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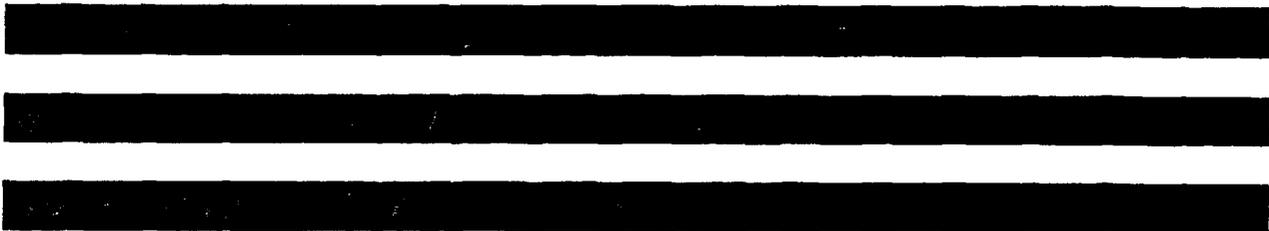
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**System Installation and Operation  
Manual for the EPA Third-Generation  
Air Quality Modeling System  
(Models-3 Version 3.0)**



EPA 600/R-99/057  
June 1999

# **System Installation and Operation Manual for the EPA Third-Generation Air Quality Modeling System (Models-3 Version 3.0)**

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and

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**Contract No. 68-W-99-002, Task Order 10**

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U.S. ENVIRONMENTAL PROTECTION AGENCY  
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## NOTICE

This Installation and Operation Manual constitutes Volume 9A of the documentation set for the Models-3 Third Generation Air Quality Modeling System. The U.S. Environmental Protection Agency through its Office of Research and Development partially funded and collaborated in the procedures described here under contracts 68-W1-0055 and 68-W-99-002 to Science Applications International Corporation. This Manual has been subjected to the Agency's peer and administrative review and has been approved for publication as an EPA document. Mention of trade names or commercial products are not intended to constitute endorsement or recommendation for use.

Significant portions of Models-3/Community Multi-scale Air Quality (CMAQ) software were developed by government employees and under a United States Government contract. Portions of the software are also based on information from non-federal sources, including software developed by research institutions through jointly-funded cooperative agreements. These research institutions have given the government permission to use, prepare derivative works, and distribute copies of their work to the public within the Models-3/CMAQ software release and to permit others to do so. EPA therefore grants similar permissions for use of Models-3/CMAQ software, but users are requested to provide copies of derivative works to the government without restrictions as to use by others. Users are responsible for acquiring their own copies of commercial software associated with the Models-3/CMAQ release and are also responsible to those vendors for complying with any of the vendors' copyright and licence restrictions. In particular users must obtain a runtime licence for Orbix from IONA Technologies for each CPU used in Models-3/CMAQ applications. Copies and documentation of Models-3 obtained from the National Technical Information Service (NTIS) are subject to NTIS cost-recovery charges.

Portions of I/O API, PAVE, and the model builder are Copyrighted 1993-1997 by MCNC- North Carolina Supercomputing Center, and are used with their permissions subject to the above restrictions. Rights and restrictions for copyrights and trademarks used throughout this document are listed in *Appendix E*.

Although efforts were made to make Models-3 user-friendly, it is a complex software system. Consequently, it is important that the system administrator read this Installation Manual before installing the system. Installation instructions must be followed closely. It is recommended that the system administrator contact EPA support before beginning installation. There are error conditions which can come from third-party software, and are not Models-3 problems specifically. For example, expired or unavailable SAS or Arc/Info licenses or versions not tested with Models-3 can result in error messages.

## ABSTRACT

Models-3 is a flexible software system designed to simplify the development and use of air quality models and other environmental decision support tools. It is designed for applications ranging from regulatory and policy analysis to understanding the complex interactions of atmospheric chemistry and physics. The June 1999 release of Models-3 contains a Community Multi-Scale Air Quality (CMAQ) modeling system for urban to regional scale air quality simulation of tropospheric ozone, acid deposition, visibility, and fine particles. Principal improvements since the initial release in June 1998 include the availability of a full port of Models-3 to Windows-NT based computers. This Installation and Operation Manual includes an overview of the system architecture, installation requirements, procedures for installation of the Models-3 server and clients, establishing users, Models-3 system start-up and shut-down, loading of data sets, description of system administration functions, and installation examples.

## FOREWORD

The Models-3 Community Multi-scale Air Quality (CMAQ) modeling system has been developed and improved under the leadership of the Atmospheric Modeling Division of the EPA National Exposure Research Laboratory in Research Triangle Park, NC. This June 1999 release is the first substantial upgrade to the initial Models-3 release of June 1998. Other than third-party costs as described in the Notice, the Sun Unix version of Models-3 is available without charge for use by air-quality regulators, policy makers, industry, and scientists to address multi-scale, multi-pollutant air quality concerns. The Windows NT version will be distributed through the National Technical Information Service.

In keeping with its capabilities Models-3 is a sophisticated and complex system. Consequently, this System Installation and Operation Manual is made available to guide the user's system administrator with the installation and maintenance of the Models-3 software. The new release of Models-3/CMAQ is another step in a process which we hope will unite the community under the common goal of advancing our knowledge and abilities to tackle critical problems of the future in far more effective ways than have been attempted in the past. Scientifically sound modeling systems, developed and supported by the community, are one method of achieving this goal.

F.A. Schiermeier  
June 1999

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## 1.0 INTRODUCTION

The Environmental Protection Agency (EPA) Third Generation Air Quality Modeling System (Models-3) consists of scientific models, datasets, tools, and a framework system that manages them. This document is intended to be used by UNIX and NT systems administrators to install and configure the Models-3 software.

The Models-3 system is designed to be installed at local autonomous sites. Each local site has its own UNIX systems administrator, computers, file server, and database server. The site may be connected to the Internet or be stand-alone. If the site does not have Internet access, the users will not be able to run the *Mesoscale Meteorological Model 5 (MM5)*, which is available only on the Cray computer.

The Models-3 system programs are of three types: framework, models, and tools (including third-party commercial software). The framework comprises programs that provide services to the user. The Graphical User Interface (GUI) is part of the framework. The framework provides services to move files, manage datasets, compile programs, and run studies. The models are FORTRAN programs that the user compiles through the framework. The tools are utilities that are already compiled and may be used by the user.

Models-3 was initially developed on a Sun workstation. Therefore, the Sun is the current server platform for Models-3, and workstations may be configured to share resources and serve other peer machines. The Sun Models-3 server is a Sun Sparc20 or higher, with a regular workstation operating system license.

On the Sun you may run the framework, most models, and all of the tools. Client machines may be either Suns or Personal Computers (PC) with the Windows NT Workstation operating system. The client Suns can run the framework GUI, models, and tools. The NT clients can run the framework GUI, models, and some of the tools. The following configurations are possible:

- One Sun - one machine is the client and server.
- Multiple Suns - one machine is the server with one or more clients.
- One Sun and one or more NTs - the Sun is the server and the NTs are clients.
- Multiple Suns and one or more NTs - one Sun is the server while the other Suns and NTs are clients.

There are two advantages to using the NT Workstation machines as clients. First, under the Sun the Models-3 Emissions Projection processor (MEPRO) component of Strategy Manager must be run with the assistance of SoftWindows, a Microsoft Windows emulator that is inefficient. MEPRO runs quickly on the NT. The second advantage of the NT Workstation is software price. The NT Workstation Statistical Analysis System (SAS) license is much cheaper than the Sun SAS license. The NT Workstation SAS license will not work on an NT Server. The

disadvantage of the NT Workstation is that the ARC/INFO licenses will not float between the machines without the presence of an NT Server. Both SAS and ARC/INFO must be present on a machine to execute the emissions models.

A Cray may be used as a secondary client. You may not run the framework GUI from a Cray, but you may execute some models on it. Setup for the Cray is not addressed in this document. In addition, the Models-3 servers are being ported to a Silicon Graphics Inc. (SGI) system and Windows NT and should be available in the near future.

**Note: Since there are many assumptions regarding computer configurations and resources, system administrators should read this ENTIRE document before attempting to install the system.**

## 1.1 Overview of Installation Tasks

1. Read the ENTIRE installation manual before beginning installation. The detailed procedure begins in Section 1.3.
2. Verify that the Sun, which is to be the Models-3 server and a client, is configured properly. Check disk space (at least 30 Gigabytes), memory, and user identifications (IDs). Third party software, not provided by EPA, must be installed first. (See Section 3.2). [NOTE: There are many reasons why the install scripts can fail. The more changes you make to the expected configuration the greater the chance something will not work causing the install scripts to fail. In general, the scripts work best when you have a /home/models3 directory that has been automounted, software residing in the common SUN software directory /opt and scripts in /usr/local/bin. These expected directories can be changed if you understand the install process or contact us for instruction for your special case.]
3. If you will have other clients, (Suns or NT Workstations) verify that they are configured properly. Check disk space, memory, and user IDs. Third party software, not provided by EPA, must be installed.
4. If you wish to run MEPRO from Models-3 Strategy Manager from the Sun, configure the user-supplied commercial SoftWindows package. This is not on the installation tape.
5. After all files are installed, add objects to the database for your site. Users, hosts, printers, and editors must be registered through the System Administration subsystem. This is done from your Sun Models-3 server.
6. On the Sun Models-3 server, set up cron jobs to clean up after Models-3.
7. If you wish to install Models-3 clients on one or more Suns, run the installation script on

machines.

8. If you wish to install Models-3 clients on one or more NT Workstations, install the CD's for NT Workstation directly onto your NT. This dumps all the software on the Sun disk and creates a special area for NT executable. The Samba software, which allows the NT to mount the Sun disks is included on this tape. Install the Samba software on the Sun and test from the NT. On the NT, run a final installation script which copies certain files from the Sun into C:\bin. Install war-ftp software on the NT so files which are not accessible from shared disks, may be sent between the Sun and the NT.

## 1.2 Directory and File Sizes

Models-3 utilizes many software packages (Tables 1-1 and 1-2). Please refer to the Models-3 user Manual for a description of address environment variables. Most of the software resides on the Sun Models-3 server and is mounted from the Sun and NT clients. No additional software is necessary to run a Sun Models-3 client if all directories are mounted from the Sun Models-3 server. There is additional software for the NT client.

The amount of disk space required in the user's \$HOME directories varies. The visualization tools and Strategy Manager models copy files into the \$HOME of the user. If the user is dealing with a large domain, this may result in copying up to 2 Gigabytes (GB) of data into \$HOME.

Software	Location	Size Megabytes	Notes
<i>Sun Server Software</i>			
framework	\$M3HOME/framework, /usr/local/bin	187	
datasets	\$M3HOME/datasets \$M3MMEPPS/inv	14179 725	More detail in Section 8.0.
models	\$M3HOME/models	176	
executable	\$M3HOME/exec	525	
tools	\$M3HOME/tools /usr/local/bin	436	

**Table 1-1.** Models-3 Software, Size, and Location

Software	Location	Size Megabytes	Notes
FORTRAN 4.2	/opt/SUNWspro	405	
SoftWindows 4.0	/opt/SoftWindows2	87	Needed to run MEPRO from Sun (under Strategy Manager)
Object Store	/opt/OStore, /etc/rc2.d	39	
Orbix	/opt/Orbix	94	
Galaxy 3.0	/opt/galaxycxx	93	
ARC/INFO v 7.2	/opt/arcexec70, /etc/rc2.d	473	
SAS Version 6.12	/opt/sas	401	
Samba	/usr/local/src /usr/local/lib /usr/local/bin	9	
m3 scripts	/usr/local/bin	20	Including internet browser and copies of Models-3 Vis tools.
supplemental datasets	\$M3HOME/datasets \$M3MMEPPS/inv	6913 455	More detail in Section 8.0.
<i>NT Workstation Client</i>			
FORTRAN	C:\Program Files\DevStudio	70	
Orbix	C:\Orbix	50	
Galaxy 3.0	C:\galaxy.cxx	159	
ARC/INFO v 7.2	C:\arcexe70, C:\flexlm	351	
SAS v 6.12	C:\sas	218	
WFTPD	C:\war24	1	
m3 scripts	C:\bin	1	

**Table 1-2.** Commercial Software, Size, and Location

### 1.3 Installation Checklists

The following checklists are to be used during installation of the Sun Models-3 server and a NT Workstation Models-3 client.

#### 1.3.1 Sun Installation Checklist

The following checklists can be used during installation of the Sun Models-3 server. You might not understand all of the steps until you have read the entire installation manual.

## Sun Installation Checklist

1. Read the ENTIRE installation manual.
2. Verify that the Sun used for the Models-3 server has enough disk space (at least 46 Gigabytes) and memory (256 MB). Disk space will be needed for software that comes from the tapes and also third party software. The tapes will use space as follows:

“Typical” Sun installation will need the following space for installation of all tapes:  
(NOTE: sizes below were determined by issuing a “du -ks” on specific directories.

ALSO the numbers below imply using the option to delete tars. Please expect to use a lot more space if you don’t use the delete tar option.)

- a.) Software from tapes to /opt: 229450k

Orbix	92395k
ostore	45517k
galaxycxx	91538k

- b.) Software from tapes to /home/models3: 24067250k

framework	191520k
datasets	21692076k
exec	611306k
models	1279553k
tools	761218k

- c.) Software from tapes to /usr/local/bin: 7100k

- d.) Software from tapes to /etc: 3k

**NOTE:** Make sure root can write to all file systems that the tape will be writing to.

3. Verify that any Sun which will run emissions models has at least 1 GB of swap space.
4. Verify that Sun runs Solaris 5.6, development version.
5. Add appropriate user IDs (models3, etc.) and group "models3" to Sun server and clients.
6. Verify that Sun hosts information is complete. The machine will need to act like it is networked if it is a standalone machine.

7. Verify that users' home directories are available from all Suns (both server and clients) that will run Models-3.
8. Verify that the Sun Models-3 server's disk is mounted by other Suns (including clients) that will run Models-3.
9. If you wish to build any models for the Sun, install the Fortran compiler.
10. If you wish to run emission models from the Sun (i.e. MEPPS), install ARC/INFO (7.2), SAS (6.12), and SAS/Full Screen Processor (FSP). Make sure all third party software works before you install the tapes. [Note: If you don't install all packages, expect a corresponding error message in the script logs that can be ignored.]
11. If you wish to run MEPRO under the Strategy Manager from the Sun, install SoftWindows 95 version 4.0.
12. Install an Internet browser in /usr/local/bin on your Sun. The Help System will use this.
13. Create the \$M3HOME directory and make sure all clients can mount it. It should be owned by "models3" and in "models3" group. On a typical installation this will be /home/models3.
14. Make sure you have space for Galaxy and Orbix directories. They will reside on the Sun server and should be mounted on all Sun machines that will act as Models-3 clients.
15. Verify that your system has a domain name. The scripts use your workstation name concatenating it to the domain name. For this reason, if you are using Network Information Service (nis), the install scripts might fail. To check, at your SUN prompt type host name [an example response: temp9]. Then type domain name [an example response: rtpnc.epa.gov]. The two concatenated would be temp9.rtpnc.epa.gov which is a valid full name. If you don't have a valid full name, make note of it. After the install you will need to modify some files. You will need to modify /usr/local/bin scripts [m3env.csh and m3runEnv.sh] to reflect your environment. Also you will need to modify \$M3HOME/framework/config files [Orbix.cfg, and Orbix.hosts] and under each check the /Repository/\*.imp files. Finally, you will need to do a restart of install process 19 on the database after moving models3.db.bak to models3.db in the \$M3HOME/framework/db directory. Contact us before completing these adjustments.

## **YOU ARE NOW READY TO INSTALL THE TAPES**

16. As root, run the installTape1.sh script from the Sun. **Be sure to input the proper site ID!** This ID should be on your tapes and the front of this Installation Manual. A typical way to extract the first script is to use the command -- tar xvf /dev/rmt/0

(a.) Install scripts for all tapes are the first tar file on the tape. Untar the scripts and install the tapes in order. The scripts' names for the 8mm tapes are as follows: installTape1.sh, installTape2.sh, installTape3.sh, installData1.sh, installData2.sh for tapes 1-5 respectively.

(b.) If you wish to understand the install process review the install scripts. The three "installTape" scripts are actually all the same script with different names as are the two "installData" scripts. You really have to look at only two scripts.

(c.) As you go through the installation process, pay particular attention to any errors that might show up in either /tmp/restart.txt, /tmp/installTapeX.log.\$\$ or /tmp/installTapeX.tar.log.\$\$ (where X refers to the tape number and \$\$ is the process id number of the script when you run it. All of these files should be automatically made in the /tmp directory and can be used to pinpoint errors or sections of the install process that will need to be re-run because they failed.

When the script finishes normally, copies of the log files and the restart file will be made in M3HOME/logs where M3HOME is the location you have chosen for your models3 home (usually /home/models3).

(d.) If you need to re-install anything use the restart option. For example, if you need to re-run step 13 run the install script by typing the following at the Unix prompt:

```
/tmp/installTape3.sh -restart 13
```

(e.) In the restart.txt files references to restart points are as follows for the 8mm tapes:

Tape 1 restart 1-5

Tape 2 restart 6-9

Tape 3 restart 10-21

(f.) Note: If an error occurs, you will usually see an error message in the log files but still see the message "RESTART X COMPLETED". In such a case, you should use as the restart number, the number in the position indicated by "X" in the "RESTART X COMPLETED" message following the error message.

**HOPEFULLY YOU HAVE NOW COMPLETED A FULL INSTALL** – if you have any errors about which you are unsure, please contact us.

17. Verify that the Object Store database is running by typing "ps -aef | grep os" and viewing the two processes, osserver and oscmgr4.

18. Verify that the site ID and Models-3 server host name have been set properly by typing "grep SITE /usr/local/bin/m3\*" and "grep HOST /usr/local/bin/m3\*".



```
setenv LD_LIBRARY_PATH
/usr/local/lib:/usr/lib:/usr/ucblib:/usr/openwin:/opt/SUNWspro/lib:/usr/dt/lib
```

These values might be different on your system depending on where libraries are located and what window manager you use. See visualization tool documentation for details.

**YOU SHOULD NOW BE READY TO RUN** – try running models3 by starting the system with command m3run. You will need to be logged in as models3. Make sure you source m3env.csh

Please contact us if you have questions.

### 1.3.2 NT Installation Checklist

1. Verify that any NT Workstation that serves as a client uses the NTFS file system.
2. Verify that the NT Workstation runs NT 4.0, service pack 3.
3. Set the NT workgroup to "MODELS3" in network identification.
4. Add appropriate user IDs and group "models3" to NT Workstation clients.
5. If you wish to run any models from the NT, install the FORTRAN compiler.
6. If you wish to run emissions models from the NT, install ARC/INFO, SAS, and SAS/FSP.
7. Install a web browser and make it known to the NT operating system.
8. Create the NT \$M3HOME directory on the Sun Models-3 server and make sure all clients can mount it.
9. From the Sun, load the NT 8mm installation tape and run installNT.sh. **Be sure to input the proper site ID!** If loading from a DLT, the tape contains the NT software too.
10. Install and configure Samba software on the Sun.
11. From the NT, add GALAXYHOME to the global registry as user "administrator."
12. From the NT, run the install.bat script. This should be done under the "administrator" login.

13. Users must set their WFTPD password from the NT and the Samba password from the Sun.

## 2.0 ARCHITECTURAL OVERVIEW

Models-3 is designed using the client-server architectural model. One machine acts as the database server, running several framework server programs. There is one server for each of the main components in the framework (e.g., M3DS for Dataset Manager, M3SP for Study Planner). These framework servers use a communications package called Orbix to communicate to the GUI (M3GI), which may be run on the server and/or on client machines.

### 2.1 Server

The server machine must run the ObjectStore database processes, the Models-3 framework servers, and an Orbix process. Also, it may be the main file server and the license server for the third-party commercial tools, and may run the framework client GUI program. One machine acting as a client and a server is the minimal configuration for Models-3 and should be sufficient to run the system.

### 2.2 Clients

#### 2.2.1 Sun Solaris

If more than one person will be using Models-3, client machines must be configured regardless of whether the server has more than one CPU. The client machines must be able to see (via the Network File System or NFS) the \$M3FRAME area and the Orbix directory. It should share the /usr/local/bin that the server uses and run an Orbix process and the framework client GUI programs. It is not necessary to mount the ARC/INFO, SAS, FORTRAN, and SoftWindows directories if the user sets them up in the framework to execute from another machine and display back to the client machine. It might be faster, however, to use the client Central Processing Unit (CPU) to run these tools, which means they must be mounted.

#### 2.2.2 Microsoft Windows NT Workstation

If more than one person will be using Models-3, client machines must be configured. The client machines must be able to see (via Samba software running on the Sun server) the \$M3FRAME area. The client must run an Orbix process and the framework client GUI programs. ARC/INFO, SAS, and FORTRAN must be installed on each NT Workstation. The NT operating system will not allow display to or from a remote machine.

### 2.3 Communications

The Orbix communications package allows only **one person to use the Orbix process per machine**. When the Orbix process is started, it takes the \$DISPLAY of the current user and sends all windows to that particular machine. If a second person logs into the machine and sets

the display to go to his or her own machine, the Orbix daemon continues to display to the first machine.

Since Orbix is not available on all platforms (Cray being the exception), File Transfer Protocol (FTP) is used to transfer and kick off processes remotely. For this reason the users must configure their \$HOME/.rhosts file to allow such transfers. On the NT Workstation, FTP access is not provided by the operating system. The program, WFTPD, must be installed to allow files to be moved between machines.

## **3.0 INSTALLATION REQUIREMENTS**

### **3.1 Hardware**

At the time of the Models-3 version 3.0 release, the server system runs on a Sun SparcStation. The minimum processor is the Sparc20; however, a Sparc Ultra 30 will provide for better model performance. The minimum amount of memory is 256 Megabytes (MB). This machine should be configured with 1 GB of swap space. Peripheral devices such as printers are optional. If they do not exist, then some Models-3 features will not be operational. The release is on a 8 mm tape or a DLT so a tape drive is required. The minimum amount of disk space necessary is 46 GB.

The client system will run on a Sun SparcStation or a Windows NT Workstation. The Windows NT machine will need 256 MB of memory and a paging file size of over 100 MB. The NT Workstation should use the NT File System (NTFS).

### **3.2 Software**

The Models-3 system includes commercial third-party tools, freeware, EPA-developed and EPA-funded software and datasets. These elements are all tied together by the Models-3 framework software. The framework provides a GUI from which users may start the other tools and manipulate models and datasets. Since the system comprises many programs that have been created by many different groups, the installation is somewhat complicated. It is important to follow the directions carefully. Table 3-1 lists all the packages integrated by the Models-3 framework software.

Key: X = available

Software	Version	S u n	N T	C r a y	Notes
<i>Models-3 Models</i>					
BCON	1.1	X	X		
CCTM	1.4	X	X		
ECIP	1.2	X	X		
EMPRO	3.0	X	X		
include	1.2	X	X		Replaces ICL dir.
ICON	1.1	X	X		
JPROC	1.2	X	X		
LUPROC	1.0	X	X		
MCIP	1.3	X	X	X	
MECH	1.2	X	X		
MEPPS	3.0	X	X		
MEPRO	1.2	X	X		Sun requires SoftWindows.
IDA (MIDPRO)	3.0	X	X		
PDM	1.1	X	X		
PROCAN	1.2	X	X		
<i>Models-3 Tools</i>					
CVS	1.10	X	X	X	Cray not in distribution.
Grid Viewer	Sept. 17, 1998	X	X		
I/O API	2.3	X	X	X	
File Convertor (MIDPRO)	3.0	X			
m3bld	May 24, 1999	X	X		
M3GridSample	May 4, 1999	X	X		
M3SubsetTool	May 25, 1999	X			
mm5_to_v5d	May 20, 1999	X			
netCDF	3.4	X	X	X	
PAVE	1.6	X	X		
RCS	5.7	X	X	X	
Samba	1.9.16	X			Need if have NT clients.
setx.exe	1.0		X		

Table 3-1. Software Packages

Software	Version	S u n	N T	C r a y	Notes
tcsd	6.06.02		X		
Vis5D	5.0	X	X		
VisDriver	May 4, 1999	X	X		
<i>Models-3 Commercial Software</i>					
ARC/INFO	7.2.1	X	X		Not in distribution.
IBM Data Explorer		X			Not in distribution.
FORTTRAN 77 Compiler	Sun FORTRAN 4.0 Visual FORTRAN 5.0 Digital FORTRAN 5.0 Cray FORTRAN	X	X	X	Not in distribution. Will need at least one compiler.
Galaxy libraries and help server	3.0	X	X		
Microsoft Internet Explorer			X		Not in distribution.
Mosaic	2.0 or higher	X	X		Not in distribution.
Netscape	2.0 or higher	X	X		Not in distribution.
ObjectStore	5.1	X			
Orbix	2.3	X	X		
SAS + SAS/FSP	6.12	X	X		Not in distribution.
SoftWindows	95 version 4.0	X			Not in distribution.
WFTPD	2.4		X		

**Table 3-1.** Software Packages (continued)

### 3.2.1 Operating System

#### 3.2.1.1 Sun Solaris

The SparcStation must be running the Sun Solaris 5.6 operating system. This is required because some of the scientific models are configurable via compilation with FORTRAN 77. The emission models require large amounts of swap space. For this reason a /tmp partition sized at least 1 GB is recommended.

If Models-3 is run from more than one machine, the client machines should be Network File System (NFS)-mounted to the main server. This way, the clients may share third-party tools, the framework, scientific models, and datasets.

It is important to the Models-3 framework software that the domain is set properly. The system must have a domain name. If you type "domainname" and see nothing, your domain is not set.

It is also important that the hosts in NIS, NIS+, or /etc/hosts are set properly so that there are entries for the host and the full hostname plus domain. A sample entry in /etc/hosts would be of the format:

```
#
# Internet host table
#
127.0.0.1    localhost    loghost
161.80.55.13 sdcws1.sdc3.epa.gov sdcws1
161.80.55.20 sdcws6.sdc3.epa.gov sdcws6
161.80.55.22 sdcws8.sdc3.epa.gov sdcws8 mailhost
161.80.55.28 sdcws9.sdc3.epa.gov sdcws9
```

The system must contain a user group called "models3," as well as a user named "models3." The users must have home directories that are NFS-mounted across all machines that will run Models-3.

The system should run under OpenWindows, but it was developed under the Common Desktop Environment (CDE).

### **3.2.1.2 Microsoft Windows NT Workstation**

The PC must be running the Microsoft Windows NT 4.0 Workstation operating system. The operating system must be the workstation version in order to get the cheaper single-user SAS license. The machine must also be loaded with service pack 3. It must use the NTFS file system. The paging file size should be set to over 100 MB.

Since the NT environment is a client to the Sun server, the NT machine must be able to communicate with the Sun over Transmission Control Protocol/Internet Protocol (TCP/IP). Make sure the NT is networked and has TCP/IP installed.

The system must have a workgroup. You can check your workgroup by selecting Control Panel, then Network, and then the Identification tab. The workgroup should be "MODELS3." If you wish to use another name, you will have to reconfigure the Samba networking software that is on the Sun. This is accomplished by modifying the smb.conf file.

## **3.2.2 Third-Party Packages Installed Before Models-3 Installation**

### **3.2.2.1 Sun Solaris**

Several commercial software packages must be installed before installing the Models-3 distribution tape. If you intend to run and compile any models on the Sun, you must install the Sun FORTRAN 77 compiler. If you intend to run the emissions models (Models-3 Emission Processing and Projection System [MEPPS], Emissions Processor [EMPRO], and Emissions Inventory Data Analyzer [IDA]), you must install FORTRAN, ARC/INFO, and SAS. If you wish to run MEPRO from the Sun, you must install the Windows emulator SoftWindows on your Sun.

The Models-3 installation script will try to execute an ARC/INFO program so it is important that this package be tested before installing the Models-3 distribution tape. Since Models-3 comprises so many packages, some programs currently use hard-coded paths to reference third-party software. To avoid problems, you should install ARC/INFO in /opt/arcexe70, SAS in /opt/sas/sas612, and FORTRAN in /opt/SUNWspro. If you elect to install SoftWindows, it should reside in /opt/SoftWindows2. If you choose to install these packages elsewhere, the Models-3 installation program will create soft links to the directories in /opt. For this reason the installer must have write access to the /opt directory. The SAS/FSP software is not part of the standard SAS installation options but must be present to run MEPPS.

Because of some constraints with the development environment, the license path of ARC/INFO has been placed in some of the model scripts. If your FLEXlm license is not located in \$ARCHOME/sysgen/license.dat, create a link from your license file to this one or edit the scripts \$M3HOME/models/empro/bin/xarcinfo, \$M3HOME/models/mepps/bin/mepps\_bat, and \$M3HOME/models/mepps/bin/mepps\_models3. See Appendix C for a complete listing of Models-3 environment variables.

The help systems that come with the visualization Subsystem package and the framework rely on a copy of either Netscape or Mosaic residing in /usr/local/bin. If you do not have a copy of one of these packages installed in the proper place, the help for the visualization tools and framework will not be accessible.

### **3.2.2.2 Microsoft Windows NT Workstation**

Several commercial software packages must be installed before compiling and running models on the NT client. If you intend to run and compile any models on the NT, you must install the Visual FORTRAN 77 compiler. If you intend to run the emissions models (MEPPS, EMPRO, and IDA) you must install FORTRAN, ARC/INFO, and SAS. You should install ARC/INFO in C:\arcexe70, SAS in C:\SAS, and FORTRAN in the default location that should be C:\Program Files. The ARC/INFO software uses the flexlm license management software. This should be

installed in C:\flexlm. The SAS/FSP software is not part of the standard SAS installation options but must be present to run MEPPS.

The help system that comes with the framework relies on the use of an html browser. Explorer, Netscape, or Mosaic may be used. The browser must be installed so that the operating system knows where it is.

### **3.2.3 Software on the Models-3 Distribution Tapes**

The 8mm tape distribution is on one set of tapes for the Sun and one tape for the NT Workstation. Each tape contains an installation script and appropriate software. The datasets used for the tutorial are on the main Sun installation tapes (1 through 3 on 8mm tapes). Additional datasets are on the Sun supplemental tape. The DLT distribution has everything on one tape.

#### **3.2.3.1 Sun Solaris**

The Sun server's main tree is usually housed in /home/models3 but may be installed anywhere you have the disk space. This directory is \$M3HOME for the rest of this document. The \$M3HOME directory should exist before running the installation script. It should be mounted to any machine that will run Models-3. This directory has five main partitions: \$M3HOME/datasets, \$M3HOME/models, \$M3HOME/framework, \$M3HOME/exec, and \$M3HOME/tools (see Appendix B).

**Note:** The ARC/INFO package does not deal well with capital letters in a file path. For this reason, make sure that the path used for \$M3HOME is all lower-case letters.

The tape contains Galaxy libraries that are used by the framework GUI. These libraries are usually installed in /opt/galaxycxx and take up 93 MB. These libraries must be mounted on any machine that is going to run Models-3.

Orbix is a communications package used to transport data between the framework servers and the GUI clients. It is usually installed in /opt/Orbix and takes up 94 MB. This software must be mounted on any machine that is going to run Models-3.

ObjectStore is an object-oriented database management system used by Models-3. It is usually installed in /opt/OStore and takes up 39 MB. This should not be mounted on all machines. It is only seen on the main Models-3 server machine.

All of these packages may be located in the directories of your choice but may not be moved after installation without reestablishing links and address of the components. If the three commercial packages are not located in /opt, the installation script will create soft links to the

directories in /opt. For this reason, the installer of Models-3 will need write access to the /opt directory during installation.

If you intend to use Windows NT machines as clients, the Samba package will be loaded on the Sun server. The Samba software allows the Sun to serve files to the Windows NT machines. Samba must be installed in the /usr/local tree. This is on the Windows NT tape that must be loaded on the Sun hard disk. See Section 4.0 for details on installation of these packages.

### **3.2.3.2 Microsoft Windows NT Workstation**

The binaries to run the Windows NT server are on the tape and will be installed anywhere you have the disk space. This directory is \$M3HOME for the rest of this document. This directory has five main partitions: \$M3HOME/datasets, \$M3HOME/models, \$M3HOME/framework, \$M3HOME/exec, and \$M3HOME/tools. Usually the models, datasets, exec, and tools directories will be mounted from the Sun server.

The tape contains Galaxy libraries that are used by the framework GUI. These libraries are usually installed in C:\galaxy.cxx and take up 159 MB. These libraries must be loaded on any machine that is going to run Models-3.

Orbix is a communications package used to transport data between the framework servers and the GUI clients. It is usually installed in C:\Orbix and takes up 50 MB. This software must be loaded on any machine that is going to run Models-3.

The Models-3 Windows NT framework software will be loaded on the Sun server and mounted from the NT using the Samba software.

Some PC utilities are distributed on the tape. A software package allowing the users to FTP files to and from the NT workstation is included.

## **3.3 Security**

Models-3 has several layers of security. In order to use the computer, there is a requirement for a login and password. In order to use the Models-3 system, the user login must be added to the database by the Models-3 system administrator. The data in the database is controlled by user access lists. This works in a similar fashion to UNIX group permissions.

### **3.3.1 User Identification**

In order to run Models-3 a computer user ID is required. This user ID should be a member of the group "models3." All Models-3 users must be entered into the Models-3 framework database before they are allowed to use the framework GUI (see Section 9.2). No password is

required to enter Models-3 because it is assumed that a password is required to login to the computer. The client computer UID and the Models-3 server UID should be the same. Users should have the same ID and password for all computers on the local area network (LAN).

A special user ID called "models3" must be created. This user is the Models-3 super user and has special privileges. This user can remove items that other users cannot and has special privileges inside the framework GUI as well.

### **3.3.2 File Access**

All files under \$M3HOME on UNIX are owned by user "models3" and are in group "models3." All files generated by Models-3 users should belong to group "models3" and have group write permissions enabled. This way, Models-3 users can share programs, directories, and datasets.

The system does allow users to tag certain executables as "official," which means write permissions are taken away from the file. Only the Models-3 framework administrator can change permissions on these write-protected files. These official programs are moved to a directory under \$M3HOME/exec.

### **3.3.3 File Transfer**

The framework moves and copies physical files in order to run models on user-specified machines. During some of these operations, files must be moved to machines that are not NFS mounted. During these moves, the framework uses FTP. In order for this to work successfully, the user may be prompted for a password and a user ID, which allows a login to the remote host. This password may be stored in the database and is used in construction of a shell script that resides in the \$M3TEMP directory. Once the script has been run, it will be deleted automatically.

In order to use FTP on UNIX, the user must have a .rhosts file in the \$HOME directory. The .rhosts file must include the names and addresses of any machine from which the user may wish to execute models. In order to use FTP on the Windows NT, the WFTPD software must be installed and configured.

## 4.0 INSTALLATION OF MODELS-3 SERVER

The main installation script is a simple Bourne shell script that should be run as "root" on the Sun machine which is the Models-3 server. Before running the script, make sure that the computer has been set up as specified in previous sections of this document. Make sure that the directory chosen to be \$M3HOME exists and is writable by "root." Make sure that your main database file, \$M3FDBNAME, is on the hard disk of the machine that runs the database server process, osserver, generally the Models-3 server. Installation scripts, release notes, and the bill of materials are in \$M3FRAME/installdb.

### 4.1 Installation Tapes (8mm format)

The installation tapes contains files in the tar format. There are 10 tar volumes on the first 8 mm tape, separated by the end of file marker. The first installation tape set contains /tmp/installTape1.sh (installation script), \$M3FRAME/framework, \$M3FRAME/tools, \$M3FRAME/exec, selected files in \$M3FRAME/datasets, \$M3FRAME/models, selected \$M3FRAME/models, Galaxy, Orbix, and ObjectStore. All of the installation tapes have an install script. Tapes 2 and 3 have installTape2.sh and installTape3.sh respectively. All of the scripts are the first tar set on a tape. Some data files in \$M3FRAME/datasets are on the two supplementary data tapes. These are installed using installData1.sh and installData2.sh.

### 4.2 Installation Script

Sample output from running the server installation script used to install the Models-3 software is in Appendix A. The scripts installTape1.sh, installTape2.sh, and installTape3.sh gathers information; dumps files from the tape to the disk; configures the framework, Orbix, and ObjectStore; and customizes the database. It also modifies the ARC/INFO installation. It includes 12 functions. The functions are:

- set\_info
- get\_info
- load\_frame\_data\_models\_tools
- load\_galaxy\_orbix\_ostore\_from\_tape
- load\_data
- set\_usr\_local\_bin
- set\_third\_party\_links
- install\_Orbix
- install\_OStore
- modify\_demo\_database
- set\_perms
- setup\_arc\_libs

Remember to use the installDLT.sh script if installing from DLT. It also contains these functions and several more to install the supplemental and NT files.

### 4.3 Running the Installation Script

You must login to your Models-3 server as "root," extract the installation program from the tape, and execute it. You must know the device name of your tape drive. In the example /dev/rmt/0 is used. Use the "tee" command to pump all output to a log file. **WARNING: The installation will overwrite any existing Models-3 database. If you wish to save an existing database, copy \$M3FRAME/db/models3.db to another location and return it to the Models-3 tree after the installation.**

The following is a walk-through of the installation script and a brief explanation of what you will see and what you will be asked to enter. (Note: Some final hints and changes will be output during the use of the install script. Please make note of this while you run the scripts.) Read this section before you begin to make sure you have all the proper rights and directory mounts. Start by entering the following commands (substitute "installDLT" for "installTape#" if installing from a DLT):

Note # refers to tape 1,2, or 3

```
su - root
tar xvf /dev/rmt/0 /tmp/installTape#.sh
cd /tmp
./installTape1.sh | tee -a /tmp/install.out
or
sh -x ./installTape1.sh | tee -a /tmp/install.out
```

If the install fails, there is a restart capability described at the end of this section (4.3).

- **set\_info:** This function prompts you for the base directory for the Models-3 system. The default is /home/models3. If you want to use another directory path, you must make sure it exists, is writable by "root," and contains only lower case letters. It will also prompt you for the location to install Galaxy, Orbix, and ObjectStore. You may overwrite the defaults if you do not have enough space to put the files in /opt. When you are asked if the machine is a server, type in "y" for yes. You will be asked to enter the name of your tape drive. Enter the main device name (i.e. "/dev/rmt/0"). The script will use the "mt" utility to test the tape and will set it at the correct spot to access the next tar partition on the tape. It writes inputs to /tmp/restart.txt which will necessary if the installation must be re-run. Note: (One can review the restart.txt or install.out file in /tmp to determine if certain errors have occurred in the install process.)
- **get\_info:** This function reads information from /tmp/restart.txt that was input by the user during a previous run of the Models-3 installation. If the file does not exist, it calls set\_info.

- **load\_frame\_data\_models\_tools:** This function pulls the \$M3HOME files off the tape and places them on your disk. The database files are under \$M3HOME/db (which is equivalent to \$M3FDBPATH). These files must be on the hard disk of the database server. It asks if the user wants to remove previous versions of Models-3 before installing the new version. Restart point 1 is at the beginning of this function.
- **load\_galaxy\_orbix\_ostore\_from\_tape:** This function pulls the Galaxy, Orbix, and ObjectStore files off the tape and places them on your disk. This takes less than 30 minutes. Restart point 2 is at the beginning of this function.
- **load\_data:** This function pulls dataset files off the tapes and places them on your disk. Since there are many datasets to support the tutorial case, this tar may take up to 8 hours. Restart points 3 through 14 are in this function.
- **set\_usr\_local\_bin:** This function copies 10 files to your /usr/local/bin. If this directory does not exist, it will try to create it. This directory should be shared between all Models-3 machines through NFS to avoid inconsistencies between machines. The /usr/local/bin/m3env.csh and /usr/local/bin/m3runEnv.sh scripts will be modified by the installation script and customized for your site. Restart point 15 is at the beginning of this function.

After this function is run, the main installTape#.sh will source the /usr/local/bin/m3runEnv.sh to get the proper Models-3 environment, which it needs to execute programs and configure the database.

- **set\_third\_party\_links:** This function sets links for ARC/INFO, SAS, FORTRAN 77, and SoftWindows if they are not in the expected directories. Please note that "root" must have write permission to /opt. Also note that SAS is expected to be two directory levels down from root, so a directory is created and the link goes inside the /opt/sas directory. Restart point 16 is at the beginning of this function.
- **install\_Orbix:** This method modifies the Orbix configuration files in \$M3HOME/framework/config. The configuration files do not work with environment variables so the \$M3HOME path and the domain name of the system must be modified. The script will do this for you unless you do not have a "typical domainname." In the Repository subdirectory, all the files must be modified for the same reasons. Restart point 17 is at the beginning of this function.
- **install\_OStore:** This function installs the database startup files in /etc/rc2.d so the database will come up when the computer boots. It also executes the database startup script so the osserver and oscmgr4 processes are started. You can use the "ps -aef" command to verify that the two ObjectStore processes started. The next step will not

work if the database is not up. **Note:** When the database comes up, it creates a file and a directory in /tmp. The ObjectStore files in /tmp should **NEVER** be deleted by hand. Restart point 18 is at the beginning of this function.

- **modify\_demo\_databases:** This function can be run once the database is operating. It relocates the database schemas. This is essential so that the framework executables can find the correct database and validate themselves against the schemas. The datasets, programs, and studies in the database contain the host and file names of machines at EPA. This function runs three programs to modify the database so the objects look for files on the Models-3 server. Restart point 19 is at the beginning of this function.
- **set\_perms:** This function sets permissions on files in the \$M3HOME directory tree. It changes the ownership of all files to user "models3" and group "models3." Restart point 20 is at the beginning of this function.
- **setup\_arc\_libs:** This function changes the ARC/INFO Library Locator. Detailed U.S. data, including water bodies and TIGER/Line roads, are too large for storage as single ARC/INFO coverages. These data are stored as multiple coverages tiled by county and are organized using ARC/INFO Librarian. Access to these data require that Librarian's "Library Locator file" (visible from an "Arc": prompt as \$ARCHOME/tables:arc:libraries) be updated to include the directories in which they are stored. "root" must have write access to the ARC/INFO directory tree to configure the Librarian. If you have not setup ARC/INFO on the Sun because you intend to run it on the NT, the ARC commands will fail. This will not damage the Sun installation in any way. Restart point 21 is at the beginning of this function.

If the install fails and you have to change something on your computer to continue, you may restart the /tmp/installTape#.sh script with the appropriate command line option and restart number.

```
sh -x /installTape1.sh -restart 5 | tee -a /tmp/install.out
```

It reads the file /tmp/restart.txt to get the parameters that were input during the first run of installTape1.sh.

Verify that the Object Store database is running by viewing the two processes, osserver and oscmgr4:

```
ps -aef | grep os
```

Verify that your site ID and Models-3 server host name have been set properly by typing:

```
grep SITE /usr/local/bin/m3*
grep HOST /usr/local/bin/m3*
```

#### 4.4 Configuring SoftWindows

The SoftWindows 95 package is a user-provided Microsoft Windows 95 emulation package that allows users to run windows programs from the Sun. This package is necessary if you do not have a Windows NT machine and wish to run the MEPRO model. MEPRO is a Microsoft Windows-based model. The SoftWindows 95 package must be configured to run the MEPRO model in batch as well as in interactive mode. Perform the following steps to configure SoftWindows:

1. As "root," install SoftWindows 95 with all the defaults except use /opt/SoftWindows2 as the home directory instead of /opt/SoftWindows.

2. As "root," create a SoftWindows link.

```
cd /opt
ln -s SoftWindows2 SoftWindows
```

3. As "root," link the executable to swin2.

```
ln -s /opt/SoftWindows2/bin/SoftWindows95 /opt/SoftWindows2/bin/swin2
```

4. When you create your hdf file (C: hard drive file) put it in /opt/SoftWindows2/WIN95-root.hdf. This is created the first time you try to execute /opt/SoftWindows2/bin/swin2 from Unix.

```
chgrp models3 WIN95-root.hdf
chmod g+wr WIN95-root.hdf
```

5. Change the C: drive name in the configuration file \$M3FBIN/.swin2config

```
DRIVE_C_FILE_NAME          $$SWINHOME/MS-WIN-311 hdf
    to be
DRIVE_C_FILE_NAME          $$SWINHOME/WIN95-root.hdf
```

6. Change code in \$M3FBIN/.swin2config to blank out the G: drive.

```
DRIVE_G_FSA_DIRECTORY     $$SWINHOME/windows
    to be
DRIVE_G_FSA_DIRECTORY
```

7. Modify the file /usr/local/bin/m3run.

```
if [ ! -f $HOME/.swin2config ] ; then
    cp $M3FBIN/.swin2config $HOME
fi
```

change it to

```
if [ ! -f $HOME/.swinconfig ] ; then
    cp $M3FBIN/.swin2config $HOME/.swinconfig
fi
```

8. As user "models3," copy the Models-3 configuration file to your home and create a link. Start SoftWindows 95. It should read this file when it starts up.

9.

```
cp $M3FBIN/.swin2config $HOME/.swinconfig
ln -s $M3HOME/models/mepro .
/opt/SoftWindows2/bin/swin2 &
```

10. Users can not start programs from command line outside of Windows 95. The "models3" user must setup MEPRO to run from the startup menu.

In SoftWindows go to

- Start
- Settings
- Task Bar
- Start Menu Programs
- Add
- H:\mepro\sbrts.exe H:\mepro\mepro.sbp
- Next
- Startup (menu to put this program into)
- MEPRO (name of new menu option)
- Finish
- OK

11. The E: drive should be mapped to \$HOME/mepro, which is a link in your \$HOME to the main source tree. The H: drive is mapped to the \$HOME on Unix. The \*.dll files for MEPRO should be copied into C:\WINDOWS.

```
c:
cd WINDOWS
copy e:\dll\*.dll c:
```

12. SoftWindows 95 allocates F: to the CDROM. MEPRO needs this drive to point to /tmp. Change the CDROM to M:

In SoftWindows go to

- Start
- Settings
- Control Panel

```
System
Device Manager
CD-ROM
Insignia CD-ROM drive
Settings
Change "Start drive letter" and "End drive letter" to M
OK
OK
YES (let Windows 95 restart itself)
```

Get out of SoftWindows 95 by selecting File and Exit from the top menu. When you exit SoftWindows 95, you do NOT want to save configuration changes or create a TurboStart data file.

13. From UNIX get a new configuration file. The next time you come into SoftWindows 95 MEPRO will start up properly.

```
cp $M3FBIN/.swin2config $HOME/.swinconfig
```

14. **WARNING: If you get a warning about the C disk being mounted read only, add more permissions to /opt/SoftWindows2/\*.hdf files. All the users will share this file.**

#### 4.5 Adding System Objects to the Database

A default database is provided with the distribution tape. This database contains the data used to run the tutorial. This database requires some additional objects specific to your configuration. "Registration" is a term used in Models-3 to denote entering information in the database about physical files or devices that already exist. To use the system, the Models-3 administrator (models3) must register the valid hosts (see Section 9.4), devices (see Section 9.5), users (see Section 9.2), and editors (see Section 9.13.1).

All users in group "models3" have write access to the database (\$M3FDBPATH). Section 9 gives detailed examples of how to run the System Administration tool. This tool, \$M3FBIN/M3SysAdmin, does not have a GUI. It is a character-based program. To start up the tool, login as "models3" and type:

```
source /usr/local/bin/m3env.csh
$M3FRAME/bin/orbixd -t &
```

Open up another window while you are logged in as "models3" and type:

```
source /usr/local/bin/m3env.csh
$M3FBIN/M3SysAdmin
```

You will see a lot of information scrolling across the first window (see Section 9). This is the log for all the system activity.

#### 4.5.1 Site ID Numbers

Each site must have a unique site ID. The site ID must be unique across all Models-3 systems. This makes it possible in the future to export objects created by Models-3 in a local database and send it to a master database. When the object is imported into the master database, it will have a unique ID. The Models-3 release includes a fresh database. ID objects are loaded into the database for each local site. The name of each site ID is the two-letter postal code (if available, otherwise SN code is used) plus a sequence number. For instance, Environmental Protection Agency/Research Triangle Park (EPA/RTP) is in North Carolina, and they are the first site to run Models-3 in that state. Their ID name is NC01. If another site in that state runs Models-3, the site name for the new site will be NC02. Your unique site ID is on the installation tape you received. This site ID is requested during the installation procedure. It is used to modify environment variables in scripts stored in /usr/local/bin on the Sun Server. **Each installation of Models-3 must have a unique site ID to ensure integrity of a master database.**

#### 4.5.2 Computer Hosts

Add to the system a host for the Models-3 server and any clients you wish to use (see Section 9.4). Since the System Administration Subsystem does not have a GUI, you must carefully type in the operating system and hardware architecture names in capitals letters. They will be validated against an existing list in the database. If they are incorrect, an error message will display. Common entries are for SUNOS 5.6 on a Sun and NT 4.0 on a PC\_NT. See Section 9 for complete examples.

#### 4.5.3 Computer Host Devices

The computer host menu contains an option to add hardware devices, such as printers or tape drives (see Section 9.5). If you register these devices, they will appear in Models-3 GUI pop-up boxes, and you may select them. Register only devices that actually exist and are operational. If these are not added, then some Models-3 functions may not be operational. The device type for printers is the string "printer." The device type for the tape drive is "8mm tape drive" or "4mm tape drive." Be sure to type in the device type exactly since it will be validated against an existing list of device types in the database. If it is incorrect, an error message will display.

#### 4.5.4 Users

Adding users to the Models-3 system is necessary (see Section 9.2). A Models-3 user ID should match a user's UNIX ID. No password is required to get into Models-3. Enter the location

information for each user. This information displays as contact data in the application. This contact information is referenced by datasets and executables so users can find out whom to contact regarding certain files. You may setup a keystroke file if you are familiar with keystroke files, or enter the users as you are prompted by the M3SysAdmin program.

#### 4.5.5 Editors

If the users want to edit datasets from the framework, the editor must be selected from a pick list in the GUI. These editors must be registered in the System Administration component (see Section 9.13.1). Editors come in two classes: full editors and viewers. An example might be "vi" and its view only counterpart "viewer." The file type used with each editor must be typed in capital letters. It is validated against a list of file types and must be an exact string match. Section 9 contains examples of editor registration.

#### 4.6 Cron Jobs to Clean Files

On the Models-3 database server you must add a script to the "root" crontab, which cleans out the ObjectStore cache files in /tmp. These files are open as long as a database connection is open. For this reason these files should never be removed by hand. Create a file in /usr/local/bin called osClean.csh. Its contents should set up the user environment and call the ObjectStore cache cleaning program. The following is an example:

```
#!/bin/csh
# osClean.csh
# script to clean out the ostore stuff in tmp area

source /home/models3/.cshrc
source /usr/local/bin/m3env.csh

# the cache files that are not in use on current machine
# in /tmp/ostore are cleaned up
#
/opt/ostore/sunpro/bin/oscmrf
```

Add a line to the crontab for "root" to execute this script. Here is an example:

```
# to clean up ostore stuff
0,15,30,45 7-20 * * * /usr/local/bin/osClean.csh > /tmp/os_clean 2>&1
```

All datasets marked to expire from the Study Planner will be removed by the dsExpire cron job. This cron job should be run as the user "models3" from the Sun server. A log file showing what was removed is found in \$M3FDBPATH/dsExpire.log. Cron will not accept environment variables so you must enter the full path which corresponds to \$M3FBIN. The dsExpire program is in \$M3FBIN.

```
# to clean up expired Models-3 generated datasets  
0 20 * * * /home/models3/framework/bin/dsExpire > /tmp/dsExpire 2>&1
```

(Please contact us if you have questions on this procedure )

## 5.0 INSTALLATION OF MODELS-3 CLIENTS

### 5.1 Sun Solaris

To run Models-3 from a client machine, the \$M3HOME, /usr/local/bin, and Orbix directories must be NFS mounted to the client. The client host should be a registered host in the Models-3 database. If the user wishes to run ARC/INFO, SAS, FORTRAN, or SoftWindows from the client machine, those directories should be mounted on the client as well. If those tools are not in the /opt area, you will need to create links to them from the /opt directory. The installTape#.sh program will do this for you. Copy the installTape1.sh from the server's /tmp to the client's /tmp directory and type in:

```
su - root
cd /tmp
./installTape1.sh | tee -a /tmp/install.out
```

- **set\_info:** This function prompts you for the base directory for the Models-3 system. The default is /home/models3. If you want to use another directory path, you must make sure it exists, is writable by "root," and contains only lower-case letters. It will also prompt you for the location to install Galaxy, Orbix, and ObjectStore. You may overwrite the defaults if you do not have enough space to put the files in /opt. When you are asked, if the machine is a server type "n" for no.
- **set\_third\_party\_links:** This function sets links for ARC/INFO, SAS, FORTRAN 77, and SoftWindows if they are not in the expected directories. Note that "root" must have write permission to /opt. Also, note that SAS is expected to be two levels down. A directory is created and the link goes inside the /opt/sas directory.
- **set\_gal\_orb\_links:** This function sets the links for Orbix and Galaxy. If these are not installed on /opt, it will create links from the install directories (which should be mounted from the Models-3 server) to /opt.

### 5.2 Windows NT

Installation is a three-step process. The files must be moved from the tape to the Sun disk, the Sun must be configured to allow NT to mount its disks, and then the NT must be configured.

#### 5.2.1 Installing Files on the Sun

The installNT.sh script must be run on the Sun. This takes all the Windows NT-specific framework executables from the tape and installs them on the Sun disk. It also makes soft links to the Sun Models-3 tree for the tools, exec, models, and datasets directories. This way, you save disk space by pointing to the shared files instead of copying them to the Windows NT tree.

The installNT.sh script also loads the m3NTUtils directory to the Sun disk. This directory contains files that will reside on the Windows NT hard disk and the Samba networking software that will reside on the Sun. It also changes the values of the Orbix configuration files and the m3env.bat file. From the Sun, enter the following commands to install the first NT machine (for the DLT use "installDLT.sh -nt" in place of "installNT.sh"):

```
su - root
tar xvf /dev/rmt/0 /tmp/installNT.sh
cd /tmp
./install.NTsh | tee -a /tmp/installNT.out
or
sh -x ./installNT.sh | tee -a /tmp/installNT.out
```

The entire installNT.sh should be run once on the Sun. When you wish to configure different NTs, you must run installNT.sh on the Sun each time. But you only need to run part of installNT.sh for these subsequent installations. From the Sun, enter the following commands to install subsequent NT machines (for the DLT, use "installDLT.sh -partial" in place of "installNT.sh -partial"):

```
cd /tmp
./install.NTsh -partial | tee -a /tmp/installNT.out
or
sh -x ./installNT.sh -partial | tee -a /tmp/installNT.out
```

### 5.2.2 Installing Samba Files on the Sun

The Windows NT client must mount files from the Sun Server. The Samba freeware package may be used for disk mounts. Samba must be installed on the Sun. If you install Samba from the installation tape, the files must reside in the /usr/local directory hierarchy. If you wish to install the files elsewhere, you will have to reconfigure the Samba networking software by modifying the smb.conf file. The name of the Windows NT workgroup must be "MODELS3." If you use any other name for the workgroup, you will have to reconfigure the Samba networking software by modifying the conf.smb file. The file samba.tar should be installed by typing in the following commands:

```
cd /usr/local
su root (on the machine that houses /usr/local)
tar xvf $M3FRAME/installdb/samba.tar
```

Create a user account on the Sun named "samba." It may be in any group.

You must edit /usr/local/lib/samba-1.9.16/smb.conf. Change the "hosts allow" field to your host and change the "ws" section to the directory where you have mounted your Models-3 NT framework files. You want to mount the main disk on your Sun server from the NT client. For instance, if your main Sun disk is /export/ws and this is automounted or mounted on your Sun

clients as /ws, then you want to have the same /ws mounted on your NT client. In this case, your \$M3HOME on the Sun would be /ws/models3. On the NT client, your \$M3HOME would be Y:\models3 (assuming Y: was mounted to the Sun at /ws). The Models-3 framework software should all be loaded on the same machine. The datasets and models are shared between the NT version and the Sun version to save disk space.

If Models-3 is loaded on /home, you need to have a special mount for /home. The Samba software is designed to mount each individual user's home directory using the "homes" label in the smb.conf file. This way, you can see your own home by going to X: (or whatever letter you chose), but you cannot see another user's home directory. If the NT version of Models-3 is loaded under home (/home/models3NT), then you must use another mount (similar to the /ws example) using /home so users can see other directories under /home besides their own. The default smb.conf contains such a mount point. You may need to change /usr/local/lib/samba-1.9.16/lmhosts file. You also need to add the following two lines to the smb.conf file to allow case sensitivity:

```
preserve case = yes
short preserve case = yes
```

If the login names on the PC are different from the Sun, you may have to change the /usr/local/lib/samba-1.9.16/users.map file.

Documentation for Samba is on /usr/local/src/samba/samba-1.9.16/docs or on the web at <http://samba.anu.edu.au/samba>.

Add users to Samba with the addtosmbpass command. This command should already be installed in /usr/local/bin. You must setuid for /usr/local/bin/smbpasswd. The permissions should be -rwsr-sr-x so users can change their Samba password with "root" permissions without becoming "root."

```
chmod U+s /usr/local/bin/addtosmbpass
chmod g+s /usr/local/bin/addtosmbpass
```

Go to the machine that is the file server and copy the file /usr/local/src/samba/samba-1.9.16 to /etc/rc3.d/S100samba. This will start up the Samba server whenever the Sun file server is booted.

### **5.2.3 Installing Files on the Windows NT**

Once you have been able to mount the Sun disk, you must transfer some files from the Sun to the hard disk of the Windows NT machine. The file m3NTUtils/install.bat should be run from the Windows NT system. This script will install the Orbix communications software in

C:\Orbix. It will install galaxy graphics libraries in C:\galaxy.cxx. It will also place some files in C:\bin.

The install.bat script will copy files to the C: drive. It will also copy some Orbix files to the user profile area so Orbix executables will be available from the menu bar.

Set your PC screen resolution to the highest the computer will accommodate. In order to see the framework user interface, the resolution should be at least 1024 X 768.

Add GALAXYHOME to the global registry on PC as administrator. Setting the local user's environment will not work; it must be a global.

### 5.2.3.1 FTP

In order for the Models-3 framework to send files between machines, the FTP protocol must be used. Since a FTP server does not come with Windows NT Workstation, a version must be installed under the administrator account by following these steps:

```
login as Administrator
open a DOS window
cd C:\war24
wftpd
```

You must add all your users to the WFTPD software. You should use the same user IDs for Samba, FTP, UNIX, and NT. The users should use the same passwords for all of these as well.

To add a user:

1. From the wftp menu select *Security*, then *Users/rights*.
2. Push the *New User* button.
3. Enter the user name, push the *OK* button.
4. Enter the user password and verification of password, push the *OK* button.
5. Give the user a home directory (usually this will be X:\ from the Samba).
6. Push the *New User* button to add the next user.
7. After all users have been entered, push the *Done* button.

Next, reboot the workstation.

### 5.2.3.2 User Accounts on NT

All users should have an account on the NT. The users should all be in the group "models3." The user accounts should be set so that they mount their home directories that reside on the Sun or some NT server. This may all be set by logging in as administrator, adding the user, and

modifying the User Profile screen. Set the user profile login script to devl.bat. If you are mounting your home directory from the Sun, click on the Connect button and select the drive that you are using as a mount point from the Sun (ex: X:). Set the next field to the name of your Sun server and use the homes mount point (ex: \\sdcws34.sdc3.epa.gov\homes).

In order to run models and move files between machines, Models-3 uses the FTP protocol. In order to move files, each user must set his or her FTP password. The following steps must be performed by each user:

```
login to NT and open a DOS window
ftp <hostname of NT>
<your User ID>
quote site pass <your New Password>
```

### 5.2.3.3 Startup Scripts

Startup scripts for the NT version are stored in C:\bin, which should be in the path of all users. In order to run Models-3, the Orbix daemon must be running. Then, the application GUI may be brought up. The two scripts should be run from two different command windows.

```
C:
cd bin
m3start                (this establishes communications with the Models-3 server via the
                        Orbix software)

C:
cd bin
m3run                  (this starts the framework GUI program)
```

## 6.0 PREPARING USERS TO LOGIN TO MODELS-3

The Models-3 programs run under the C shell. Some of the Models-3 tools may be run stand-alone and will require certain environment variables. The Models-3 users should source `/usr/local/bin/m3env.csh` or put it at the end of their `$HOME/.cshrc` scripts.

To run the PAVE visualization package, the user will have to add some lines to the `$HOME/.Xdefaults` file. The new lines are in the `$M3FRAME/templates/add2Xdefaults` file:

```
EDSS_Pave*background:    antiquewhite
EDSS_Pave*foreground:    black
EDSS_Pave*geometry:      +175+150
EDSS_Pave*fontSet:       -b&h-lucida sans-medium-r-normal-*-*-*-*-*
EDSS_Pave*fontList:      -b&h-lucida sans-medium-r-normal-*-*-*-*-*
Browser*fontSet:         -b&h-lucida sans-medium-r-normal-*-*-*-*-*
Browser*fontList:        -b&h-lucida sans-medium-r-normal-*-*-*-*-*
```

The user will notice some new files that display in `$HOME`, a result of using Models-3. When the user runs MEPRO from the Sun, the SoftWindows package is invoked. A `.swin2config` file will be copied to `$HOME`. A link to the MEPRO directory is also created. When the user runs SAS or MEPPS, a directory called `sasuser` will be created in `$HOME`. If the visualization driver is invoked, the user will notice some `.vis*` files in `$HOME`. The visualization driver translates data files between several file formats, copying the files to the user `$HOME`. These visualization files might become large. If you plan on running MEPRO or visualization packages, large files (as large as 2 GB) may be copied into your home directory. For this reason, you should have ample disk space.

MEPPS will have a problem on a workstation if `'rm'` is aliased to `'rm -i'` in the workstation setup. Internally MEPPS issues system remove commands. When an alias is in effect, the window is hung up until the remove prompt is answered in the UNIX window. Normally, the MEPPS users do not look at the UNIX window while running MEPPS. If a user wants to run MEPPS without worrying about answering the UNIX prompt, the `'rm'` alias must be removed from the users' `$HOME/.cshrc` script.

Users should set their Sun password and have their user ID entered into the Models-3 system via the System Administration subsystem. The machines from which you wish to run the Models-3 server and clients should be registered in the Models-3 database via the System Administration component. The Models-3 administrator may add users and hosts by logging into the system as user "models3." When running from a Windows NT client, the Samba password (`smbpasswd`) and Windows NT WFTPD password must also be set. To copy files between remote machines, the `$HOME/.rhosts` file should be configured for each user and for "models3," as shown below:

```
#
# .rhosts file for user joe
#
#
sdcwsa.sdc3.epa.gov joe
sdcwsb.sdc3.epa.gov joe
sdcwsc.sdc3.epa.gov joe
sdcws0.sdc3.epa.gov joe
sdcwsa.sdc3.epa.gov models3
sdcwsb.sdc3.epa.gov models3
sdcwsc.sdc3.epa.gov models3
sdcws0.sdc3.epa.gov models3
```

## 7.0 MODELS-3 STARTUP AND SHUTDOWN

The framework servers talk to the database and the GUI processes. These servers run on the Models-3 database server machine. An Orbix process is present on the server and the clients. The Orbix package allows only one orbixd daemon process per machine. That daemon displays all output and GUI screens to the DISPLAY that is set at the time the user starts up the system. Only one person may run the Models-3 GUI from any one machine. Since the database server machine runs all of the programs that are used by the GUI programs, **NEVER** shut down the processes on the server when clients are running on other machines.

### 7.1 Server Startup

The Models-3 server processes should all be started up from the Models-3 server computer. Though any user may start up the system, the user "models3" should perform this task. Login to the server as "models3." Make sure you have added the source /usr/local/bin/m3env.csh line to the "models3" \$HOME/.cshrc file. Source the .cshrc or the script file itself:

```
source $HOME/.cshrc
```

Start the Orbix daemon and the framework servers by typing:

```
m3run
```

You will see several messages scrolling up and down your screen. These are the Orbix and framework server messages. If you do not want these to appear, you may start the system with the same command, sending the output to /dev/null:

```
m3run >& /dev/null
```

When the system is running, you will see the Orbix daemon process "orbixd" running. You will also observe processes starting with M3. These processes should be owned by user "models3" on the server machine. The M3\* processes will start themselves as they are needed. They remain in memory until the entire Models-3 framework is brought down. Though no one on the server might be using the framework, clients on other machines will need these processes.

### 7.2 Client Startup

Startup on the client is the same as the server. The difference is that any user may start up Models-3 from a client machine. The orbixd process will execute. This one is owned by the user who kicked off m3run. There will only be a few processes starting with M3 (M3GI and possibly M3EM).

On the Windows NT machine, the Orbix daemon and the Models-3 framework GUI must be started from separate DOS windows.

```
C:
cd bin
m3start                (this establishes communications with the Models-3 server via the
                        Orbix software)

C:
cd bin
m3run                  (this starts the framework GUI program)
```

### 7.3 Server Shutdown

Models-3 may be stopped by user "models3" by logging into the server running a script that kills all the servers and the Orbix process. If any client GUIs are running on other machines, do not shutdown the Models-3 server processes. To shut down the Models-3 system, type:

```
killOrbix.sh
```

### 7.4 Client Shutdown

The user may shut down the GUI by double clicking on the Models-3 framework GUI button on the top right of the GUI screen. The orbixd process and M3EM will still be running in the background. They will be owned by the person who ran the GUI.

If someone does an rlogin from another machine (to a UNIX client), they will not be able to run Models-3 from this remote machine because the orbixd process is still running and has been set with the previous user's DISPLAY. In this case, the first user should complete a shutdown, killing his or her orbixd and M3GI processes. This complete shutdown is achieved by typing:

```
killOrbix.sh
```

To exit Models-3 on the Windows NT machine, click the *Exit* icon located in the tool bar.

## 8.0 LOADING SUPPLEMENTARY DATASETS

Since some of the datasets are very large, all are not loaded during installation. If you wish to use supplementary datasets, the system administrator must load them to the appropriate directories on the UNIX file server (see Table 8-1). All datasets on 8mm tapes are in tar format. The first file on the tape is `installData#.sh`. This file should be extracted and run by the UNIX super user on the file server. Those datasets marked with "M" in the Tape column of Table 8-1 are installed during the Models-3 system installation. Those datasets marked with "S" can be loaded by the system administrator as requested by users. Appendix D contains detailed information about selected dataset files. Type the following commands to install the datasets:

```
su - root
cd /tmp
tar xvf /dev/rmt/0
/installData#.sh | tee -a /tmp/installData.out
or
sh -x ./installData#.sh | tee -a /tmp/installData.out (# is either 1 or 2)
```

When installing from a DLT, the system prompts if the supplemental datasets should be installed. Enter "y" to install them. If they were not installed, they can be installed by doing the following:

```
su - root
cd /tmp
tar xvf /dev/rmt/0
/installDLT.sh -restart 22 | tee -a /tmp/installData.out
or
sh -x ./installDLT.sh -restart 22 | tee -a /tmp/installData.out
```

Key: M = main tape, S = supplementary tape

Dataset Name	File Location	File/Dir size (MB)	Tape
<i>MEPPS Datasets</i>			
Landuse	\$M3MMEPPS/inv/landuse	6.5	M
1985 NAPAP	\$M3MMEPPS/inv/y1985	216.6	S
1988 Interim	\$M3MMEPPS/inv/y1988	65.9	S
1990 NET	\$M3MMEPPS/inv/y1990/aaaread.doc \$M3MMEPPS/inv/y1990/artaff90.sd2 \$M3MMEPPS/inv/y1990/artaff90.ssd01 \$M3MMEPPS/inv/y1990/jeiog.readme \$M3MMEPPS/inv/y1990/net90a02.txt \$M3MMEPPS/inv/y1990/net90p02_srd.txt \$M3MMEPPS/inv/y1990/pstaffxx.sd2 \$M3MMEPPS/inv/y1990/pstaffxx.ssd01 \$M3MMEPPS/inv/y1990/so4_table.ar \$M3MMEPPS/inv/y1990/so4_table.pt \$M3MMEPPS/inv/y1990/sulfate.ar \$M3MMEPPS/inv/y1990/sulfate.pt	381.6	M
1990 Interim	\$M3MMEPPS/inv/y1990/inter.ar90.data \$M3MMEPPS/inv/y1990/inter.ar90.data.d0 60895 \$M3MMEPPS/inv/y1990/inter.pt90.data \$M3MMEPPS/inv/y1990/inter.pt90.data.d0 60895 \$M3MMEPPS/inv/y1990/inter.vmt90data	177.5	S
1995 NET	\$M3MMEPPS/inv/y1995	331.1	M
Continuous Emission Monitoring data for 1995 Q3	\$M3DATA/nostudies/cem/cem95q3.ssd01	190.6	M
Continuous Emission Monitoring data for 1995 Q1, Q2, Q4	\$M3DATA/nostudies/cem/cem95q1.ssd01 \$M3DATA/nostudies/cem/cem95q2.ssd01 \$M3DATA/nostudies/cem/cem95q4.ssd01	462.2	S
Continuous Emission Monitoring data for 1995 Q3 (Windows NT version)	\$M3DATA/nostudies/cem/cem95q3.sd2	221.8	M

**Table 8-1.** Datasets Provided on Models-3 Release Tapes

Dataset Name	File Location	File/Dir size (MB)	Tape
Continuous Emission Monitoring data for 1995 Q1, Q2, Q4 (Windows NT version)	\$M3DATA/nostudies/cem/cem95q1.sd2 \$M3DATA/nostudies/cem/cem95q2.sd2 \$M3DATA/nostudies/cem/cem95q4.sd2	537.7	S
Offshore Stack Emissions data	\$M3DATA/nostudies/offshore	89.5	S
Canadian Emissions Inventory	\$M3DATA/nostudies/can1995	6.7	M
Motor Vehicle Particulate Emissions	\$M3DATA/nostudies/part5	less than 1	M
<i>Meteorological Datasets</i>			
Tutorial Inputs	\$M3DATA/studies	11167	M
MM5 Runs	\$M3DATA/nostudies/mm5	2500	M
<i>Strategy Manager Datasets (all compressed PC format)</i>			
Bureau of Labor Statistics - Entire US	\$M3DATA/nostudies/blsus.exe	200.9, (2600 uncompressed)	S
Bureau of Labor Statistics - Eastern US	\$M3DATA/nostudies/blseast.exe	125.3, (1400 uncompressed)	M
Bureau of Labor Statistics - Western US	\$M3DATA/nostudies/blswest.exe	82, (1100 uncompressed)	S
Wharton Entire US	\$M3DATA/nostudies/whrus.exe	201.5, (2600 uncompressed)	S
Wharton Eastern US	\$M3DATA/nostudies/whreast.exe	125.4, (1400 uncompressed)	S
Wharton Western US	\$M3DATA/nostudies/whrwest.exe	82.3, (1100 uncompressed)	S
<i>Other Datasets</i>			
U.S. Census Tiger roads GIS data used for EMPRO Mobile Source model	\$M3DATA/nostudies/tigerdb	4703	S
Base map data used for EMPRO surrogates and GIS-View in EMPRO and MIDPRO	\$M3DATA/nostudies/gisdb	697	M

**Table 8-1.** Datasets Provided on Models-3 Release Tapes (continued)

## 9.0 SYSTEM ADMINISTRATION

The System Administration Main Menu allows the system administrator to manipulate system lists and access administrative functions of other Models-3 components. To use this tool, you should be logged in as the Models-3 super user called "models3." Execute the M3SysAdmin, which is in the \$M3FBIN directory on the Sun server. The component may also be accessed from the Models-3 framework GUI by clicking on the Framework Administrator button under Tools Manager. Menu options selected in this document will be bold, but this will not be the case when using the program. Type the following commands:

```
% su - models3
% $M3FBIN/M3SysAdmin
```

You will see the following menu:

### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts
- 4) *Process Device Types*
- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.
- 9) Process Operating System Names.
- 10) Process Platform Names.
- 11) *Process Time Zone Names.*
- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit

Enter Selection:

## 9.1 Startup/Shutdown of the Models-3 System Framework

**To start the Models-3 system framework,** login as user "models3" on the server and type:

```
$M3FBIN/framework.sh start
```

**To exit the Models-3 system framework,** type:

```
$M3FBIN/framework.sh stop
```

## 9.2 Users Maintenance

To use the Models-3 framework, a system user must be registered in the system. There is no Models-3 password. The user must have a UNIX user ID and a UNIX password. Also, the Models-3 user ID and the UNIX user ID should match (i.e., if a user's UNIX ID is "joe" then the Models-3 ID should be "joe" as well). In addition to providing the user ID, other user information is required. Models-3 uses this information to document the creator of datasets or studies; fill in as much information as possible.

**To add a user to Models-3**, select option 1 from the System Administration Main Menu. The System Administration User Menu is displayed. This menu allows you to add users to the Models-3 system. Most of the fields are in free format; the exception is the address type. The user must enter in the address type in all capital letters. It must be one of the three options inside the brackets.

### System Administration User Menu

- 1) **Add User.**
- 2) Deactivate/Reactivate User (do in place of delete)
- 3) List All Users.
  
- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data)
- 13) Find One User
- 14) Back.

```
Enter Selection: 1
Enter user id. joe
Enter position : Manager
Enter name: Joe Smith
Enter org : EPA
Enter email joe@epa.gov
Enter address1. 123 Main Street
Enter address2: Suite 300
Enter city Arlington
Enter state. VA
Enter zip: 12345
Enter country USA
```

Enter phone: (703)123-1234

Enter address type:[MAILING | PHYSICAL | BOTH] BOTH

**To list all Models-3 users**, select option 1 from the System Administration Main Menu. The System Administration User Menu displays. This menu allows you to list all Models-3 system users. The Models-3 user ID is displayed with a number. The "0" means the user is current. If a "1" precedes the ID, the user is not currently active. This information is kept for historical reasons. If a user creates 10 datasets and each one of them references information about that user, that information should not be destroyed. **For this reason, do not remove users who have been using the system, just obsolete their usage privileges.** The role mask of the user will also be displayed. This is a hexadecimal number that maps the user to one or more roles or groups, establishing data access privileges.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.**
- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data)
- 13) Find One User.
- 14) Back

Enter Selection: 3

UserID: models3	Online: 0	RoleMask: c
UserID: joe	Online: 0	RoleMask: c

Now deactivate a user with option number 2. Display all users with menu option 3. Notice that after you deactivate a user, the Online flag is changed to 1.

#### System Administration User Menu

- 1) Add User
- 2) Deactivate/Reactivate User (do in place of delete).**
- 3) List All Users

- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data)
- 13) Find One User.
- 14) Back.

Enter Selection: 2  
 Enter user id for update. joe  
 Deactivate User? [Y | N] : y

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.**
  
- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User
- 14) Back.

Enter Selection: 3

```
UserID: models3 Online 0   RoleMask c
UserID: joe      Online 1   RoleMask: c
```

**To modify the roles for Models-3 users**, select option 1 from the System Administration Main Menu. The System Administration User Menu displays. This menu allows you to add or remove users from roles. Option 4 will add a user to a role. Option 5 removes a user from a role. Option 6 lists all the roles assigned to a specific user. See Section 9.3 of this document for more detail on roles.

By default there are two roles: Public and SysAdmin. All users are in the group Public. Only the user named "models3" is in the SysAdmin group. Users in the SysAdmin group have access to all objects in the Models-3 database. The roles are stored internally in hexadecimal format. The users will not have to understand this notation because it is all hidden from them in the GUI screens.

Add the SysAdmin role for a user by selecting option 4. View all users by selection of option 6. Notice that the RoleMask has changed. The new role was added to the list of roles assumed by this user.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.
- 4) Add User Role.**
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) Back.

Enter Selection: 4  
Enter user id: joe  
Enter new user role: SysAdmin  
Role added.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.**
  
- 4) Add User Role
- 5) Remove User Role
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User
- 10) List Host Passwords for One User.

- 11) List One Host Password for One User.
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) Back.

Enter Selection: 3

```
UserID: models3 Online: 0 RoleMask: c
UserID: joe      Online: 0 RoleMask: f
```

Now remove a role from a user and list all users. The RoleMask value should change to "c."

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users
  
- 4) Add User Role
- 5) Remove User Role.**
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) Back.

Enter Selection: 5

Enter user id: joe

Enter role to remove from user: SysAdmin

Role removed

Option 6 will list all roles for a particular user. The RoleMask number will be translated into the textual representation of each role.

#### System Administration User Menu

- 1) Add User
- 2) Deactivate/Reactivate User (do in place of delete)
- 3) List All Users
  
- 4) Add User Role
- 5) Remove User Role

- 6) Get Role Mask for One User.**
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) Back.

Enter Selection: 6  
 Enter userID joe

RoleMask is c  
 Roles are:  
 Public Yes

Each Models-3 user may have one or more system IDs on other computers used to run scientific models. When the user runs a model through the Study Planner, the user must run the program on his or her own computer or another computer that is part of Models-3. If the user wishes to run on a remote host, the user must enter a valid ID/password for that computer. Models-3 framework allows a user to store this information for reuse. The Study Planner will get this information from the System Administration server so the user will not have to type in his or her ID/password every time he or she wishes to execute on a remote host. Users may modify this ID/password information through the screens of the Study Planner or through the System Administration program. To modify remote host ID/passwords, select option 1 from the System Administration Main Menu. The System Administration User Menu displays. Options 7 through 9 on the User menu allow the system administrator to manipulate this information. Options 10 and 11 are disabled in the runtime version of Models-3.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete)
- 3) List All Users.
  
- 4) Add User Role
- 5) Remove User Role.
- 6) Get Role Mask for One User
  
- 7) Add Host Password for One User.**
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User
- 12) Remove User (do NOT use unless sure user has no data)

- 13) Find One User.
- 14) Back.

Enter Selection: 7  
Enter Models-3 user id: joe  
Enter host name: sdcws98.sdc3.epa.gov  
Enter user id for given host: joseph  
Enter password: fake1  
Password added for host sdcws98 sdc3.epa gov

It is possible to add multiple passwords for one user at one time. Select option 8 to add multiple passwords. It is possible to remove a password by using option 9.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.
  
- 4) Add User Role
- 5) Remove User Role.
- 6) Get Role Mask for One User
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.**
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) Back

Enter Selection: 8  
Enter number of passwords to enter for user: 2  
Enter Models-3 user id: joe  
Enter host name: sdcws98.sdc3.epa.gov  
Enter user id for given host: tester1  
Enter password: happy1  
Enter host name: sdcws99.sdc3.epa.gov  
Enter user id for given host: joe  
Enter password: home32

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete)
- 3) List All Users

- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User
- 9) Remove Host Password from One User.**
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) Back

Enter Selection 9  
 Enter Models-3 user id: joe  
 Enter host name: sdcws98.sdc3.epa.gov  
 Enter user id for given host: joseph  
 Password removed for host sdcws98.sdc3.epa.gov

**To see if a user is in the system,** select option 1 from the System Administration Main Menu. The System Administration User Menu displays. You may find one user by selecting option 13.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.
  
- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User.
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User
  
- 12) Remove User (do NOT use unless sure user has no data)
- 13) Find One User.**
- 14) Back.

Enter Selection 13  
 Enter user id for find joe

joe exists in the list

**To delete a user**, select option 1 from the System Administration Main Menu. The System Administration User Menu displays. This menu allows you to remove one user by selecting option 12. **This should be done only if the user has not been on-line and added data to the system.** Use this option if you have added a user, made a typing error, and want to start over again.

#### System Administration User Menu

- 1) Add User
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users
  
- 4) Add User Role
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User
- 8) Add Multiple Host Passwords for One User.
- 9) Remove Host Password from One User.
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User.
  
- 12) Remove User (do NOT use unless sure user has no data).**
- 13) Find One User.
- 14) Back.

Enter Selection: 12

Enter user id for delete: joe

To move from the System Administration User Menu back to the main menu, select option 14.

#### System Administration User Menu

- 1) Add User.
- 2) Deactivate/Reactivate User (do in place of delete).
- 3) List All Users.
  
- 4) Add User Role.
- 5) Remove User Role.
- 6) Get Role Mask for One User.
  
- 7) Add Host Password for One User
- 8) Add Multiple Host Passwords for One User
- 9) Remove Host Password from One User
- 10) List Host Passwords for One User.
- 11) List One Host Password for One User

- 12) Remove User (do NOT use unless sure user has no data).
- 13) Find One User.
- 14) **Back.**

Enter Selection: 14

### 9.3 Role Maintenance

Users of the Models-3 system have permission to see their own objects by default. If they wish to see objects created by other users, they must be granted permission. User roles were devised to facilitate this object sharing among groups of users. Two default roles exist in every database: SysAdmin and Public. Users in the SysAdmin group can see all objects. Users in the Public group (all users are members of Public by default) may see objects that have been granted to public view by their creator. Each role is assigned a hexadecimal number. An object in the database may be seen by multiple roles. A user may belong to multiple roles. The creator of an object may give read or write permission to any role in the Models-3 framework GUI. The Models-3 administrator may add or remove roles from the system through the System Administration Main Menu.

**To add or remove roles**, select option 2 from the System Administration Main Menu. The System Administration Security Role Menu displays. This menu allows you to add roles to the Models-3 system by selecting option 1. The role may be removed with option 2. All roles may be viewed with option 3. **Do not remove roles that are in use, or the Models-3 system will not work properly.**

#### System Administration Main Menu

- 1) Process Users.
- 2) **Process Roles.**
- 3) Process Hosts.
- 4) Process Device Types.
- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.
- 9) Process Operating System Names.
- 10) Process Platform Names.
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration
- 16) Exit

Enter Selection: 2

It should not be necessary to add any new roles unless your site does code development. You may add roles by selecting option 1.

System Administration Security Role Menu

- 1) **Add Role.**
- 2) Remove Role (do NOT use unless sure role not ever used).
- 3) List All Roles.
- 4) Back.

Enter Selection: 1  
Enter role : Scientists

System Administration Security Role Menu

- 1) Add Role.
- 2) Remove Role (do NOT use unless sure role not ever used)
- 3) **List All Roles.**
- 4) Back.

Enter Selection: 3

SysAdmin hex:3  
Public hex:c  
Scientists hex:30

Notice that the first role is "3" and the second number used is "c." Internally the roles are actually used in a binary masking scheme. This is why they are not allocated sequentially. There are a limited number of roles.

System Administration Security Role Menu

- 1) Add Role.
- 2) **Remove Role (do NOT use unless sure role not ever used).**
- 3) List All Roles.
- 4) Back.

Enter Selection: 2  
Enter role . Scientists

System Administration Security Role Menu

- 1) Add Role.
- 2) Remove Role (do NOT use unless sure role not ever used).
- 3) **List All Roles.**
- 4) Back.

Enter Selection: 3

SysAdmin hex:3  
Public hex:c

#### System Administration Security Role Menu

- 1) Add Role.
- 2) Remove Role (do NOT use unless sure role not ever used)
- 3) List All Roles.
- 4) **Back.**

Enter Selection: 4

## 9.4 Hosts Maintenance

**To use the Models-3 framework system**, the administrator must register existing host computers that will be accessible to modelers. These hosts will appear in list boxes. This allows users to choose from a list instead of having to type in all the information about the host each time they want to use it. The hardware devices connected to the hosts should also be registered. These devices appear in list boxes for selection as well.

**To add a host to Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to add hosts to the Models-3 system by selecting option 1. The name of the host should include its full domain. The operating system, os type, must be one of the existing operating system types. The hardware, hw, type must be one of the existing hardware platforms. The os and hw must be typed in capital letters and must match the defined types exactly. To see all the available operating system and platform types, select options 9 and 10 from the System Administration Main Menu. If the machine has Orbix running on it, type in "Y" when the Orbix enabled prompt displays. If the machine is on-line, type in "Y" when prompted. If a machine goes off-line for a prolonged period and the administrator does not want users to run models from it, you may denote that the computer is off-line in the System Administration component. If the machine mounts disks from the main server, the disk mounted flag should be "Y." If the main disks are mounted, files will be moved and not FTP'ed to the execution directory on the computer.

#### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) **Process Hosts.**
- 4) Process Device Types.
- 5) Process Screen Access
- 6) Process Site IDs
- 7) Process File Format Types
- 8) Process Compiler Names.
- 9) Process Operating System Names

- 10) Process Platform Names.
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 3

#### System Administration Host Menu

- 1) Add Host.**
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag
- 4) Set Host Disks Mounted Flag
- 5) Remove Host (do NOT do this unless sure host never used)
- 6) List Hosts
- 7) List Host Details.
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host.
- 12) Find Device of certain type.
- 13) Back.

Enter Selection: 1

Enter name : sdcws99.sdc3.epa.gov

Enter ip : 161.80.55.99

Enter os : SUNOS 5.6

Enter hw : SUN

Host online? [Y | N] : y

Host Orbix enabled? [Y | N] : y

Host disks mounted from server? [Y | N] : y

Enter notes : Main machine that is also database server

**To disable a host already used in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to disable hosts already in the Models-3 system by selecting option 2. You may enter either the host's internal Models-3 ID number or the full host name. Then, indicate whether or not the machine is off-line or on-line.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.**
- 3) Set Host Orbix Flag
- 4) Set Host Disks Mounted Flag
- 5) Remove Host (do NOT do this unless sure host never used)
- 6) List Hosts

- 7) List Host Details.
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host
- 12) Find Device of certain type.
- 13) Back.

Enter Selection: 2

Enter id :

Enter name : sdcws99.sdc3.epa.gov

Host online? [Y | N] : n

**To change the status of a host to indicate Orbix is not running**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to change the Orbix setting by selecting option 3. You may enter either the host's internal Models-3 ID number or the full host name. Then, indicate whether or not the machine is running an Orbix daemon or not.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag.**
- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts.
- 7) List Host Details.
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host.
- 12) Find Device of certain type.
- 13) Back.

Enter Selection: 3

Enter id :

Enter name : sdcws98.sdc3.epa.gov

Host Orbix enabled? [Y | N] : N

**To change the status of a host to indicate that the host uses the shared disk**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to change the disks mounted flag by selecting option 4. You may enter either the host's internal Models-3 ID number or the full host name. Then, indicate whether or not the machine is mounting the shared server disk.

#### System Administration Host Menu

- 1) Add Host
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag
- 4) Set Host Disks Mounted Flag.**
- 5) Remove Host (do NOT do this unless sure host never used)
- 6) List Hosts.
- 7) List Host Details.
- 8) Host Orbix Enabled Check
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host.
- 12) Find Device of certain type.
- 13) Back.

Enter Selection. 4

Enter id :

Enter name : sdcws99.sdc3.epa.gov

Host disks mounted from server? [Y | N] : n

**To remove a host in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to remove a host by selecting option 5. You must enter the host's internal Models-3 ID number. **Do not remove a host from the system if it is still in use.** You may set a host to an off-line status if you are shutting the machine down for maintenance, or if it will be unavailable for a period of time.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag.
- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used).**
- 6) List Hosts.
- 7) List Host Details.
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host
- 12) Find Device of certain type.
- 13) Back

Enter Selection: 5

Enter id . 000000075 000000024.000000002

**To view hosts in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to view hosts in the Models-3 system by selecting option 6.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag.
- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts.**
- 7) List Host Details.
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.
- 10) Add Device to host
- 11) Remove Device from Host
- 12) Find Device of certain type.
- 13) Back.

Enter Selection: 6

Code: sdcws98.sdc3.epa.gov  
Desc: SUN : SUNOS 5.6

Code: sdcws99.sdc3.epa.gov  
Desc: SUN : SUNOS 5.6

**To view host details in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to view host data in the Models-3 system by selecting option 7.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag.
- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts.
- 7) List Host Details.**
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host.
- 12) Find Device of certain type.
- 13) Back

Enter Selection: 7

ID 000000075.000000024.000000002  
Name sdcws98.sdc3.epa.gov  
IP Address 161.80.55.98

Operating System: SUNOS 5.6  
Hardware: SUN  
Online: YES  
Orbix Enabled: YES  
Disks Mounted: YES

Notes: print server  
Num devices : 0

ID: 000000075.000000024 000000001  
Name: sdcws99.sdc3.epa.gov  
IP Address 161.80.55.99  
Operating System: SUNOS 5.6  
Hardware: SUN  
Online YES  
Orbix Enabled: YES  
Disks Mounted YES

Notes: Main machine that is also database server  
Num devices : 0

**To see if the host is Orbix enabled**, select option 3 from the System Administration Main Menu. (This only tells you what the database believes to be occurring. It does NOT find out if the machine is actually running the Orbix daemon.) The System Administration Host Menu displays. This menu allows you to see if a host is Orbix enabled by selecting option 8.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag.
- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts
- 7) List Host Details.
- 8) Host Orbix Enabled Check.**
- 9) Host Disks Mounted Check.
- 10) Add Device to host.
- 11) Remove Device from Host
- 12) Find Device of certain type.
- 13) Back

Enter Selection. 8  
Enter host name sdcws99.sdc3.epa.gov

Orbix Enabled YES

**To see if the host uses a disk mounted from a server**, select option 3 from the System Administration Main Menu. (This only tells you what the database believes is occurring. It

does NOT find out if the machine is actually mounting the main disk.) The System Administration Host Menu displays. This menu allows you to see if a host mounts the main disk by selecting option 9.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag
- 3) Set Host Orbix Flag.
- 4) Set Host Disks Mounted Flag
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts.
- 7) List Host Details.
- 8) Host Orbix Enabled Check.
- 9) Host Disks Mounted Check.**
- 10) Add Device to host.
- 11) Remove Device from Host.
- 12) Find Device of certain type.
- 13) Back.

Enter Selection: 9

Enter host name : sdcws99.sdc3.epa.gov

Disks Mounted: YES

To access hardware devices, such as printers or tape drives, from Models-3, they must be registered with the system. Once registered, they will appear in pick lists from the GUIs of several components.

**To add a device to a host in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to add a device by selecting option 10. You may enter either the host's internal Models-3 ID number or the full host name. You must enter the logical device name used by the computer to access the hardware. The device type must match the name of a device in the main device list. This list may be accessed by selecting option 4 from the System Administration Main Menu.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag
- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used)
- 6) List Hosts.
- 7) List Host Details
- 8) Host Orbix Enabled Check
- 9) Host Disks Mounted Check.
- 10) Add Device to host.**

- 11) Remove Device from Host.
- 12) Find Device of certain type.
- 13) Back.

Enter Selection: 10

Enter host ID :

Enter host name : sdcws98.sdc3.epa.gov

Enter device name : lc890

Enter device type : printer

Enter notes : laser jet

**To find a certain device type in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to find a device of a certain type by selecting option 12. The device type must match the name of a device in the main device list. This list may be accessed by picking option 4 from the System Administration Main Menu.

#### System Administration Host Menu

- 1) Add Host.
- 2) Set Host Online Flag.
- 3) Set Host Orbix Flag.
- 4) Set Host Disks Mounted Flag
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts.
- 7) List Host Details.
- 8) Host Orbix Enabled Check
- 9) Host Disks Mounted Check
- 10) Add Device to host.
- 11) Remove Device from Host.
- 12) Find Device of certain type.**
- 13) Back

Enter Selection: 12

Enter device type to find: printer

000000075.000000024.000000003 lc890 : sdcws98.sdc3.epa.gov

**To remove a device from a Models-3 host**, select option 3 from the System Administration Main Menu. The System Administration Host Menu displays. This menu allows you to remove a device from a specified host by selecting option 11. You may enter either the host's internal Models-3 ID number or the full host name. You must enter the device name.

#### System Administration Host Menu

- 1) Add Host
- 2) Set Host Online Flag
- 3) Set Host Orbix Flag

- 4) Set Host Disks Mounted Flag.
- 5) Remove Host (do NOT do this unless sure host never used).
- 6) List Hosts.
- 7) List Host Details.
- 8) Host Orbix Enabled Check
- 9) Host Disks Mounted Check
- 10) Add Device to host.
- 11) Remove Device from Host.**
- 12) Find Device of certain type
- 13) Back.

Enter Selection: 11

Enter host ID :

Enter host name : sdcws98.sdc3.epa.gov

Enter device name . lc890

## 9.5 Device Type Maintenance

Models-3 tracks lists of certain resources used by programs. Some of the resources are hardware devices that are attached to computers. When a user registers a computer host, the hardware devices attached to the computer are also often registered. These devices must match a device type code that is in the database. This way programs can query the database to say "give me all devices of type printer." Most of the devices are in the default database. It is very unlikely that a user will ever need to add more device types. If this is necessary, the device type menu gives the users the opportunity to process device types.

**To add a device type to Models-3**, select option 4 from the System Administration Main Menu. The System Administration Device Type Menu displays. This menu allows you to add device types to the Models-3 system by selecting option 1. Most of the fields are free format.

### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types.**
- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types
- 8) Process Compiler Names.
- 9) Process Operating System Names
- 10) Process Platform Names
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 4

#### System Administration Device Type Menu

- 1) **Add Device Type.**
- 2) Remove Device Type.
- 3) List Device Type.
- 4) Back.

Enter Selection: 1

Enter name : plotter

Enter desc : for large diagrams

**To view all device types in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Device Type Menu displays. This menu allows you to view all device types in Models-3 by selecting option 3.

#### System Administration Device Type Menu

- 1) Add Device Type.
- 2) Remove Device Type.
- 3) **List Device Type.**
- 4) Back.

Enter Selection: 3

3.25 floppy drive : High Density - holds 1M

4mm tape drive : holds up to 5G compressed

8mm tape drive : holds up to 2G compressed

plotter : for large diagrams

printer : laser printer

**To remove a device type in Models-3**, select option 3 from the System Administration Main Menu. The System Administration Device Type Menu displays. This menu allows you to remove device types in Models-3 by selecting option 2. Do not remove any of the default device types. This should be used only if you have added one and it has not been used.

#### System Administration Device Type Menu

- 1) Add Device Type
- 2) **Remove Device Type.**
- 3) List Device Type
- 4) Back

Enter Selection: 2

Enter name : plotter

## 9.6 Screen Access Maintenance

Certain screens are accessible only to users in the System Administration role. These screens and buttons are listed in the Screen Access List. The Models-3 administrator may change permissions on these screens/buttons through the System Administration component. This should be done only upon request by EPA. Screen Access maintenance will probably never be used at most sites.

**To modify the screen access list**, select option 5 from the System Administration Main Menu. The System Administration Screen Access Menu displays. Option 1 creates a new access object in the database. It must use the Galaxy screen tag name.

### System Administration Main Menu

- 1) Process Users
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types.
- 5) Process Screen Access.**
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.
- 9) Process Operating System Names
- 10) Process Platform Names
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration
- 16) Exit.

Enter Selection: 5

### System Administration Screen Access Menu

- 1) Add Screen Access.**
- 2) Remove Screen Access.
- 3) List All Screen Access Objects.
- 4) Change Screen Access Permission.
- 5) Check Access For User and One Screen.
- 6) Check Access For User and All Screens
- 7) Back

Enter Selection: 1

Enter screen access name M3GISMASButton

Option 2 removes the screen or button label name from the database. This should **NEVER** be used unless the screen access name entered was entered incorrectly.

#### System Administration Screen Access Menu

- 1) Add Screen Access.
- 2) Remove Screen Access.**
- 3) List All Screen Access Objects
- 4) Change Screen Access Permission.
- 5) Check Access For User and One Screen
- 6) Check Access For User and All Screens.
- 7) Back.

Enter Selection: 2

Enter screen access name : M3GISMASButton

**To view the screens or buttons with restricted access, use option 3.**

#### System Administration Screen Access Menu

- 1) Add Screen Access.
- 2) Remove Screen Access.
- 3) List All Screen Access Objects.**
- 4) Change Screen Access Permission
- 5) Check Access For User and One Screen.
- 6) Check Access For User and All Screens
- 7) Back.

Enter Selection: 3

M3GISMASButton hex:3

M3GISMCMBButton hex:3

**To change permissions for a screen or button by role, use Option 4.** Read and write permissions are separated out, but the current code just checks to see if the use is in a role that has at least one of these permissions.

#### System Administration Screen Access Menu

- 1) Add Screen Access.
- 2) Remove Screen Access.
- 3) List All Screen Access Objects.
- 4) Change Screen Access Permission.**
- 5) Check Access For User and One Screen
- 6) Check Access For User and All Screens
- 7) Back

Enter Selection 4

Enter screen access name M3GISMASButton

Enter role name : Scientists

Read permission? [Y | N] : y  
Write permission? [Y | N] : y

**Access for individual users** may be checked with menu options 5 and 6.

#### System Administration Screen Access Menu

- 1) Add Screen Access.
- 2) Remove Screen Access.
- 3) List All Screen Access Objects.
- 4) Change Screen Access Permission
- 5) Check Access For User and One Screen.**
- 6) Check Access For User and All Screens
- 7) Back

Enter Selection. 5  
Enter screen access name : M3GISMASButton  
Enter userID : swr  
NO

#### System Administration Screen Access Menu

- 1) Add Screen Access.
- 2) Remove Screen Access.
- 3) List All Screen Access Objects.
- 4) Change Screen Access Permission.
- 5) Check Access For User and One Screen.
- 6) Check Access For User and All Screens.**
- 7) Back.

Enter Selection: 6  
Enter userID : swr

The following screens/buttons are not accessible by user swr:

M3GISMASButton  
M3GISMCMBButton

## 9.7 Site ID Maintenance

The Models-3 system tracks objects by unique numbers. Each site has a unique number. When installing Models-3, the system administrator must get a unique site name from EPA. Valid site names are in the format <state postal code><2 digit number>. Examples of site names include: NC01, NC02, VA01, and VA02. Sites must obtain this unique site number and enter it into the system in order to maintain file identification uniqueness when metadata from different sites are combined to form a master metadata repository for centralized searches. This capability is currently not implemented. Each data object will have a unique number and will be able to be loaded into a master database at some future date. If the installation of Models-3 is successful,

no ID maintenance is necessary. The ID maintenance functions will be used primarily by EPA users.

**To add a site ID to Models-3**, select option 6 from the System Administration Main Menu. The System Administration Site ID Menu displays. This menu allows you to add a Site ID by selecting option 1. When entering the site number, do not pad it with zeros.

```
Enter new site name : NY03
Enter new site number : 198
Please wait, adding new site ...
```

**To view sites in current database**, select option 6 from the System Administration Main Menu. The System Administration Site ID Menu displays. This menu allows you to view the site by selecting option 3.

System Administration Site ID Menu

- 1) Add Site.
- 2) Delete Site.
- 3) List Site.**
- 4) Back.

```
Enter Selection: 3
Also list contents [Y|N]: n
```

```
SITE:000000052 MA02
SITE:000000082 OH02
SITE:000000044 LA02
SITE:000000081 OH01
SITE:000000011 CA01
SITE:000000069 NJ01
SITE:000000099 TN01
...
```

**To delete sites in the current database**, select option 6 from the System Administration Main Menu. The System Administration Site ID Menu displays. **Do not use the delete function unless you are instructed to use it.** This menu allows you to delete the site by selecting option 2.

System Administration Site ID Menu

- 1) Add Site
- 2) Delete Site.**
- 3) List Site
- 4) Back..

Enter Selection: 2  
Enter site name : NY03

## 9.8 File Format Maintenance

The datasets that Models-3 uses come in various file formats. These file formats will appear in the GUI as pick-lists on certain menus. The default database contains most formats that will be used. The ability to add formats is provided in case EPA adds more formats, or the site needs more formats. The format of a dataset is used to select appropriate editors. The format is also used to match input files to programs. **Do not remove a file format unless it is one you have added by mistake and no one has used it.**

**To add a file format to Models-3**, select option 7 from the System Administration Main Menu. The System Administration File Format Menu displays. This menu allows you to add file formats to the Models-3 system by selecting option 1.

### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types.
- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.**
- 8) Process Compiler Names.
- 9) Process Operating System Names.
- 10) Process Platform Names.
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 7

### System Administration File Format Menu

- 1) Add File Format.**
- 2) Remove File Format (do NOT do this unless sure format never used)
- 3) List File Formats.
- 4) Back.

Enter Selection 1  
Enter name . FAKE  
Enter desc . fake format type

**To view all file format codes in Models-3**, select option 7 from the System Administration Main Menu. The System Administration File Format Menu displays. This menu allows you to view all file format codes in the Models-3 system by selecting option 3.

#### System Administration File Format Menu

- 1) Add File Format.
- 2) Remove File Format (do NOT do this unless sure format never used)
- 3) List File Format.**
- 4) Back.

Enter Selection: 3

ASCII . ascii format  
DIGITAL UNIX BINARY . Digital Unix binary  
IOAPI NETCDF : IO/API netCDF  
OTHER FORMAT . known but not in list  
SAS . SAS format  
SUN SOL BINARY : Sun Solaris binary  
UNKNOWN FORMAT : unknown  
FAKE : fake format type

**To remove a file format code in Models-3**, select option 7 from the System Administration Main Menu. The System Administration File Format Menu displays. This menu allows you to remove a file format code by selecting option 2. **Do not remove a file format unless it is one you have added by mistake and no one has used it.**

#### System Administration File Format Menu

- 1) Add File Format.
- 2) Remove File Format (do NOT do this unless sure format never used).**
- 3) List File Format.
- 4) Back.

Enter Selection: 2  
Enter name : FAKE

## 9.9 Compiler Maintenance

The models compiled by Models-3 use various compilers. The name of the compiler is stored with the models so that it may be built at a later date under the same environment. These compiler names will appear in the GUI as pick-lists on certain menus. The default database contains most compilers that will be used. The ability to add compilers is provided in case the EPA adds more compilers or the site needs more compilers. Do not remove a compiler name unless it is one you have added by mistake and no one has used it.

**To add a compiler name to Models-3**, select option 8 from the System Administration Main Menu. The System Administration Compiler Menu displays. This menu allows you to add compiler names to the Models-3 system by selecting option 1.

#### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts
- 4) Process Device Types
- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.**
- 9) Process Operating System Names
- 10) Process Platform Names.
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.
- 13) Program Manager Administration
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit

Enter Selection: 8

#### System Administration Compiler Menu

- 1) Add Compiler.**
- 2) Remove Compiler (do NOT do this unless sure compiler never used).
- 3) List Compilers.
- 4) Back.

Enter Selection: 1

Enter name : Sun C++ 6 4.3

Enter desc : Native C++ for Sun version 6

**To view all compiler names in Models-3**, select option 8 from the System Administration Main Menu. The System Administration Compiler Menu displays. This menu allows you to view all compiler names in the Models-3 system by selecting option 3.

#### System Administration Compiler Menu

- 1) Add Compiler.
- 2) Remove Compiler (do NOT do this unless sure compiler never used)
- 3) List Compiler.**
- 4) Back

Enter Selection: 3

Cray C++ 2.0 : Cray C++ compiler for UNICOS  
Cray CF90 2.0 : Cray FORTRAN 90 compiler for UNICOS  
GNU gcc 2.5.8 : GNU C++ compiler for Solaris  
MSVC 4.2 : Microsoft Visual C++ 4.2  
Sun C++ 4.0.1 : Native C++ for Sun Solaris2.x  
Sun F77 4.0 : FORTRAN 77 for Sun Solaris2.x  
Sun F90 1.1 : FORTRAN 90 for Sun Solaris2.x

**To remove a compiler name in Models-3**, select option 8 from the System Administration Main Menu. The System Administration Compiler Menu displays. This menu allows you to remove a compiler name by selecting option 2. **Do not remove a compiler name unless it is one you have added by mistake and no one has used it.**

System Administration Compiler Menu

- 1) Add Compiler.
- 2) Remove Compiler (do NOT do this unless sure compiler never used).**
- 3) List Compilers.
- 4) Back.

Enter Selection: 2  
Enter name : Sun C++ 6.4.3

## 9.10 Operating System Name Maintenance

Models-3 executes programs on various operating systems. In order to know which executable will run on each platform, the operating system and hardware platform names are stored in the database with each program. The master list of operating systems appears in pick-lists in the GUI. The GUI gets this information from the System Administration component. Additional operating systems may be added through System Administration; however, this does not mean they have been tested or supported unless EPA sends out such notification. The only time a site might want to add an operating system would be if it upgrades its operating system to a minor release. Do not remove any operating system name unless it is one you have added by mistake and no one has used it.

**To add an operating system name to Models-3**, select option 9 from the System Administration Main Menu. The System Administration Operating System Menu displays. This menu allows you to add operating system names to the Models-3 system by selecting option 1.

System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types.

- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.
- 9) Process Operating System Names.**
- 10) Process Platform Names
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration
- 16) Exit.

Enter Selection 9

#### System Administration Operating System Menu

- 1) Add Operating System.**
- 2) Remove Operating System (do NOT do this unless sure it is never used).
- 3) List Operating Systems.
- 4) Back

Enter Selection: 1  
 Enter name NT 6.0  
 Enter desc : WindowsNT 6.0

**To view all operating system names in Models-3**, select option 9 from the System Administration Main Menu. The System Administration Operating System Menu displays. This menu allows you to view all operating system names in the Models-3 system by selecting option 3.

#### System Administration Operating System Menu

- 1) Add OpSys.
- 2) Remove OpSys (do NOT do this unless sure OpSys never used)
- 3) List OpSys.**
- 4) Back.

Enter Selection: 3

IRIX 5.3 . Silicon Graphics Operating System  
 IRIX 6 . Silicon Graphics Operating System  
 NT 4.0 WindowsNT 4 0  
 NT 5 0 WindowsNT 5.0  
 OTHER OPSYS Other  
 SUNOS 4 1.3 Sun Operating System  
 SUNOS 5.6 . Sun Solaris  
 SUNOS 5:6 . Sun Solaris  
 UNICOS 8.0 UNIX for the CRAY  
 UNICOS 9 0 : UNIX for the CRAY

**To remove an operating system name in Models-3**, select option 9 from the System Administration Main Menu. The System Administration Operating System Menu displays. This menu allows you to remove a operating system name by selecting option 2. **Do not remove an operating system name unless it is one you have added by mistake and no one has used it.**

#### System Administration Operating System Menu

- 1) Add OpSys.
- 2) Remove OpSys (do NOT do this unless sure OpSys never used).**
- 3) List OpSys.
- 4) Back.

Enter Selection: 2  
Enter name : SUNOS 9.9

### 9.11 Platform Name Maintenance

Models-3 executes programs on various platforms. In order to know which executable will run on each platform, the operating system and hardware platform names are stored in the database with each program. The master list of platforms appears in pick-lists in the GUI. The GUI gets this information from the System Administration component. Additional platforms may be added through System Administration; however, this does not mean they have been tested or supported unless EPA sends out such notification. The only time when a site might want to add a platform would be if Models-3 were to be upgraded to execute programs on a new platform. **Do not remove a platform name unless it is one you have added by mistake and no one has used it.**

**To add a platform name to Models-3**, select option 10 from the System Administration Main Menu. The System Administration Platform Menu displays. This menu allows you to add platform names to the Models-3 system by selecting option 1.

#### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types
- 5) Process Screen Access.
- 6) Process Site IDs
- 7) Process File Format Types
- 8) Process Compiler Names.
- 9) Process Operating System Names
- 10) Process Platform Names.**
- 11) Process Time Zone Names

- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 10

#### System Administration Platform Menu

- 1) Add Platform.**
- 2) Remove Platform (do NOT do this unless sure platform never used)
- 3) List Platforms
- 4) Back.

Enter Selection: 1

Enter name : AMIGA

Enter desc : AMIGA personal computer

**To view all platform names in Models-3**, select option 10 from the System Administration Main Menu. The System Administration Platform Menu displays. This menu allows you to view all platform names in the Models-3 system by selecting option 3.

#### System Administration Platform Menu

- 1) Add Platform.
- 2) Remove Platform (do NOT do this unless sure platform never used).
- 3) List Platform.**
- 4) Back.

Enter Selection: 3

CRAY . CRAY Super Computer

OTHERHW : other

PC . Personal Computer

SGI : Silicon Graphics Workstations

SUN . Sun SparcStation

**To remove a platform name in Models-3**, select option 10 from the System Administration Main Menu. The System Administration Platform Menu displays. This menu allows you to remove a platform name by selecting option 2. **Do not remove a platform name unless it is one you have added by mistake and no one has used it.**

#### System Administration Platform Menu

- 1) Add Platform
- 2) Remove Platform (do NOT do this unless sure platform never used).**
- 3) List Platform

4) Back.

Enter Selection: 2

Enter name : AMIGA

## 9.12 Time Zone Name Maintenance

Models-3 stores a list of valid time zones in the database. The master list of time zones appears in pick-lists in the GUI. The GUI gets this information from the System Administration component. Additional time zones may be added through System Administration. Do not remove any time zone name unless it is one you have added by mistake and no one has used it.

**To add a time zone name to Models-3**, select option 11 from the System Administration Main Menu. The System Administration Time Zone Menu displays. This menu allows you to add time zone names to the Models-3 system by selecting option 1.

### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types.
- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.
- 9) Process Operating System Names.
- 10) Process Platform Names.
- 11) Process Time Zone Names.**
- 12) Dataset Manager Administration.
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 11

### System Administration Time Zone Menu

- 1) Add Time Zone.**
- 2) Remove Time Zone (do NOT do this unless sure time zone never used).
- 3) List Time Zones.
- 4) Back

Enter Selection: 1

Enter time zone abbreviation : BBB

Enter time zone full name : Barely Below Bermuda

**To view all time zone names in Models-3**, select option 11 from the System Administration

Main Menu. The System Administration Time Zone Menu displays. This menu allows you to view all time zone names in the Models-3 system by selecting option 3.

#### System Administration Time Zone Menu

- 1) Add Time Zone.
- 2) Remove Time Zone (do NOT do this unless sure time zone never used).
- 3) List Time Zone.**
- 4) Back

Enter Selection: 3

Atlantic Daylight Saving : ADT  
Atlantic Standard : AST  
Central Daylight Saving : CDS  
Central Standard : CST  
Eastern Daylight Saving : EDS  
Eastern Standard : EST  
GMT : GMT  
GMT +1 : GMTPLUS1  
GMT +10 : GMTPLUS10  
GMT +11 : GMTPLUS11  
GMT +12 : GMTPLUS12  
GMT +2 : GMTPLUS2  
GMT +3 : GMTPLUS3  
GMT +4 : GMTPLUS4  
GMT +5 : GMTPLUS5  
GMT +6 : GMTPLUS6  
GMT +7 : GMTPLUS7  
GMT +8 : GMTPLUS8  
GMT +9 : GMTPLUS9  
GMT -1 : GMTMINUS1  
GMT -10 : GMTMINUS10  
GMT -11 : GMTMINUS11  
GMT -12 : GMTMINUS12  
GMT -2 : GMTMINUS2  
GMT -3 : GMTMINUS3  
GMT -4 : GMTMINUS4  
GMT -5 : GMTMINUS5  
GMT -6 : GMTMINUS6  
GMT -7 : GMTMINUS7  
GMT -8 : GMTMINUS8  
GMT -9 : GMTMINUS9  
Mountain Daylight Saving : MDS  
Mountain Standard : MST  
Pacific Daylight Saving : PDS  
Pacific Standard : PST

**To remove a time zone name in Models-3,** select option 11 from the System Administration Main Menu. The System Administration Time Zone Menu displays. This menu allows you to

remove a time zone name by selecting option 2. Do not remove a time zone name unless it is one you have added by mistake and no one has used it.

#### System Administration Time Zone Menu

- 1) Add Time Zone.
- 2) Remove Time Zone (do NOT do this unless sure time zone never used).**
- 3) List Time Zone.
- 4) Back.

Enter Selection. 2

Enter time zone full name : Barely Below Bermuda

### 9.13 System Administration of Module Managers

Some operations affecting Models-3 framework managers may only be performed by the administrative user. These operations are included in the System Administration Main Menu. There is an administration submenu for the Dataset Manager, Program Manager, Study Manager, and Science Manager Models-3 framework components. Dataset Manager Administration is currently the only manager administration submenu implemented.

#### 9.13.1 Dataset Manager Administration

**To view or edit a dataset from the framework**, an editor must be registered with the system administration component. You should specify the type of file that the editor can handle. When you pop up a list of editors from the M3DS, it should bring up editors that will work on your type of data file.

To register an existing editor, go to the System Administration Main Menu and select option 12, Dataset Manager Administration. Select option 1 and input the relevant information. If the editor runs from only one host, enter the host name, including the domain, or else hit the *Return* key. Enter the full path to the editor. If there are any command line options that you want users to have access to enable, enter them in the options section. Enter a valid platform, operating system, and dataset type code. If these are not typed in correctly, the registration will fail. (See options 7, 9, and 10 from the System Administration Main Menu for detailed lists of valid file formats, platforms, and operating systems.)

#### System Administration Main Menu

- 1) Process Users.
- 2) Process Roles.
- 3) Process Hosts.
- 4) Process Device Types.
- 5) Process Screen Access.
- 6) Process Site IDs.

- 7) Process File Format Types
- 8) Process Compiler Names.
- 9) Process Operating System Names.
- 10) Process Platform Names.
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.**
- 13) Program Manager Administration
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 12

Two examples of editors are given in this document. The first example is for a screen-based editor like "ex" or "vi." If you wish to use these, you must set them up to run inside of an xterm window. The second example is an editor that has its own X Windows-based GUI.

Example 1:

#### System Administration Menu

- 1) Add Editor.**
- 2) Delete Editor.
- 3) List Editors.
  
- 4) Add Viewer.
- 5) Delete Viewer.
- 6) List Viewers.
  
- 7) Add Dataset Type.
- 8) Delete Dataset Type.
- 9) List Dataset Types.
  
- 10) Print Dataset Report.
  
- 11) Back.

Enter Selection: 1  
Enter editor host :  
Enter editor path/name : xterm -e /usr/bin/vi  
Enter editor options  
Enter editor operating System : SUNOS 5.6  
Enter editor platform : SUN  
Enter editor file format: ASCII

Example 2:

#### System Administration Menu

- 1) **Add Editor.**
- 2) Delete Editor.
- 3) List Editors.
  
- 4) Add Viewer.
- 5) Delete Viewer.
- 6) List Viewers.
  
- 7) Add Dataset Type.
- 8) Delete Dataset Type.
- 9) List Dataset Types.
  
- 10) Print Dataset Report
  
- 11) Back.

```

Enter Selection: 1
Enter editor host . sdcws98.sdc3.epa.gov
Enter editor path/name . /usr/local/bin/nedit
Enter editor options -autosave
Enter editor operating System : SUNOS 5.6
Enter editor platform : SUN
Enter editor file format: ASCII

```

**To view all the available editors from the System Administration Component,** select option 3 from the System Administration Menu. Enter a format to get all editors for one type of file or return to get editors for all formats.

#### System Administration Menu

- 1) Add Editor.
- 2) Delete Editor.
- 3) **List Editors.**
  
- 4) Add Viewer.
- 5) Delete Viewer.
- 6) List Viewers.
  
- 7) Add Dataset Type
- 8) Delete Dataset Type.
- 9) List Dataset Types.
  
- 10) Print Dataset Report
  
- 11) Back.

```

Enter Selection: 3

Enter editor file format . ASCII
id: 000000075.000000024.000000004
host.

```

editor: xterm -e /usr/bin/vi  
options:

id: 000000075.000000024.000000005  
host: sdcws98.sdc3.epa.gov  
editor: /usr/local/bin/nedit  
options: -autosave

**To delete an editor registration**, select option 2 from the System Administration Menu. You must enter the unique ID number assigned to the particular registration of this editor. **This should not be done unless you know that no one wants to use this editor anymore.**

#### System Administration Menu

- 1) Add Editor.
- 2) Delete Editor.**
- 3) List Editors.
  
- 4) Add Viewer
- 5) Delete Viewer.
- 6) List Viewers.
  
- 7) Add Dataset Type.
- 8) Delete Dataset Type
- 9) List Dataset Types.
- 10) Print Dataset Report.
- 11) Back.

Enter Selection: 2

Enter editor id number : 000000075.000000024.000000005

**To register an existing viewer**, go to the System Administration Main Menu and select option 12, Dataset Manager Administration. The System Administration Menu displays. Select option 4 and input the relevant information. If the viewer runs from only one host, enter the host name, including the domain, or else hit the *Return* key. Enter the full path to the viewer. If there are any command line options that you want users to have access to, enter them in the options section. Enter a valid platform, operating system, and dataset type code. If these are not typed in correctly, the registration will fail. (See options 7, 9, and 10 from the System Administration Main Menu for detailed lists of valid file formats, platforms, and operating systems.) Viewers are programs that allow the user to view but not change data.

#### System Administration Main Menu

- 1) Process Users
- 2) Process Roles
- 3) Process Hosts
- 4) Process Device Types

- 5) Process Screen Access.
- 6) Process Site IDs.
- 7) Process File Format Types.
- 8) Process Compiler Names.
- 9) Process Operating System Names
- 10) Process Platform Names.
- 11) Process Time Zone Names.
- 12) Dataset Manager Administration.**
- 13) Program Manager Administration.
- 14) Study Manager Administration.
- 15) Science Manager Administration.
- 16) Exit.

Enter Selection: 12

#### System Administration Menu

- 1) Add Editor.
- 2) Delete Editor.
- 3) List Editors
- 4) Add Viewer.**
- 5) Delete Viewer.
- 6) List Viewers.
- 7) Add Dataset Type.
- 8) Delete Dataset Type.
- 9) List Dataset Types.
- 10) Print Dataset Report.
- 11) Back.

Enter Selection: 4  
 Enter viewer host :  
 Enter viewer path/name : xterm -e /usr/bin/view  
 Enter viewer options :  
 Enter viewer operating System : SUNOS 5.6  
 Enter viewer platform : SUN  
 Enter viewer file format. ASCII

**To display all the available viewers from the System Administration Component, select option 6 from the System Administration Menu. Enter a format to get all viewers for one type of file. or return to get viewers for all formats.**

#### System Administration Menu

- 1) Add Editor.
- 2) Delete Editor.
- 3) List Editors.

- 4) Add Viewer.
- 5) Delete Viewer.
- 6) List Viewers.**
  
- 7) Add Dataset Type.
- 8) Delete Dataset Type.
- 9) List Dataset Types.
  
- 10) Print Dataset Report.
  
- 11) Back.

```

Enter Selection: 6
Enter viewer file format : ASCII
id. 000000075.000000024 000000006
host:
viewer xterm -e /usr/bin/view
options:

```

**To delete a viewer registration**, select option 5 from the System Administration Menu. You must enter the unique ID number assigned to the particular registration of this viewer. **This should not be done unless you know that no one wants to use this viewer anymore.**

#### System Administration Menu

- 1) Add Editor.
- 2) Delete Editor.
- 3) List Editors.
  
- 4) Add Viewer.
- 5) Delete Viewer.**
- 6) List Viewers.
  
- 7) Add Dataset Type.
- 8) Delete Dataset Type.
- 9) List Dataset Types.
  
- 10) Print Dataset Report.
  
- 11) Back

```

Enter Selection. 5
Enter viewer id number : 000000075.000000024.000000006

```

All dataset files are categorized by their contents. The main list of dataset types is already in the system. **New dataset types should be added only at the request of EPA.** To add a new type, use option 7 on the System Administration Menu. Type in the new dataset type code.

#### System Administration Menu

- 1) Add Editor
  - 2) Delete Editor.
  - 3) List Editors.
  
  - 4) Add Viewer.
  - 5) Delete Viewer.
  - 6) List Viewers.
  
  - 7) Add Dataset Type.**
  - 8) Delete Dataset Type.
  - 9) List Dataset Types
  
  - 10) Print Dataset Report.
  
  - 11) Back
- Enter Selection: 7  
Enter dataset type . fake

**To view the existing dataset type codes**, select option 9 from the System Administration Menu.

#### System Administration Menu

- 1) Add Editor.
  - 2) Delete Editor.
  - 3) List Editors.
  
  - 4) Add Viewer.
  - 5) Delete Viewer.
  - 6) List Viewers.
  
  - 7) Add Dataset Type.
  - 8) Delete Dataset Type
  - 9) List Dataset Types.**
  
  - 10) Print Dataset Report.
  
  - 11) Back.
- Enter Selection: 9  
air quality  
air quality AIRS  
air quality PAMS  
air quality simulated  
boundary condition  
chemistry  
demographic  
demographic Census

demographic Tiger  
emissions  
emissions FIRE  
emissions area source  
emissions inventory  
emissions mobile  
emissions natural  
emissions point source  
emissions processed  
initial condition  
land use  
land use BEIS  
meteorology  
meteorology NWS  
meteorology processed  
meteorology satellite  
meteorology surface  
meteorology upper air  
satellite AVHRR  
soil  
solar radiation  
terrain height  
terrain height Global  
terrain height USGS  
weather

**To remove a dataset type, select option 8 from the System Administration Menu. Dataset types should not be removed. The Remove option exists in case you add a new dataset type, have made a mistake, and now wish to delete it.**

#### System Administration Menu

- 1) Add Editor
- 2) Delete Editor
- 3) List Editors.
  
- 4) Add Viewer.
- 5) Delete Viewer.
- 6) List Viewers.
  
- 7) Add Dataset Type.
- 8) Delete Dataset Type.**
- 9) List Dataset Types
  
- 10) Print Dataset Report.
  
- 11) Back

Enter Selection: 8  
Enter dataset type : fake

**To obtain a report that shows the metadata for a particular dataset**, select option 10 from the System Administration Menu. You must enter the unique ID of the dataset registration. The report will display in your home directory in \$HOME/models3.rpt.

*System Administration Menu*

- 1) Add Editor.
- 2) Delete Editor.
- 3) List Editors.
  
- 4) Add Viewer.
- 5) Delete Viewer.
- 6) List Viewers.
  
- 7) Add Dataset Type
- 8) Delete Dataset Type
- 9) List Dataset Types.
  
- 10) Print Dataset Report.**
  
- 11) Back.

Enter Selection: 10  
Enter DS id: 000000002.000000015.000000015

### **9.13.2 Program Manager Administration**

This menu option is not currently implemented.

### **9.13.3 Study Manager Administration**

This menu option is not currently implemented.

### **9.13.4 Science Manager Administration**

This menu option is not currently implemented.

## 10.0 MISCELLANEOUS ADMINISTRATION

### 10.1 Backups

The local UNIX system administrator is responsible for backing up the Models-3 files. The backup should be done when there is no system activity. The \$M3DATA directory will grow quickly. The \$M3TOOLS and \$M3MODEL directories do not change. The \$M3FRAME tree changes daily because the database directory is a subtree.

### 10.2 File Clean Up

The files in /tmp/ostore should **NEVER** be cleaned up by hand. They remain there while the database is open. If a process goes away, it is safe to clean up the /tmp cache file using the osClean.csh script described in Section 4.

Users' \$HOME directories may become cluttered if they use these areas to store datasets or models. Some of the models are run from the \$HOME areas. Some tools add directories under the users' \$HOME. The visualization component uses \$HOME as a staging area to do file format conversions. These files are hidden and usually begin with .vis\*.

The studies are typically put in \$M3DATA/studies. This area will grow larger. It is possible that it might be filled up with useless files if users create many test studies. Some of the output datasets may be placed in this directory. The other directory under \$M3DATA, nostudies, should not grow very much. The files under this directory are initial inventories and should not be removed.

### 10.3 Process Clean Up

Use the "ps" command to see processes started up by the "models3" user on the Models-3 server. On the Models-3 server, "root" should own the two ObjectStore database processes: osserver and oscmgr4. The "models3" user should own the Orbix process orbixd. The "models3" user should also own the M3\* processes.

On the client machines, the person logged in should own the Orbix process, orbixd, and the M3GI and M3EM processes. If the user is running visualization (PAVE or Vis5d), SAS, ARC/INFO, or SoftWindows, he or she will be the owner of these processes. Just because the visualization tools have been closed, do not assume that the processes are gone.

If you want to kill only selected processes, use the UNIX kill command. If you want to kill all of the Models-3 processes, use the killOrbix.sh script found in /usr/local/bin.

## **APPENDIX A**

Sample Installation Output

```
# tar xvf /dev/rmt/0
x /tmp/installTape1.sh, 60101 bytes, 101 tape blocks
#./installTape1.sh | tee -a tape1.log
```

Current Process id is 4950

Log file is /tmp/installTape1.log.4950 and tar log is /tmp/installTape1.tar.log.4950

Please press the <<return>> or <<enter>> key to continue.

## Overview of Installation Tasks

The best way to install Models-3 is to read the manual and perform all tasks in the order in which they are documented. A brief overview of the tasks are as follows:

1. Read the ENTIRE installation manual.
2. Verify that the Sun, which is to be the Models-3 server and a client, is configured properly. Check disk space (at least 30 Gigabytes), memory, and user identifications (IDs). Third party software, not provided by EPA, must be installed first. There are many, many reasons why the install scripts can fail. The more changes you make to the expected configuration the more chance something will not work causing the scripts to fail. In general the scripts work best when you have a /home/models3 directory that has been automounted, software residing in the common SUN software directory /opt and scripts in /usr/local/bin. These expected directories can be changed if you understand the install process or contact us for instruction for your special case.
3. If you will have other clients, (Suns or NT Workstations) verify that they are configured properly. Check disk space, memory, and user IDs. Third party software, not provided by EPA, must be installed.
4. If you wish to run Strategy Manager from the Sun, configure the SoftWindows package.
5. Add objects to the database for your site. users, hosts, printers, and editors must be registered through the System Administration subsystem. This is done from your Sun Models-3 server.
6. On the Sun Models-3 server, set up cron jobs to clean up after Models-3.

7. If you wish to install Models-3 clients on one or more Suns, run the installation script on these machines.

8. If you wish to install Models-3 clients on one or more NT Workstations, install the 8mm tape for NT Workstation clients on your Sun Models-3 server. This dumps all the software on the Sun disk and creates a special area for NT executable. The Samba software, which allows the NT to mount the Sun disks is included on this tape. Install the Samba software on the Sun and test from the NT. On the NT, run a final installation script which copies certain files from the sun into C:\bin. Install war-ftp software on the NT so files which are not accessible from shared disks, may be sent between the Sun and the NT.

Please press the <<return>> or <<enter>> key to continue.

### Installation Checklist

The following checklist is to be used during installation of the Sun Models-3 server.

#### Sun Installation Checklist

1. Read the ENTIRE installation manual.
2. Verify that the Sun used for the Models-3 server has enough disk space (at least 30 Gigabytes) and memory (256 MB). Disk space will be needed for software that comes from the tapes and also third party software.  
The tapes will use space as follows:

"Typical" Sun installation will need the following space for installation of all tapes:

(NOTE: sizes below were determined by issuing a "du -ks" on specific directories.

a.) Software from tapes to /opt: 229450k

Orbix	92395k
ostore	45517k
galaxycxx	91538k

b.) Software from tapes to /home/models3: 24535673k

framework	191520k
datasets	21692076k
exec	611306k
models	1279553k
tools	761218k

c.) Software from tapes to /usr/local/bin: 7100k

d.) Software from tapes to /etc: 3k

NOTE: Make sure root can write to all file systems that the tape will be writing to.

3. Verify that any Sun which will run emissions models has at least 1 GB of swap space.
4. Verify that Sun runs Solaris 5.6, development version.
5. Add appropriate user IDs (models3, etc.) and group "models3" to Sun server and clients.
6. Verify that Sun hosts information is complete in /etc. Machine will need to act like it is networked if it is a standalone machine.
7. Verify that users' home directories are available from all Suns that run Models-3.
8. Verify that the Sun Models-3 server's disk is mounted by other Suns that will run Models-3.
9. If you wish to run any models from the Sun, install the Fortran compiler.
10. If you wish to run emissions models from the Sun, install ARC/INFO, SAS, and SAS/Full Screen Processor (FSP). Make sure all third party software works before you install the tapes. Note: If you don't install all packages expect a corresponding error message in the script logs that can be ignored.
11. If you wish to run the Strategy Manager from the Sun, install SoftWindows 95 version 4.0.
12. Install an internet browser in /usr/local/bin on your Sun. The Help

System will use this.

13. Create the directory and make sure all clients can mount it. It should be owned by "models3" and in "models3" group. On a typical installation this will be /home/models3.

14. Make sure you have space for Galaxy and Orbix directories. They will reside on the Sun server and should be mounted from all Sun machines that will act as Models-3 clients.

15. Verify that your system has a domainname. The scripts use your workstation name concatenating it to the domainname. For this reason if you are using nis the install scripts might fail. To check domainname at your SUN prompt type hostname an example response: temp9  
Then type domainname an example response: rtpnc.epa.gov.  
The two concatenated would be temp9.rtpnc.epa.gov. -- A valid full name.  
If you don't have a valid full name make note of it. After the install you will need to modify some files. You will need to modify /usr/local/bin scripts: m3env.csh and m3runEnv.sh to reflect your environment. Also you will need to modify /framework/config files: Orbix.cfg, and Orbix.hosts and check the Repository directory \*.imp files. Finally you will need to do a restart of install process 19 on the databases after moving your models3.db.bak to models3.db in the /framework/db directory. Contact us before completing these adjustments.

#### YOU ARE NOW READY TO INSTALL THE TAPES

16. As root, run the installTape1.sh script from the Sun. Be sure to input the proper site ID! A typical way to extract the first script is to use the command --

```
tar xvf /dev/rmt/0
```

(a.) Install scripts for all tapes are the first tar file on the tape. Untar the scripts and install the tapes in order. The scripts' names for the 8mm tapes are as follows:

```
installTape1.sh, installTape2.sh, installTape3.sh, installData1.sh,  
installData2.sh
```

for tapes 1-5 respectively.

(b.) If you wish to understand the install process review the install scripts.

The three "installTape" scripts are actually all the same script with different names as are the two "installData" scripts. You really have to look at only two scripts.

(c.) As you go through the installation process, pay particular attention to any errors that might show up in either /tmp/restart.txt, /tmp/installTapeX.log.4950 or /tmp/installTapeX.tar.log.4950 (where X refers to the tape number and 4950 is the process id number of the script when you run it. All of these files should be automatically made in the /tmp directory and can be used to pin point errors or sections of the install process that will need to be re-run because they have failed. You will see the same outputs on your screen. The install script outputs are saved to the above log files just in case you do not sit at your terminal during the whole install.

When the install script finishes normally, copies of the log files and the restart file will be made in M3HOME/logs where M3HOME is the location you have chosen for your models3 home (usually /home/models3).

(d.) IF you need to re-install anything use the restart option. For example if you need to re-run step 13 run the install script by typing the following at the Unix prompt:

```
/tmp/installTape3.sh -restart 13
```

(e.) In the log files references to restart points are as follows for the 8mm tapes:

Tape 1 restart 1-5

Tape 2 restart 6-9

Tape 3 restart 10-21

(f.) Note: If an error occurs you will usually see an error message in the log files .. but still see the message "RESTART X COMPLETED". In such a case, you should use as the restart number, the number in the position indicated by "X" in the "RESTART X COMPLETED" message following the error message.

HOPEFULLY YOU HAVE NOW COMPLETED A FULL INSTALL if you have any errors you are unsure about please contact us.

17. Verify that the Object Store database is running by typing "ps -aef | grep os" and viewing the two processes, osserver and oscmgr4.

18. Verify that the site ID and Models-3 server host name have been set

properly by typing "grep SITE /usr/local/bin/m3\*" and "grep HOST /usr/local/bin/m3\*".

19. IMPORTANT!! Verify that your config directory is correct. Go to /framework/config. Check Orbix.hosts, Orbix.cfg, and all \*.imp files under /framework/config/Repository. Make sure the entries make sense for your environment. Please contact us if you have questions.
20. Verify that the database file has 664 permissions.
21. As root, add the clean up cron entries.
22. Through the M3SysAdmin program, add host objects for all hosts that will access Models-3. This should be done under the "models3" user ID.
23. Through the M3SysAdmin program, add host device objects (printers) for all devices attached to hosts that will access Models-3. This should be done under the "models3" user ID.
24. Through the M3SysAdmin program, add user objects for all users that will access Models-3. This should be done under the "models3" user ID.
25. Through the M3SysAdmin program, add editor objects. This should be done under the "models3" user ID.
26. User "models3" and all other users must modify their .rhosts files.
27. Users should source /usr/local/bin/m3env.csh from their .cshrc files.
28. If users wish to run the visualization tools, they must add lines to their .Xdefaults file and .cshrc file. An example that works on our system if the user is using Desktop window manager would be.

~/.Xdefaults:

```
EDSS_Pave*geometry: +175+150
EDSS_Pave*fontSet: -dt-interface system-medium-r-normal-m*-*-**-*-*-*
EDSS_Pave*fontList: -dt-interface system-medium-r-normal-m*-*-**-*-*-*
Browser*fontSet: -dt-interface system-medium-r-normal-m*-*-**-*-*-*
Browser*fontList: -dt-interface system-medium-r-normal-m*-*-**-*-*-*
```

~/.cshrc:

```
setenv LD_LIBRARY_PATH
/usr/local/lib:/usr/lib:/usr/ucblib:/usr/openwin:/opt/SUNWspro/lib:/usr/dt/lib
```

These values might be different on your system depending on where libraries are located and what window manager you use. See visualization tool documentation for details.

**YOU SHOULD NOW BE READY TO RUN**

try running models3 by starting the system with command m3run  
you will want to be logged in as models3. Make sure you source m3env.csh  
Please contact us if you have questions.

#####

A copy of the checklist is in the file /tmp/m3\_install\_checklist  
in simple text format. Please print this list and use it  
As you go through the installation steps.

Starting installation: Thu Jul 15 09:47:50 EDT 1999

In function set\_info

Please enter the directory for models3 [/home/models3]:

Please enter the directory where Galaxy will be installed [/opt/galaxycxx]:

Please enter the directory where Orbix will be installed [/opt/Orbix]:

Please enter the directory where Object Store will be installed [/opt/ostore]:

Please enter the name of the ObjectStore server host [olympia]:

Your site name should be your two digit state code and a sequence number.  
If there is more than one site in your state running Models-3 check with EPA  
to get your site sequence number. This must be setup before you run Models-3.  
Please enter the site name[AL01]:

Is this installation a server [Y|N]:

Do you wish to remove "tar" files when files have been extracted?

NOTE: This will greatly reduce the required disk space, but will  
require a tape to be reloaded if certain errors occur. [Y|N]

Please insert Sun Installation Tape #1 into your tape drive. then enter the device name of your tape drive and press return [/dev/rmt/0]:

Skipping ahead of first file so at the start of the distribution ...  
-rwxr-xr-x 1047/101 60101 Jul 14 17:02 1999 /tmp/installTape1.sh

In function load\_frame\_data\_models\_tools

RESTART POINT 1

Remove existing Models3 framework software from last release?  
Answering "Y" will remove the framework, datasets, tools, models, and exec directories from your models3 installation location. [Y|N]:

Tape 1 will now begin loading files. This should take around two hours. If it appears to load correctly, continue by loading of Tape 2; if not, correct problems and reload or restart Tape 1.

Getting file off tape

Getting file off tape: framework ...  
tar xvf /dev/rmt/0n  
Tar of framework from tape completed okay

Getting file off tape: tools ...  
tar xvf /dev/rmt/0n ./tools  
Tar of tools from tape completed okay

Getting file off tape: executables ...  
tar xvf /dev/rmt/0n ./exec  
Tar of executables from tape completed okay

Getting file off tape: scientific models ...  
tar xvf /dev/rmt/0n  
Tar of models from tape completed okay  
RESTART 1 COMPLETED

In function load\_galaxy\_orbix\_ostore\_from\_tape

RESTART POINT 2

Installing galaxy libraries ...

```
tar xvf /dev/rmt/0n ./galaxycxx
Tar of Galaxy completed okay
```

```
Installing Orbix libraries ...
tar xvf /dev/rmt/0n ./Orbix
Tar of Orbix completed okay
```

```
Installing ObjectStore software...
tar xvf /dev/rmt/0n ./ostore
Tar of ostore completed okay
RESTART 2 COMPLETED
```

```
In function load_data1
```

```
RESTART POINT 3
```

```
Getting file off tape: datasets ...
RESTART 3 COMPLETED
```

```
RESTART POINT 4
```

```
Getting mepps files off tape: ...
tar xvf /dev/rmt/0n
Tar of mepps/inv from tape completed okay
RESTART 4 COMPLETED
```

```
RESTART POINT 5
```

```
Getting nostudies files off tape: ...
tar xvf /dev/rmt/0n
Tar of nostudies from tape completed okay
RESTART 5 COMPLETED
Finised Loading tape 1.
Log files moved to /home/models3/logs
```

```
.....
# tar xvf /dev/rmt/0
x /tmp/installTape2.sh. 60101 bytes. 101 tape blocks
#./installTape2.sh | tee -a tape2.log
```

```
Current Process id is 5810
Log file is /tmp/installTape2.log.5810 and tar log is /tmp/installTape2.tar.log.5810
```

Do you want to see hints and an install checklist? [Y|N]

Starting installation: Thu Jul 15 11:59:21 EDT 1999

In function get\_info

Please insert Sun Installation Tape #2 into your tape drive, then press enter.

Skipping ahead of first file so at the start of the distribution ...

```
-rwxr-xr-x 1047/101 60101 Jul 14 17:02 1999 /tmp/installTape2.sh
```

In function load\_data2.

Tape 2 will now begin loading files. This should take around two hours. If it appears to load correctly, continue by loading of Tape 3; if not, correct problems and reload or restart Tape 2.

RESTART POINT 6

Getting mm5 nostudies files off tape: ...

```
mt -f /dev/rmt/0n asf 1
```

Moving to file 1 on tape completed okay

```
tar xvf /dev/rmt/0n
```

Tar of mm5 in nostudies completed okay

RESTART 6 COMPLETED

RESTART POINT 7

Getting CTM study files off tape: ...

```
tar xvf /dev/rmt/0n
```

Tar of CTM files in NC01 completed okay

RESTART 7 COMPLETED

RESTART POINT 8

Getting mepps 4 study files off tape: ...

```
tar xvf /dev/rmt/0n
```

Tar of mepps 4 files completed okay

RESTART 8 COMPLETED

## RESTART POINT 9

Getting mepps 12 study files off tape: ...

```
tar xvf /dev/rmt/0n
```

Tar of mepps 12 files completed okay

RESTART 9 COMPLETED

Finised Loading tape 2.

Log files moved to /home/models3/logs

.....

```
# tar xvf /dev/rmt/0
```

```
x /tmp/installTape3.sh. 60101 bytes, 101 tape blocks
```

```
#!/installTape3.sh | tee -a tape3.log
```

Current Process id is 6162

Log file is /tmp/installTape3.log.6162 and tar log is /tmp/installTape3.tar.log.6162

Do you want to see hints and an install checklist? [Y|N]

Starting installation: Thu Jul 15 13:19:20 EDT 1999

In function get\_info

Please insert Sun Installation Tape #3 into your tape drive, then press enter.

Skipping ahead of first file so at the start of the distribution ...

```
-rwxr-xr-x 1047/101 60101 Jul 14 17:02 1999 /tmp/installTape3.sh
```

In function load\_data3.

Tape 3 will now begin loading files. This should take around two hours. After that time you will be asked a few questions and then the installation will run some important configuration steps that will take about 1 minute. Please check carefully that these steps have completed correctly.

If it appears that Tape 3 loaded correctly, you may continue by loading of optional Tape 4, if desired. Note that loading of data from Tapes 4 and 5 is optional.

If you noted any errors when loading tape 3,  
correct the problems and reload or restart Tape 3.

#### RESTART POINT 10

Getting mepps 36 files off tape: ...  
mt -f /dev/rmt/0n asf 1  
Moving to file 1 on tape completed okay

Getting mepps 36 gridspec study files off tape: ...  
tar xvf /dev/rmt/0n  
Tar of mepps 36 gridspec completed okay

Getting mepps 36 lookup study files off tape: ...  
tar xvf /dev/rmt/0n  
Tar of mepps 36 lookup completed okay

Getting mepps 36 raw data study files off tape: ...  
tar xvf /dev/rmt/0n  
Tar of mepps 36 raw data completed okay

Getting t2\_36 general study files off tape: ...  
tar xvf /dev/rmt/0n  
Tar of t2\_36 general study completed okay

Getting t2\_36 day x1 study files off tape: ...  
tar xvf /dev/rmt/0n  
Tar of t2\_36 day x1 completed okay

Getting t2\_36 day x2 study files off tape: ...  
tar xvf /dev/rmt/0n  
Tar of t2\_36 day x2 completed okay  
RESTART 10 COMPLETED

#### RESTART POINT 11

Uncompressing mm5 nostudies file: ...  
uncompress mm5.tar.Z  
Uncompress of mm5.tar.Z completed okay  
tar xvf mm5.tar  
Untar of mm5.tar completed okay

You may remove /home/models3/datasets/nostudies/mm5.tar  
if you are sure they have been untarred without running out of space.  
RESTART 11 COMPLETED

RESTART POINT 12

Uncompressing mepps 4 study files : ...  
uncompress mepps\_4.tar.Z  
Uncompress of mepps\_4.tar.Z completed okay  
tar xvf mepps\_4.tar  
Untar of mepps\_4.tar completed okay  
uncompress mepps\_4c.tar.Z  
Uncompress of mepps\_4c.tar.Z completed okay  
tar xvf mepps\_4c.tar  
Untar of mepps\_4c.tar completed okay  
uncompress mepps\_4p.tar.Z  
Uncompress of mepps\_4p.tar.Z completed okay  
tar xvf mepps\_4p.tar  
Untar of mepps\_4p.tar completed okay

You may remove /home/models3/datasets/studies/project/mepps\_4.tar,  
mepps\_4c.tar, and mepps\_4p.tar if you are sure they have been untarred  
without running out of space.  
RESTART 12 COMPLETED

RESTART POINT 13

Uncompressing mepps 12 study files : ...  
uncompress mepps\_12.tar.Z  
Uncompress of mepps\_12.tar.Z completed okay  
tar xvf mepps\_12.tar  
Untar of mepps\_12.tar completed okay

You may remove /home/models3/datasets/studies/project/mepps\_12.tar  
if you are sure it has been untarred without running out of space.  
RESTART 13 COMPLETED

RESTART POINT 14

Uncompressing mepps 36 study files : ...

Uncompressing mepps 36 gridspec study files : ...

```
uncompress mepps_36_gridspec.tar.Z
Uncompress of mepps_36_gridspec.tar.Z completed okay
tar xvf mepps_36_gridspec.tar
Untar of mepps_36_gridspec.tar completed okay
```

You may remove /home/models3/datasets/studies/project/mepps\_36\_gridspec.tar if you are sure it has been untarred without running out of space.

```
Uncompressing mepps 36 lookup study files : ...
uncompress mepps_36_lookup.tar.Z
Uncompress of mepps_36_lookup.tar.Z completed okay
tar xvf mepps_36_lookup.tar
Untar of mepps_36_lookup.tar completed okay
```

You may remove /home/models3/datasets/studies/project/mepps\_36\_lookup.tar if you are sure it has been untarred without running out of space.

```
Uncompressing mepps 36 raw study files : ...
uncompress mepps_36_raw_data.tar.Z
Uncompress of mepps_36_raw_data.tar.Z completed okay
tar xvf mepps_36_raw_data.tar
Untar of mepps_36_raw_data.tar completed okay
```

You may remove /home/models3/datasets/studies/project/mepps\_36\_raw\_data.tar if you are sure it has been untarred without running out of space.

Uncompressing t2\_36 study files : ...

```
Uncompressing t2_36 general study files : ...
uncompress t2_36.tar.Z
Uncompress of t2_36.tar.Z completed okay
tar xvf t2_36.tar
Untar of t2_36.tar completed okay
```

You may remove /home/models3/datasets/studies/project/t2\_36.tar if you are sure it has been untarred without running out of space.

```
Uncompressing t2_36 day x1 study files : ...
uncompress t2_36_x1.tar.Z
Uncompress of t2_36_x1.tar.Z completed okay
tar xvf t2_36_x1.tar
Untar of t2_36_x1.tar completed okay
```

You may remove /home/models3/datasets/studies/project/t2\_36\_x1.tar if you are sure it has been untarred without running out of space.

```
Uncompressing t2_36 day x2 study files : ...
uncompress t2_36_x2.tar.Z
Uncompress of t2_36_x2.tar.Z completed okay
tar xvf t2_36_x2.tar
Untar of t2_36_x2.tar completed okay
```

You may remove /home/models3/datasets/studies/project/t2\_36\_x2.tar if you are sure it has been untarred without running out of space.

RESTART 14 COMPLETED

In function set\_usr\_local\_bin

RESTART POINT 15

Copying some files to /usr/local/bin...

Modifying some startup scripts ...  
RESTART 15 COMPLETED

In function set\_third\_party\_links

RESTART POINT 16

Please enter the directory where arcInfo is installed [/opt/arcexe70]:

Creating link in /opt

Please enter the directory where sas is installed [/opt/sas/sas612]:

Please enter the directory where fortran is installed [/opt/SUNWspro]:

Please enter the directory where Soft Windows is installed [/opt/SoftWindows2]:  
RESTART 16 COMPLETED

In function install\_Orbix

RESTART POINT 17

Configuring Orbix communications software ...  
RESTART 17 COMPLETED

In function install\_ostore

RESTART POINT 18

Installing ObjectStore startup scripts in /etc/rc2.d ...

Installing ObjectStore license ...

Starting the ObjectStore processes osserver and oscmgr4 ...  
RESTART 18 COMPLETED

In function modify\_demo\_database

RESTART POINT 19

Relocating database schema to your database path ...  
990715 152859 ObjectStore Release 5.1 Database Server  
990715 152859 ObjectStore Release 5.1 Database Server

Changing data in the demo database to match host olympia.rtpnc.epa.gov ...

NOTE: If the machine you are currently installing to  
is NOT olympia.rtpnc.epa.gov they you will have to manually change  
configuration files in /framework/config.  
RESTART 19 COMPLETED

In function set\_perms

RESTART POINT 20

Setting file permissions on models ...

Setting file ownership ...

Setting file group ...

Setting file permissions for datasets ...  
RESTART 20 COMPLETED

In function setup\_arc\_libs

RESTART POINT 21

Adding arc libraries in /opt/arcexe70...

RESTART 21 COMPLETED

Completing installation: Thu Jul 15 15:36:23 EDT 1999

Models3 installation complete.

Log files moved to /home/models3/logs

.....

Data tapes 1 and 2 are completed in the same fashion.

## **APPENDIX B**

Models-3 Directory Tree

The Models-3 tree is usually housed in /home/models3. This may be configured to be a different directory during installation. The name must not contain any capital letters. This top-level directory is identified by the environment variable \$M3HOME. The five main sections of the tree are:

- *datasets* - \$M3DATA: Inputs and outputs to studies reside in ./studies and ./nostudies. This will be the area that is prone to the most growth as far as disk space is concerned.
- *exec* - \$M3EXEC: Executables that have been tagged as "official" are placed in this area. The users have permissions to modify this area. There will be subdirectories for models and each hardware platform.
- *framework* - \$M3FRAME: Programs that allow the users to run the suite of tools and models are stored in this directory along with the database and Orbix configuration files. Users have privileges to modify the database files only.
- *models* - \$M3MODEL: Scientific models are stored in this area. The conforming models are written in FORTRAN and must be compiled before they are run. The users in group "models3" have permissions to modify this area.
- *tools* - \$M3TOOLS: Third-party tools, freeware, and scripts that kick off commercial executables from the framework. The users do not have permissions to change the contents of this directory.

The top two levels of the tree are as below:

```
datasets:
nostudies/      studies/

exec:
protected/

framework:
bin/    config/  db/    installdb/ lib/    templates/

models:
CCTM/  ICON/  MCIP/  LUPROC/  MECH/  empro/  mepro/  include/
ECIP/  BCON/  JPROC/  PROCAN/  PDM/  mepps/  midpro/
```

tools:

GridViewer/ Models3Vis/ VisDriver/ M3SubsetTool/ mm5\_to\_v5d/  
IOAPI/ PAVE/ arc/ netCDF/ sas/ STENEX/ stenex/  
MP/ Vis5d/ build/ rcs\_cvs/ M3GridSample/ to\_v5d/

The complete listing of all files that were used to create the framework and models code are in \$M3HOME/framework/installdb/BillOfMaterials.txt. It also contains a listing of every file included on the latest installation tape.

## **APPENDIX C**

Models-3 Environment Variables

The following environment variables are used by the Models-3 system. They are set in the m3env.csh, m3runEnv.sh, and m3env.bat scripts.

Environment Variable	Value	Description
<i>Models-3 Directories</i>		
M3HOME	usually /home/models3	base directory where software is installed
M3FRAME	\$M3HOME/framework	framework files and database
	\$M3HOME/datasets	datasets
M3EXEC	\$M3HOME/exec	executables - compiled models
M3TOOLS	\$M3HOME/tools	tools to use - do not compile these
M3MODEL	\$M3HOME/models	source code for scientific models
M3FBIN	\$M3FRAME/bin	framework binary executables
M3FLIB	\$M3FRAME/lib	framework libraries
M3FSRC	\$M3FRAME/src	framework source - empty for most sites
M3FINC	\$M3FRAME/inc	framework include files - empty for most sites
M3FDBPATH	\$M3FRAME/db	framework database files
M3FDBNAME	\$M3FDBPATH/models3.db	main framework database
M3MMEPPS	\$M3MODEL/mepps	mepps model (emissions)
M3MEMPRO	\$M3MODEL/empro	empro model (emissions)
M3MMEPRO	\$M3MODEL/mepro	mepro model (strategy manager)
M3MMIDPRO	\$M3MODEL/midpro	IDA model (file formatted for emissions)
M3MCTM	\$M3MODEL/CCTM	CTM model (chemistry)
M3TEMP	usually it is /tmp or C:\TEMP	holds temporary files
<i>Other</i>		
M3SITE	(system dependent)	unique site name
M3HOST	(system dependent)	host name, including domain name
M3FMHOST	(system dependent)	host name where File Migrator is running
M3USERHOME	(system dependent)	the user's home directory

**Table C-1.** Models-3 Framework Environment Variables

## **APPENDIX D**

### Selected Dataset Details

The following table describes selected datasets under the nostudies area. Acronyms may be found in Appendix B of User Manual.

Key: M is Main Tape, S is Supplemental Tape

Dataset Name	File Location	Tape
BC profile data for BCON	\$M3DATA/nostudies/bcon/bc_profile.dat	M
IC profile data for ICON	\$M3DATA/nostudies/bcon/ic_profile.dat	M
Land-use data for LUPROC	\$M3DATA/nostudies/bcon/mm5_soil_data	M
Hourly ozone measurements July 6-10, 1995 (SAS)	\$M3DATA/nostudies/ozone/o3_dev.ssd01	M
Hourly ozone measurements July 11-15, 1995 (SAS)	\$M3DATA/nostudies/ozone/o3_evl.ssd01	M
Site locations for all available monitoring stations for July 6-15, 1995 (SAS)	\$M3DATA/nostudies/ozone/site.ssd01	M
Hourly ozone measurements from NARSTO for 1995	\$M3DATA/nostudies/narsto_ne_1995/AME07AI1.1HR	M
Description of NARSTO Data	\$M3DATA/nostudies/narsto_ne_1995/narsto_ne_readme95.txt	M
Extra-terrestrial irradiance values for JPROC	\$M3DATA/nostudies/phot/ETirradiance.dat	M
Vertical Profiles data for JPROC	\$M3DATA/nostudies/phot/PROFILES.dat	M
O2 absorption cross section data for JPROC	\$M3DATA/nostudies/phot/O2_NASA94	M

Dataset Name	File Location	Tape
--------------	---------------	------

**Table D-1.** Selected Datasets Under Nostudies

O2 absorption cross section data for JPROC	\$M3DATA/nostudies/phot/O2_RADM88	M
O3 Photolysis to O1D for JPROC	\$M3DATA/nostudies/phot/O3O1D_NASA94	M
O3 Photolysis to O1D for JPROC	\$M3DATA/nostudies/phot/O3O1D_RADM88	M
O3 Photolysis to O1D for JPROC	\$M3DATA/nostudies/phot/O3O1D_CBIV88	M
O3 Photolysis to O3P for JPROC	\$M3DATA/nostudies/phot/O3O3P_RADM88	M
O3 Photolysis to O3P for JPROC	\$M3DATA/nostudies/phot/O3O3P_NASA94	M
Nitrogen Dioxide Photolysis for JPROC	\$M3DATA/nostudies/phot/NO2_RADM88	M
Nitrogen Dioxide Photolysis for JPROC	\$M3DATA/nostudies/phot/NO2_CBIV88	M
Nitrogen Dioxide Photolysis for JPROC	\$M3DATA/nostudies/phot/NO2_NASA94	M
Nitrate Photolysis to NO for JPROC	\$M3DATA/nostudies/phot/NO3NO_RADM88	M
Nitrate Photolysis to NO for JPROC	\$M3DATA/nostudies/phot/NO3NO_NASA-94	M
Nitrate Photolysis to NO2 for JPROC	\$M3DATA/nostudies/phot/NO3NO2_RADM88	M
Nitrate Photolysis to NO2 for JPROC	\$M3DATA/nostudies/phot/NO3NO2_NASA94	M
Nitrous Acid Photolysis for JPROC	\$M3DATA/nostudies/phot/HONO_RADM88	M

Dataset Name	File Location	Tape
--------------	---------------	------

**Table D-1.** Selected Datasets Under Nostudies (continued)

Nitrous Acid Photolysis for JPROC	\$M3DATA/nostudies/phot/HONO_NASA94	M
Nitric Acid Photolysis for JPROC	\$M3DATA/nostudies/phot/HNO3_RADM88	M
Nitric Acid Photolysis for JPROC	\$M3DATA/nostudies/phot/HNO3_NASA94	M
Pernitric Acid Photolysis for JPROC	\$M3DATA/nostudies/phot/HNO4_RADM88	M
Pernitric Acid Photolysis for JPROC	\$M3DATA/nostudies/phot/HNO4_NASA94	M
Hydrogen Peroxide Photolysis for JPROC	\$M3DATA/nostudies/phot/H2O2_RADM88	M
Hydrogen Peroxide Photolysis for JPROC	\$M3DATA/nostudies/phot/H2O2_NASA94	M
Formaldehyde Photolysis to Radicals for JPROC	\$M3DATA/nostudies/phot/HCHOrad_RADM88	M
Formaldehyde Photolysis to Radicals for JPROC	\$M3DATA/nostudies/phot/HCHOrad_CBIV88	M
Formaldehyde Photolysis to Radicals for JPROC	\$M3DATA/nostudies/phot/HCHOrad_NASA94	M
Formaldehyde Photolysis to Molecular Hydrogen for JPROC	\$M3DATA/nostudies/phot/HCHOmol_RADM88	M
Formaldehyde Photolysis to Molecular Hydrogen for JPROC	\$M3DATA/nostudies/phot/HCHOmol_CBIV88	M

**Table D-1.** Selected Datasets Under Nostudies (continued)

Dataset Name	File Location	Tape
Formaldehyde Photolysis to Molecular Hydrogen for JPROC	\$M3DATA/nostudies/phot/HCHOmol_NASA94	M
Acetaldehyde Photolysis for JPROC	\$M3DATA/nostudies/phot/ALD_RADM88	M
Acetaldehyde Photolysis for JPROC	\$M3DATA/nostudies/phot/ALD_CBIV88	M
Acetone Photolysis for JPROC	\$M3DATA/nostudies/phot/ACETONE_RADM88	M
Methyl Ethyl Ketone Photolysis for JPROC	\$M3DATA/nostudies/phot/KETONE_RADM88	M
Glyoxal Photolysis to Formaldehyde for JPROC	\$M3DATA/nostudies/phot/GLYform_RADM88	M
Methyl Glyoxal Photolysis for JPROC	\$M3DATA/nostudies/phot/MGLY_RADM88	M
Unsaturated Dicarbonyl Photolysis for JPROC	\$M3DATA/nostudies/phot/UDC_RADM88	M
Methyl Hydrogen Peroxide Photolysis for JPROC	\$M3DATA/nostudies/phot/MHP_RADM88	M
Methyl Hydrogen Peroxide Photolysis for JPROC	\$M3DATA/nostudies/phot/MHP_NASA94	M
Organic Nitrate Photolysis for JPROC	\$M3DATA/nostudies/phot/ORGNIT_RADM88	M
Glyoxal Photolysis to Molecular Hydrogen for JPROC	\$M3DATA/nostudies/phot/GLYmol_RADM88	M

**Table D-1.** Selected Datasets Under Nostudies (continued)

Dataset Name	File Location	Tape
Acrolein Photolysis for JPROC	\$M3DATA/nostudies/phot/ACROLEIN	M
Sequence file of doppler derived precipitation associated with the 36km tutorial	\$M3DATA/nostudies/mm5/ MMOUT_D2_nmc.seq	M
Vis5d formatted MM5 output associated with the 36 km tutorial domain	\$M3DATA/nostudies/mm5/ MMOUT_D2_nmc.v5d	M
C-shell script that invokes TERRAIN for all four tutorial domains	\$M3DATA/nostudies/mm5/scripts/terrain.deck	M
C-shell script that invokes DATAGRID for all four tutorial domains	\$M3DATA/nostudies/mm5/scripts/ datagrid.deck	M
C-shell script that invokes RAWINS for 108 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/ rawins.deck.d1	M
C-shell script that invokes RAWINS for 36 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/ rawins.deck.d2	M
C-shell script that invokes RAWINS for 12 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/ rawins.deck.d3	M
C-shell script that invokes RAWINS for 4 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/ rawins.deck.d4	M

**Table D-1.** Selected Datasets Under Nostudies (continued)

Dataset Name	File Location	Tape
C-shell script that invokes INTERP for front-end processor for 108 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d1fd	M
C-shell script that invokes MM5 for 108 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/mm5.deck.d1	M
C-shell script that invokes INTERP for front-end processor for 36 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d2fd	M
C-shell script that invokes INTERP for back-end (one-way nest) processor for 36 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d2bd	M
C-shell script that invokes MM5 for 36 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/mm5.deck.d2	M
C-shell script that invokes INTERP for front-end processor for 12 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d3fd	M
C-shell script that invokes INTERP for back-end (one-way nest) processor for 12 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d3bd	M

**Table D-1.** Selected Datasets Under Nostudies (continued)

Dataset Name	File Location	Tape
C-shell script that invokes MM5 for 12 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/mm5.deck.d3	M
C-shell script that invokes INTERP for front-end processor for 4 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d4fd	M
C-shell script that invokes INTERP for back-end (one-way nest) processor for 4 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/interp.deck.d4bd	M
C-shell script that invokes MM5 for 4 km tutorial domain	\$M3DATA/nostudies/mm5/scripts/mm5.deck.d4	M
NMC Analyses & Sea Surface Temperature July 01 -15, 1995	\$M3DATA/nostudies/mm5/data/Y26563	M
NMC Analyses & Sea Surface Temperature July 16 -31, 1995	\$M3DATA/nostudies/mm5/data/Y26564	M
NMC Surface 6h Data July 09 -15, 1995	\$M3DATA/nostudies/mm5/data/Y26674	M
NMC Surface 3h Data July 09 -15, 1995	\$M3DATA/nostudies/mm5/data/Y26675	M
NMC RAOBS July 09 -15, 1995	\$M3DATA/nostudies/mm5/data/Y26676	M
NMC Surface 3h Data July 16 -22, 1995	\$M3DATA/nostudies/mm5/data/Y26681	M

**Table D-1.** Selected Datasets Under Nostudies (continued)

Dataset Name	File Location	Tape
NMC RAOBS July 16 -22, 1995	\$M3DATA/nostudies/mm5/data/Y26682	M
Cray IEEE MM5 output files used as input to MCIP in the tutorial	\$M3DATA/nostudies/mm5/MET_36/ MMOUT_DOMAIN2	M
Cray IEEE MM5 output files used as input to MCIP in the tutorial	\$M3DATA/nostudies/mm5/MET_12/ MMOUT_DOMAIN3	M
Cray IEEE MM5 output files used as input to MCIP in the tutorial	\$M3DATA/nostudies/mm5/MET_4/ MMOUT_DOMAIN4	M
Files associated with NCAR graphics QA routines for MM5	\$M3DATA/nostudies/mm5/Terrain/  con.tbl, maparea.tbl, t_luco.tbl, ter.30s, ezmap_area_ids, plots.f, t_map.tbl, ter.60, landu.10, plots.o, t_maparea.tbl, ter.plt, landu.30, raobsta, t_mapfi.tbl, landu.60, t.deck, ter.05, terrain.example, luco.tbl, t_con.tbl, ter.10, map.tbl, t_conf.tbl, ter.30	M

**Table D-1.** Selected Datasets Under Nostudies (continued)

## **APPENDIX E**

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## Operating System - Solaris

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## Database ObjectStore

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ObjectStore Release 4.0.2.0.0 for SPARC Solaris 2.4/SunPro (SunOS 5.4)

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## GUI Galaxy

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Sun Fortran Compiler

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Operating System - Windows NT

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WFTPD  
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WFTPD (by Texas Imperial Software) 32-bit version 2.40 8/11/1998

Copyright (c) 1995-98 Texas Imperial Software  
Winsock FTP Daemon for MS Windows 3.1, 95 & NT

## **APPENDIX F**

Troubleshooting the Models-3 Server Installation

The following items could be helpful for troubleshooting any problems that may occur while installing the Models-3 server.

1. Look to see if Orbix communication software has been configured properly. Look at \$M3FRAME/config/Orbix.hosts. The name of the Sun host and full domain should be on each line. If this is not correct, run installTape3.sh again starting with restart point 17.

```
%cat $M3FRAME/config/Orbix.hosts
```

```
M3AS:sun9.sdc9.epa.gov:
M3CL:sun9.sdc9.epa.gov:
M3DS:sun9.sdc9.epa.gov:
M3EH:sun9.sdc9.epa.gov:
M3EM:sun9.sdc9.epa.gov:
M3EMmon:sun9.sdc9.epa.gov:
M3FM:sun9.sdc9.epa.gov:
M3ID:sun9.sdc9:epa.gov:
M3MB:sun9.sdc9.epa.gov:
M3MS:sun9.sdc9.epa.gov:
M3SP:sun9.sdc9.epa.gov:
```

2. The proper domain should be on line 28 of \$M3FRAME/config/Orbix.cfg. If this is not correct, run installTape3.sh again starting with restart point 17.

```
%cat $M3FRAME/config/Orbix.cfg
```

```
# This file contains the default values for Orbix 1.3.1 system configuration.
```

```
#
```

```
=====
```

```
#
```

```
# Below are listed the main orbix environment configuration variables
# and associated default values. An Orbix client, server or daemon will
# use these values if, and only if, the relevant unix environment
# variable is not defined.
```

```
# the port number for the Orbix daemon:
```

```
IT_DAEMON_PORT          1570
```

```
# the starting port number for daemon-run servers:
```

```
IT_DAEMON_SERVER_BASE  1241
```



4. Make sure the ObjectStore database server will be started automatically. If this is not correct, run `installTape3.sh` again starting with restart point 18.

```
%ls /etc/rc2.d/S80ostore4
%ls /etc/rc2.d/K80ostore4
```

5. Make sure the ObjectStore database server is running on the Sun. Use the UNIX `ps` command to see if the processes are running. If this is not correct, run `installTape3.sh` again starting with restart point 18.

```
%ps -ef | grep os
root 242 1 0 Nov 09 ? 0:03 /opt/ostore/lib/oscmgr4 0
root 240 1 0 Nov 09 ? 0:56 /opt/ostore/lib/ossserver
```

6. Make sure the Models-3 files are in `/usr/local/bin`. If this is not correct, run `installTape3.sh` again starting with restart point 15.

```
%ls /usr/local/bin/m3*
m3runEnv.sh*          m3env.csh*          m3run
```

7. After you source `/usr/local/bin/m3env.csh` check the Models-3 environment variable to be sure they point to the directory tree for your installation. If this is not correct, run `installTape3.sh` again starting with restart point 15.

```
%env | grep M3
M3HOME=/home/models3
M3TOOLS=/home/models3/tools
M3MODEL=/home/models3/models
M3USERHOME=/home
M3FRAME=/home/models3/framework
M3FLIB=/home/models3/framework/lib
M3FBIN=/home/models3/framework/bin
M3FSRC=/home/models3/framework/src
M3FINC=/home/models3/framework/inc
M3FHELP=/home/models3/framework/help
M3FDBPATH=/home/models3/framework/db
M3EXEC=/home/models3/exec
M3MMEPPS=/home/models3/models/mepps
M3MEMPRO=/home/models3/models/empro
M3MMEPRO=/home/models3/models/mepro
M3MMIDPRO=/home/models3/models/midpro
M3MCTM=/home/models3/models/CTM
```

```
M3TEMP=/tmp
M3SITE=NC01
M3HOST=sun9.sdc9.epa.gov
M3FMHOST=sun9.sdc9.epa.gov
M3DATA=/home/models3/datasets
M3FDBNAME=/home/models3/framework/db/models3.db
```

8. Check \$M3HOME for the proper tree structure.

```
%ls $M3HOME
datasets/  exec/    framework/  models/    tools/
```