status and statistics.

```
STOP
```

   Stop date-altering and INTRINSIC logging for all processes.

```
USE[Q] filename
```

   Execute commands in an external file.

```
CLEARREDO
DO
LISTREDO
REDO
```

   A REDO facility for the HourGlass for MPE program.

In addition to the commands which can be entered into the HOURGLAS.PUB.SYS program, we also provide the :HGDATE command file as a simple interface to the HourGlass for MPE SETDATE command. The syntax for the :HGDATE command file is:

```
:HGDATE <altered_date_specification> [JINHERIT]
:HGDATE JINHERIT [ SHOW | ON | OFF | CLEAR ]
```

("<altered_date_specification>" is defined under "SETDATE", above).