CERES Software Bulletin 97-05

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CERES Subsystem Test Plan Guidelines

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Purpose:

The purpose of this Computer Bulletin is to provide a set of guidelines for documenting the CERES Software Test Plan that will be a part of each Software Delivery Package delivered to the DAAC by CERES subsystems for Science Software Integration and Test (SSI&T).

An example Test Plan can be obtained from: http://asd-www.larc.nasa.gov/~cerescm/

Software Delivery Package Contents

The Test Plan is a part of the Software Delivery Package. This package will include:

1. This Test Plan
2. The appropriate compressed tar files. The tar files should be compressed using a "UNIX" compress. The tar files should be tarred from the working group directory structure expected by the DAAC. The Science Software Integration and Test (SSI&T) Procedures Document (SPD) contains an illustration of the directory structure at the DAAC (Appendix E). Tar files should be grouped as follows:
   tar file containing software
   tar file containing ancillary data files
   tar file(s) containing all other data required for testing
   tar file containing documentation (which includes the Test Plan)
   Note: Maximum uncompressed tar file size is 1 gigabyte.
3. Listing of the contents of each tar file. The listing for each tar file should contain a list of all delivered files along with their size and location.
   Note: After the last test is complete, remove all extraneous files and use the tar_file_list.csh script located on thunder in the /CERES/CERES_CM/cm_bin directory to generate a listing of each tar file to be delivered.
   USAGE: /CERES/CERES_CM/cm_bin/tar_file_list.csh <PATH OF WORKING GROUP DIRECTORY>
   EX. /CERES/CERES_CM/cm_bin/tar_file_list.csh /CERES/tisa_grid
4. Operators Manual (if revisions have been made).
5. The Delivery Memo must be delivered 2 weeks before the CM software delivery.

Test Plan Guidelines

1.0 Introduction

The standard introduction paragraph for all CERES documents will be used.

1.1 Document Overview

This section will only contain the purpose of the document and how it is organized.

1.2 Subsystem Overview

This section will contain:

1. The general purpose of the subsystem.
2. Identify PGEName(s) and brief description of each PGE.

2.0 Software and Data File Installation Procedures

This section will contain any special instructions about the order in which the software is to be installed or compiled.

2.1 Installation

This section describes the steps or commands required to uncompress and untar the delivered files.

2.2 Compilation

This section describes the delivered software and the order in which the software is to be compiled.

For Each PGE:

1. Subsystem software should use the Toolkit supplied environment variables, the makemake utility, and CERES environment variables as described in the CERES Software Bulletin 96-05, November 4, 1996, "Environment Variables, Makefiles, Scripts, and PCF Files," wherever possible.
2. This section should also explain any standard options, (i.e. clean command) or non-standard option used in the Makefiles.
3. Special Compiler Options
4. Special Test Environment
5. If applicable, also include instructions for using the smfcompile command to create the Status Message files.

3.0 Test and Evaluation Procedures

This section gives an overview of the test and evaluation procedures. It includes a description of what is being tested and the order in which the tests should be performed. It also should include information about which modes or paths of the code are not tested with these procedures.

3.x PGEName

A test is required for <u>each PGE separately</u> included in the delivery. Note: Sections 3.x.1, 3.x.2, and 3.x.3 should be repeated for each PGE(x) test.

3.x.1 Stand Alone Test Procedures

This section will include the following:

1. Description of what functions are being tested. (This is particularly important when several tests are run with the same PGE.)
2. Test Evaluation Software and order in which procedures are to be performed.
3. Exit Code Summary
4. Summary of each test and the system resources that are required, such as total run time, disk space, and memory. Time and memory allocation can be obtained by

using the Unix time command.

3.x.2 Evaluation Procedures

This section will explain how the test results are to be evaluated. It will include the following:

1. List expected output directories and expected file names within each directory (include all expected Web files such as .ps, .gif, etc.).
2. Instructions for comparing all expected and produced output. (including Web files)
3. Instructions for comparing all expected and produced status or log files or information about what the status files should and should not contain.
4. Explanations of how to interpret any output that is written to the screen during the tests. (Writing to the screen is not recommended.)

3.x.3 Solutions to Possible Problems

This section should include any additional information that might be helpful to the Test conductor. (Example: Remove all output files before rerunning this Test.)

References (if used)

Appendix A - Acronyms and Abbreviations

Appendix B - Directory Structure Diagrams

Appendix C - File Description Tables

This Appendix is divided into 7 sections (C.1 - C.7) based on file type categories. Each section can contain more than one table, if subcategories are needed. If a subsystem does not use or produce files that are described in any one of the 7 sections, then “Not Applicable” will be entered under that section.

C.1 Production Scripts

C.2 Executables (include Web executables)

C.3 Status Message Files (.t)

C.4 PCF/MCF Templates

C.5 HDF Read Software

C.6 Ancillary Input Files

C.7 Temporary Files

Example Table:

Table C.6: Ancillary Input Files

File Name	Format	Description
SW_ADMS	Binary	SW Angular Distribution Models (ADM)
LW_ADMS_autumn	Binary	LW ERBE ADM for Sep., Oct., Nov.
LW_ADMS_spring	Binary	LW ERBE ADM for Mar., Apr., May
LW_ADMS_summer	Binary	LW ERBE ADM for Jun., Jul., Aug.
LW_ADMS_winter	Binary	LW ERBE ADM for Dec., Jan., Feb.

Note: Change bars have been used to emphasize the new material that has been added to the Test Plan Template which did not appear in the June 5, 1997 Test Plan Template.

Note: The CERES Software Bulletin 97-05, published June 5, 1997, is included for reference with strikethroughs to indicate the omissions that have been made. This does not reflect material that has been added or reorganized in this, Oct. 26, 1998, version of the Test Plan.

CERES Software Bulletin 97-05

June 5, 1997

CERES Subsystem Test Plan Guidelines

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Purpose:

The purpose of this Computer Bulletin is to provide a standard set of guidelines for documenting the CERES Software Test Plan that will be a part of the Software Delivery Package delivered to the DAAC by each CERES subsystem at SSI&T.

~~An example Test Plan can be obtained from Sandy Nolan at: s.k.nolan@larc.nasa.gov~~

Test Plan Guidelines

1.0 Introduction

The standard introduction paragraph for all CERES documents will be used.

1.1 Document Overview

This section will contain the purpose of the document and how it is organized.

The Test Plan is a part of the Software Delivery Package. This package will include:

1. This Test Plan
2. The appropriate compressed tar files. The tar files should be compressed using a "UNIX" compress. The tar files should be tarred from the working group directory structure expected by the DAAC. The Science Software Integration and Test (SSI&T) Procedures Document (SPD) contains an illustration of the directory structure at the DAAC (Appendix E). Tar files should be grouped as follows:

   tar file containing software
   tar file containing ancillary data files
   tar file(s) containing all other data required for testing
   tar file containing documentation (which includes the Test Plan)

   Note: Maximum uncompressed tar file size is 1 gigabyte.
3. Listing of the contents of each tar file. The listing for each tar file should contain a list of all delivered files along with their size and location.

Note: After the last test is complete, remove all extraneous files and use

the tar_file_list.csh script located on thunder in the /CERES/CERES_CM/cm_bin directory to generate a listing of each tar file to be delivered.

USAGE: /CERES/CERES_CM/cm_bin/tar_file_list.csh <PATH OF WORKING GROUP DIRECTORY>

EX. /CERES/CERES_CM/cm_bin/tar_file_list.csh /CERES/tisa_grid

4. The Delivery Memo must be delivered 2 weeks before the CM software delivery.

1.2 Subsystem Overview

This section will contain:

1 - The general purpose of the subsystem

~~2 - The high level processing steps for each PGE~~

~~3 - A general description of the subsystem output~~

~~**2.0 Test Environment**~~

~~**2.1 External Interface Requirements**~~

~~This section will contain:~~

~~1 – An explanation of which delivered files contain simulated data and a description of the production data for which the simulated data is being substituted.~~

~~2 – List and description of the CERESlib routines used by the Subsystem software. A CERESlib release or version number will be included on the Delivery Memo.~~

~~**2.2 Directory Structure and File Descriptions**~~

~~This section will contain a general description of the tar files delivered for SSI&T and will explain that the Directory Structure Diagram and File Description tables are in Appendices B and C, respectively.~~

3.0 Software and Data File Installation Procedures

This section will contain any special instructions about the order in which the software is to be installed or compiled.

3.1 Installation

This section describes the steps or commands required to uncompress and untar the delivered files.

3.2 Compilation

This section describes ~~how to compile~~ the delivered software and the order in which the software is to be compiled. ~~No scripts should be used to compile the code.~~ Subsystem software should use the Toolkit supplied environment variables, the makemake utility, and CERES environment variables as described in the CERES Software Bulletin 96-05, November 4, 1996, “Environment Variables, Makefiles, Scripts, and PCF Files”, wherever possible. This section should also explain any standard options, (i.e. clean command) or non-standard option used in the Makefiles. If applicable, also include instructions for using the smfcompile command to create the Status Message files.

4.0 Test and Evaluation Procedures

This section gives an overview of the test and evaluation procedures. It includes a description of what is being tested and the order in which the tests should be performed. It also should include information about which modes or paths of the code are not tested with these procedures.

4.1 Stand Alone Test Procedures

This section describes each test separately and includes the following:

1. Description of what functions are being tested.
2. Order in which procedures are to be performed.

3. Summary of each test and the system resources that are required, such as time, disk space, and memory. Time and memory allocation can be obtained by using the Unix time command.

4.2 Normal Operating Procedures

This section describes any production procedures that are different from the Stand Alone Test Procedures described in section 4.1. It will also include a list of input requirements that are not delivered with the subsystem code and any external subsystems which must be run first in order to create the input for this subsystem.

4.3 Evaluation Procedures

This section will explain how the test results are to be evaluated. It will include the following:

1. Instructions for comparing the expected and produced output.
2. Instructions for comparing the expected and produced status or log files or information about what the status files should and should not contain.
3. Explanations of how to interpret any output that is written to the screen during the tests. (Writing to the screen is not recommended.)
4. A description of all exit codes which may be returned when each PGE stops execution. Any special instructions about steps that need to be taken when certain exit codes are encountered should be included.
5. A description of optional evaluation procedures that can be used, such as using EOSView to look at HDF files.

4.4 Solutions to Possible Problems

This section should include any additional information that might be helpful to the Test conductor. (Example: Remove all output files before rerunning this Test.)

References (if used)

Appendix A - Acronyms and Abbreviations

Appendix B - Directory Structure Diagrams

Appendix C - File Description Tables

This Appendix is divided into 10 sections (C.1 - C.10) based on file type categories. Each section can contain more than one table, if subcategories are needed. If a subsystem does not use or produce files that are described in any one of the 10 sections, then “Not Applicable” will be entered under that section.

. Each table will include the file name, format, and a description for each delivered file or produced file in the file type category. If more than one PGE is being delivered, then each file listed should be designated as to which Subsystem(s)/PGE(s) it is apart of. File sizes and directory locations for all delivered files will not be include in the tables, but will be produced and delivered on a separate tar file listing. An example of a file type category table is shown in Table C.4-1.

Table C.4-1. Ancillary Input Data

File Name	Format	Description
SW_ADMS	Binary	SW Angular Distribution Models (ADM)

File Name	Format	Description
LW_ADMS_autumn	Binary	LW ERBE ADM for Sep., Oct., Nov.
LW_ADMS_spring	Binary	LW ERBE ADM for Mar., Apr., May
LW_ADMS_summer	Binary	LW ERBE ADM for Jun., Jul., Aug.
LW_ADMS_winter	Binary	LW ERBE ADM for Dec., Jan., Feb.

C.1 Production Scripts and Executables
C.2 Processing Control Files (PCF), Metadata Control Files (MCF) and Status Message Files (SMF)
C.3 Production Makefiles
C.4 Ancillary Input Data
~~**C.5 Primary Input Data**~~
~~**C.6 Output Data Files (Expected Results)**~~
~~**C.7 Output Data Files (Production Results)**~~
C.8 Output Temporary Data Files (Production Results)
C.9 ~~Error and~~ Status Message Files ~~(Expected Results~~)
~~**C.10 Test Evaluation Software**~~