# Reviewing Hardware Status etc. (Cont.)

- **Review Job Activities**
  - **Production Monitor reviews job activities using the AutoSys Job Activity Console**
    - » **primary interface for monitoring all jobs that have been defined for AutoSys**
    - » **based on criteria defined using the Job Selection GUI**

# Reviewing Hardware Status etc. (Cont.): Procedure

- **Reviewing Job Activities:**
- **Launch AutoSys**
- **Click on the Ops Console button on the AutoSys GUI Control Panel to display the Job Activity Console GUI**
- **Review the job data in the Job List region of the Job Activity Console**
  - **Job Name**
  - **Description**
  - **Status**
  - **Command**
  - **Machine**

# Reviewing Hardware Status etc. (Cont.): Procedure

- If the Job List region does not contain the desired job or set of jobs, perform the procedure for Reviewing Job Selection Criteria
- Click anywhere on a job row to have detailed information for that job displayed
- Review the data in the Currently Selected Job region of the display
  - Job name (Currently Selected Job)
  - Description
  - Command
  - [continued]

# Reviewing Hardware Status etc. (Cont.): Procedure

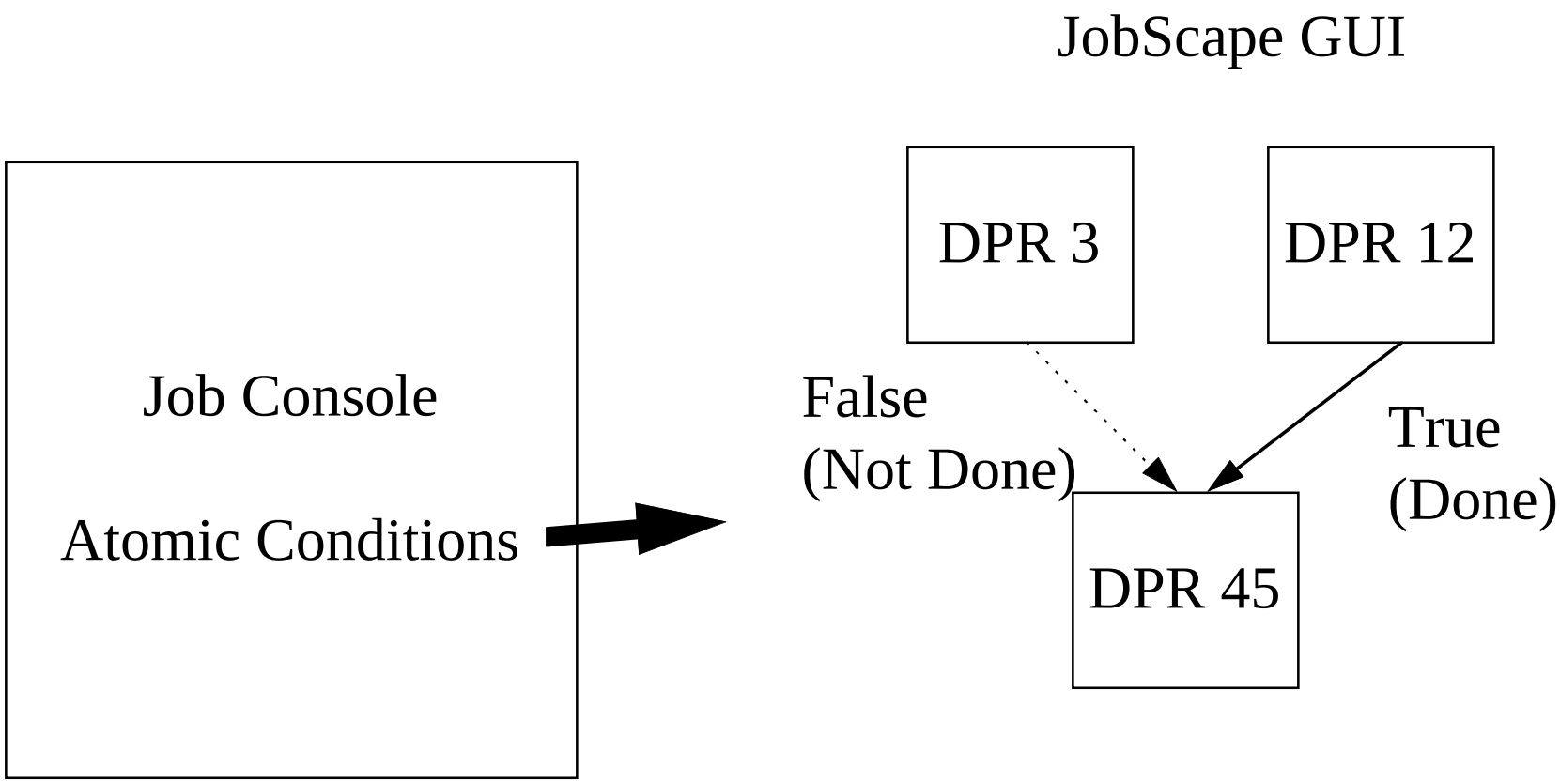
- **Review the data in the Currently Selected Job region of the display (Cont.)**
  - **Start Time (and date)**
  - **End Time (and date)**
  - **Run Time**
  - **Status**
  - **Exit Code**
  - **Next Start**
  - **Machine**
  - **Queue Name**
  - **Priority**
  - **Num. of Tries**

# Reviewing Hardware Status etc. (Cont.): Procedure

- **Review the data in the Starting Conditions region of the display**
  - **overall starting conditions(including all atomic conditions)**
  - **Identification of each Atomic Condition**
    - » **Current State**
    - » **T/F**

# Reviewing Hardware Status etc. (Cont.): Procedure

## Nuke'm



# Reviewing Hardware Status etc. (Cont.): Procedure

- In the Reports list click on the type of report to be reviewed then review the report in the Job Report region of the display:
  - Summary
  - Event
  - None
- When the job activity has been adequately reviewed, click on Exit to quit the Job Activity Console display
- Click on the OK button to close the AutoSys Job Activity Console GUI

# Modifying Job Priority

- **Job Priority**
  - **sometimes necessary to modify the priority of a job; examples:**
    - » **there may be a hardware or software problem that reduces the available resources to the point where some jobs are too large to be processed**
    - » **due to the volume of large, high-priority jobs, some small, low-priority jobs will never be processed unless they are given higher priority**
  - **job priorities are assigned using numbers:**
    - » **1 (one) has the highest priority**
    - » **higher-priority jobs (lower numerically) completely block lower-priority jobs**

# Modifying Job Priority (Cont.)

- **Job Priority (Cont.)**
  - **prevents situations where a high-priority, resource-intensive job cannot obtain enough resources to run because smaller, lower-priority jobs continually grab the small amounts of resources available**
  - **Production Monitor uses AutoSys when modifying job priority**

# Modifying Job Priority (Cont.)

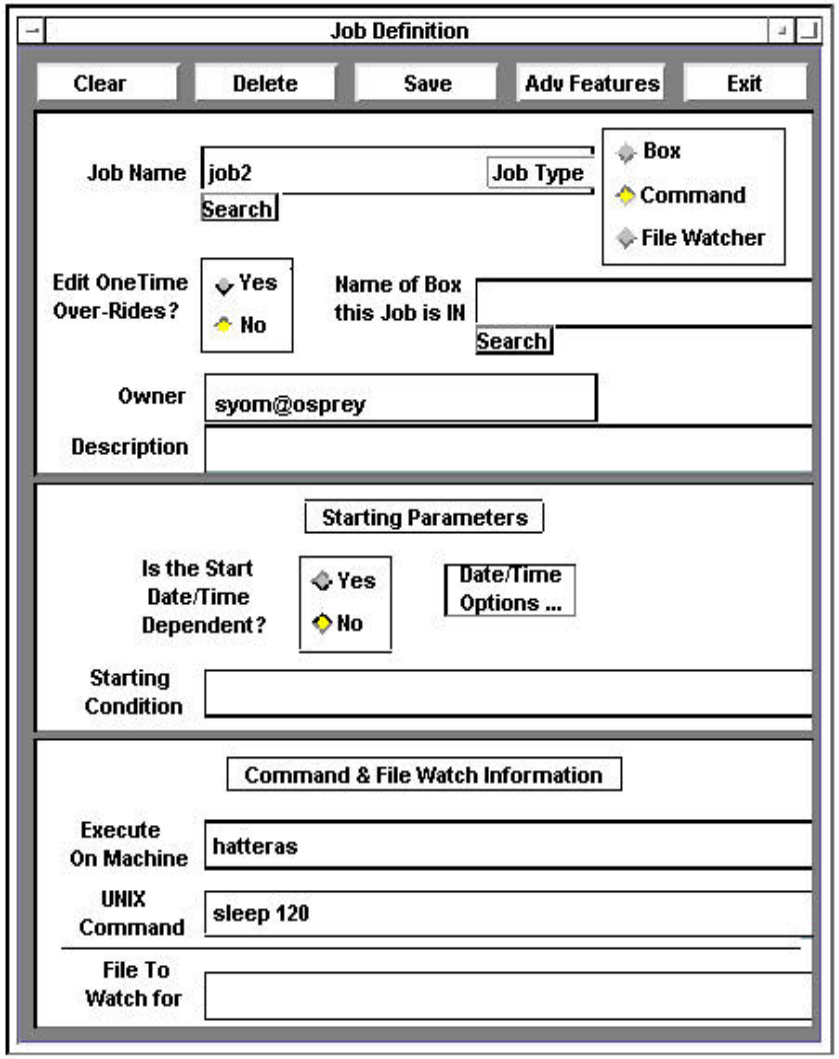
## CAUTION

**The only field that may be modified on the Job Definition Advanced Features GUI is the Que Priority field. ECS cannot disable these GUI features, because AutoSys/ AutoXpert is a commercial off-the-shelf (COTS) product. Operations personnel will receive training and documentation that will provide clear instructions concerning the intended use of the Job Definition Advanced Features GUI and which features must be avoided.**

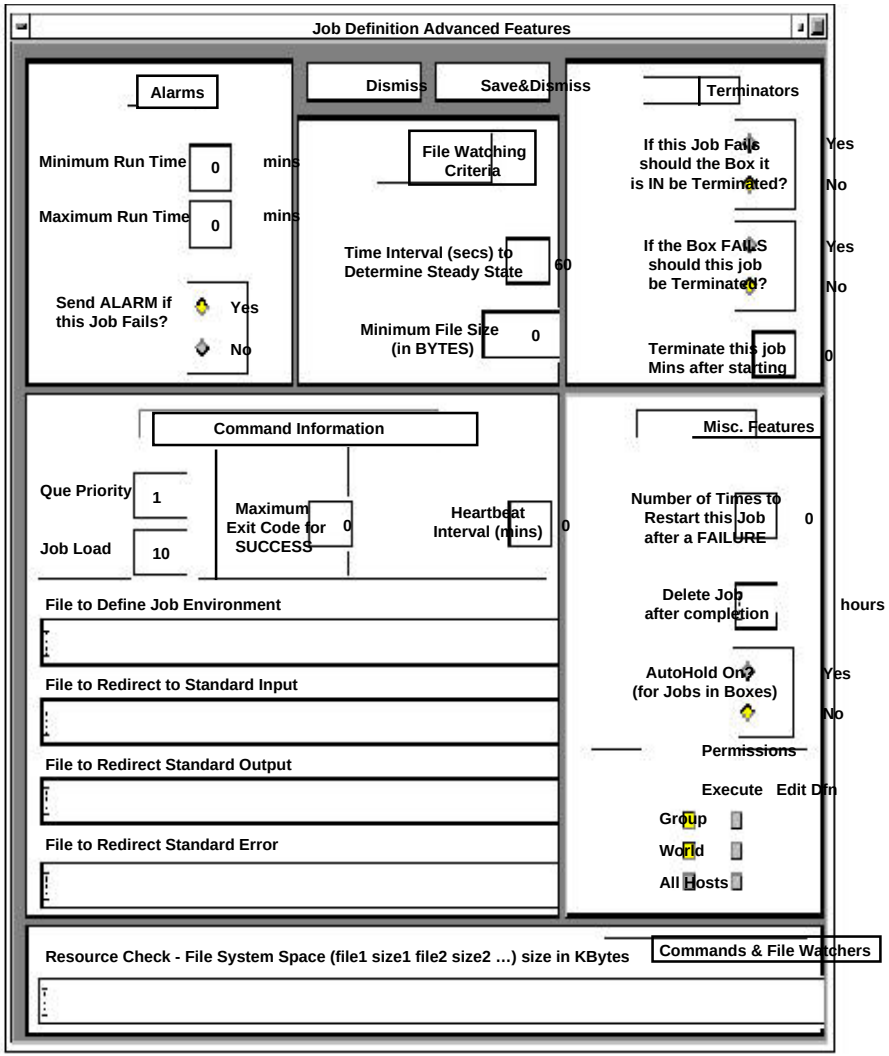
# Modifying Job Priority (Cont.): Procedure

- **Modifying Job Priority:**
- **Launch AutoSys**
- **Click on the Job Definition button to display the Job Definition GUI**
- **Type the name of the job with the priority to be modified in the Job Name field.**
- **Click on the Adv Features button to display the Job Definition Advanced Features GUI**

# Modifying Job Priority (Cont.): Job Definition GUI



# Modifying Job Priority (Cont.): Job Definition Adv. Features GUI



# Modifying Job Priority (Cont.): Procedure

- In the Command Information area of the Job Definition Advanced Features GUI, click in the Que Priority field and type in the desired priority value.
  - Que Priority is the only field you may change on the Job Definition Advanced Features GUI
- Click on the Save&Dismiss button to save the modified Que Priority value
- Click on the Exit button to quit the Job Definition GUI

# Modifying Job Status

- **Job Status**
  - **Production Monitor may need to modify a particular job in any of the following ways:**
    - » **start the job**
    - » **kill the job**
    - » **force the job to start**
    - » **place the job on hold**
    - » **take the job off hold**
  - **Production Monitor can initiate the preceding actions from the Actions region of the Job Activity Console (Ops Console)**

# Modifying Job Status (Cont.)

- **Job Status (Cont.)**
  - **Production Monitor can initiate the preceding actions and the following additional actions from the Send Event GUI:**
    - » **change the job's status**
    - » **change the job's priority**
    - » **put the job on ice**
    - » **take the job off ice**
    - » **stop the demon (stop the Event Processor in an emergency)**
    - » **Set a global value**
    - » **Send a signal concerning the job**
    - » **make a comment (for example, why a job start was forced)**

# Modifying Job Status (Cont.)

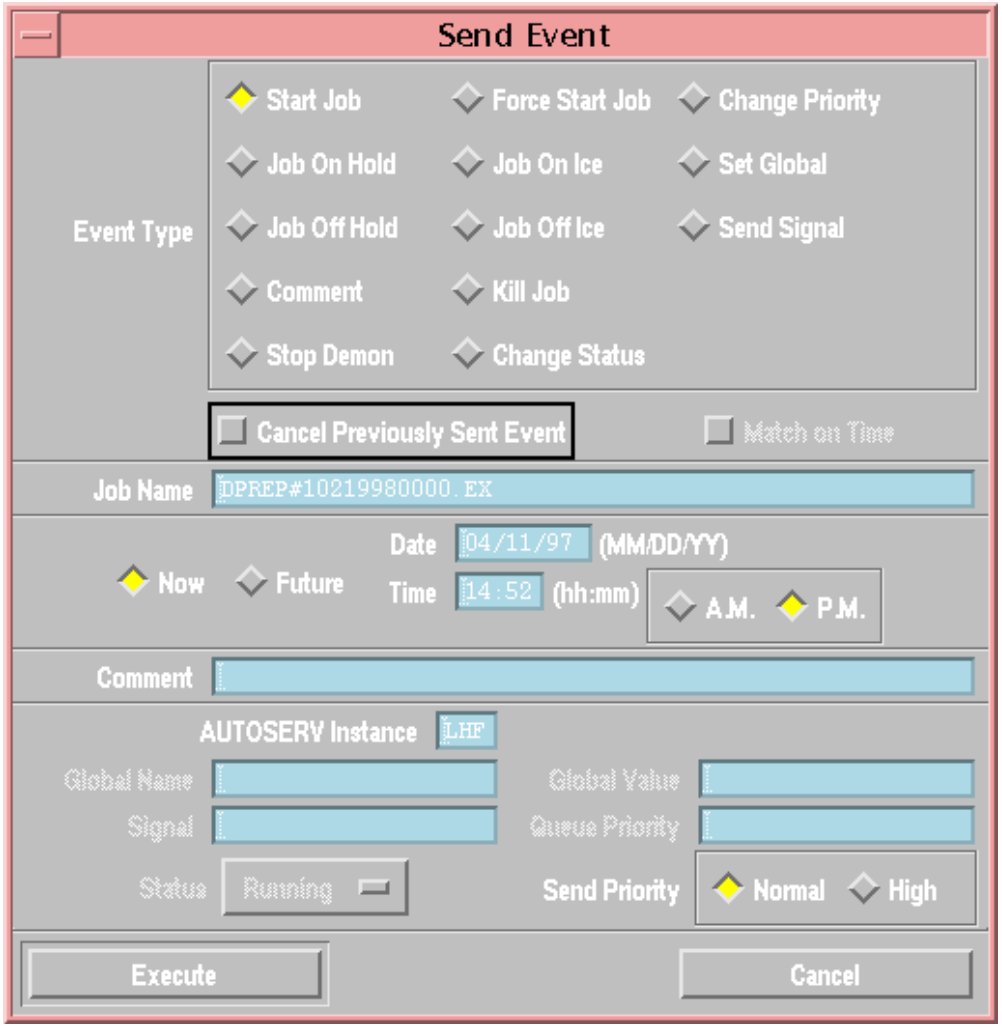
## CAUTION

**Once an event has been sent from the Send Event dialog, it cannot be canceled or modified in any way.**

# Modifying Job Status (Cont.): Procedure

- **Modifying Job Status:**
- **Launch AutoSys**
- **Click on the Ops Console button on the AutoSys GUI Control Panel to display the Job Activity Console GUI**
- **Review the Job List region of the Job Activity Console to identify the job with the status to be modified**
- **If the Job List region does not contain the desired job or set of jobs, perform the procedure for Reviewing Job Selection Criteria**

# Modifying Job Status (Cont.): Send Event GUI



# Modifying Job Status (Cont.): Procedure

- In the Job List region of the Job Activity Console click on the job row corresponding to the job with the status to be modified
- Click on the Send Event button in the Actions region of the Job Activity Console GUI to display the Send Event  GUI
- Verify that the correct job is listed in the Job Name field of the Send Event GUI

# Modifying Job Status (Cont.): Procedure

- **Click on Event Type to select the desired type of job status to be modified**
  - **Start Job**
  - **Job On Hold**
  - **Job Off Hold**
  - **Comment**
  - **Stop Demon**
  - **Force Start Job**
  - **Job On Ice**
  - **Job Off Ice**
  - **Kill Job**
  - **Change Status**
  - **Change Priority**
  - **Set Global**
  - **Set Signal**

# Modifying Job Status (Cont.): Procedure

- To enter the desired date and time when the job status is to be modified, either right away or at some time in the future, click on either Now or Future.
  - If Future is selected, type in the Date and Time and click on either A.M. or P.M.
- Type any comments in the Comment field
- Review the AUTOSERV Instance field
  - specifies the instance of AutoSys/AutoXpert to which the event will be sent
  - if the event specified in the Event Type field should be sent to a different instance of AutoSys/ AutoXpert, type the name of the other instance in the AUTOSERV Instance field

# Modifying Job Status (Cont.): Procedure

- **Review the Global Name and Global Value fields**
  - **if Set Global was selected in the Event Type region**
    - » **type the appropriate entries in the Global Name and Global Value fields**
- **Review the Signal field**
  - **if Send Signal or Kill Job was selected in the Event Type region**
    - » **type the appropriate entry in the Signal field**

# Modifying Job Status (Cont.): Procedure

- **Change the Queue Priority entry**
  - **if Change Priority was selected in the Event Type region**
- **Select Status to send**
  - **if Change Status was selected in the Event Type region**
  - **Status option menu**
    - » **Running**
    - » **Success**
    - » **Failure**
    - » **Terminated**
    - » **Starting**
    - » **Inactive**

# Modifying Job Status (Cont.): Procedure

- **Select the Send Priority**
  - **if Send Priority should be changed, click on the radio button corresponding to the desired priority**
    - » **High (reserved for emergencies)**
    - » **Normal**
- **Click on the Execute button to enable the modified send event**
  - **Once an event has been sent from the Send Event dialog, it cannot be canceled or modified in any way**

# Reviewing Activity and Job Dependency Logs

- **Reviewing an Activity Log**
  - **Production Monitor reviews the activity log to determine which jobs...**
    - » **have been completed**
    - » **are currently running**
    - » **are in the queue**

# Reviewing Logs (Cont.): Sample Activity Log

```
-------------------------------------< Date: 06/14  21:52:04    >----------------------------
EVENT: CHANGE_STATUS        STATUS:  STARTING  JOB: stage.DPR_04
EVENT: CHANGE_STATUS        STATUS:  RUNNING   JOB: stage.DPR_04
EVENT: CHANGE_STATUS        STATUS:  SUCCESS   JOB: stage.DPR_04

-------------------------------------< Date: 06/14  21:53:04    >----------------------------
EVENT: CHANGE_STATUS        STATUS:  STARTING  JOB: prepare.DPR_08
EVENT: CHANGE_STATUS        STATUS:  RUNNING   JOB: prepare.DPR_08
EVENT: CHANGE_STATUS        STATUS:  SUCCESS   JOB: prepare.DPR_08
```

# Reviewing Logs (Cont.): Procedure

- **Reviewing an Activity Log:**
- **Set up AutoSys**
- **Type autorep -J ALL unless the command needs to be modified:**
  - **the particular path to be typed may vary from site to site**
  - **to specify a particular job, type the job name instead of ALL**
  - **to obtain a machine report, type -M *machine_name* after either ALL or the job name**
  - **to obtain a summary report, type -s after either ALL or the job name**

# Reviewing Logs (Cont.): Procedure

- to obtain a detailed report, type -d after either ALL or the job name
- to obtain a query report, type -q after either ALL or the job name
- to print the document, type | lpr after typing the code for whichever of the preceding options are desired

- **Press Return/Enter to obtain access to the Activity Log**
  - if | lpr was typed on the command line, the Activity Log is printed
- **Review the Activity Log to determine job states**

# Reviewing Logs (Cont.)

- **Reviewing a Job Dependency Log**
  - **Production Monitor reviews a job dependency log using the AutoSys job_depends command**
  - **job_depends command reports information about the dependencies and conditions of jobs**
    - » **current state of a job**
    - » **job's dependencies**
    - » **dependencies and nested hierarchies (for boxes) as specified in the job definition**
    - » **forecast of what jobs will run during a given period of time**

# Reviewing Logs (Cont.): Sample Job Dependency Log

| Job Name | Status | Date Cond? | Start Cond? | Dependent Jobs? |
|---|---|---|---|---|
| DPR## | Activated | No | Yes | No |

**Condition: (success(DPR_##) and exit code(execute.DPR_##)<5)**

| Atomic Condition | T/F | Current Status |
|---|---|---|
| SUCCESS(SPR_##) | T | SUCCESS |
| EXIT_CODE(execute.DPR_##) | F | SUCCESS |

# Reviewing Logs (Cont.): Procedure

- **Reviewing a Job Dependency Log:**
- **Set up AutoSys**
- **Type job_depends -c -J ALL unless the command needs to be modified**
  - **the particular path to be typed may vary from site to site**
  - **to specify a particular job, type the job name instead of ALL**
  - **to obtain the current condition status, type -c before -J**
  - **to obtain the dependencies only, type -d before -J**
  - **to obtain the time dependencies, type -t before -J**

# Reviewing Logs (Cont.): Procedure

- to print the document, type | lpr after typing the code for whichever of the preceding options are desired

- Press Return/Enter to obtain access to the Activity Log
  - if | lpr was typed on the command line, the Job Dependency Log is printed
- Review the Job Dependency Log to determine job states

# Generating Production Reports

- **Production Reports**
  - **Report Generator GUI - standard reports**
    - » **Processing Status Report**
    - » **Processing Errors Report**
    - » **Resource Usage Report**
    - » **Actual vs. Plan Report**
    - » **Ground Event Resource Utilization Report**
    - » **Ground Event Resource Schedule (by Resource)**
    - » **Ground Event Resource Schedule (Chronological)**
    - » **Job Report**
    - » **Dependency Jobs Report**
    - » **Disk Availability Report**
    - » **Production Plan Report**

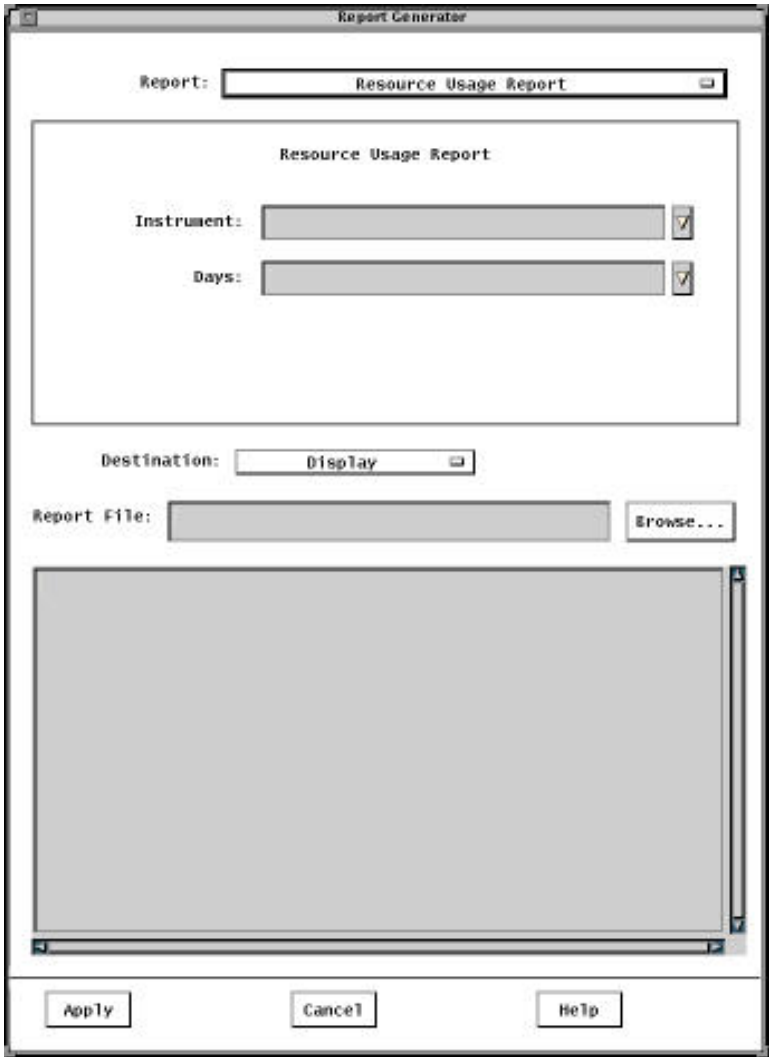
# Generating Production Reports (Cont.)

- **Production Reports (Cont.)**
  - **Monitor/Browser GUI can generate reports**
  - **AutoSys has the capability of generating reports:**
    - » **Job Reports**
    - » **Machine Reports**
    - » **Reports on AutoSys Global Variables**

# Generating Production Reports (Cont.): Procedure

- **Generating Standard Production Reports:**
- **Launch the Production Request Editor**
- **Access the Report Generator GUI by selecting File → Generate Report from the pull-down menu**
- **Click and hold on the Report option button to display a menu of reports**
- **Select the desired report from the menu**
- **Enter report parameters in the Report Selection area (if applicable)**
  - **e.g., Instrument, Days, Start Date, End Date**

# Generating Production Reports (Cont.): Report Generator GUI



# Generating Production Reports (Cont.): Procedure

- Click and hold the Destination option button to display a menu of destinations (output options)
  - Display is the default and is always selected
  - Printer
  - Data Document Server (Document Data Server)
  - File
- If File was selected, type the report file destination (path/filename) in the Report File field
  - or use the browse tool to identify the path/filename
- Click on the Apply button to generate the report

# Generating Production Reports (Cont.): Procedure

- **When the report has been adequately reviewed on the screen, click on the Cancel button to close the GUI**

# Generating Production Reports (Cont.): Procedure

- **Generating AutoSys Reports:**
- **Set up AutoSys**
- **If a Detailed Job Report is desired, type autorep -J *job_name* -d then press Return/ Enter**
  - **to specify all jobs type ALL instead of *job_name***
- **If a Summary Job Report is desired, type autorep -J *job_name* -s then press Return/ Enter**
  - **to specify all jobs, type ALL instead of *job_name***

# Generating Production Reports (Cont.): Procedure

- **If a Machine Report is desired, type autorep -M *machine_name* then press Return/Enter**
  - **to specify all machines type ALL instead of *machine_name***
- **If an AutoSys Global Variables Report is desired, type autorep -G *global_name* then press Return/Enter**
  - **AutoSys system configuration parameters are displayed**
  - **to specify all global variables type ALL instead of *global_name***

# Defining and Running Monitors/ Browsers

- **Defining Monitors/Browsers**
  - **Production Monitor uses the AutoSys Monitor/ Browser to define monitors and browsers**
  - **monitor function can limit monitoring to alarms and changes of job status (e.g., from “running” to “success” or “failure”)**
  - **browser function can be used to determine such conditions as the current status of a particular job or which jobs presently have a particular status (e.g., which jobs, if any, are on hold)**

# Monitors/Browsers (Cont.): Sample Browser Screen

**Alarm: STARTJOBFAIL  Job: execute.DPR_15  06/14  19:18:18  Run #782:9**

**Exit Code = 0**

**Job: execute.DPR_15 FAILURE  06/14  19:20:20 Run # 782**

**<Have EXCEEDED the Max # of times (10) to attempt a restart.  Something is wrong and needs to be investigated>**

**Alarm: STARTJOBFAIL  Job: execute.DPR_15  06/14  19:18:18  Run #782:9**

**Exit Code = -655**

# Monitors/Browsers (Cont.)

- **Defining Monitors/Browsers**
  - **Production Monitor uses the AutoSys Monitor/ Browser to define monitors and browsers**
  - **monitor function can limit monitoring to alarms and changes of job status (e.g., from “running” to “success” or “failure”)**
  - **browser function can be used to determine such conditions as the current status of a particular job or which jobs presently have a particular status (e.g., which jobs, if any, are on hold)**

# Monitors/Browsers (Cont.): Procedure

- **Defining Monitors/Browsers:**
- **Launch AutoSys**
- **Click on the Monitor/Browser button on the AutoSys GUI Control Panel**
- **Type a name for the monitor or browser in the Name field near the top of the GUI**
  - **if a pre-defined monitor or browser is desired, use the Search button under the Name field to call it up**
- **Click on either the Alarms button or the ALL EVENTS button for Types of Events**

# Monitors/Browsers (Cont.): Monitor/ Browser GUI

# Monitors/Browsers (Cont.): Procedure

- **Click on either ALL Job Status Events or the corresponding toggle button(s) to select individual Job Status Events**
  - **Running**
  - **Success**
  - **Failure**
  - **Terminated**
  - **Starting**
  - **ReStarting**
  - **On Ice**
  - **On Hold**

# Monitors/Browsers (Cont.): Procedure

- **Click on the corresponding toggle button to select the desired Job Selection Criteria**
  - **All Jobs**
  - **Box with its Jobs**
  - **Single Job**
    - » **if Single Job is selected, type the job name in the Job Name field**
- **Click on the corresponding toggle button to select the desired Monitor Options**
  - **Sound**
  - **Verification Required for Alarms**

# Monitors/Browsers (Cont.): Procedure

- **Click on Yes or No to select the desired Current Run Time and/or Events After Date/ Time, which are the Browser Time Criteria**
  - **if Events After Date/Time are desired, type the starting date and time) in the Events After Date/ Time field**
- **Click on the corresponding toggle button to select the desired Mode**
  - **Monitor**
  - **Browser**

# Monitors/Browsers (Cont.): Procedure

- **Click on the Save button**
  - **before running a monitor or browser you must Save the monitor/browser definition**
- **Click on the Run MonBro button to run the monitor/browser that has just been defined**
- **Review the monitor/browser results**
- **Type Ctrl-C to exit from a browser**

# Monitors/Browsers (Cont.): Procedure

- **Running Monitors/Browsers**
  - **may be run from the Monitor/Browser GUI as described in the preceding procedure**
  - **may be run using a UNIX command**

# Monitors/Browsers (Cont.): Procedure

- **Running Monitors/Browsers:**
- **Set up AutoSys**
- **Type monbro -N *name* & then press Return/ Enter to run the previously defined monitor/ browser**
  - **monitor or report (browser) must have been previously defined and saved under an appropriate file *name* using the Monitor/Browser GUI**
- **Review the monitor/browser results**
- **Type Ctrl-C to exit from a browser**

# Changing the Database Maintenance Time

- **Database Maintenance Time**
  - once a day the Event Processor goes into an internal database maintenance cycle
  - during this time, it does not process any events
  - it waits for the maintenance activities to be completed before resuming normal operations
  - time of day for start-up of the maintenance cycle is pre-set to 3:30 AM
  - database maintenance cycle takes approximately one minute
  - if it is necessary to change the time when the maintenance cycle occurs, the Production Monitor can reset it
    - » preferably to a time when there is minimal activity

# Database Maintenance Time (Cont.): Procedure

- **Changing the Database Maintenance Time:**
- **Access the command shell**
- **Type xhost + then press the Return/Enter key on the keyboard**
- **Open another UNIX window**
- **Start the log-in to the appropriate server by typing either telnet *servername* (e.g., plnn1sun), rlogin *servername*, or rsh *servername* in the second window then press the Return/Enter key**
- **If a Login: prompt appears, log in as yourself by typing your *UserID* then pressing the Return/Enter key**

# Database Maintenance Time (Cont.): Procedure

- At the Password: prompt type your *Password* then press the Return/Enter key
- Type setenv DISPLAY *clientname*:0.0 then press the Return/Enter key
- Type cd /*path* then press Return/Enter
  - Change directory to the directory (e.g., /data1/COTS/autotree2) containing the config. *XXX* file (where *XXX* = the applicable AUTOSERV instance)
  - The particular path to be typed may vary from site to site

# Database Maintenance Time (Cont.): Procedure

- Type vi  config. *XXX* (where *XXX* = the applicable AUTOSERV instance) then press Return/Enter
- Using vi editor commands find DBMaintTime= 03:30 and replace the existing time with the desired time in 24 hour format (hh:mm).
- Press the Esc key
- Type ZZ then press Return/Enter

# Production Processing Scenarios

- **Three scenarios from the *Operations Scenarios for the ECS Project: Release A*, 605-CD-001-003, June 1996:**
  - **Normal Production Processing Scenario**
  - **Production Processing Job Anomaly Scenario**
  - **Production Processing Job Modification Scenario**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario**
  - **occurs during a given day of the Release A period at the Langley Research Center (LaRC) DAAC under the following conditions:**
    - » **DAAC is in stable operations**
    - » **Production Planner sends the next 16-hour portion daily production schedule to the Data Processing Subsystem (DPS), representing the processing workload for the day**
    - » **Production processing is expected to be a routine event**
    - » **Production Monitor monitors the daily production schedule at the beginning of each shift and periodically throughout the day**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.)**
  - **scenario conditions (cont.):**
    - » **In the normal case, the Production Monitor interacts with the system only at the beginning of the day and when jobs fail**
    - » **loading of a day's jobs occurs once in each sixteen-hour period**
    - » **activation of the daily production schedule in AutoSys is automatic and does not require operator intervention**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.)**
  - **scenario is based on the following assumptions:**
    - » **long-term production planning window is one month**
    - » **each day the production planner sends a sixteen-hour portion of the active plan to the production processing system**
    - » **window is adjustable to suit the needs of the DAAC**
    - » **scenario represents normal processing and does not investigate various anomalies**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Planner notes the jobs scheduled for processing today in the month-long current active plan**
  - **Production Planner, using the Planning Workbench software, initiates the “downloading” of the daily schedule of jobs to the AutoSys scheduling tool**
  - **system converts DPRs into AutoSys commands using the AutoSys Job Information Language (JIL) interface**
  - **AutoSys displays each DPR in a job box which contains all the required jobs for a PGE**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **AutoSys automatically places the jobs in a “held” state while waiting on their data dependencies**
  - **Data Server Subsystem notifies the Planning Subsystem subscription manager software as subscription requests are fulfilled**
  - **subscription manager software releases the appropriate DPRs from their “held” state as the subscription notifications arrive**
    - » **process is automatic and requires no operator intervention**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor may use AutoSys/AutoXpert to observe and determine the processing status of all DPRs throughout the day**
    - » **AutoXpert JobScape GUI shows job status**
  - **Processing Subsystem scheduling engine (AutoSys) dispatches DPRs as specified by the subscription manager**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **typical DPR may contain the following information:**
    - » **Resource Allocation**
    - » **Data Staging**
    - » **Environment Preparation**
    - » **PGE execution**
    - » **Data Destaging**
    - » **Resource Deallocation**
  - **As DPRs finish, their job boxes turn gray**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor views a GANTT-chart view (AutoXpert TimeScape GUI) of the daily schedule of jobs**
  - **Processing Subsystem scheduling engine (AutoSys) stores production history data (e.g., duration, completion code) in its database**
  - **Production planning software uses production history data in creating the next daily production schedule**

# Production Processing Scenarios (Cont.)

- **Normal Production Processing Scenario (Cont.)**
  - **conditions at the completion of the normal production processing scenario:**
    - » **Planning and Data Processing System (PDPS) database contains new and updated entries reflecting the production processing status from the current day**
    - » **Production Planner will use the information in determining which DPRs to include in the next daily production schedule**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario**
  - **occurs during a given day of the Release A period at the Langley Research Center (LaRC) DAAC under the following conditions:**
    - » **DAAC is in stable operations**
    - » **daily production schedule for this day has been loaded and PGE execution is in progress**
    - » **Data Processing Subsystem (as managed by the AutoSys Job Scheduling engine) runs the PGEs and associated jobs as the resources required for the tasks become available**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.)**
  - **follows a PGE that fails due to an internal software error during execution**
  - **follows the PGE execution from AutoSys alarm generation and PGE termination through PGE data destaging, notification to the Instrument Team (IT), post-mortem analysis and PGE reprocessing**
  - **actors in the scenario:**
    - » **DAAC Production Monitor**
    - » **DAAC Data Specialist**
    - » **ECS system**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.)**
  - **addresses anomalies that occur internal to the PGE**
  - **anomalies include but are not limited to the following factors:**
    - » **missing, bad or incomplete input data**
    - » **PGE software faults**
    - » **input or output resource failures**
    - » **communication errors**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.)**
  - **does not address re-initiation of the PGE after failure**
    - » **each PGE will have individual methods for re-initiation, from simple resubmission to specialized command line arguments**
    - » **this varies widely with the PGE in question**
    - » **although not addressed here re-initiation is an option when a PGE fails**
  - **production processing job anomalies are expected to be non-routine events**
  - **job anomalies are expected**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.)**
  - **majority of PGEs are expected to run to completion without incident**
  - **Production Monitor is alerted to the anomalies that occur and can take the needed action**
  - **fewer than 5% of PGEs should fall into this category (anomalies)**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.)**
  - **scenario is based on the following assumptions:**
    - » **daily production schedule has been sent from Planning and some of the scheduled PGEs are executing**
    - » **failed PGE terminates gracefully and returns a status code**
    - » **no option to re-initiate the PGE exists for the failed PGE**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor, using the AutoXpert HostScape GUI, notes that a PGE completed its execution abnormally**
    - » **system displays an AutoSys alarm for the failed PGE on the AutoXpert HostScape GUI**
  - **system sends the Management Subsystem (MSS) HP OpenView event for the AutoSys alarm**
  - **MSS logs the event**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor decides to double-check the failed PGE using the AutoXpert TimeScape and JobScape GUIs**
    - » **system displays the failed PGE on the TimeScape and JobScape GUIs**
    - » **step is not mandatory; it is presented to demonstrate how the Production Monitor can view the problem**
  - **Production Monitor clicks on the HostScape alarm box and views the detailed information concerning the PGE failure**
    - » **system displays the AutoSys alarm display for detailed alarm information**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor notifies the responsible DAAC Data Specialist of the PGE failure**
    - » **may send an e-mail message or make a telephone call**
  - **Data Processing Subsystem moves the temporary output and job logs for the failed PGE to the local storage on the appropriate data server for destaging**
  - **Production Monitor opens a trouble ticket on the PGE failure**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **DAAC Data Specialist takes the following actions:**
    - » **coordinates with the Science Computing Facility (SCF)**
    - » **reviews appropriate information received from the Production Monitor**
    - » **makes the necessary adjustments to the PGE**
    - » **resubmits the algorithm through the integration and test process**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Anomaly Scenario (Cont.)**
  - **conditions at the completion of the production processing job anomaly scenario:**
    - » **PDPS database contains new and updated entries reflecting the production processing status from the failed job**
    - » **data server contains the job logs and output data from the PGE**
    - » **DAAC Data Specialist has been informed of the location of the data and the detailed alarm information**
    - » **DAAC Data Specialist passes the information to the Instrument Team**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario**
  - **occurs during a given day of the Release A period at the Langley Research Center (LaRC) DAAC under the following conditions:**
    - » **DAAC is in stable operations**
    - » **daily production schedule for the day has been loaded and PGE execution is in progress although the PGE to be modified has not begun executing**
    - » **Data Processing Subsystem (as managed by the AutoSys Job Scheduling engine) executes the PGEs and associated jobs as the resources required for the tasks become available**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.)**
  - **follows the steps the Production Monitor takes to change the priority of a PGE**
  - **follows the PGE from selection to priority change**
  - **actors in the scenario:**
    - » **Production Monitor**
    - » **ECS system**
  - **job modification (priority change in this scenario) applies to the next execution of the PGE only**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.)**
  - **modification made with the AutoSys interface allows the Production Monitor flexibility in controlling the job schedule**
  - **no change is reflected in the PDPS database**
  - **permanent change is accomplished through the Planning Subsystem GUIs as described in the Replanning Production Scenario**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.)**
  - **production processing job modifications are expected to be non-routine events**
  - **majority of PGEs are not expected to require changes**
  - **ECS allows the Production Monitor to modify job parameters (such as priority) any time prior to PGE execution**
    - » **allows flexibility in unforeseen and unusual circumstances**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.)**
  - **unforseen and unusual circumstances include but are not limited to the following conditions:**
    - » **equipment failures**
    - » **emergency or high priority processing**
    - » **delayed input data**
    - » **PGE faults**
    - » **PGEs with data product-dependent components that affect PGE run time (e.g., the PGE runs long or short when clouds are encountered)**
    - » **PGEs with geo-location dependent processing**
  - **job modification rate is expected to be very low, well under 5%**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.)**
  - **scenario is based on the following assumptions:**
    - » **daily production schedule has been sent from Planning and some of the scheduled PGEs are executing**
    - » **PGE to be modified has not begun execution**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor, using AutoSys, selects a PGE from the Job Activity Console GUI and clicks on the Job Definition button**
    - » **system displays the Job Definition GUI**
  - **Production Monitor selects the Job Definition Advanced Features GUI by clicking on the Adv Features button on the Job Definition GUI**
    - » **system displays the Job Definition Advanced Features GUI**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.) - steps extracted and adapted from the scenario:**
  - **Production Monitor changes the priority of the selected PGE and saves the data in AutoSys by clicking on the Save&Dismiss button on the Job Definition Advanced Features GUI**
    - » **system displays the Job Definition Advanced Features GUI**
  - **Processing Subsystem (AutoSys) updates the job priority of the selected PGE**

# Production Processing Scenarios (Cont.)

- **Production Processing Job Modification Scenario (Cont.)**
  - **conditions at the completion of the production processing job modification scenario:**
    - » **AutoSys database entry for the selected PGE has been modified as desired**

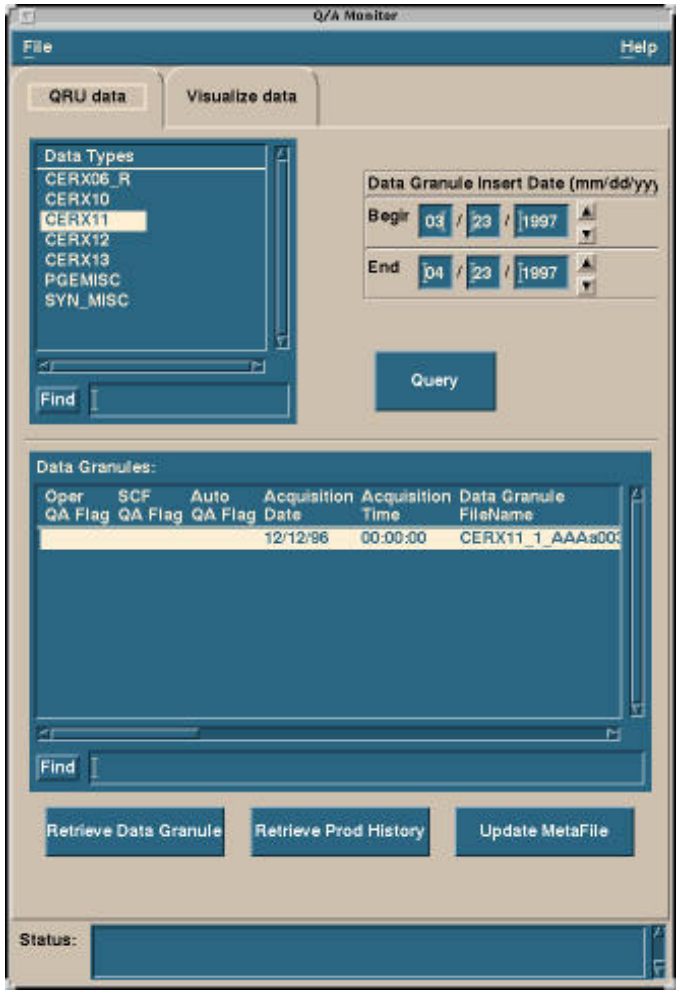
# Science Product Quality Assurance (QA)

- **Uses the QA Monitor application**
- **Production Monitor**
  - **makes a visual check to ensure that the output of data processing is of the desired type (rather than an empty granule)**
- **Science Data Specialist**
  - **makes a more detailed inspection of the science products**

# Science Product QA (Cont.): Procedure

- Performing Science Product Quality Assurance (QA):
- Launch QA Monitor GUI
- Compose a query to search for the granule(s) to be checked
  - Data Type
  - Duration (time range)
- Click on the Query button
- Click on the granule(s) to be checked
  - Data Granules field
- Click on the Retrieve Data Granule button

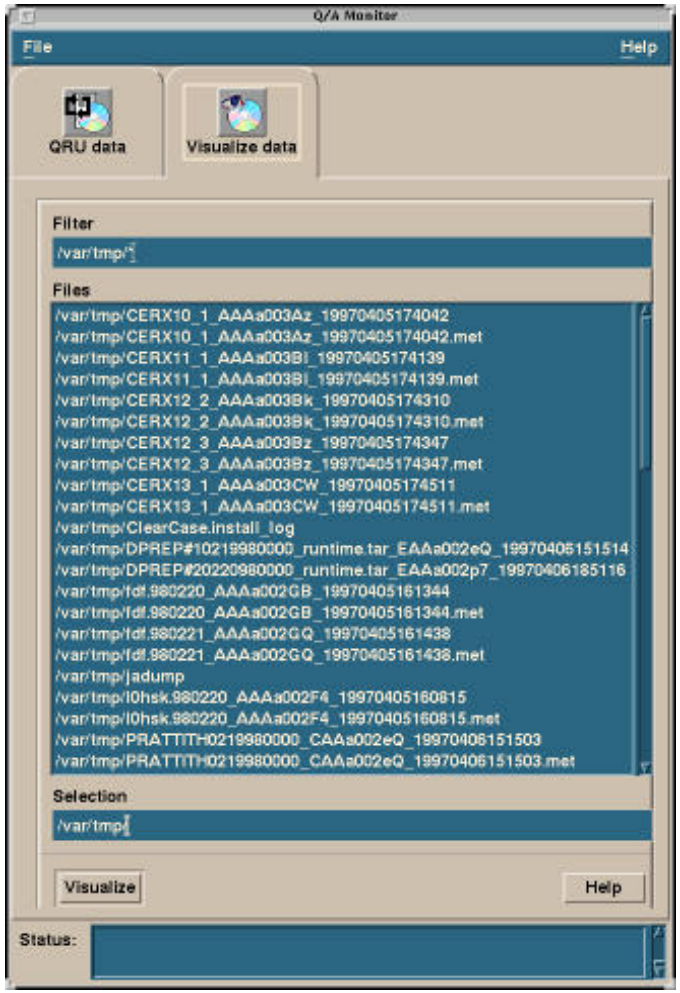
# Science Product QA (Cont.)



# Science Product QA (Cont.): Procedure

- Click on the Visualize data tab
- Click on the name of the file to be checked
  - Files field
- Click on the Visualize button
- Review the image that is displayed
  - verify that processing has actually resulted in an image
  - if there is no image, it is necessary to investigate why processing failed and subsequently reprocess the PGE
- Click on the QRU data tab
  - QRU = Query, Retrieve and Update

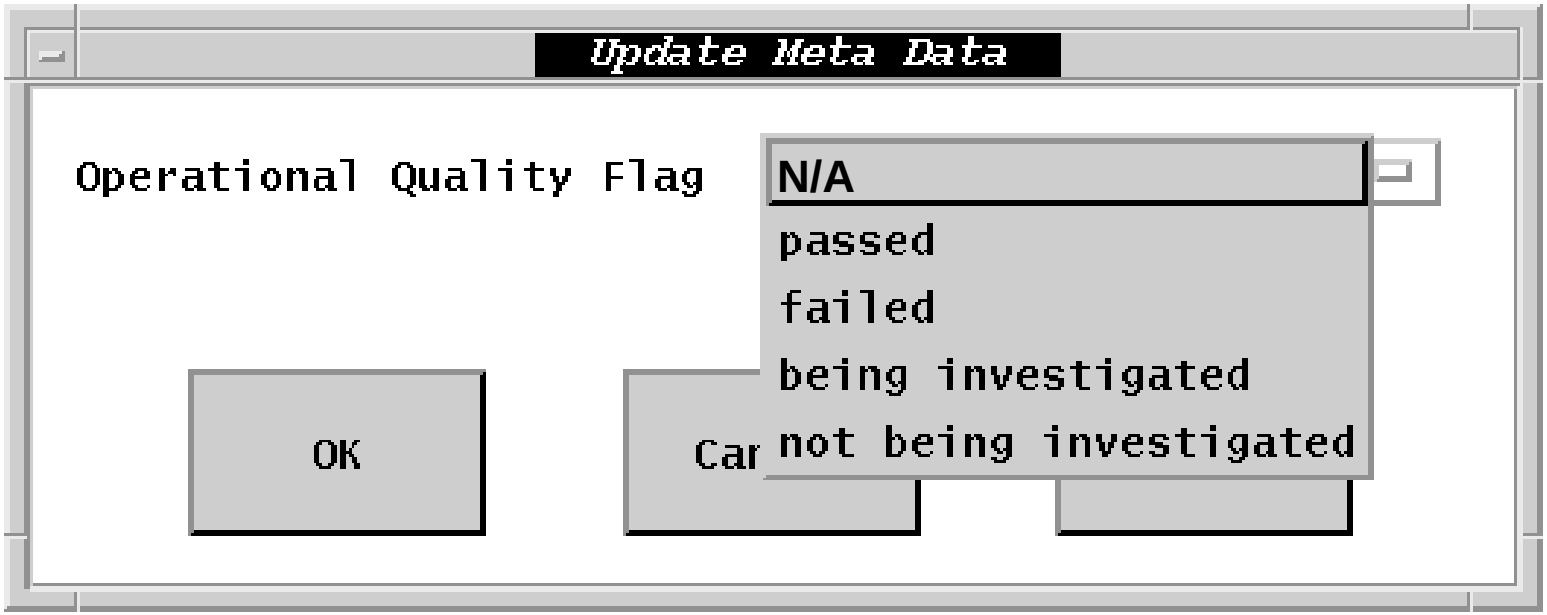
# Science Product QA (Cont.)



# Science Product QA (Cont.): Procedure

- Click on the appropriate *File Name*
  - Data Granule field
- Click on the Update MetaFile button
  - Displays the Update Meta Data dialog box
- Click on the appropriate QA parameter:
  - N/A
  - passed
  - failed
  - being investigated
  - not being investigated
- Click on the OK button to set the flag and close the Update Meta Data dialog box

# Science Product QA (Cont.)



# Science Product QA (Cont.): Procedure

- **Repeat steps as necessary to review additional granules/files**
- **Select File → Quit to exit from the QA Monitor**

# Science Product Quality Assurance (QA)

- **Reviewing Science Product History involves...**
  - **access to and inspection of data granule production history files**
  - **the QA Monitor application and UNIX command shell**

# Science Product QA (Cont.): Procedure

- Reviewing Science Product History :
- Launch QA Monitor GUI
- Compose a query to search for the granule(s) to be checked
  - Data Type
  - Duration (time range)
- Click on the Query button
- Click on the granule(s) to be checked
  - Data Granules field
- Click on the Retrieve Prod History button

# Science Product QA (Cont.): Procedure

- **Access the directory of the desired data type using the UNIX command shell**
- **Type more *filename*.met then press Return/ Enter**
  - **displays the metadata for the specified file**
- **Review the metadata**
- **Repeat steps as necessary to review additional data granule production history files**
- **Select File → Quit from the pull-down menu to exit from the Q/A Monitor GUI**