

uniformance

PHD Management and Support

Lesson Objective

Objective

Manage, monitor, and support a PHD system

Topics

- PHDMAN Overview, Help, and System Control
- NT PHDCTL Utility - Pause, Start, Stop PHD
- PHD Interface Control
- NT PHD Security Groups
- PHDMAN Audit Log (R150 and later)
- Log Files
- PHD Directory Structure
- Named Parameters
- Data Archiving and Recovery
- PHD System Tasks
- PHD Command Summary
- Hands-on Exercise

References

- *PHD System Manual*
- *PHDMAN User's Guide*

PHDMAN Overview

PHDMAN is used primarily for the following functions:

- **Manage Archives**--Create, connect, disconnect archive files, and configure logical archive characteristics
- **Startup and shutdown** PHD system and detached processes
- Real-time **monitoring of PHD system** and detached processes
- Monitor Raw and Data **queues** for specified tags
- Generate statistical **reports** highlighting system performance and problem tags

- Individual value **PUT** for a tag
- **Compile** and load virtual (calculated) tag definitions (VMS)
- Configure automatic data **routing** for tags

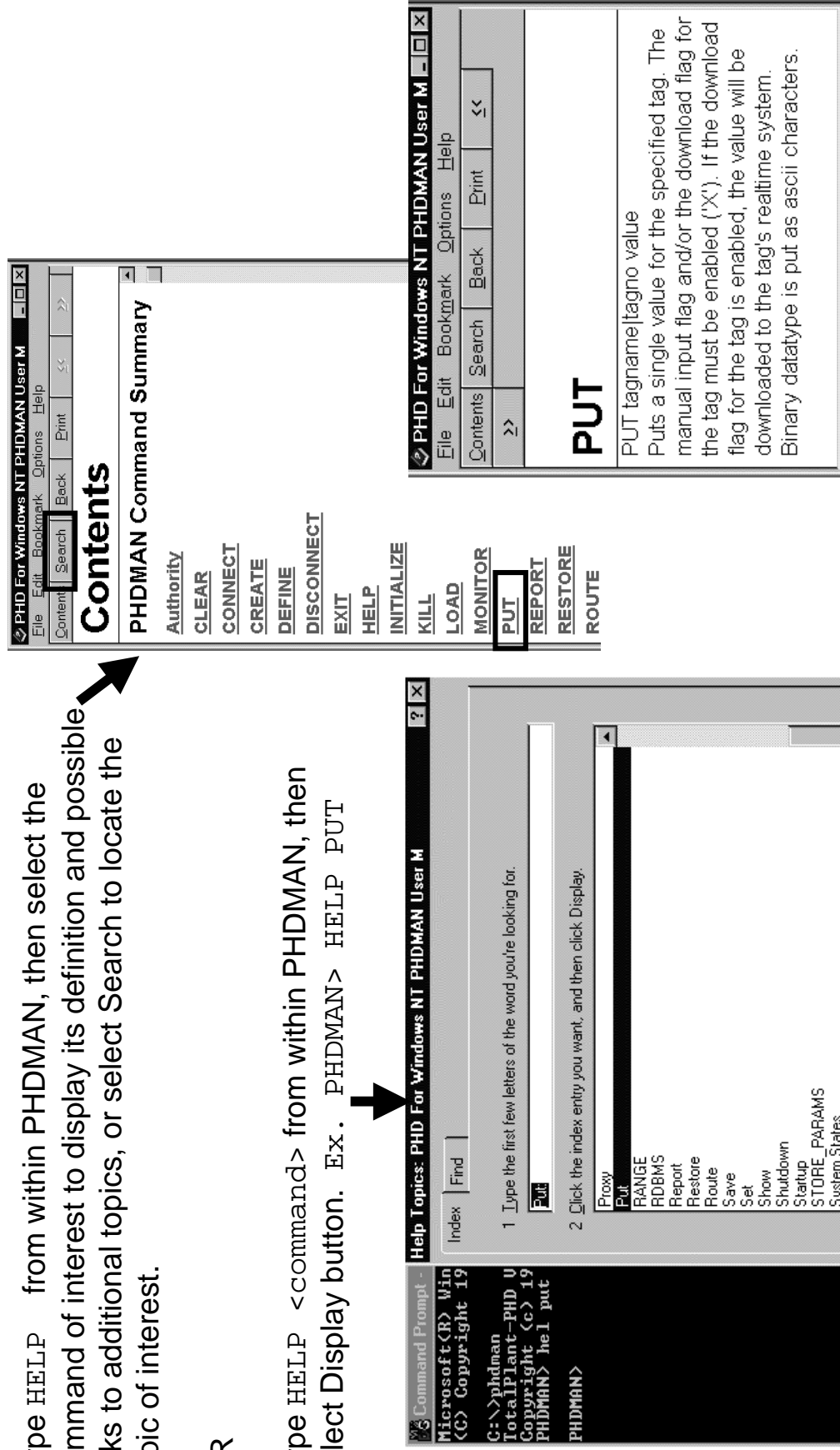
- Configure PHD **named parameters**--These parameters are used to configure and tailor the PHD system for the particular installation (ex. MAX_TAGS).
- Configure **store process parameters**--used to control behavior of PHD_CONSTORE process
- Configure **monitor process parameters**--used to control behavior of PHDMON program (integrity monitoring facility for detecting abnormal conditions in CONSTORE and RDIs)

PHDMAN Help

Type **HELP** from within PHDMAN, then select the command of interest to display its definition and possible links to additional topics, or select **Search** to locate the topic of interest.

OR

Type **HELP <command>** from within PHDMAN, then select **Display** button. Ex. **PHDMAN> HELP PUT**



PHDMAN System Control

PHDMAN> SHO SYS or MON SYS

Overall PHD system state and PHD current local server time.

Constore process state. If enabled, it stores data to archive file

Priority: Current Priority of store process.
Interval: Constore Interval time and offset in seconds. [rem] is the remaining time to the next interval.
Interval: Actual previous interval time used for data storage.

System state: ACTIVE
Current time: 10-NOV-97 16:10:55

PHD tag number being processed [number of tags stored to archive:number of tag storage errors]

STORE PROCESS
Process state: ACTIVE
Data storage: ENABLED
Priority [Lo/Hil]: 9 [7/9]
Interval/off [rem]: 300/0 [245]
Interval used: 7 (2%)
Tagno [instoinerr]: 11481 [827:0]
Store rate [avg]: 118.1/s [177.6/s]

REALTIME DATA INTERFACES

RDI Name	STATE	INTERFACE	RDISTATE	SH	TU	RC	RS	OFS	HRM	NSCAN	NTAGS
TDC1	ACTIVE	ACTIVE	IDLE								
TDC2	INACTIVE	INACTIVE									

The state of the overall interface process

Indicates the current interface state

Shutdown request indicator

The state of communication to the real-time system (PHD or DCS).

Tag list update request indicator

Remote Clock enabled indicator. Corresponds to REMCLOCK parameter.

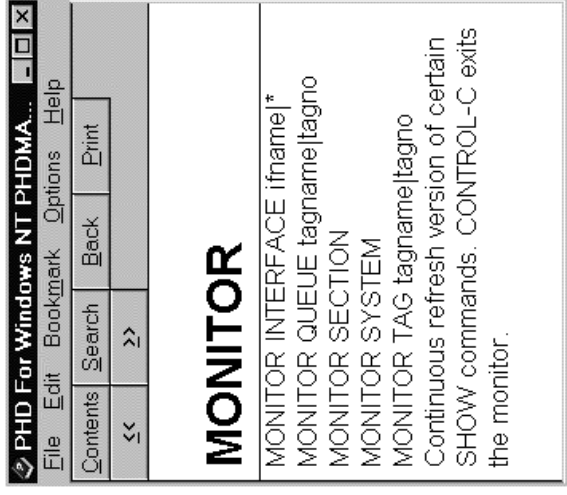
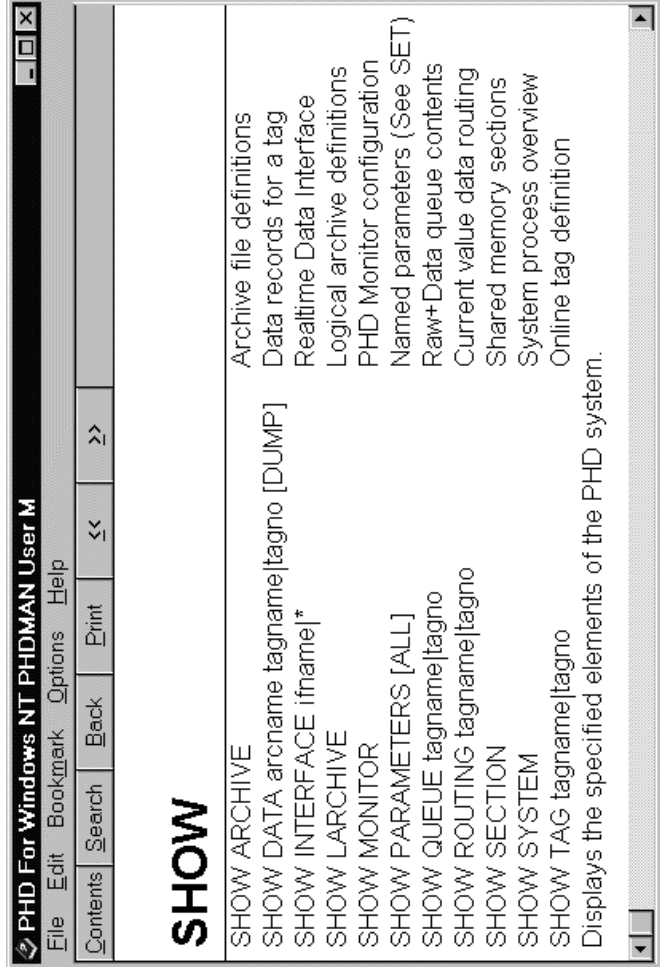
MIN_HIST RECMN Interface parameter

Corresponds to REMSYNCH parameter

References: *PHD System Manual*, Monitoring and Tuning PHD
Monitoring the System Overview

PHDMAN System Control, *continued*

PHDMAN Show and Monitor facilities:



PHDMAN System Control, *continued*

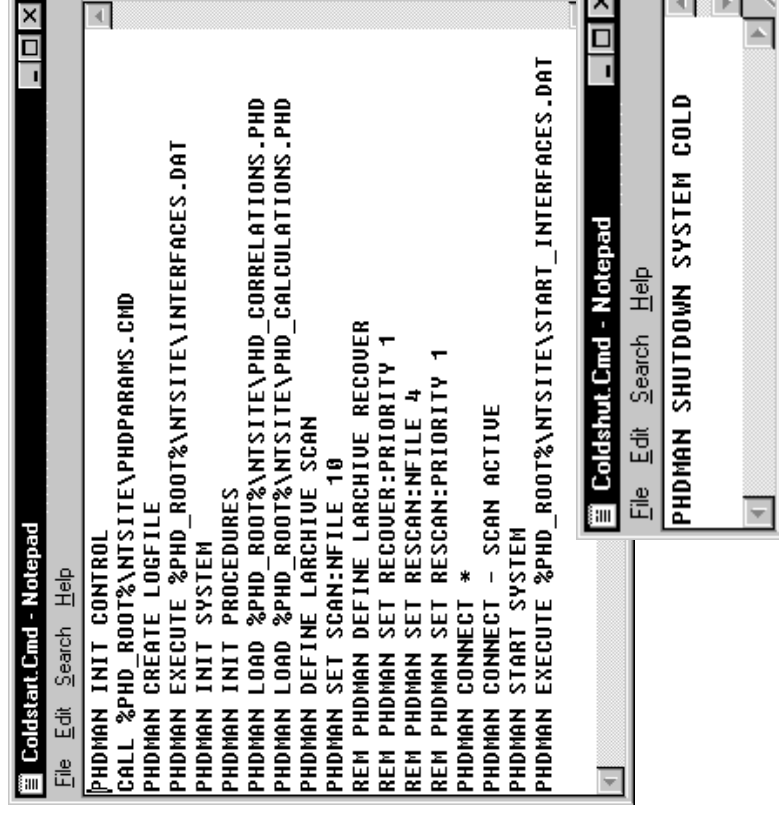
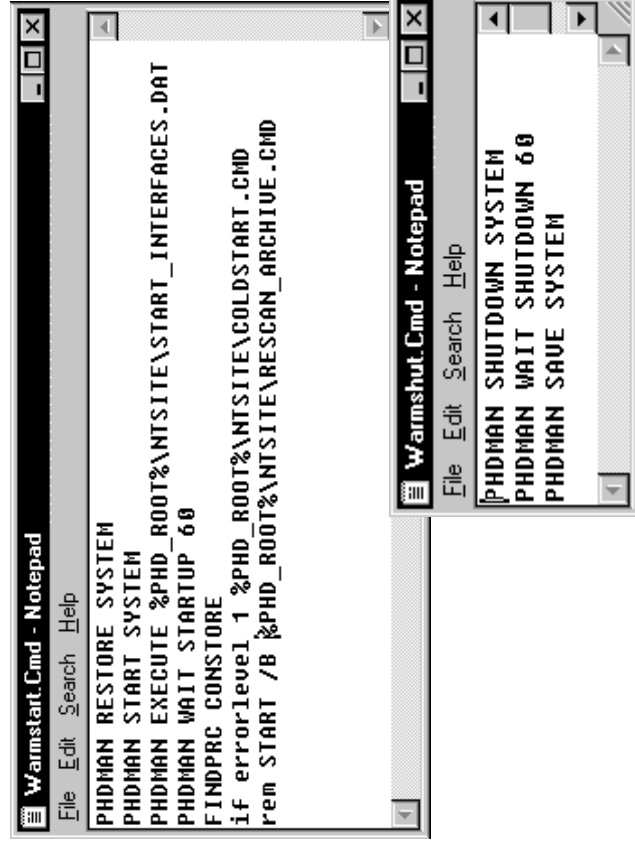
Site-specific command procedures in the NTSITE directory:

- WARMSTART.CMD - Startup from a saved system. Use when hardware is restarted.
- WARMSHUT.CMD - Shutdown, then save the system. Use when hardware is shutdown.
- PHDPARAMS.CMD - Named parameters.
- COLDSTART.CMD - Startup (non-saved system). Use for initial hardware startup or upgrades.
- COLDSHUT.CMD - Shutdown and extract queue data (no save). Use for upgrades.

Do not Open these files!

Opening the file causes it to execute.

Right-Click/Edit to display the file.



Named Parameters

A primary method of configuring PHD for particular site requirements is by using named parameters. The command procedure PHDPARAMS sets named parameter values considered site-permanent (ex. archive file size).

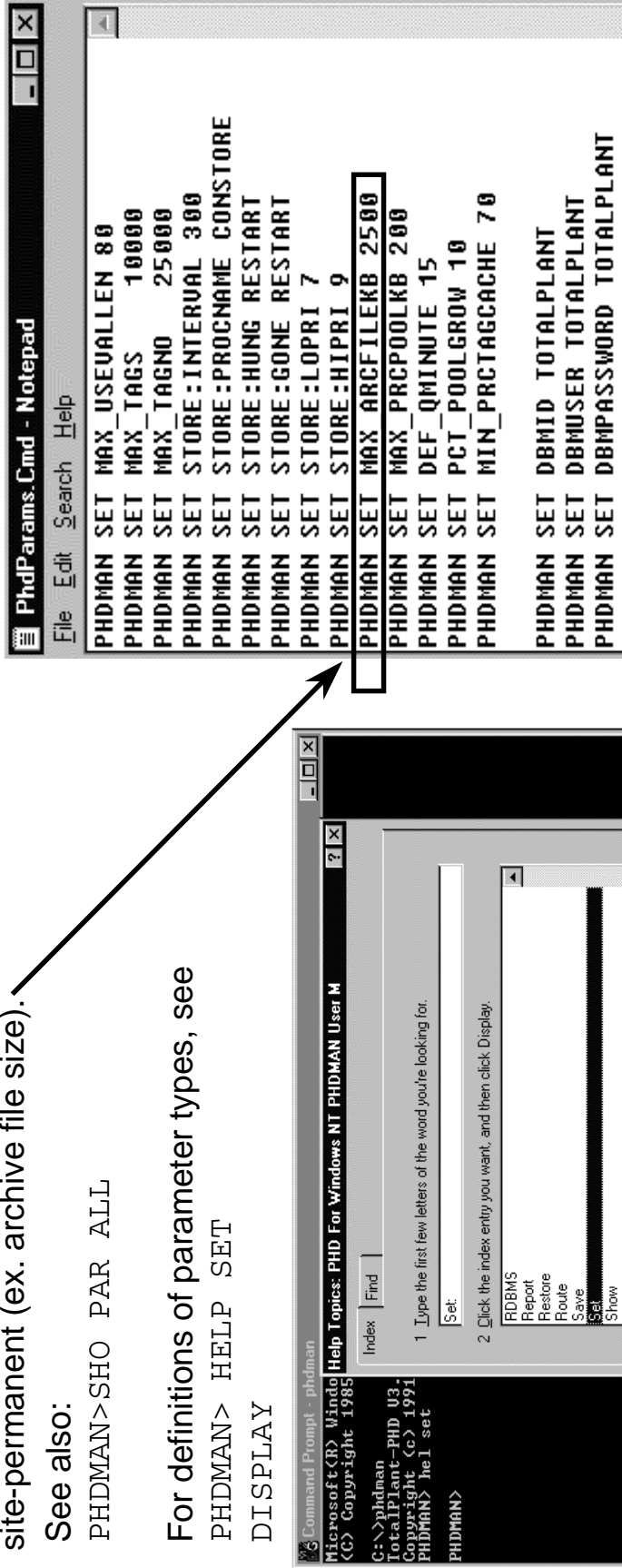
See also:

PHDMAN>SHO PAR ALL

For definitions of parameter types, see

PHDMAN> HELP SET

DISPLAY



Reference: *PHD System Manual*, Named Parameters

PHDCTL Utility

The PHDCTL command line utility is used to control the PHD service in an NT environment. Pausing the PHD service terminates all of the client network connections and prevents any incoming connections from being established.

*You should pause the PHD service before shutting down the PHD system.
Use PHDCTL to Stop and Start the PHD system.*

PHDCTL PAUSE
PHDCTL STOP
PHDCTL START

In the NT implementation of PHD, the memory regions used by PHD remain until all processes accessing the memory terminate.

If PHD is shutdown while a client process is still connected, subsequent startups of PHD fail because the memory regions still exist.

To recover, you can delete the .gbl files in the PHD Server GBLSECT directory. Because all data buffered in the memory queues will be lost, you should avoid having to delete the global files by correctly shutting down PHD when it is necessary to do so.

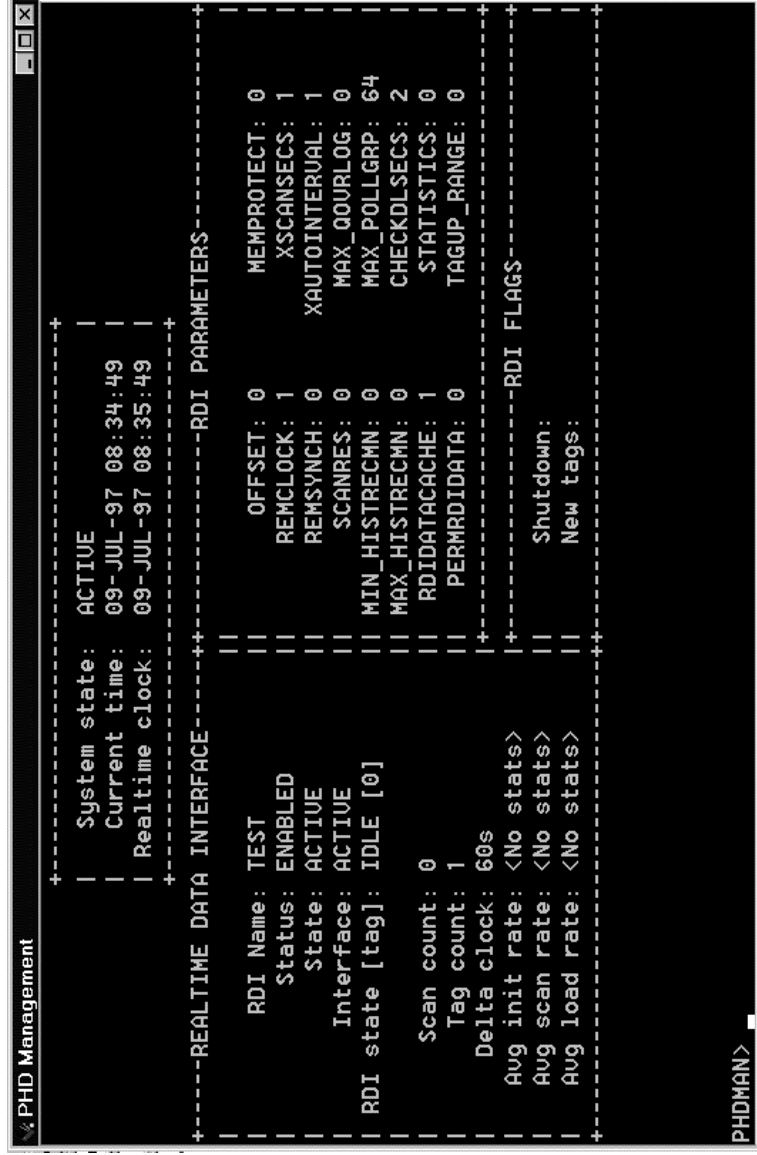
Reference: *PHD System Manual*, NT Installation

PHDMAN Interface Control

RDI Show and Monitor facilities:

SHO INT ifname or *
MON INT ifname or *

To show the state of the RDI named “TEST”, type SHO INT TEST



Reference: *PHD System Manual*, Real-time Data Interface Monitoring
Real-time Data Interface Parameters

PHDMAN *Interface Control*, continued

Start and shutdown interface commands:

START INT ifname or *

Initiates startup of specified interface(s). The Interface is placed in the START state and goes to the ACTIVE state once active.

SHUTDOWN INT ifname or *

Initiates a shutdown of specified interface(s). The interface is placed in the SHUTDOWN state then goes to the INACTIVE state when all processes terminate.

Each RDI has three command procedures that must exist for each interface type and instance:

GO_ifname.CMD- Setup of required hardware resources, log file name, and process name.
EXEC_ifname.CMD- Initiates real-time interface instance and passes required parameters (VMS).
KILL_ifname.CMD- Emergency stop and cleanup of real-time interface instance.

PHD Security

Authority for PHD functions is granted by the system manager on a per-user basis. (On NT systems, these authorities are implemented as local groups through the User Manager utility.)

PHD_MANAGER

Allows access to privileged PHDMAN commands (other users can use the SHOW and MONITOR commands only).

PHD_PUTDATA

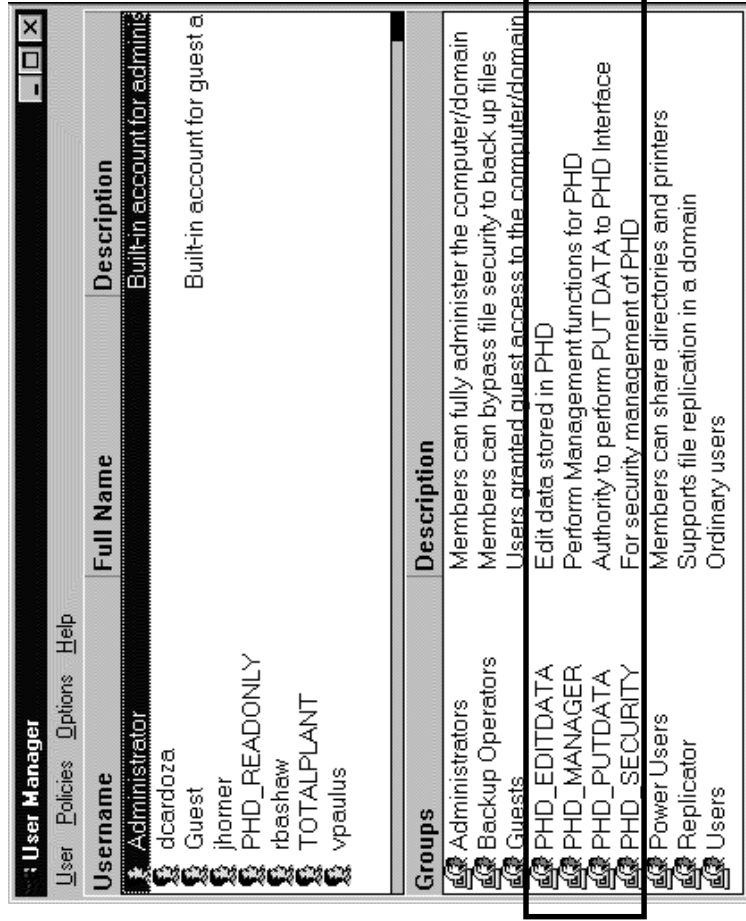
Allow users to put values to an RDI instance by tag name if tag's Put Download Enable Flag is set.

PHD_EDITDATA

Allow users to modify values within the archive system if tag's Data Edit Enable Flag is set.

PHD_SECURITY

For security management of PHD. Allows configuration of tag security proxies and parameters, and allows read/write to any PHD tag.



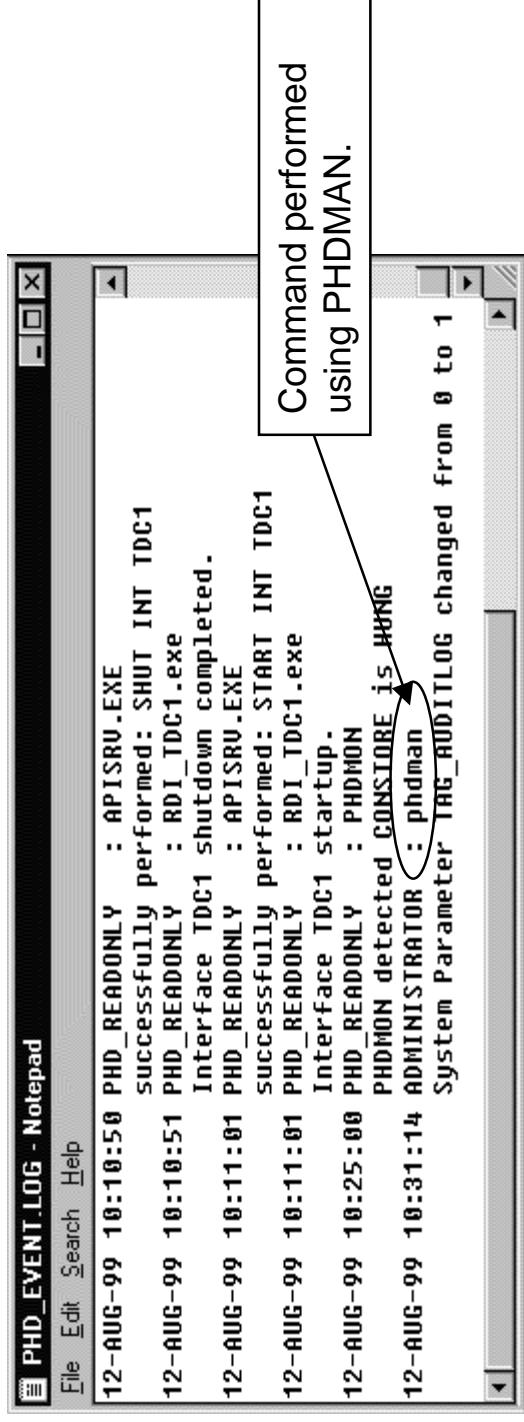
PHDMAN Audit Log (R150 and later)

On R150 and later, the system tracks changes made through PHDMAN.

The PHD_EVENT.log includes a user name with all audit log entries to show who performed the audited function.

Specifically, action affecting the system state will be logged:

- Starting/stopping system
- Starting/Stopping interfaces
- Changing parameter values



PHD Log Files

Logs contain important PHDMAN events, status update, and PHD system messages. Logs should be reviewed for errors or problems detected.

Ntsite\PHD_EVENT.LOG
PHDSRVC.LOG

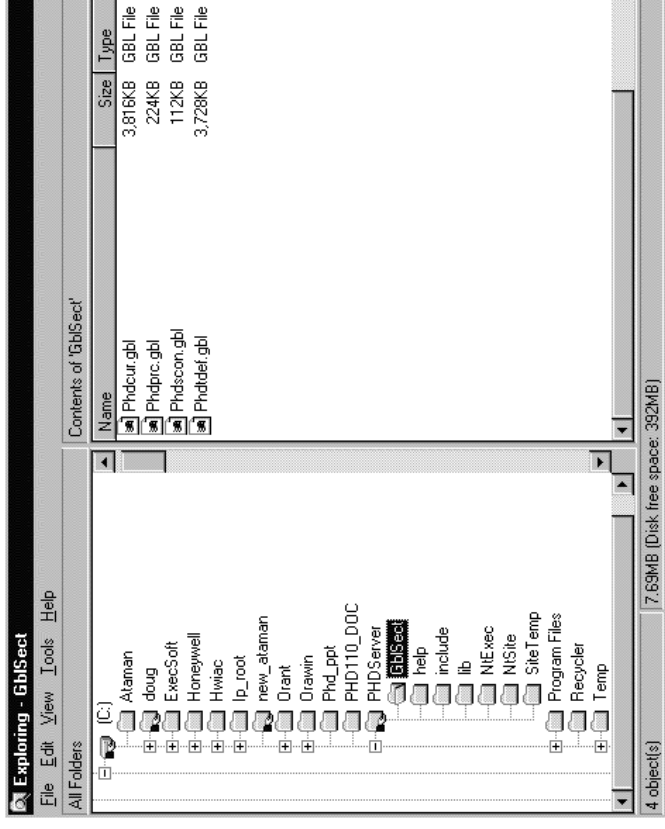
- Messages are logged when the PHD system is started and shutdown.
- Messages are logged when each real-time interface and instance is started and shutdown.
- Specified messages are logged during the execution of each interface with codes and text specific to each error type supported by the real-time system vendor.
- Messages are logged from the PHD Monitor process when an interface or system process is no longer functional.

Each interface instance creates .OUT log files in SITETEMP that can be examined for information not logged in the PHD log files.

PHD Directory Structure

PHD is installed in the following major directories:

- **Archive**
Default location for PHD archives files. Can be moved to another disk.
- **Gblsect**
Location of PHD global section paging files.
- **Include**
PHD application programming include files. The include files support both C and FORTRAN source.
- **Lib**
NT object libraries.
- **Ntexec**
Executable programs and shared images.
- **Ntsite**
Site-specific procedures and parameters.
- **Sitetemp**
Temporary file location.



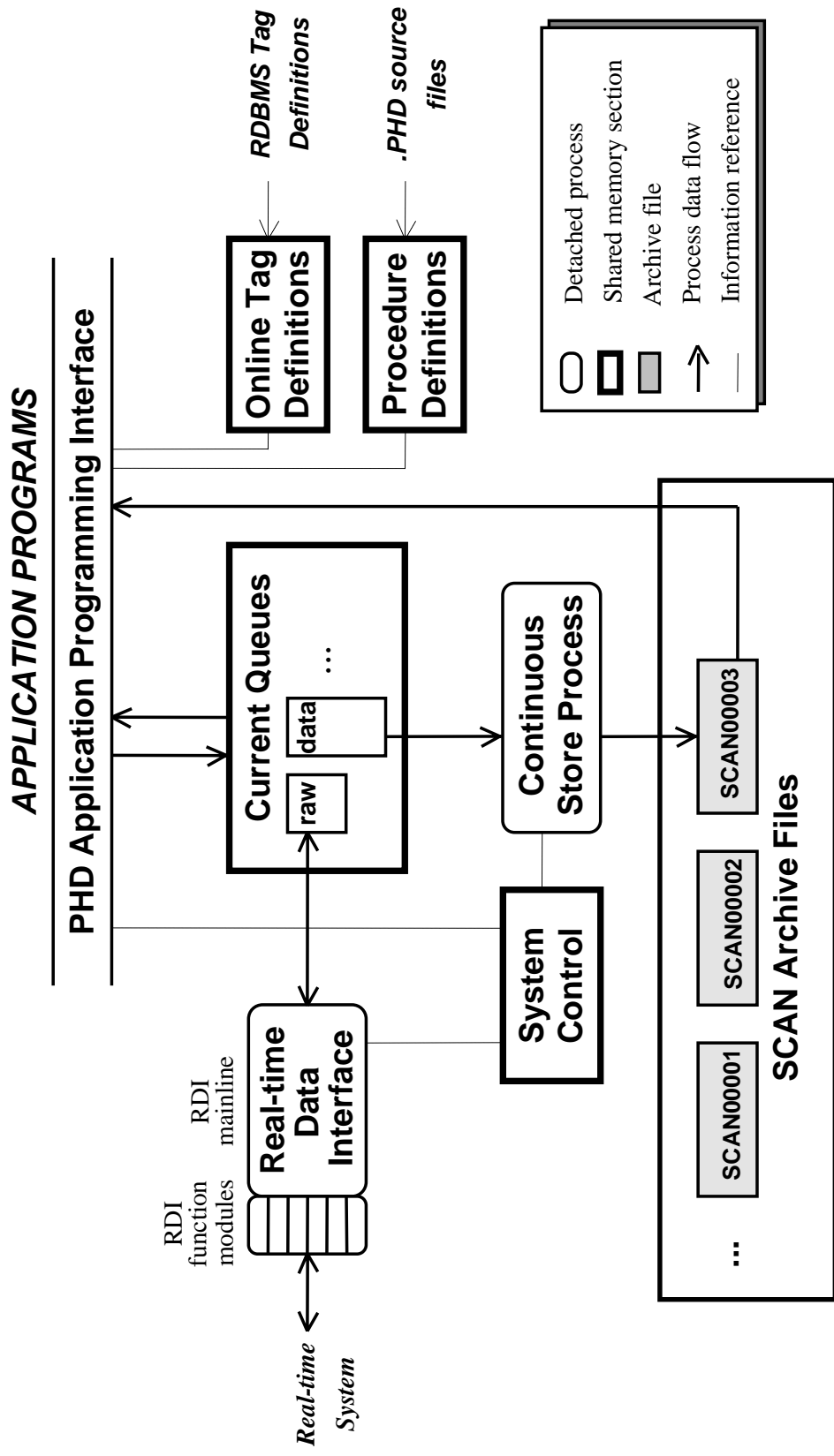
Global Memory Section Files:

PHDCUR - Current Queues
PHDPRC - Virtual Tags and Functions
PHDSCN - System Control - For PHD configuration and interprocess communication. Holds information about RDIs, connected archive files and logical archives and named parameter values.
PHDTDEF - Tag and User Definitions

Reference: *PHD System Manual*, Windows NT, VMS, and UNIX Directory Structure

PHD Archive System

The Continuous Store Process automatically creates a new SCAN archive file when the current active file is full and deletes the oldest file when the archive has the maximum number of files.



Multi-File, Multi-Layer Archive

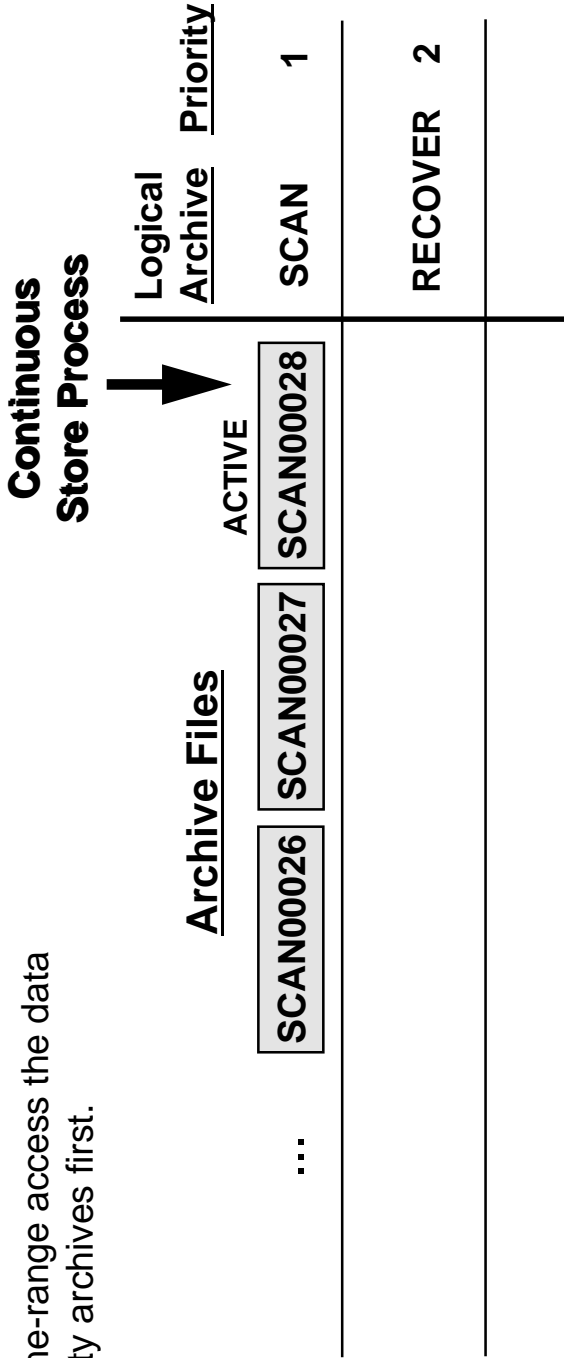
Each archive file resides in its own layer according to logical archive priorities.

Minimum configuration is a SCAN logical archive (user configures # of files per logical archive and max. file size)

Each SCAN archive file

- holds data at actual scanned frequency for all tags
- holds data for a particular time range (ex. one month)

Data requests for a time-range access the data within the higher priority archives first.



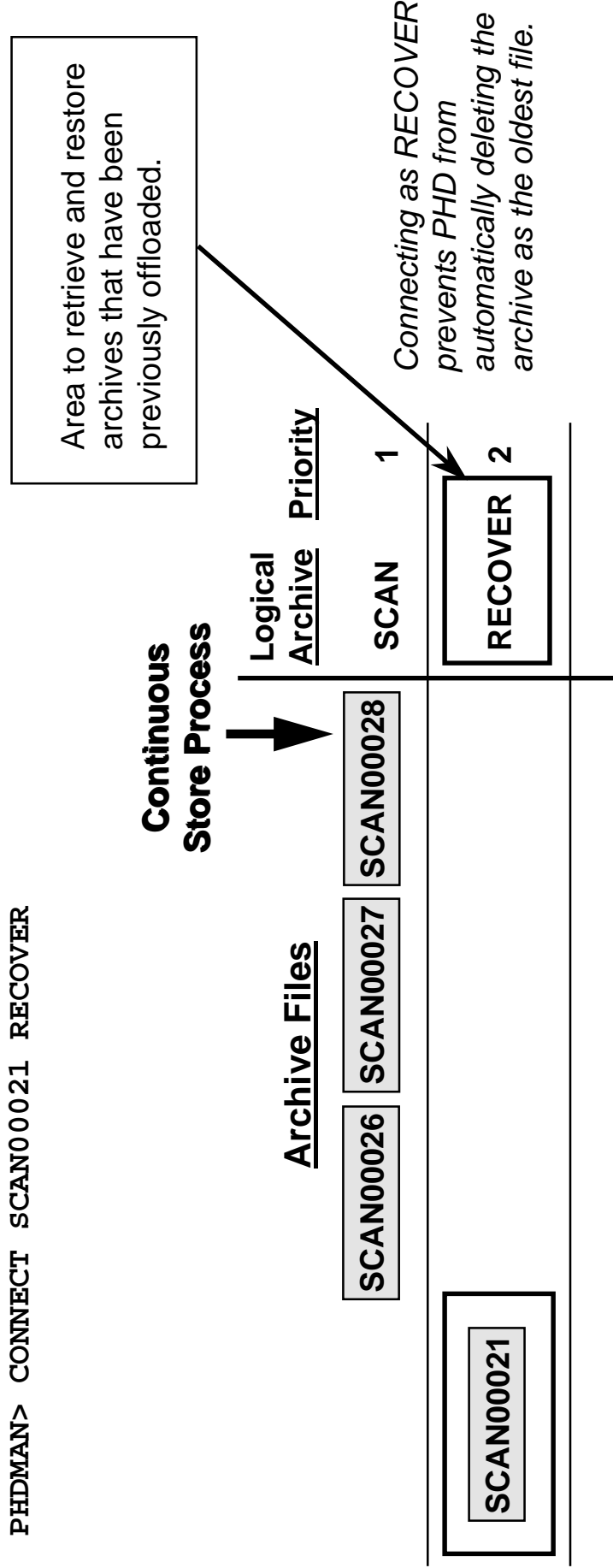
Reference: *PHD System Manual*, Archive Management

Recover Archive

In order for PHD to use data within an archive, the archive must be connected to the system.

An off-line backup of an archive can be connected as a RECOVER logical archive file. Any programs querying data from the appropriate range automatically access the recovered archive.

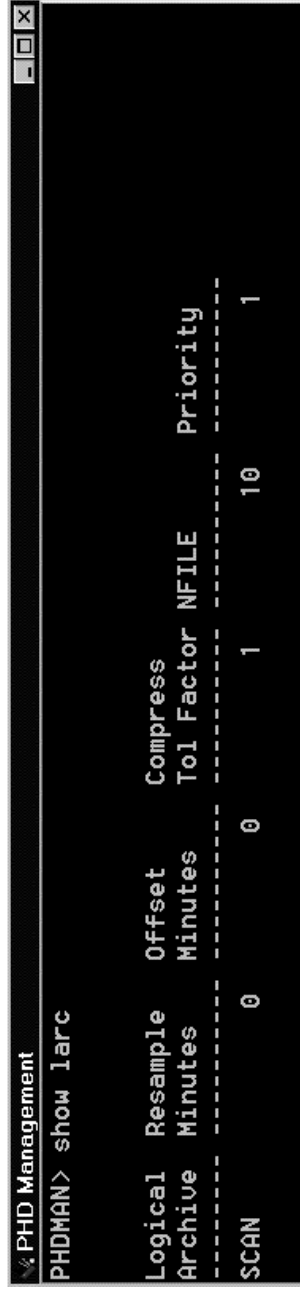
PHDMAN> CONNECT SCAN00021 RECOVER



PHDMAN Commands - Show Archive

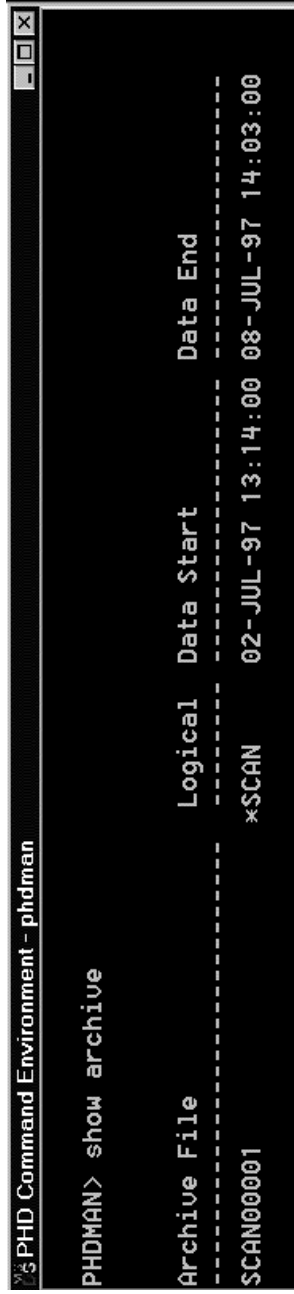
PHDMAN> SHO LARC

Displays current logical archive definitions.



PHDMAN> SHO ARC

Displays currently connected archive files.



(* indicates the active archive file for the logical archive. Any new data inserts into the active archive.)

PHDMAN> SHO DAT SCANnnnnnn tdc1.tag1000.pv

Lists data records for a tag within an archive file.

Defining and Connecting Archives

Archive commands can be performed manually and automatically by the system Coldstart procedure.

Defining a logical archive:

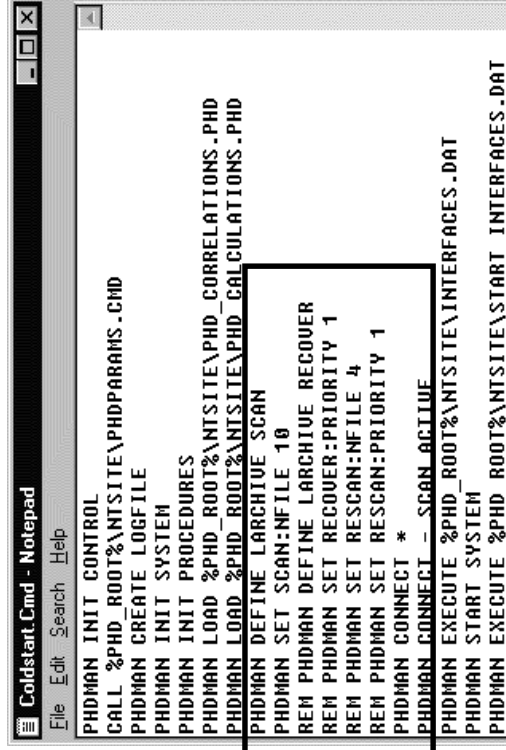
```
DEFINE LARCHIVE larcname  
SET larcname param value  
CONNECT - larcname ACTIVE
```

Defining a physical archive file:

```
CREATE ARCHIVE arcname
```

Activating the archive file:

```
CONNECT arcname larcname ACTIVE
```



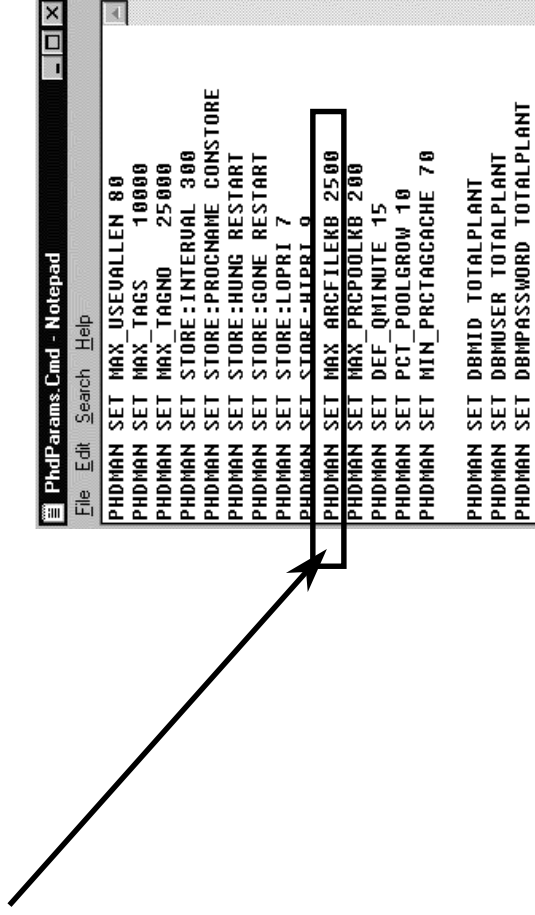
- NFILE - Number of archive files for the logical archive.
- PRIORITY - Read priority of logical archive. Defaults to DEF_ARCPRIO.
- RESAMPLEMIN - Resample interval.
- OFFSETMIN - Offset for resampling intervals.
- COMPRESSTOL - Compression tolerance multiplier.

Reference: *PHD System Manual*, System Initialization and Coldstart

Archive Size

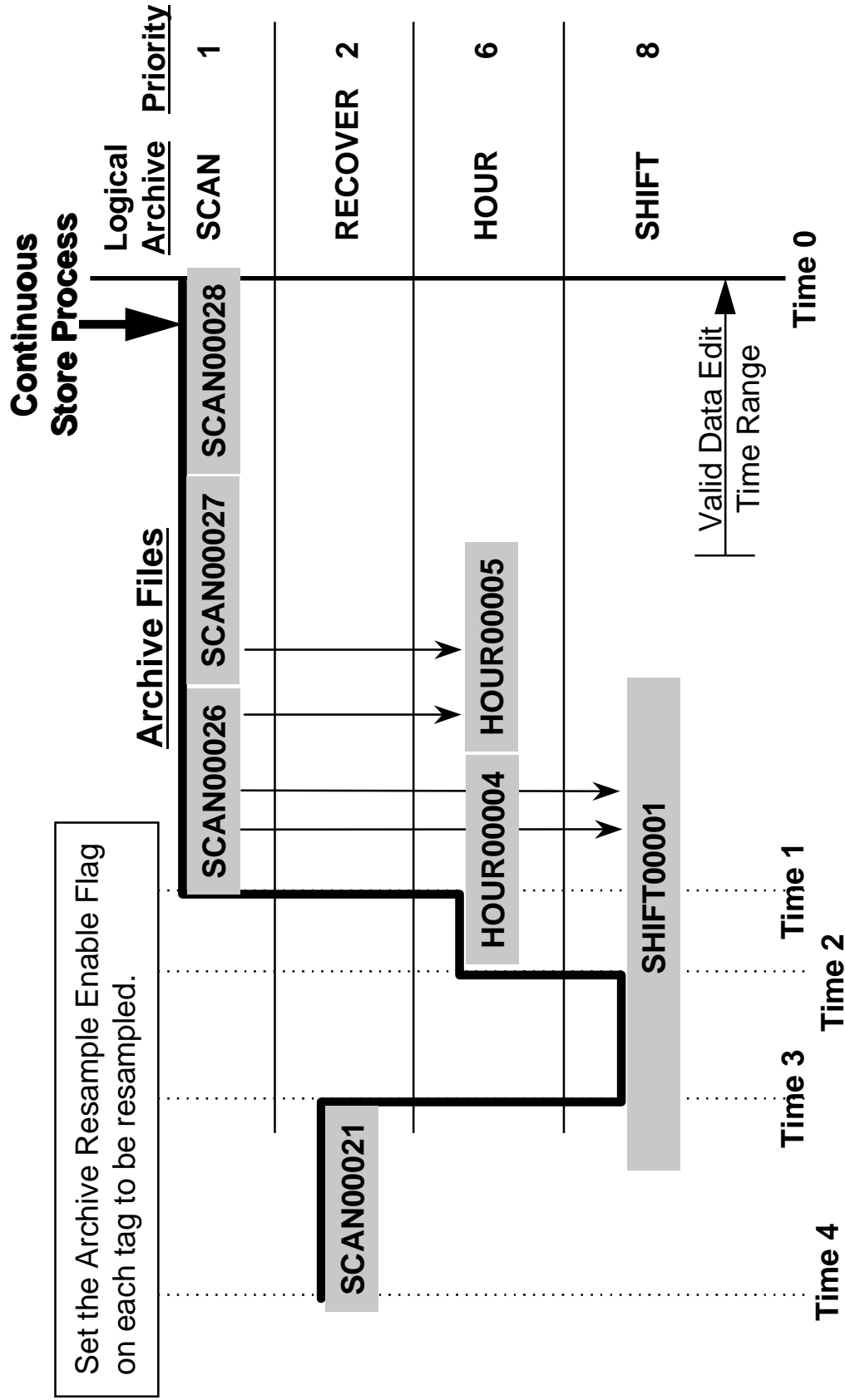
The size of the archive file typically spans a period of time or a file storage size.

$\text{MAX_ARCFILEKB} * \text{NFILE} = \text{total allocation for each logical archive}$



Resample Archives

Resampling allows you to keep more data online. PHD can be configured to resample data at a configured interval from higher resolution archives and populate the resample archive.



Creating Resample Archives

```
PHDMAN> DEFINE LARCHIVE HOUR
PHDMAN> SET HOUR:PRIORITY 5
PHDMAN> SET HOUR:NFILE 2
PHDMAN> SET HOUR:RESAMPLEMIN 60
PHDMAN> SET HOUR:offsetmin 10
PHDMAN> SET HOUR:COMPRESSTOL 2
PHDMAN> WRITE HOUR TODAY -30
```

The `Write` to a resample archive is best done within a scheduled command procedure for regular execution. The use of date keywords combined with date offsets (ex. `TODAY-30`) facilitates this automation.

Reference: *PHD System Manual*, Logical Archives and Resampling

PHD System Tasks

CONSTORE

PHD Continuous Store Process moves collected data from memory and stores it to the PHD archive system. (PHDMAN> SHO SYS)

PHDMON

PHD Monitor Program monitors CONSTORE and RDIs for events that are abnormal and performs actions depending on the event (PHDMON_ACTION.cmd). The actions and events are configured using PHDMAN. (PHDMAN> SHO MON to view configuration)

See *PHD System Manual*, PHD Integrity Monitoring

PHDMAN Command Summary

CREATE (create archives and log files)

SET (set parameters used by logical archives, CONSTORE, RDBMS, RDI, and PHD monitor)

DEFINE (define interfaces and archives)

CONNECT (connect archives and logical archives)

DISCONNECT (disconnect archive)

WRITE (write resampled data into the specified logical archive)

SHOW (show archives, logical archives, interfaces, system status, all named parameters, tag data queues, tag configuration, tag routing, shared memory sections)

MONITOR (monitor continuous refresh of system, interface, queues, tag, shared memory sections)

REPORT (report tag statistics)

CLEAR (clear statistics for all tags)

LOAD (load virtual tag)

LOGIN (connect user to PHD through specified username)

PROXY (specify proxy login PHD username for specified operating system domain and user)

PUT (put a single value for a tag, then download to tag's real-time system, if download is enabled)

ROUTE (route current value of source tag to current queue of destination tag, and download value to destination tag's real-time system, if download is enabled)

SHUTDOWN (shutdown system or interface)

STARTUP (startup system or interface)

WAIT (wait for completion of startup or shutdown)

KILL (kill/abort system or interface)

INITIALIZE (initialize system tag definitions or specified sections of shared memory)

UPDATE (update tag definitions within PHD)

RESTORE (restore shared memory)

SAVE (save contents of shared memory and remove them from system access)

EXIT (exit PHDMAN)

HELP (display PHDMAN help)

Hands-on Exercises - PHDMAN and Archives

Exercise 1

In this exercise you will examine the archive configuration of the training system.

1. Using PHDMAN, display the list of archive files currently connected to this system: SHO ARC

What are names of the currently connected *archive files*? _____

What are the names of currently connected *logical archives*? _____

2. What is the minimum, maximum, and default *archive file size* on this system? SHO PAR

MAX_ARCFILEKB min.= _____ max.= _____ default = _____

3. Using the Explorer, determine the current size of the archive file in use at this time:
phdserver\archive\SCAN0000n.DAT current size = _____

4. Display the list of *logical archives* defined on this system: SHO LARC

What are the names of the logical archives? _____

What is the maximum number of archive files in the *active* logical archive? NFILE=_____

5. Display the status of the continuous store process (CONSTORE): SHO SYS

What is the storage interval on this system? Interval = _____

What is the offset of the storage interval to the system clock (seconds)? off = _____

Hands-on Exercises - PHDMAN and Archives, continued

Exercise 1, continued

6. View this system's PHD integrity monitor (PHDMON) configuration for the CONSTORE process: SHO MON

The configuration shows what PHDMON will do if CONSTORE goes to either of these states:

HUNG - Process was idle longer than is acceptable.
GONE - Process disappeared abnormally.

What actions (log, warn, restart) will PHDMON take if the CONSTORE process goes to the GONE or HUNG state?

LOG - puts entry in PHDMON log file
WARN - executes PHDMON_ACTION.cmd
RESTART - executes PHDMON_ACTION.cmd

7. The PHDMON_ACTION.cmd file defines what actions PHDMON takes for a specific system. Use Explorer to look at the contents of the file (Right Click/Edit).

This file can be customized to send email to specific users for WARN action.

Hands-on Exercises - PHDMAN and Archives, continued

Exercise 2

In this exercise you create new archives. The commands you manually perform here are the same commands performed in the PHD coldstart command file.

1. Create a new logical archive GUESTnn (where nn is your machine number): DEF LARC larcname
2. Set its maximum number of files as 3: SET larcname:NFILE 3
3. Create a new archive file Gnn whose size is 50 Kbytes: CRE ARC arcname 50
4. Connect the archive to the PHD system as the active archive for the newly created logical archive:
CON arcname larcname ACTIVE
5. Verify the newly created archive is now connected: SHO ARC
6. Disconnect your newly created archive and verify the status: DIS arcname, SHO ARC
7. Delete the archive file.

Hands-on Exercises - PHDMAN and Archives, continued

Exercise 3

In this exercise you will start and stop the PHD system.

1. Shutdown the PHD system and save it: From the DOS prompt, enter PHDCTL, then enter STOP.
2. Using PHDMAN, check the status of the system: SHO SYS.
3. Restore the PHD system and restart it. Enter PHDCTL, then enter START.
4. Using PHDMAN, monitor the status of the system: MON SYS.
5. Start either the VTAG interface or the TEST interface, whichever is defined on your system:
STA INT <rdi_name>

Show the status of the interface: MON INT <rdi_name>

6. Check the PHD event log.

7. Examine in detail the coldstart/stop and warmstart/stop command procedures. **DO NOT OPEN THE FILES---**
That causes the file to execute. **Right Click/Edit** to view the file.

END OF EXERCISES

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