

**Clouds and the Earth's Radiant Energy System  
(CERES)**

**Data Management System**

**CERES Instrument Geolocate and Calibrate Earth  
Radiances Subsystem 1.0**

**Release 5 Test Plan  
Version 3**

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## Document Revision Record

The Document Revision Record contains information pertaining to approved document changes. The table lists the date the Software Configuration Change Request (SCCR) was approved, the Release and Version Number, the SCCR number, a short description of the revision, and the revised sections. The document authors are listed on the cover. The Head of the CERES Data Management Team approves or disapproves the requested changes based on recommendations of the Configuration Control Board.

### Document Revision Record

<b>SCCR Approval Date</b>	<b>Release/Version Number</b>	<b>SCCR Number</b>	<b>Description of Revision</b>	<b>Section(s) Affected</b>
06/21/01	R4V1	272	<ul style="list-style-type: none"> <li>• Updated to include Aqua testing information.</li> <li>• Updated format to comply with standards.</li> </ul>	All All
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03/21/02	R4V4	324	<ul style="list-style-type: none"> <li>• Added Preliminary Draft for new PGE CER1.3P2.</li> <li>• Added new environment variables used for PGE CER1.3P2 and CER1.3P3.</li> <li>• Added instructions for compilation of CER1.3P2.</li> <li>• Changed name of all compilation and run scripts for all PGEs to include PGE name.</li> <li>• Changed usage of clean-up script.</li> <li>• Added new exit code for CER1.2P1 to indicate that no usable data was available to write to the Pre-ES8.</li> <li>• Updated format to comply with standards.</li> </ul>	7.0 2.1  2.2.3 2.2.4, 3.1.1.1, 4.1.1.1, 5.1.1.1 3.1.3, 4.1.3, 5.1.3, 6.1.3 5.1.1.2  All
04/11/02	R4V5	336	<ul style="list-style-type: none"> <li>• Updated information for PGE CER1.3P2.</li> <li>• Fixed references to L0 environment variables for CER1.3P1 to reflect the proper names.</li> <li>• Updated environment script information.</li> <li>• Updated format to comply with standards.</li> </ul>	7.0 6.1.2  App. C All
06/06/02	R4V6	355	<ul style="list-style-type: none"> <li>• Added new PGE CER1.3P3 information.</li> <li>• Updated format to comply with standards.</li> </ul>	8.0 All
07/03/02	R4V7	370	<ul style="list-style-type: none"> <li>• Updated Table C.4-2 to include new CER1.3Pn PGE files.</li> <li>• Updated Table C.6-1 to include alternate filenames for Terra and Aqua Ephemeris and Attitude data files. New filenaming convention for these files may be in place.</li> </ul>	App.C  App. C

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11/21/02	R4V8	402	<ul style="list-style-type: none"> <li>• Updated with new environment scripts to take compile environment out of the run environment scripts. Added new compile environment script instructions.</li> <li>• Updated format to comply with standards.</li> </ul>	2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5, 3.1.1.1, 3.1.3, 4.1.1.1, 4.1.3, 5.1.1.1, 5.1.3, 6.1.1.1, 6.1.3, 7.1.1.1, 7.1.3, 8.1.1.1, 8.1.3 All
1/16/04	R4V9	497	<ul style="list-style-type: none"> <li>• Added comment to all TRMM Testing stating that the TRMM tests should not be run at this time.</li> <li>• Added comment that Quicklook PGEs should not be run at this time.</li> <li>• Added comment to not copy data from the input subdirectory if prior tests had been run.</li> <li>• Updated format to comply with standards.</li> </ul>	3.1.1.1, 5.1.1.1, 6.1.1.1 4.1.1.1 7.1.1.1, 8.1.1.1 All
4/29/04	R4V10	524	<ul style="list-style-type: none"> <li>• Added BDSS to files created in out_comp directory under CER1.1P5 - Aqua FM3.</li> <li>• Deleted text concerning hours 12-19 in CER1.1P1 - TRMM PFM.</li> <li>• Deleted text concerning hours 00-04 in CER1.1P3 - Terra FM1.</li> <li>• Deleted text concerning hours 00-04 in CER1.1P3 - Terra FM2.</li> <li>• Deleted text concerning hours 00-11 in CER1.1P5 - Aqua FM3.</li> <li>• Deleted text concerning hours 00-11 in CER1.1P5 - Aqua FM4.</li> <li>• Deleted text concerning hours 00-23 from IES files created.</li> <li>• Updated format to comply with standards.</li> </ul>	3.1.1.1 3.1.2.3 All
1/26/05	R4V11	573	<ul style="list-style-type: none"> <li>• Added new environment variables needed to create PCFs for CER1.1P3 through CER1.1P5.</li> <li>• Updated format to comply with standards.</li> </ul>	2.1 All
3/07/05	R4V12	579	<ul style="list-style-type: none"> <li>• Moved Compiling the Comparison Software section from 2.2.6 to 2.2.7 to allow the addition of a new section, Compiling the EOS Construction Record Reader Software, which is related to the previous PGE compilation instructions.</li> <li>• Added the compilation instructions for the EOS Construction Record reader software.</li> <li>• Updated format to comply with standards.</li> </ul>	2.2.6, 2.2.7 2.2.6 All

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11/18/05	R4V14	599	<ul style="list-style-type: none"> <li>• Updated Test Run times.</li> <li>• Remove notation that TRMM tests are not to be run.</li> <li>• Updated format to comply with standards.</li> </ul>	3.1.1.3, 5.1.1.3 3.1.1.1, 4.1.1.1, 6.1.1.1, 7.1.1.1, 8.1.1.1 All
4/14/06	R4V15	621	<ul style="list-style-type: none"> <li>• Added new environment variables, start and stop, for CER1.3P3.</li> <li>• Updated format to comply with standards.</li> </ul>	2.1 All
3/07/07	R5V1	610	• Updated for new directory structure.	All
2/04/09	R5V2	698	• Added new PGE CER1.0P2 NPP Preprocessor.	3.1
4/06/09	R5V3	702	<ul style="list-style-type: none"> <li>• Added new PGE CER1.1P7, NPP-FM5 main processor (Ada).</li> <li>• Updated contents in Introduction.</li> <li>• Added compile instructions for new PGE.</li> <li>• Added preliminary information for PGE CER1.1P8, Instrument Main processor for all spacecraft/instruments (C++).</li> </ul>	5.0  1.1 2.2.8 1.1, 2.2.9, 6.0

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
Document Revision Record .....	ii
1.0 Introduction.....	1
1.1 Document Overview .....	1
1.2 Subsystem Overview.....	2
2.0 Software and Data File Installation Procedures.....	4
2.1 Installation.....	4
2.2 Compilation.....	6
2.2.1 Compilation Instructions for Instrument Metadata library modules.....	6
2.2.2 Compilation Instructions for PGE CER1.0P2 .....	7
2.2.3 Compilation Instructions for PGE CER1.2P1 .....	7
2.2.4 Compilation Instructions for PGE CER1.3P1 .....	7
2.2.5 Compilation Instructions for PGE CER1.3P2 .....	8
2.2.6 Compilation Instructions for PGE CER1.3P3 .....	8
2.2.7 Compilation Instructions for PGEs CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5, and CER1.1P6.....	8
2.2.8 Compilation Instructions for PGEs CER1.1P7 .....	10
2.2.9 Compilation Instructions for PGEs CER1.1P8 .....	11
2.2.10 Compiling the EOS Construction Record Reader Software .....	11
2.2.11 Compiling the Comparison Software.....	11
2.2.12 Compiling the Compression Software .....	12
3.0 Test and Evaluation Procedures for NPP RDR Preprocessing .....	13
3.1 CER1.0P2, NPP RDR Data PreProcessing .....	13
3.1.1 Standalone Test Procedures .....	13
3.1.1.1 Execution.....	13

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
3.1.1.2 Exit Codes .....	14
3.1.1.3 Test Summary .....	15
3.1.2 Evaluation Procedures .....	15
3.1.2.1 Log File Results .....	15
3.1.2.2 Metadata Evaluation.....	16
3.1.2.3 Evaluation of Comparison Software Output .....	16
3.1.3 Solutions to Possible Problems.....	17
4.0 Test and Evaluation Procedures for Level-0 Data Processing.....	18
4.1 CER1.1P1, CER1.1P3, and CER1.1P5 Level-0 Data Processing.....	18
4.1.1 Stand-alone Test Procedures.....	18
4.1.1.1 Execution.....	18
4.1.1.2 Exit Codes .....	21
4.1.1.3 Test Summary .....	21
4.1.2 Evaluation Procedures .....	21
4.1.2.1 Log and Status File Results.....	22
4.1.2.2 Metadata Evaluation.....	22
4.1.2.3 Evaluation of Comparison Software Output .....	22
4.1.3 Solutions to Possible Problems.....	23
5.0 Test and Evaluation Procedures for NPP Ada Level-0 Data Processing.....	25
5.1 CER1.1P7 NPP Ada Level-0 Data Processing.....	25
5.1.1 Stand-alone Test Procedures.....	25
5.1.1.1 Execution.....	25
5.1.1.2 Exit Codes .....	25
5.1.1.3 Test Summary .....	26

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
5.1.2    Evaluation Procedures .....	26
5.1.2.1    Log and Status File Results.....	26
5.1.2.2    Metadata Evaluation.....	26
5.1.2.3    Evaluation of Comparison Software Output .....	26
5.1.3    Solutions to Possible Problems.....	28
6.0    Test and Evaluation Procedures for the C++ Level-0 Data Processing.....	29
6.1    CER1.1P8 C++ Level-0 Data Processing .....	29
6.1.1    Stand-alone Test Procedures.....	29
6.1.1.1    Execution.....	29
6.1.1.2    Exit Codes .....	32
6.1.1.3    Test Summary .....	33
6.1.2    Evaluation Procedures .....	33
6.1.2.1    Log and Status File Results.....	34
6.1.2.2    Metadata Evaluation.....	34
6.1.2.3    Evaluation of Comparison Software Output .....	34
6.1.3    Solutions to Possible Problems.....	35
7.0    Test and Evaluation Procedures for QuickLook Data Processing.....	36
7.1    CER1.1P2, CER1.1P4 and CER1.1P6 QuickLook Data Processing .....	36
7.1.1    Stand-alone Test Procedures.....	36
7.1.1.1    Execution.....	36
7.1.1.2    Exit Codes .....	39
7.1.1.3    Test Summary .....	39
7.1.2    Evaluation Procedures .....	40
7.1.2.1    Log and Status File Results.....	40

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
7.1.2.2 Metadata Evaluation.....	40
7.1.2.3 Evaluation of Comparison Software Output .....	41
7.1.3 Solutions to Possible Problems.....	41
8.0 Test and Evaluation Procedures for BDS to Pre-ES8 Processing.....	42
8.1 CER1.2P1 BDS Conversion to Pre-ES8 .....	42
8.1.1 Stand-alone Test Procedures.....	42
8.1.1.1 Execution.....	42
8.1.1.2 Exit Codes .....	43
8.1.1.3 Test Summary .....	44
8.1.2 Evaluation Procedures .....	44
8.1.2.1 Log and Status File Results.....	44
8.1.2.2 Metadata Evaluation.....	44
8.1.2.3 Evaluation of Comparison Software Output .....	44
8.1.3 Solutions to Possible Problems.....	45
9.0 Test and Evaluation Procedures for BDS/BDSD to BDSI Processing .....	46
9.1 CER1.3P1 BDS/BDSD Subsetting of Internal Calibration Data into BDSIs .....	46
9.1.1 Stand-alone Test Procedures.....	46
9.1.1.1 Execution.....	46
9.1.1.2 Exit Codes .....	47
9.1.1.3 Test Summary .....	47
9.1.2 Evaluation Procedures .....	48
9.1.2.1 Log and Status File Results.....	48
9.1.2.2 Metadata Evaluation.....	48
9.1.2.3 Evaluation of Comparison Software Output .....	48

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
9.1.3    Solutions to Possible Problems.....	49
10.0    Test and Evaluation Procedures for Gain Analysis Processing .....	50
10.1    CER1.3P2 Gain Analysis .....	50
10.1.1    Stand-alone Test Procedures.....	50
10.1.1.1    Execution .....	50
10.1.1.2    Exit Codes.....	51
10.1.1.3    Test Summary.....	51
10.1.2    Evaluation Procedures .....	51
10.1.2.1    Log and Status File Results .....	52
10.1.2.2    Metadata Evaluation .....	52
10.1.2.3    Evaluation of Comparison Software Output .....	52
10.1.3    Solutions to Possible Problems.....	52
11.0    Test and Evaluation Procedures for BDS Reprocessing.....	53
11.1    CER1.3P3 BDS/IES Recalculate Radiances.....	53
11.1.1    Stand-alone Test Procedures.....	53
11.1.1.1    Execution .....	53
11.1.1.2    Exit Codes.....	55
11.1.1.3    Test Summary.....	55
11.1.2    Evaluation Procedures .....	55
11.1.2.1    Log and Status File Results .....	55
11.1.2.2    Metadata Evaluation .....	55
11.1.2.3    Evaluation of Comparison Software Output .....	55
11.1.3    Solutions to Possible Problems.....	56
References.....	57

**TABLE OF CONTENTS**

<u>Section</u>	<u>Page</u>
Appendix A - Acronyms and Abbreviations .....	A-1
Appendix B - Directory Structure Diagram.....	B-1
Appendix C - File Description Tables .....	C-1
C.1    Production Script.....	C-1
C.2    Executables.....	C-4
C.3    Status Message Files(SMF).....	C-4
C.4    PCF/MCF Templates.....	C-6
C.5    HDF Read Software .....	C-11
C.6    Ancillary Input Data.....	C-12
C.7    Temporary Files .....	C-18
Appendix D - Example Test Script Screen Output and Results File .....	D-1
Appendix E - Supplemental Test Plan for SCCR #237 .....	E-1

**LIST OF TABLES**

<u>Table</u>	<u>Page</u>
Table C.1-1. Production Scripts.....	C-1
Table C.2-1. Executables (\$CERESHOME/instrument/bin).....	C-4
Table C.3-1. Status Message Files.....	C-4
Table C.4-1. Metadata Control Files (\$CERESHOME/instrument/rcf).....	C-6
Table C.4-2. Process Control Files <sup>1</sup> .....	C-6
Table C.5-1. HDF Read Software Files.....	C-11
Table C.6-1. Ancillary Input Data .....	C-12
Table C.7-1. Temporary Files Used by Metadata.....	C-18

## 1.0 Introduction

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS) program. The CERES instrument provides radiometric measurements of the Earth's atmosphere from three broadband channels: a shortwave channel (0.3 - 5  $\mu\text{m}$ ), a total channel (0.3 - 200  $\mu\text{m}$ ), and an infrared window channel (8 - 12  $\mu\text{m}$ ). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES continues that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which has an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation and to improve the consistency between the cloud parameters and the radiation fields, CERES includes cloud imager data and other atmospheric parameters. The TRMM satellite carries one CERES instrument while the EOS satellites carry two CERES instruments, one operating in a fixed azimuth plane scanning mode (FAPS) for continuous Earth sampling and the other operating in a rotating azimuth plane scan mode (RAPS) for improved angular sampling.

## 1.1 Document Overview

The Release 4 delivery Test Plan to the Langley Atmospheric Sciences Data Center (ASDC) for the CERES Instrument Geolocate and Calibrate Earth Radiances Subsystem 1.0 consists of tar files and documentation describing the data and software contained in the tar files.

The tar files contain the CERES Instrument Geolocate and Calibrate Earth Radiances Subsystem Release 4 software and the ancillary data sets required for the software to execute. The tar files also contain output data files that were generated in the Engineering Test Area at the ASDC on *samantha*.

This document, the CERES Instrument Geolocate and Calibrate Earth Radiances Subsystem 1.0 Release 5 Test Plan, provides a description of the software and supporting data files and explains the procedures for installing, executing, and testing the software. A section is also included on validating the results of executing the software.

The document is organized as follows:

Section 1.0 - Introduction

Section 2.0 - Software and Data File Installation Procedures

Section 3.0 - Test and Evaluation Procedures for NPP RDR Preprocessing

Section 4.0 - Test and Evaluation Procedures for Level-0 Data Processing

Section 5.0 – Test and Evaluation Procedures for NPP Ada Level-0 Data Processing

Section 6.0 – Test and Evaluation Procedures for the C++ Level-0 Data Processing

Section 7.0 - Test and Evaluation Procedures for QuickLook Data Processing

Section 8.0 - Test and Evaluation Procedures for BDS to Pre-ES8 Processing  
Section 9.0 - Test and Evaluation Procedures for BDS/BDSD to BDSI Processing  
Section 10.0 - Test and Evaluation Procedures for Gain Analysis Processing  
Section 11.0 – Test and Evaluation Procedures for BDS Reprocessing  
Appendix A - Acronyms and Abbreviations  
Appendix B - Directory Structure Diagram  
Appendix C - File Description Tables  
Appendix D - Example Test Script Screen Output and Results File  
Appendix E - Supplemental Test Plan for SCCR #237

## 1.2 Subsystem Overview

The Instrument Processing Subsystem (IPS) is the first subsystem of the CERES Data Management System (DMS). The purpose of the IPS is to process raw spacecraft and sensor telemetry data into output data products for use in subsequent processing by other CERES DMS subsystems. IPS processing of raw spacecraft and sensor telemetry data can be broken down into the following three major functions:

1. Conversion of:
  - a) instrument detector outputs (counts) into filtered radiance values
  - b) instrument analog and digital housekeeping data into engineering units
2. Geophysical location of each sample of data
3. Quality Assessment (QA) and data validation checks to ensure integrity and quality of the IPS data output products

The primary data input for the IPS is called the Level-0 file, which is actually several physical files represented as a single virtual file by the ECS Toolkit (Reference 1). The Level-0 file contains chronologically ordered data packets, where each packet corresponds to a single scan of the instrument. The format of these packets conforms to the Consultative Committee for Space Data Standards (CCSDS) communication protocol and provides for packet elements such as headers, footers, and QA flags, in addition to the primary instrument detector and housekeeping output data. Under most conditions, a typical Level-0 file will contain 24 hours of instrument detector and housekeeping data. In addition to the Level-0 file, other input files are required to support the functions of data conversion, geolocation, and QA/validation. Examples of these secondary input sources or ancillary files include the Ephemeris Data File, Attitude Data File, and Instrument Coefficients File.

The expected results of the IPS processing of a Level 0 file are two sets of output products: the BiDirectional Scan (BDS) file and the Instrument Earth Scan (IES) files. The BDS file is a distributable product which contains 24 hours of data that corresponds to the 24-hour period of the Level-0 input file. The BDS file contains all of the raw analog and digital instrument data from the Level-0 file as well as converted values (radiances and engineering units) and corresponding quality flags. The specific data parameters contained within the BDS have been defined in the CERES DMS Data Products Catalog (Reference 2). The BDS file serves as an input product for the DMS ERBE-Like Subsystem.

The IES output product is a collection of 24 1-hour data files which normally cover the corresponding 24-hour time period of the Level-0 file. As with the BDS file, the specific data parameters contained in an IES file are defined by the CERES DMS Data Products Catalog (Reference 2). Unlike the BDS file, IES files are considered internal to the CERES DMS and are not distributed. IES files do not contain any raw or unconverted instrument detector data, nor do they contain any instrument housekeeping data (raw or converted). The primary data elements in an IES file are Geolocate radiance values which are sorted temporally and spatially into data subset units called footprints ((a set of geolocated (colatitude, longitude)) set of detector radiance values). This sorting of data into footprints is a necessary function in order to support processing by the DMS Cloud Convolution Subsystem which is the primary user of the IES products.

The NPOESS Preparatory Project satellite, set to launch in January of 2011, will usher in a new generation of EOS and CERES measurements. The National Polar-Orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP) is a joint mission involving the National Aeronautics and Space Administration's (NASA) and the NPOESS Integrated Program Office (IPO).

Data from NPP (FM-5) will be packaged by the Interface Data Processing System (IDPS) and made available to the CERES Instrument team in the form of HDF5 Raw Data Records (RDRs). The purpose of the new PGE CER1.0P2 is to process these records into the Level-0 format readable by the Instrument subsystem software.

Each RDR is an aggregate of raw CCSDS Application Packets and associated metadata, the former containing satellite science, calibration, diagnostic, and/or diary data. The detailed format of each type of packet conforms to CCSDS protocol and can be found in the NPP Mission Data Format Control Book. RDR format is governed by the set of External Common Data Format Control Books, mostly books 1 and 2).

The primary outputs of the Preprocessor are:

1. Level 0 files and Construction Records, which are the primary input of the IPS.
2. ECS Toolkit (Reference 1) Attitude and Ephemeris files, which are secondary inputs to the IPS, needed to perform geolocation.

Under normal conditions, the Preprocessor will extract 24 consecutive hours of data from a collection of RDRs, process and write a single Level 0 file for each packet type, a single Attitude file, and a single Ephemeris file for that time period.

## 2.0 Software and Data File Installation Procedures

This section describes how to install the Subsystem 1.0 Instrument software in preparation for making the necessary test runs at the Langley ASDC. The installation procedures include instructions for uncompressed and untarring the delivered tar files, properly defining environmental variables, and compiling the Instrument programs.

### 2.1 Installation

Software/Data File Install Procedure:

1. The following environment variables are necessary in order to run the Subsystem 1.0 delivery package:

PGSDIR	- Directory for TOOLKIT libraries
CERESHOME	- Top Directory for CERES Software
CERESLIB	- Directory for CERESlib
PGMSG	- Directory which contains TOOLKIT and CERES Status Message Files
PGSLIB	- Directory which contains SGI n32-bit TOOLKIT library file for TOOLKIT 5.2.6
PGSINC	- Pointer to the PGS include file directory
ADA_INCLUDE_PATH	- Ada Include libraries
GCC_EXEC_PREFIX	- Ada Compiler location
ADA_OBJECTS_PATH	- Ada Libraries
C_INCLUDE_PATH	- C library include for Ada
HDFINC	- HDF include files
HDFLIB	- HDF libraries
HDFLIBS	- HDF library names
INSTRHOME	- Top Directory for Subsystem 1.0 Software and Data
BDSdir	- Directory for BDS output data products
BDSDdir	- Directory for BDSD output data products
BDSSdir	- Directory for BDSS output data products
BDSMdir	- Directory for BDSM output data products
BDSGdir	- Directory for BDSG output data products
BDSPdir	- Directory for BDSP output data products
BDSFdir	- Directory for BDSF output data products
BDSIdir	- Directory for BDSI output data products
IESdir	- Directory for IES output data products
GAINdir	- Directory for Gain Analysis output data files
F90LIB	- Directory which contains the SGI F90 Library
CODINE_Dir	- Directory containing the CODINE settings.csh script
EOS_Dir	- Directory containing the EOS Construction Record reader for Level-0 Files
DS_FILE_PATH	- Directory where Level-0 Files are located

- |  |  |
|--|--|
| <b>CLM_LOGMSGFIL</b><br><b>CLE_STDERRFIL</b> | <ul style="list-style-type: none"> <li>- Error log file for the EOS Construction Record reader</li> <li>- Message Log file for the EOS Construction Record reader</li> </ul> |
|--|--|

The following environment variables are set by the ASDC system and are necessary for testing, scripts are provided to set these variables for testing:

- |   |   |
|---|---|
| <b>SS1</b><br><b>CC1</b><br><b>CC1_2</b><br><b>CC1_3</b><br><b>CC1_4</b><br><b>CC1_5</b><br><b>SW1</b><br><b>SW1_2</b><br><b>SW1_3</b><br><b>SW1_4</b><br><b>SW1_5</b><br><b>DATA1</b><br><b>DATA1_2</b><br><b>DATA1_3</b><br><b>DATA1_4</b><br><b>DATA1_5</b><br><b>PS1</b><br><br><b>PS1_1</b><br><b>SAT</b><br><b>INST</b> | <ul style="list-style-type: none"> <li>- Instrument Subsystem Sampling Strategy</li> <li>- Instrument Subsystem Configuration Code</li> <li>- PGE1.2P1 Configuration Code</li> <li>- PGE1.3P1 Configuration Code</li> <li>- PGE1.3P2 Configuration Code</li> <li>- PGE1.3P3 Configuration Code</li> <li>- Instrument Subsystem Software SCCR number</li> <li>- PGE1.2P1 Software SCCR number</li> <li>- PGE1.3P1 Software SCCR number</li> <li>- PGE1.3P2 Software SCCR number</li> <li>- PGE1.3P3 Software SCCR number</li> <li>- Instrument Subsystem Data SCCR number</li> <li>- PGE1.2P1 Data SCCR number</li> <li>- PGE1.3P1 Data SCCR number</li> <li>- PGE1.3P2 Data SCCR number</li> <li>- PGE1.3P3 Data SCCR number</li> <li>- Instrument Subsystem Production Strategy Output or CER1.3P3 Production Strategy Input</li> <li>- PGE CER1.3P3 Production Strategy Output</li> <li>- Satellite (valid values: TRMM, Terra or Aqua)</li> <li>- Instrument (valid values: PFM, FM1, FM2, FM3 or FM4))</li> </ul> |
|---|---|

The following environment variables are set by the **temp-<inst>-env.csh** script and are necessary for testing:

- |  |  |
|--|--|
| <b>L0_PGE</b><br><b>L0_year</b><br><b>L0_month</b><br><b>L0_day</b><br><b>L0_input_script</b><br><b>L0_pcf_script</b><br><b>L0_start</b><br><b>L0_stop</b><br><b>L0_flags</b><br><br><b>QL_PGE</b><br><b>QL_input_script</b> | <ul style="list-style-type: none"> <li>- Level-0 processor PGE designator</li> <li>- Level-0/Pre-ES8 Test data date year</li> <li>- Level-0/Pre-ES8 Test data date month</li> <li>- Level-0/Pre-ES8 Test data date day</li> <li>- Level-0 Test ASCII input file generator script name</li> <li>- Level-0 Test PCF file generator script name</li> <li>- Level-0 Test processing start time</li> <li>- Level-0 Test processing stop time</li> <li>- Level-0 flags to turn on/off radiance QC checking added to allow processing of Aqua-FM4 data after the SW anomaly which began 3/30/2005</li> <li>- QuickLook processor PGE designator</li> <li>- QuickLook Test ASCII input file generator script name</li> </ul> |
|--|--|

QL_pcf_script	- QuickLook Test PCF file generator script name
QL_year	- QuickLook Test data date year
QL_month	- QuickLook Test data date month
QL_day	- QuickLook Test data date day
QL_hr	- QuickLook Test data start hour
QL_min	- QuickLook Test data start minute
QL_apid	- QuickLook Test data APID
CER1_3P1_PGE	- PGE CER1.3P1 PGE designator
CER1_3P1_input_script	- PGE CER1.3P1 ASCII input file generator script name
CER1_3P1_pcf_script	- PGE CER1.3P1 PCF file generator script name
CER1_3P1_year	- PGE CER1.3P1 Test data date year
CER1_3P1_month	- PGE CER1.3P1 Test data date month
CER1_3P1_day	- PGE CER1.3P1 Test data date day
CER1_3P2_PGE	- PGE CER1.3P2 PGE designator
CER1_3P2_input_script	- PGE CER1.3P2 ASCII input file generator script name
CER1_3P2_pcf_script	- PGE CER1.3P2 PCF file generator script name
CER1_3P2_year	- PGE CER1.3P2 Test data date year
CER1_3P2_month	- PGE CER1.3P2 Test data date month
CER1_3P2_day	- PGE CER1.3P2 Test data date day
CER1_3P3_PGE	- PGE CER1.3P3 PGE designator
CER1_3P3_input_script	- PGE CER1.3P3 ASCII input file generator script name
CER1_3P3_pcf_script	- PGE CER1.3P3 PCF file generator script name
CER1_3P3_year	- PGE CER1.3P3 Test data date year
CER1_3P3_month	- PGE CER1.3P3 Test data date month
CER1_3P3_day	- PGE CER1.3P3 Test data date day
CER1_3P3_start	- PGE CER1.3P3 Test data start time
CER1_3P3_stop	- PGE CER1.3P3 Test data stop time

2. Change directory to the directory where you plan to install the Instrument Subsystem.
3. Uncompress and untar all delivered tar files in \$CERESHOME.

## 2.2 Compilation

### 2.2.1 Compilation Instructions for Instrument Metadata library modules

This compilation only needs to occur when all Instrument PGEs are being delivered and not for each individual PGE delivery.

These steps will create the Instrument metadata library modules in the **\$CERESHOME/instrument/lib**, type the following commands:

```
source $CERESENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/lib
make -f Makefile_Meta clean
make -f Makefile_Meta
```

### **2.2.2 Compilation Instructions for PGE CER1.0P2**

The compilation of this PGE requires that **\$CERESHOME** environmental variable be set correctly, as through sourcing the relevant **ceres-env.csh**. Once it is set, executing the following commands:

```
cd $CERESHOME/instrument/CER1.0P2/src/
make -f make_CER1.0P2
```

will create the executable **\$CERESHOME/instrument/CER1.0P2/bin/CER1.0P2\_1.0R1.exe**.

### **2.2.3 Compilation Instructions for PGE CER1.2P1**

The compilation of this PGE requires that you have **not** sourced **\$CERESHOME/instrument/CER1.2P1/rcf/CER1.2P1\_compile-env.csh** for any other PGE. If you have compiled any of the other Instrument PGEs prior to this compilation, you must clear the existing environment, not doing this will result in a compilation error or an incorrect executable. To create the executable **PGE\_CER1.2P1** in directory **\$CERESHOME/instrument/bin**, type the following commands:

```
source $CERESENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1_compile-env.csh
make_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/bin
cp PGE_CER1.2P1 ../../bin/.
```

### **2.2.4 Compilation Instructions for PGE CER1.3P1**

The compilation of this PGE requires that you have **not** sourced **\$CERESHOME/instrument/CER1.3P1/rcf/CER1.3P1\_compile-env.csh** for any other PGE. If you have compiled any of the other Instrument PGEs prior to this compilation, you must clear the existing environment, not doing this will result in a compilation error or an incorrect executable. To create the executable **PGE\_CER1.3P1** in directory **\$CERESHOME/instrument/bin**, type the following commands:

```
source $CERESENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.3P1/rcf
```

```
source CER1.3P1_compile-env.csh
make_CER1.3P1.pl no_debug
cd $CERESHOME/instrument/CER1.3P1/bin
cp PGE_CER1.3P1 ../../bin/.
```

## 2.2.5 Compilation Instructions for PGE CER1.3P2

The compilation of this PGE requires that you have **not** sourced **\$CERESHOME/instrument/CER1.3P2/rcf/CER1.3P2/compile-env.csh** for any other PGE. If you have compiled any of the other Instrument PGEs prior to this compilation, you must clear the existing environment, not doing this will result in a compilation error or an incorrect executable. To create the executable **PGE\_CER1.3P1** in directory **\$CERESHOME/instrument/bin**, type the following commands:

```
source $CEREENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2_compile-env.csh
make_CER1.3P2.pl no_debug
cd $CERESHOME/instrument/CER1.3P2/bin
cp PGE_CER1.3P2 ../../bin/.
```

## 2.2.6 Compilation Instructions for PGE CER1.3P3

The compilation of this PGE requires that you have **not** sourced **\$CERESHOME/instrument/CER1.3P3/rcf/CER1.3P3\_compile-env.csh** for any other PGE. If you have compiled any of the other Instrument PGEs prior to this compilation, you must clear the existing environment, not doing this will result in a compilation error or an incorrect executable. To create the executables **PGE\_CER1.3P3A** and **PGE\_CER1.3P3B** in directory **\$CERESHOME/instrument/bin**, type the following commands:

```
source $CEREENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3_compile-env.csh
make_CER1.3P3.pl no_debug
cd $CERESHOME/instrument/CER1.3P3/bin
cp PGE_CER1.3P3* ../../bin/.
```

## 2.2.7 Compilation Instructions for PGEs CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5, and CER1.1P6

The compilation of this PGE requires that you have **not** sourced **\$CERESHOME/instrument/rcf/compile-env.csh** for any other PGE. If you have compiled any of the other Instrument PGEs prior to this compilation, you must clear the existing

environment, not doing this will result in a compilation error or an incorrect executable. To create the executable **PGE\_CER1.1P1-6** in directory “**\$CERESHOME/instrument/bin**,” type the following commands:

```
source $CERESENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6_compile-env.csh
make_CER1.1P1-6_optimize.pl
cd $CERESHOME/instrument/CER1.1P1-6/bin
cp PGE_CER1.1P1-6 ../../bin/
cd $CERESHOME/instrument/smf
cp * $PGSDIR/message/.
```

NOTE: This compilation script also the special C-routine, **Cram\_.o** in directory **\$CERESHOME/instrument/CER1.1P1-6/bin**, which compresses VData records before they are written to the BDS or IES. This compilation also creates the Instrument library, **utilities.a** in directory **\$CERESHOME/instrument/lib**.

NOTE: The following warning messages are expected and can be ignored:

level\_0\_file.ads:372:34: warning: type of “Pgs\_Io\_L0\_Getheader.Footer\_Buffer” does not correspond to C pointer (this will appear several times during the compilation)

level\_0\_file-eos\_am.adb:174:34: warning: type of “Pgs\_Io\_L0\_Getheader.Header\_Buffer” does not correspond to C pointer (this message may appear several times during the compilation)

level\_0\_file-eos\_am.adb:209:04: warning: types for unchecked conversion have different sizes  
lists.adb:499:09: warning: “Contents1” is never assigned a value  
lists.adb:500:09: warning: “Contents2” is never assigned a value  
vdata.adb:786:04: warning: “Field\_List” is never assigned a value  
vdata.adb:788:04: warning: “Name” is never assigned a value  
vdata.adb:2736:04: warning: “C\_Name” is never assigned a value  
vdata.adb:2754:04: warning: “C\_Name” is never assigned a value  
hdf2-structures-vset-vdata-api.ads:97:13: warning: return type of “VFfieldname” does not correspond to C pointer (this message appears several times during the compilation)

ld32: WARNING 127: Two shared objects with the same soname, /usr/lib32/mips3/libftn.so and /usr/lib32/libftn.so, have been linked. This is probably due to a missing -L specification. Ignoring the latter. (This message appears 3 times at the end of the compilation.)

ld32: WARNING 47: This module (./instrument.o .text) contains branch instruction(s) that might degrade performance on an older version (rev. 2.2) R4000 processor.

## 2.2.8 Compilation Instructions for PGEs CER1.1P7

To create the executable **PGE\_CER1.1P7** in directory “**\$CERESHOME/instrument/bin**,” type the following commands:

```
source $CERESENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.1P7/rcf
source CER1.1P7_compile-env.csh
make_CER1.1P7_optimize.pl
cd $CERESHOME/instrument/CER1.1P7/bin
cp PGE_CER1.1P7 ../../bin/
cd $CERESHOME/instrument/smf
cp * $PGSDIR/message/.
```

NOTE: This compilation script also the special C-routine, **Cram .o** in directory **\$CERESHOME/instrument/CER1.1P7/bin**, which compresses VData records before they are written to the BDS or IES.

NOTE: The following warning messages are expected and can be ignored:

level\_0\_file.ads:372:34: warning: type of “Pgs\_Io\_L0\_Getheader.Footer\_Buffer” does not correspond to C pointer (this will appear several times during the compilation)

level\_0\_file-eos\_am.adb:174:34: warning: type of “Pgs\_Io\_L0\_Getheader.Header\_Buffer” does not correspond to C pointer (this message may appear several times during the compilation)

level\_0\_file-eos\_am.adb:209:04: warning: types for unchecked conversion have different sizes  
lists.adb:499:09: warning: “Contents1” is never assigned a value  
lists.adb:500:09: warning: “Contents2” is never assigned a value  
vdata.adb:786:04: warning: “Field\_List” is never assigned a value  
vdata.adb:788:04: warning: “Name” is never assigned a value  
vdata.adb:2736:04: warning: “C\_Name” is never assigned a value  
vdata.adb:2754:04: warning: “C\_Name” is never assigned a value  
hdf2-structures-vset-vdata-api.ads:97:13: warning: return type of “VFfieldname” does not correspond to C pointer (this message appears several times during the compilation)

ld32: WARNING 127: Two shared objects with the same soname, /usr/lib32/mips3/libftn.so and /usr/lib32/libftn.so, have been linked. This is probably due to a missing -L specification. Ignoring the latter. (This message appears 3 times at the end of the compilation.)

ld32: WARNING 47: This module (./instrument.o .text) contains branch instruction(s) that might degrade performance on an older version (rev. 2.2) R4000 processor.

## 2.2.9 Compilation Instructions for PGEs CER1.1P8

To create the executable **PGE\_CER1.1P8** in directory “**\$CERESHOME/instrument/bin**,” type the following commands:

```
source $CERESENV
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P8_compile-env.csh
make_CER1.1P8_optimize.pl
cd $CERESHOME/instrument/CER1.1P8/bin
cp PGE_CER1.1P8 ../../bin/
cd $CERESHOME/instrument/smf
cp * $PGSDIR/message/.
```

NOTE: This compilation script also the special C-routine, **Cram .o** in directory **\$CERESHOME/instrument/CER1.1P8/bin**, which compresses VData records before they are written to the BDS or IES. This compilation also creates the Instrument library, **utilities.a** in directory **\$CERESHOME/instrument/lib**.

## 2.2.10 Compiling the EOS Construction Record Reader Software

The EOS Construction Record Reader Software is used by PGE CER1.1P3 and PGE CER1.1P5 to determine if the Diagnostic Level-0 data files contain at least 5 packets of data. This software should only need to be compiled upon initial delivery or when an operating system upgrade is performed. To create the **construction\_dump** binary in directory “**\$CERESHOME/instrument/bin/EOS**,” type the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/EOS/src
make
```

NOTE: This software is expected to be delivered only once in the lifetime of the program. Therefore, the contents in directory **\$CERESHOME/instrument/EOS/src** should **NEVER** be deleted to prepare for any delivery.

## 2.2.11 Compiling the Comparison Software

1. Change directories to the test\_suites area:  
**cd \$CERESHOME/instrument/test\_suites**
2. Compile the HDF compare program:  
**make -f Makefile\_HDF\_cmp**
3. Compile the PRES8 compare program:  
**cd \$CERESHOME/instrument/CER1.2P1/test\_suites make -f Makefile\_pres8\_cmp**

### **2.2.12 Compiling the Compression Software**

Change directories to the lib area:

```
cd $CERESHOME/instrument/lib
make -f Makefile_compress
```

## 3.0 Test and Evaluation Procedures for NPP RDR Preprocessing

This section provides general information on how to execute the NPP RDR Data pre-processor and provides 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.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999, and Aqua (also called PM1), launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with creating the Level-0 data for NPP from the RDRs received from the NPP-FM5 which will be used by the CERES Level-0 data processing, described later in this document.

### 3.1 CER1.0P2, NPP RDR Data PreProcessing

#### 3.1.1 Standalone Test Procedures

##### 3.1.1.1 Execution

Assuming the PGE has been installed:

First, source the relevant CERESlib environment script. This should set **\$CERESHOME**.

Next, a PCF which will be specific for the current system must be generated from the generic one provided, **System.PCF**. To do this, simply run the following script (you may need to reset permissions):

```
cd $CERESHOME/instrument/CER1.0P2/rcf/  
./reset_PCF
```

The new system-specific PCF called **Default.PCF** will be created in  
**\$CERESHOME/instrument/CER1.0P2/rcf/**.

The CER1.0P2 run script has the following usage: **./CER1.0P2\_1.0R1.pl YYYYMMDD**

where YYYYMMDD is the date from which data is to be processed.

The following sequence of commands runs the script against the four process dates for which there is data located in **\$CERESHOME/instrument/data/ingest/**:

```
cd $CERESHOME/instrument/CER1.0P2/rcf/  
./CER1.0P2_1.0R1.pl 20030228  
./CER1.0P2_1.0R1.pl 20030301  
./CER1.0P2_1.0R1.pl 20030302  
./CER1.0P2_1.0R1.pl 20030319
```

Each of these runs should produce the following output to stdout:

Starting **CER1.0P2\_1.0R1** with process date YYYYMMDD  
Normal Return: 0  
EXIT = 0  
Ending **CER1.0P2\_1.0R1** with process date YYYYMMDD

Each of these runs produces the following output files:  
(directories are relative to **\$CERESHOME**)

**20030228:**

```
./instrument/data/input/NPP_G149_LZ_2003-02-28T00-00-02Z_V01.DAT
./instrument/data/input/NPP_G149_LZ_2003-02-28T00-00-02Z_V01.CONS
./instrument/data/ancillary/dynamic/NPPATT.N2003059.DAT
./instrument/data/ancillary/dynamic/NPPEPH.N2003059.DAT
./instrument/runlogs/CER1.0P2__20030228_datetime.log
```

**20030301:**

```
./instrument/data/input/NPP_G149_LZ_2003-03-01T00-00-02Z_V01.DAT
./instrument/data/input/NPP_G149_LZ_2003-03-01T00-00-02Z_V01.CONS
./instrument/data/ancillary/dynamic/NPPATT.N2003060.DAT
./instrument/data/ancillary/dynamic/NPPEPH.N2003060.DAT
./instrument/runlogs/CER1.0P2__20030301_datetime.log
```

**20030302:**

```
./instrument/data/input/NPP_G149_LZ_2003-03-02T00-03-06Z_V01.DAT
./instrument/data/input/NPP_G149_LZ_2003-03-02T00-03-06Z_V01.CONS
./instrument/data/ancillary/dynamic/NPPATT.N2003061.DAT
./instrument/data/ancillary/dynamic/NPPEPH.N2003061.DAT
./instrument/runlogs/CER1.0P2__20030302_datetime.log
```

**20030319:**

```
./instrument/data/input/NPP_G147_LZ_2003-03-19T00-59-45Z_V01.DAT
./instrument/data/input/NPP_G147_LZ_2003-03-19T00-59-45Z_V01.CONS
./instrument/data/ancillary/dynamic/NPPATT.N2003078.DAT
./instrument/data/ancillary/dynamic/NPPEPH.N2003078.DAT
./instrument/runlogs/CER1.0P2__20030319_datetime.log
```

where datetime is an ASCII representation of the date and time of the run, for example:

**Wed\_Feb\_18\_11:31:18\_2009.**

### **3.1.1.2    Exit Codes**

- 0    -    Normal Exit,
- 200   -    Error creating Level-0, Eph or Att Data. If exit code 200 is returned check corresponding log file (see below).

### 3.1.1.3 Test Summary

Total Run Time:	1-2 min
Memory:	300 MB
Required Disk Space:	440 MB

### 3.1.2 Evaluation Procedures

#### 3.1.2.1 Log File Results

There are four Log files associated with this PGE. The first three listed below are also associated with the Toolkit. The Log files contain all error and/or status messages produced by the PGE. The files are written to the directory **\$CERESHOME/instrument/runlogs/**.

1. Report Log File: **CER1.0P2\_LogReport\_NPP\_Beta.log**  
The Report Log File contains Instrument-related informational messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal).
2. Status Log File: **CER1.0P2\_LogStatus\_NPP\_Beta.log**  
The Status Log File contains all messages created by the Toolkit and Instrument-related messages that can lead to abnormal ending of the Preprocessor. If an abnormal exit is encountered by the PGE, this file should be examined for '\_E\_', (error) or '\_F\_' (fatal) message types.
3. User Log File: **CER1.0P2\_LogUser\_NPP\_Beta.log**  
The User Log File is not used at this time, but exists to satisfy the Toolkit requirements. Typically the \_U\_ and \_N\_ (User information and Notice) will be written to User Log File and Status Log File.
4. CER1.0P2 Log file: This log file is specific to CER1.0P2 and has the following name:  
**CER1.0P2\_\_YYYYMMDD\_datetime.log**

where YYYYMMDD is the process date and datetime is the date and time of the execution of the PGE, for example:

**CER1.0P2\_\_20030228\_Wed\_Feb\_18\_11:31:18\_2009.log**

If a Log file of type 1, 2, or 3 does not exist in the **\$CERESHOME/instrument/runlogs/** directory when a run is started, then it will be created. If a Log file of type 1, 2, or 3 does exist in the **\$CERESHOME/instrument/runlogs/** directory, then it will be appended with information relevant to the new run.

A new Log file of type 4 is created for each new run. If a run is successful no warning or errors will be listed in this Log file. The top of this file will list the current date and number of input data files (Raw Data Records) found for the input process date. For example:

---

CER1.0P2 NPP Preprocessor run on Wed Feb 18 11:31:18 2009

---

Found 21 RDRs for process date 20030319.

The calendar dates previous and after the process date are listed next. The number of unique granules that were found and will be replaced by newer data is written. The name of each RDR file processed is then listed, followed by a summary of the number of application packets found for each packet type. For example:

Number of Packets

```
-----  
SCIENCE      =  0  
CALIBRATION = 290  
DIAGNOSTIC   = 1417  
DIARY        = 12421  
-----
```

If the number of packets found for a given type other than DIARY is greater than zero, Level-0 and construction records will be written for that type. So related messages will follow, for example:

Writing CALIBRATION L0 file

done.

Writing DIAGNOSTIC L0 file

done.

If the number of DIARY packets is greater, then SDP Toolkit Attitude and Ephemeris files are written, and the related message will follow:

Writing Toolkit Attitude and Ephemeris files

done.

### **3.1.2.2     Metadata Evaluation**

NONE

### **3.1.2.3     Evaluation of Comparison Software Output**

There are four test scripts, one test for each of the runs listed above. These scripts compare the output data of a given run to the expected output. The latter can be found in the directory **\$CERESHOME/instrument/data\_exp/CER1.0P2/**. Run these scripts after executing the four runs listed above.

```
cd $CERESHOME/instrument/CER1.0P2/test_suites/  
.CER1.0P2_1.0R1_test_COMPARE_20030228.pl  
.CER1.0P2_1.0R1_test_COMPARE_20030301.pl
```

```
./CER1.0P2_1.0R1_test_compare_20030302.pl  
./CER1.0P2_1.0R1_test_compare_20030319.pl
```

Simply type the name of the script to run it, there are no command line parameters. If there are no errors, the output of each script will be:

Comparison completed.

Occasionally, an ephemeris file **NPPEPH.NYYYYDOY.DAT** will fail to compare by 1-4 bytes. This is due to a known round off error and likely will occur at byte 149.

There should be no other differences.

### 3.1.3 Solutions to Possible Problems

All output data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
$CERESHOME/instrument/CER1.0P2/test_suites/CER1.0P2_1.0R1_test_clean_20  
030228.pl  
$CERESHOME/instrument/CER1.0P2/test_suites/CER1.0P2_1.0R1_test_clean_20  
030301.pl  
$CERESHOME/instrument/CER1.0P2/test_suites/CER1.0P2_1.0R1_test_clean_20  
030302.pl  
$CERESHOME/instrument/CER1.0P2/test_suites/CER1.0P2_1.0R1_test_clean_20  
030319.pl
```

## 4.0 Test and Evaluation Procedures for Level-0 Data Processing

This section provides general information on how to execute Subsystem 1.0 and provides 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.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1) launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with Level-0 data processing.

### 4.1 CER1.1P1, CER1.1P3, and CER1.1P5 Level-0 Data Processing

#### 4.1.1 Stand-alone Test Procedures

##### 4.1.1.1 Execution

###### CER1.1P1: TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P1-3-5_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the exact filenames can be found in

**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P1\_PFM.List**.

**\$CERESHOME/instrument/CER1.1P1-6/test\_suites**, test script screen output,  
**TRMM-PFM\_L0\_Test.results** (see [Appendix D](#)), and a file containing PGE stdout,  
**TRMM-PFM\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, 6 IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINHS, BINEL, BQCRP,  
BQCRPS).

The associated .met files for all the above files.

###### CER1.1P3: Terra-FM1

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
```

```

cd $CEREHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P1-3-5_test.pl -env

```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P3\_FM1.List**,  
where the Sampling Strategy, \$SS1 = Terra-FM1.

**\$CERESHOME/instrument/CER1.1P1-6/test\_suites**, test script screen output, **Terra-FM1\_L0\_Test.results**, and a file containing PGE stdout, **Terra-FM1\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

### CER1.1P3: Terra-FM2

```

cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P1-3-5_test.pl -env

```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P3\_FM2.List**,  
where the Sampling Strategy, \$SS1 = Terra-FM2.

**\$CERESHOME/instrument/rcf**, test script screen output, **Terra-FM2\_L0\_Test.results**, and a file containing PGE stdout, **Terra-FM2\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

### **CER1.1P5: Aqua-FM3**

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P1-3-5_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P5\_FM3.List**,  
where the Sampling Strategy, \$SS1 = Aqua-FM3.

**\$CERESHOME/instrument/rcf**, test script screen output, **Aqua-FM3\_L0\_Test.results**, and a file containing PGE stdout, **Aqua-FM3\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, and BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

### **CER1.1P5: Aqua-FM4**

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P1-3-5_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P5\_FM4.List**,  
where the Sampling Strategy, \$SS1 = Aqua-FM4.

**\$CERESHOME/instrument/rcf**, test script screen output, **Aqua-FM4\_L0\_Test.results**, and a file containing PGE stdout, **Aqua-FM4\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD, and BDSG).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

#### 4.1.1.2 Exit Codes

- 0 - Normal Exit,
- 200 - Error in Main Processing,
- 205 - Simulated Ephemeris/Attitude data
- 210 - Error creating ASCII Input, no date entered
- 215 - Error creating PCF, no input filename given
- 300 - Error in run script input, PCF file does not exist

Exit code 205 should be seen only for Quick-look data processing and any simulated Level-0 data process before launch. An error has occurred if this error is seen for processing of a full 24-hour Level-0 dataset.

#### 4.1.1.3 Test Summary

##### CER1.1P1: TRMM-PFM

Total Run Time: 35 min

##### CER1.1P3: Terra-FM1

Total Run Time: 40 min

##### CER1.1P3: Terra-FM2

Total Run Time: 40 min

##### CER1.1P5: Aqua-FM3

Total Run Time: 40 min

##### CER1.1P5: Aqua-FM4

Total Run Time: 40 min

#### 4.1.2 Evaluation Procedures

The main processor will complete with the following message on the screen:

## \*\*\*\*\* TEST RESULTS \*\*\*\*\*

# PGE Results

## CER1.1Px SUCCESSFUL

where x = 1 -- TRMM-PFM  
 = 3 -- Terra-FM1 or Terra-FM2  
 = 5 -- Aqua-FM3 or Aqua-FM4

And the following messages in the {\$SS1}\_L0\_Test.out file:

Instrument Subsystem complete with Exit Status = 0

## Instrument Subsystem PGE 1.1Px complete for PCF File

CER1.1Px\_PCF\_{\\$SS1}\_{\\$PS1}\_{\\$CC1}.{\\$L0\_year}{\\$L0\_month}{\\$L0\_day}

where \$SS1, \$PS1, \$CC1, \$L0\_year, \$L0\_month and \$L0\_day are defined in the **temp-<inst>-env.csh** sourced in the above tests.

#### **4.1.2.1 Log and Status File Results**

The Error and Status Log file, LogReport, will be located in directory  
“\$CERESHOME/instrument/runlogs” after CERES Subsystem 1.0 has been executed.

#### **4.1.2.2 Metadata Evaluation**

Done in the test script, Metadata evaluations should look like the following:

## Checking BDS Metadata file:

**CER\_BDSD\_{\$SS1}\_{\$PS1}\_{\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}.met ---  
METADATA OK**

#### **4.1.2.3 Evaluation of Comparison Software Output**

All output files in the directory matching the \$SS1, \$PS1 and \$CC1 will be compared, this includes BDSs, IESs, Log Files and a check of the Metadata for all files including QC Reports.

All comparisons done in Section 4.1.1.1 by the test script should look like the following:

Comparing BDS: CER\_BDSD\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}  
-- SUCCESSFUL

## Error Evaluation

If an error in a file comparison is found the following message will be displayed:

**For BDS:**

## Comparing BDS:

**CER\_BDS\_{SS1}\_{PS1}\_{CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day} -- ERROR**

```
--- Check file: {$CERESHOME}/instrument/CER1.1P1-
6/test_suites/CER_BDS_{$SS1}_{\$PS1}_{\$CC1}.{$L0_year}{$L0_month}{$L0_day}
.compare
```

#### For IES:

Comparing IES:

```
CERIES_{\$SS1}_{\$PS1}_{\$CC1}.{$L0_year}{$L0_month}{$L0_day}HH -
ERROR
```

```
--- Check file: {$CERESHOME}/instrument/CER1.1P1-
6/test_suites/CERIES_{\$SS1}_{\$PS1}_{\$CC1}.{$L0_year}{$L0_month}{$L0_day}
HH.compare
```

where HH is the hour number of the IES.

**NOTE:** Due to updates being made to the Toolkit provided UTCpole.dat file twice a week, differences in the BDS and IES comparisons frequently occur. These differences are expected and can be ignored. These differences are seen in the geolocation and look angles. The “.compare” files above should be examined carefully. If any of the following parameters show differences then the comparison results are **BAD** and the appropriate personnel should be contacted about the errors:

- Shortwave Detector Output
- Total Detector Output
- Window Detector Output
- Drift Corrected SW Counts
- Drift Corrected TOT Counts
- Drift Corrected WN Counts
- CERES SW Filtered Radiance Upwards
- CERES TOT Filtered Radiance Upwards
- CERES WN Filtered Radiance Upwards
- SW Spaceclamp Values
- TOT Spaceclamp Values
- WN Spaceclamp Values
- SW Slow Mode and Drift Corrected Counts
- TOT Slow Mode and Drift Corrected Counts
- WN Slow Mode and Drift Corrected Counts

#### 4.1.3 Solutions to Possible Problems

All output data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
```

```
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1Px (where x = 1, 3 or 5)
source temp-<inst>-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
test_cleanup_CER1.1P1-6.pl
```

where <instr> can be pfm, fm1, fm2, fm3 or fm4, depending on which instrument files you want to clean out of the directories. And <PGE\_Name> can be CER1.1P1 (TRMM), CER1.1P3 (Terra) or CER1.1P5 (Aqua), depending on which spacecraft you are processing.

## 5.0 Test and Evaluation Procedures for NPP Ada Level-0 Data Processing

This section provides general information on how to execute Subsystem 1.0 and provides 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.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from the NPP satellite scheduled to be launched in January 2010. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with Level-0 data processing for NPP.

### 5.1 CER1.1P7 NPP Ada Level-0 Data Processing

#### 5.1.1 Stand-alone Test Procedures

##### 5.1.1.1 Execution

###### CER1.1P7: NPP-FM5

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.1P7/rcf
source CER1.1P7-env.csh
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.1P7/test_suites
run_CER1.1P7_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the exact filenames can be found in

**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P7\_FM5.List.**

**\$CERESHOME/instrument/CER1.1P7/test\_suites**, test script screen output, **NPP-FM5\_L0\_Test.results** (see [Appendix D](#)), and a file containing PGE stdout, **NPP-FM5\_L0\_Test.out**.

**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).

**\$CERESHOME/instrument/data/int\_prod**, 6 IES files.

**\$CERESHOME/instrument/web**, CERES QC files (BINHS, BINEL, BQCRP, BQCRPS).

The associated .met files for all the above files.

##### 5.1.1.2 Exit Codes

- 0 - Normal Exit,
- 200 - Error in Main Processing,
- 205 - Simulated Ephemeris/Attitude data

- 210 - Error creating ASCII Input, no date entered
- 215 - Error creating PCF, no input filename given
- 300 - Error in run script input, PCF file does not exist

Exit code 205 should be seen only for Quick-look data processing and any simulated Level-0 data process before launch. An error has occurred if this error is seen for processing of a full 24-hour Level-0 dataset.

### **5.1.1.3 Test Summary**

#### **CER1.1P7: NPP-FM5**

Total Run Time: 35 min

### **5.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

\* \* \* \* \* T E S T   R E S U L T S \* \* \* \* \*

PGE	Results
CER1.1P7	SUCCESSFUL

And the following messages in the {\$SS1}\_L0\_Test.out file:

Instrument Subsystem complete with Exit Status = 0

Instrument Subsystem PGE 1.1Px complete for PCF File

**CER1.1P7\_PCF\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}**

where \$SS1, \$PS1, \$CC1, \$L0\_year, \$L0\_month and \$L0\_day are defined in the **temp-fm5-env.csh** sourced in the above tests.

#### **5.1.2.1 Log and Status File Results**

The Error and Status Log file, LogReport, will be located in directory  
“**\$CERESHOME/instrument/runlogs**” after CERES Subsystem 1.0 has been executed.

#### **5.1.2.2 Metadata Evaluation**

Done in the test script, Metadata evaluations should look like the following:

Checking BDS Metadata file:

**CER\_BDSD\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}.met ---  
METADATA OK**

#### **5.1.2.3 Evaluation of Comparison Software Output**

All output files in the directory matching the \$SS1, \$PS1 and \$CC1 will be compared, this includes BDSs, IESs, Log Files and a check of the Metadata for all files including QC Reports.

All comparisons done in Section 5.1.1.1 by the test script should look like the following:

Comparing BDS: **CER\_BDSD\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}**  
**-- SUCCESSFUL**  
**Error Evaluation**

If an error in a file comparison is found the following message will be displayed:

**For BDS:**

Comparing BDS:  
**CER\_BDS\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day} -- ERROR**  
--- Check file:  
**{\$CERESHOME}/instrument/CER1.1P7/test\_suites/CER\_BDS\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}.compare**

**For IES:**

Comparing IES:  
**CERIES\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}HH -- ERROR**  
--- Check file:  
**{\$CERESHOME}/instrument/CER1.1P7/test\_suites/CERIES\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}HH.compare**

where HH is the hour number of the IES.

**NOTE:** Due to updates being made to the Toolkit provided UTCpole.dat file twice a week, differences in the BDS and IES comparisons frequently occur. These differences are expected and can be ignored. These differences are seen in the geolocation and look angles. The “.compare” files above should be examined carefully. If any of the following parameters show differences then the comparison results are **BAD** and the appropriate personnel should be contacted about the errors:

- Shortwave Detector Output
- Total Detector Output
- Window Detector Output
- Drift Corrected SW Counts
- Drift Corrected TOT Counts
- Drift Corrected WN Counts
- CERES SW Filtered Radiance Upwards
- CERES TOT Filtered Radiance Upwards
- CERES WN Filtered Radiance Upwards
- SW Spaceclamp Values
- TOT Spaceclamp Values
- WN Spaceclamp Values

SW Slow Mode and Drift Corrected Counts  
TOT Slow Mode and Drift Corrected Counts  
WN Slow Mode and Drift Corrected Counts

### 5.1.3 Solutions to Possible Problems

All output data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P7/rcf
source CER1.1P7-env.csh        (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P7/rcf
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.1P7/test_suites
test_cleanup_CER1.1P7.pl
```

## 6.0 Test and Evaluation Procedures for the C++ Level-0 Data Processing

This section provides general information on how to execute Subsystem 1.0 and provides 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.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from four satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1) launched in May 2002 and NPP which is scheduled to launch in Jan. 2010. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with Level-0 data processing.

### 6.1 CER1.1P8 C++ Level-0 Data Processing

#### 6.1.1 Stand-alone Test Procedures

##### 6.1.1.1 Execution

###### TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P8-env.csh
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
run_CER1.1P8_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the exact filenames can be found in

**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P8\_PFM.List**.

**\$CERESHOME/instrument/CER1.1P8/test\_suites**, test script screen output, **TRMM-PFM\_L0\_Test.results** (see [Appendix D](#)), and a file containing PGE stdout, **TRMM-PFM\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, 6 IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINHS, BINEL, BQCRP, BQCRPS).

The associated .met files for all the above files.

###### Terra-FM1

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
```

```
cd $CEREHOME/instrument/CER1.1P8/rcf
source CER1.1P8-env.csh          (only if not previously sourced)
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
run_CER1.1P8_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P8\_FM1.List**,  
where the Sampling Strategy, \$SS1 = Terra-FM1.

**\$CERESHOME/instrument/CER1.1P8/test\_suites**, test script screen output, **Terra-FM1\_L0\_Test.results**, and a file containing PGE stdout, **Terra-FM1\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

## Terra-FM2

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P8-env.csh          (only if not previously sourced)
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
run_CER1.1P8_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P8\_FM2.List**,  
where the Sampling Strategy, \$SS1 = Terra-FM2.

**\$CERESHOME/instrument/test\_suites**, test script screen output, **Terra-FM2\_L0\_Test.results**, and a file containing PGE stdout, **Terra-FM2\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

## Aqua-FM3

```

cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
run_CER1.1P8_test.pl -env

```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P8\_FM3.List**,  
where the Sampling Strategy, \$SS1 = Aqua-FM3.

**\$CERESHOME/instrument/test\_suites**, test script screen output, **Aqua-FM3\_L0\_Test.results**, and a file containing PGE stdout, **Aqua-FM3\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, and BDSD).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

## Aqua-FM4

```

cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P8-env.csh      (only if not previously sourced)
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
run_CER1.1P8_test.pl -env

```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P8\_FM4.List**,  
where the Sampling Strategy, \$SS1 = Aqua-FM4.

**\$CERESHOME/instrument/test\_suites**, test script screen output, **Aqua-FM4\_L0\_Test.results**, and a file containing PGE stdout, **Aqua-FM4\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD, and BDSG).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

## NPP-FM5

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P8-env.csh        (only if not previously sourced)
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
run_CER1.1P8_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of the actual filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P8\_FM5.List**,  
where the Sampling Strategy, \$SS1 = NPP-FM4.

**\$CERESHOME/instrument/test\_suites**, test script screen output, **NPP-FM5\_L0\_Test.results**, and a file containing PGE stdout, **NPP-FM5\_L0\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, BDS files (BDS, BDSS, BDSD, and BDSG).  
**\$CERESHOME/instrument/data/int\_prod**, IES files.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

### 6.1.1.2 Exit Codes

- 0 - Normal Exit,
- 200 - Error in Main Processing,
- 205 - Simulated Ephemeris/Attitude data
- 210 - Error creating ASCII Input, no date entered
- 215 - Error creating PCF, no input filename given
- 300 - Error in run script input, PCF file does not exist

Exit code 205 should be seen only for Quick-look data processing and any simulated Level-0 data process before launch. An error has occurred if this error is seen for processing of a full 24-hour Level-0 dataset.

### **6.1.1.3 Test Summary**

#### **TRMM-PFM**

Total Run Time: 35 min

#### **Terra-FM1**

Total Run Time: 40 min

#### **Terra-FM2**

Total Run Time: 40 min

#### **Aqua-FM3**

Total Run Time: 40 min

#### **Aqua-FM4**

Total Run Time: 40 min

#### **NPP-FM5**

Total Run Time: 40 min

### **6.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

\* \* \* \* \* \* \* \* \* T E S T   R E S U L T S \* \* \* \* \* \* \* \* \*

PGE                      Results

CER1.1P8                SUCCESSFUL

And the following messages in the {\$SS1}\_L0\_Test.out file:

Instrument Subsystem complete with Exit Status = 0

Instrument Subsystem PGE 1.1Px complete for PCF File

**CER1.1P8\_PCF\_{\$SS1}\_{\$PS1}\_{\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}**

where \$SS1, \$PS1, \$CC1, \$L0\_year, \$L0\_month and \$L0\_day are defined in the **temp-<inst>-env.csh** sourced in the above tests.

### **6.1.2.1 Log and Status File Results**

The Error and Status Log file, LogReport, will be located in directory  
“**\$CERESHOME/instrument/runlogs**” after CERES Subsystem 1.0 has been executed.

### **6.1.2.2 Metadata Evaluation**

Done in the test script, Metadata evaluations should look like the following:

Checking BDS Metadata file:

```
CER_BDSD_{$SS1}_{\$PS1}_{\$CC1}.{$L0_year}{$L0_month}{$L0_day}.met ---
METADATA OK
```

### **6.1.2.3 Evaluation of Comparison Software Output**

All output files in the directory matching the \$SS1, \$PS1 and \$CC1 will be compared, this includes BDSs, IESs, Log Files and a check of the Metadata for all files including QC Reports.

All comparisons done in Section [6.1.1.1](#) by the test script should look like the following:

Comparing BDS: **CER\_BDSD\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}**  
**-- SUCCESSFUL**

#### **Error Evaluation**

If an error in a file comparison is found the following message will be displayed:

#### **For BDS:**

Comparing BDS:  
**CER\_BDS\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day} -- ERROR**  
--- Check file: **{\$CERESHOME}/instrument/CER1.1P1-**  
**6/test\_suites/CER\_BDS\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}**  
**.compare**

#### **For IES:**

Comparing IES:  
**CERIES\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}HH --**  
**ERROR**  
--- Check file:  
**{\$CERESHOME}/instrument/CER1.1P8/test\_suites/CERIES\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}HH.compare**

where HH is the hour number of the IES.

**NOTE:** Due to updates being made to the Toolkit provided UTCpole.dat file twice a week, differences in the BDS and IES comparisons frequently occur. These differences are expected

and can be ignored. These differences are seen in the geolocation and look angles. The “.compare” files above should be examined carefully. If any of the following parameters show differences then the comparison results are **BAD** and the appropriate personnel should be contacted about the errors:

Shortwave Detector Output  
Total Detector Output  
Window Detector Output  
Drift Corrected SW Counts  
Drift Corrected TOT Counts  
Drift Corrected WN Counts  
CERES SW Filtered Radiance Upwards  
CERES TOT Filtered Radiance Upwards  
CERES WN Filtered Radiance Upwards  
SW Spaceclamp Values  
TOT Spaceclamp Values  
WN Spaceclamp Values  
SW Slow Mode and Drift Corrected Counts  
TOT Slow Mode and Drift Corrected Counts  
WN Slow Mode and Drift Corrected Counts

### 6.1.3 Solutions to Possible Problems

All output data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P8/rcf
source CER1.1P8-env.csh        (only if not previously sourced)
source temp-<inst>-env.csh
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
```

where <instr> can be pfm, fm1, fm2, fm3, fm4 or fm5, depending on which instrument files you want to clean out of the directories.

## 7.0 Test and Evaluation Procedures for QuickLook Data Processing

This section provides general information on how to execute Subsystem 1.0 and provides 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. **At this time all Quicklook PGEs have been disabled and none of the tests in this section should be run.**

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1), launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with QuickLook data processing.

### 7.1 CER1.1P2, CER1.1P4 and CER1.1P6 QuickLook Data Processing

#### 7.1.1 Stand-alone Test Procedures

##### 7.1.1.1 Execution

###### CER1.1P2: TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P2
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P2-4-6_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in

**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P2\_PFM.List.**

**\$CERESHOME/instrument/rcf**, test script screen output, **TRMM-PFM\_QL\_Test.results**, and a file containing PGE stdout, **TRMM-PFM\_QL\_Test.out**.

**\$CERESHOME/instrument/data/out\_comp**, Science BDS file.

**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

## CER1.1P4: Terra-FM1

NOTE: Testing for QuickLook will not be done at this time.

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P4
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P2-4-6_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P4\_FM1.List**,  
where \$SS1 = Terra-FM1.

**\$CERESHOME/instrument/rcf**, test script screen output, **Terra-FM1\_QL\_Test.results**, and a file containing PGE stdout, **Terra-FM1\_QL\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, a Science BDS Quicklook file.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

## CER1.1P4: Terra-FM2

NOTE: Testing for QuickLook will not be done at this time.

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P4
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P2-4-6_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P4\_FM2.List**,  
where \$SS1 = Terra-FM2.

**\$CERESHOME/instrument/rcf**, test script screen output, **Terra-FM2\_QL\_Test.results**, and a file containing PGE stdout, **Terra-FM2\_QL\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, a Science BDS Quicklook file.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

### CER1.1P6: Aqua-FM3

NOTE: Testing for QuickLook will not be done at this time.

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
run_CER1.1P2-4-6_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P6\_FM3.List**,  
where \$SS1 = Aqua-FM3.

**\$CERESHOME/instrument/rcf**, test script screen output, **Aqua-FM3\_QL\_Test.results**, and a file containing PGE stdout, **Aqua-FM3\_QL\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, a Science BDS Quicklook file.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

### CER1.1P6: Aqua-FM4

NOTE: Testing for QuickLook will not be done at this time.

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6
source temp-fm4-env.csh
```

```
cd $CERESHOME/instrument/CER1.1P1-6/test_suites  
run_CER1.1P2-4-6_test.pl -env
```

The Main Processor PGE will be executed and will create the following files:

A list of exact filenames can be found in  
**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.1P6\_FM4.List**,  
where \$SS1 = Aqua-FM4.

**\$CERESHOME/instrument/rcf**, test script screen output, **Aqua-FM4\_QL\_Test.results**, and a file containing PGE stdout, **Aqua-FM4\_QL\_Test.out**.  
**\$CERESHOME/instrument/data/out\_comp**, a Science BDS Quicklook file.  
**\$CERESHOME/instrument/web**, CERES QC files (BINEL, BINHS, BQCRP, and BQCRPS).

The associated .met files for all the above files.

#### 7.1.1.2 Exit Codes

- 0 - Normal Exit,
- 200 - Error in Main Processing,
- 205 - Simulated Ephemeris/Attitude data, no IESs created
- 210 - Error creating ASCII Input, no date entered
- 211 - Error creating QuickLook ASCII Input, no hour entered
- 212 - Error creating QuickLook ASCII Input, no minute entered
- 213 - Error creating QuickLook ASCII Input, no APID entered
- 215 - Error creating PCF, no input filename given
- 300 - Error in **run\_instrument.csh** input, PCF file does not exist

Exit code 205 should be seen only for Quick-look data processing and any simulated Level-0 data process before launch. An error has occurred if this error is seen for processing of a full 24-hour Level-0 dataset.

#### 7.1.1.3 Test Summary

##### CER1.1P2: TRMM-PFM

Total Run Time: 10 min

##### CER1.1P4: Terra-FM1

Total Run Time: 10 min

##### CER1.1P4: Terra-FM2

Total Run Time: 10 min

**CER1.1P6: Aqua-FM3**

Total Run Time: 45 min

**CER1.1P6: Aqua-FM4**

Total Run Time: 45 min

**7.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

```
***** TEST RESULTS *****
```

PGE	Results
CER1.1Px	SUCCESSFUL

where x = 2 -- TRMM-PFM  
       = 4 -- Terra-FM1 or Terra-FM2  
       = 6 -- Aqua-FM3 or Aqua-FM4

And the following messages in the {\$SS1}\_QL\_Test.out file:

The Main Processor will complete with the following message:

```
=====
= WARNING: Simulated Ephemeris or Attitude data used for Processing Data =
= WARNING: PGE CER1.3P1 should not be run =
=====
```

Instrument Subsystem complete with Exit Status = 205, PGE CER1.2P1 should not be run  
 Instrument Subsystem PGE 1.1Px complete for PCF File

**CER1.1Px\_PCF\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$QL\_year}{\$QL\_month}{\$QL\_day}\_QL{\$QL\_hr}{\$QL\_min}-{\$QL\_apid}**

where \$SS1, \$PS1, \$CC1, \$QL\_year, \$QL\_month, \$QL\_day, \$QL\_hr, \$QL\_min and \$QL\_apid are defined in the **temp-<inst>-env.csh** sourced in the above tests.

**7.1.2.1 Log and Status File Results**

The Error and Status Log file, LogReport, will be located in directory  
**“\$CERESHOME/instrument/runlogs”** after CERES Subsystem 1.0 has been executed.

**7.1.2.2 Metadata Evaluation**

Done in the test script, Metadata evaluations should look like the following:

Checking BDS Metadata file:

**CER\_BDSD\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$QL\_year}{\$QL\_month}{\$QL\_day}\_QL{\$QL\_hr}{\$QL\_min}-{\$QL\_apid}.met --- METADATA OK**

### 7.1.2.3 Evaluation of Comparison Software Output

All comparisons done in Section 7.1.1.1 by the test script should look like the following:

Comparing BDS:

**CER\_BDSD\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$QL\_year}{\$QL\_month}{\$QL\_day}\_QL{\$QL\_hr}{\$QL\_min}-{\$QL\_apid} -- SUCCESSFUL**

If an error in a file comparison is found the following message will be displayed:

Comparing BDS:

**CER\_BDS\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$QL\_year}{\$QL\_month}{\$QL\_day}\_QL{\$QL\_hr}{\$QL\_min}-{\$QL\_apid} -- ERROR**

--- Check file: {\$CERESHOME}/instrument/CER1.1P1-6/test\_suites

**CER\_BDS\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$QL\_year}{\$QL\_month}{\$QL\_day}\_QL{\$QL\_hr}{\$QL\_min}-{\$QL\_apid}.compare**

NOTE: All QuickLook files in the directory matching the \$SS1, \$PS1 and \$CC1 will be compared, this includes BDSs, Log Files and a check of the Metadata for all files including QC Reports.

### 7.1.3 Solutions to Possible Problems

All output data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf
source CER1.1P1-6-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1Px (x = 2, 4 or 6)
source temp-<inst>-env.csh
cd $CERESHOME/instrument/CER1.1P1-6/test_suites
test_cleanup_CER1.1P1-6.pl
```

where <instr> can be pfm, fm1, fm2, fm3 or fm4, depending on which instrument files you want to clean out of the directories. And <PGE\_Name> can be CER1.1P2 (TRMM), CER1.1P4 (Terra) or CER1.1P6 (Aqua), depending on which spacecraft you are processing.

## 8.0 Test and Evaluation Procedures for BDS to Pre-ES8 Processing

This section provides general information on how to execute Subsystem 1.0 and provides 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.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1), launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with the BDS Conversion to Pre-ES8 processor.

### 8.1 CER1.2P1 BDS Conversion to Pre-ES8

#### 8.1.1 Stand-alone Test Procedures

##### 8.1.1.1 Execution

###### CER1.2P1: TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1-env.csh        (only if not previously sourced)
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
run_CER1.2P1_test.pl -env
```

###### CER1.2P1: Terra-FM1

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1-env.csh        (only if not previously sourced)
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
run_CER1.2P1_test.pl -env
```

###### CER1.2P1: Terra-FM2

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1-env.csh        (only if not previously sourced)
source temp-fm2-env.csh
```

```
cd $CERESHOME/instrument/CER1.2P1/test_suites
run_CER1.2P1_test.pl -env
```

### CER1.2P1: Aqua-FM3

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1-env.csh        (only if not previously sourced)
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
run_CER1.2P1_test.pl -env
```

### CER1.2P1: Aqua-FM4

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1-env.csh        (only if not previously sourced)
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
run_CER1.2P1_test.pl -env
```

The BDS Conversion will be executed and will create 1 PRES8 file, for each instrument, which can be found in \$CERESHOME/instrument/data/out\_comp and the associated .met files. The exact filenames can be found in

**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.2P1\_<inst>.List.**

Where <inst> is PFM, FM1, FM2, FM3 or FM4.

#### 8.1.1.2 Exit Codes

- 0 - Normal Exit,
- 203 - Error creating Pre-ES8.
- 204 - Simulated Ephemeris/Attitude data, no Pre-ES8 created
- 210 - No records available to be written to Pre-ES8, no Pre-ES8 created
- 213 - Error creating ASCII Input, no date entered
- 215 - Error creating PCF, no input filename given
- 220 - Error creating BDS to Pre-ES8 conversion ASCII Input, BDS does not exist

Exit code 204 should be seen only for Quick-look data processing and any simulated Level-0 data process before launch. An error has occurred if this error is seen for processing of a (real after launch) full 24-hour Level-0 dataset through the BDS to Pre-ES8 conversion program. Exit code 210 should be considered a Normal Exit, the instrument mode was such that the instrument did not view the Earth.

### **8.1.1.3 Test Summary**

#### **CER1.2P1: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3 and Aqua-FM4**

Total Run Time: 2 min

### **8.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

```
***** TEST RESULTS *****
```

PGE	Results
CER1.2P1	SUCCESSFUL

And the following messages in the {\$SS1}\_CER1.2P1\_Test.out file:

Instrument Subsystem complete with Exit Status = 0

Instrument Subsystem PGE 1.2P1 complete for PCF File

**CER1.2P1\_PCF\_{\$SS1}\_{\\$PS1}\_{\\$CC1}.{\$L0\_year}{\$L0\_month}{\$L0\_day}**

where \$SS1, \$PS1, \$CC1, \$L0\_year, \$L0\_month and \$L0\_day are defined in the **temp-<inst>-env.csh** sourced in the above tests.

#### **8.1.2.1 Log and Status File Results**

The Error and Status Log file, LogReport, will be located in directory  
**“\$CERESHOME/instrument/runlogs”** after CERES Subsystem 1.0 has been executed.

#### **8.1.2.2 Metadata Evaluation**

TBD

#### **8.1.2.3 Evaluation of Comparison Software Output**

All comparisons done in Section [8.1.1.1](#) by the test script should look like the following:

Comparing PRES8 file: **CER\_PRES8\_TRMM-PFM\_ReleaseTest\_000027.19980105 ---  
SUCCESSFUL**

If an error in a file comparison is found the following message will be displayed:

Comparing PRES8 file:

```
CER_PRES8_{$SS1}_{\$PS1}_{\$CC1}.{$L0_year}{$L0_month}{$L0_day} -- ERROR
--- Check file: {$CERESHOME}/instrument/CER1.2P1/test_suites
CER_PRES8_{$SS1}_{\$PS1}_{\$CC1}.{$L0_year}{$L0_month}{$L0_day}.compare
```

NOTE: All PRES8 files in the directory matching the \$SS1, \$PS1 and \$CC1 will be compared, this includes PRES8 and Log Files.

### 8.1.3 Solutions to Possible Problems

All PRES8 data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT_env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.2P1/rcf
source CER1.2P1-env.csh        (only if not previously sourced)
source temp-<instr>-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
```

where <instr> can be pfm, fm1, fm2, fm3 or fm4, depending on which instrument files you want to clean out of the directories.

## 9.0 Test and Evaluation Procedures for BDS/BDS to BDSI Processing

This section provides general information on how to execute PGE CER1.3P1, which reads a BDS and/or a BDSD created by the IPS and subsets the information in BDSIs based on the presence of Internal Calibration data.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1), launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with the BDS/BDSD Subsetting of Internal Calibration information into BDSIs.

### 9.1 CER1.3P1 BDS/BDSD Subsetting of Internal Calibration Data into BDSIs

#### 9.1.1 Stand-alone Test Procedures

##### 9.1.1.1 Execution

###### CER1.3P1: TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P1/rcf
source CER1.3P1-env.csh        (only if not previously sourced)
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.3P1/test_suites
run_CER1.3P1_test.pl -env
```

###### CER1.3P1: Terra-FM1

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P1/rcf
source CER1.3P1-env.csh        (only if not previously sourced)
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.3P1/test_suites
run_CER1.3P1_test.pl -env
```

###### CER1.3P1: Terra-FM2

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P1/rcf
source CER1.3P1-env.csh        (only if not previously sourced)
source temp-fm2-env.csh
```

```
cd $CERESHOME/instrument/CER1.3P1/test_suites  
run_CER1.3P1_test.pl -env
```

### CER1.3P1: Aqua-FM3

```
cd $CERESHOME/instrument/rcf  
source INSTRUMENT-env.csh      (only if not previously sourced)  
cd $CERESHOME/instrument/CER1.3P1/rcf  
source CER1.3P1-env.csh        (only if not previously sourced)  
source temp-fm3-env.csh  
cd $CERESHOME/instrument/CER1.3P1/test_suites  
run_CER1.3P1_test.pl -env
```

### CER1.3P1: Aqua-FM4

```
cd $CERESHOME/instrument/rcf  
source INSTRUMENT-env.csh      (only if not previously sourced)  
cd $CERESHOME/instrument/CER1.3P1/rcf  
source CER1.3P1-env.csh        (only if not previously sourced)  
source temp-fm4-env.csh  
cd $CERESHOME/instrument/CER1.3P1/test_suites  
run_CER1.3P1_test.pl -env
```

The BDSI creator will be executed and will create 1 BDSI file, for each instrument, which can be found in \$CERESHOME/instrument/data/out\_comp and the associated .met files. No BDSI files will be created when no Internal Calibration data is present (Exit Code = 10). The exact filenames can be found in

**\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.3P1\_<inst>.List.**

Where <inst> is PFM, FM1, FM2, FM3, or FM4.

#### 9.1.1.2 Exit Codes

- 0 - Normal Exit,
- 10 - Normal Exit, no Internal Calibration Events were found,
- 200 - Fatal Error creating BDSIs.

#### 9.1.1.3 Test Summary

##### CER1.3P1: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3 and Aqua-FM4

Total Run Time: 2 min

### **9.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

```
***** TEST RESULTS *****
```

PGE	Results
CER1.3P1	SUCCESSFUL

And the following messages in the `{$SS1}_CER1.3P1_Test.out` file:

`CER1.3P1 SUCCESSFUL -- Exit Status = 0`

`CER1.3P1 Complete for PCF file`

`CER1.3P1_PCF_{$SS1}_{\$PS1}_{\$CC1_3}.\{$CER1_3P1_year\}\{$CER1_3P1_month\}\{$CER1_3P1_day\}`

where `$SS1`, `$PS1`, `$CC1`, `$CER1_3P1_year`, `$CER1_3P1_month` and `$CER1_3P1_day` are defined in the `temp-<inst>-env.csh` sourced in the above tests.

**NOTE:** At this time for Aqua processing you will see the following messages in the `{$SS1}_CER1.3P1_Test.out` file:

`CER1.3P1 SUCCESSFUL -- Exit Status = 10, no Internal Cal Events were found -- no BDSI files created`

`CER1.3P1 Complete for PCF file`

`CER1.3P1_PCF_{$SS1}_{\$PS1}_{\$CC1_3}.\{$CER1_3P1_year\}\{$CER1_3P1_month\}\{$CER1_3P1_day\}`

#### **9.1.2.1 Log and Status File Results**

The Error and Status Log file, LogReport, will be located in directory  
`“$CERESHOME/instrument/runlogs”` after CERES Subsystem 1.0 has been executed.

#### **9.1.2.2 Metadata Evaluation**

TBD

#### **9.1.2.3 Evaluation of Comparison Software Output**

All comparisons done in Section [9.1.1.1](#) by the test script should look like the following:

Comparing BDSI file: `CER_BDSI_TRMM-PFM_ReleaseTest_$CC1_3.1998032501 --- SUCCESSFUL`

If an error in a file comparison is found the following message will be displayed:

Comparing BDSI file:

`CER_BDSI_$SS1_$PS1_$CC1_3.\{$CER1_3P1_year\}\{$CER1_3P1_month\}\{$CER1_3P1_day\} -- ERROR`

--- Check file: **{\$CERESHOME}/instrument/CER1.3P1/test\_suites  
CER\_BDSI\_{\$SS1}\_{\$PS1}\_{\$CC1\_3}.{\$CER1\_3P1\_year}{\$CER1\_3P1\_month}{\$CER1\_3P1\_day}01.compare**

NOTE: All BDSI files in the directory matching the \$SS1, \$PS1 and \$CC1\_3 will be compared, this includes BDSI and Log Files.

### **9.1.3 Solutions to Possible Problems**

All BDSI data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P1/rcf
source CER1.3P1-env.csh        (only if not previously sourced)
source temp-<instr>-env.csh
cd $CERESHOME/instrument/CER1.3P1/test_suites
test_cleanup_CER1.3P1.pl
```

where <instr> can be pfm, fm1, fm2, fm3 or fm4, depending on which instrument files you want to clean out of the directories.

## 10.0 Test and Evaluation Procedures for Gain Analysis Processing

This section provides general information on how to execute PGE CER1.3P2, which reads a months worth of BDSIs created by CER1.3P1 and analyzes the gains based on the internal calibration data within the BDSIs.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1), launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with the analysis of the instrument gains based on the Internal Calibration data available in the BDSIs.

### 10.1 CER1.3P2 Gain Analysis

#### 10.1.1 Stand-alone Test Procedures

##### 10.1.1.1 Execution

###### CER1.3P2: TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2-env.csh        (only if not previously sourced)
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.3P2/test_suites
run_CER1.3P2_test.pl -env
```

###### CER1.3P2: Terra-FM1

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2-env.csh        (only if not previously sourced)
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.3P2/test_suites
run_CER1.3P2_test.pl -env
```

###### CER1.3P2: Terra-FM2

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2-env.csh        (only if not previously sourced)
source temp-fm2-env.csh
```

```
cd $CERESHOME/instrument/CER1.3P2/test_suites
run_CER1.3P2_test.pl -env
```

### **CER1.3P2: Aqua-FM3**

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2-env.csh        (only if not previously sourced)
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.3P2/test_suites
run_CER1.3P2_test.pl -env
```

### **CER1.3P2: Aqua-FM4**

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2-env.csh        (only if not previously sourced)
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.3P2/test_suites
run_CER1.3P2_test.pl -env
```

The Gain Analyzer will read a month's worth of BDSIs and create an output file containing the gain analysis for each of the internal calibration events found in the BDSIs along with the associated .met file. The exact filenames can be found in **\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.3P2\_<inst>.List**. Where <inst> is PFM, FM1, FM2, FM3 or FM4.

#### **10.1.1.2 Exit Codes**

0 - Normal Exit,  
200 - Fatal Error.

#### **10.1.1.3 Test Summary**

#### **CER1.3P2: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3 and Aqua-FM4**

Total Run Time:	2 min
-----------------	-------

#### **10.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

\* \* \* \* \* \* \* \* \* T E S T   R E S U L T S \* \* \* \* \* \* \* \* \*

PGE	Results
CER1.3P2	SUCCESSFUL

And the following messages in the `{$SS1}_CER1.3P2_Test.out` file:

`CER1.3P2 SUCCESSFUL -- Exit Status = 0`

`CER1.3P2 Complete for PCF file`

`CER1.3P2_PCF_{$SS1}_{$PS1}_{$CC1_4}.{$CER1_3P2_year}{$CER1_3P2_month}`

where `$SS1`, `$PS1`, `$CC1_4`, `$CER1_3P2_year`, `$CER1_3P2_month` and `$CER1_3P2_day` are defined in the `temp-<inst>-env.csh` sourced in the above tests.

#### 10.1.2.1 Log and Status File Results

The Error and Status Log file, `LogReport`, will be located in directory  
`"$CERESHOME/instrument/runlogs"` after PGE CER1.3P2 has been executed.

#### 10.1.2.2 Metadata Evaluation

TBD

#### 10.1.2.3 Evaluation of Comparison Software Output

All comparisons done in Section 10.1.1.1 by the test script should look like the following:

Comparing GAIN file: `CER_GAIN_TRMM-PFM_ReleaseTest_000027.1998010501 --- SUCCESSFUL`

If an error in a file comparison is found the following message will be displayed:

Comparing GAIN file:

`CER_GAIN_$SS1_$PS1_$CC1_4.{$CER1_3P2_year}{$CER1_3P2_month} -- ERROR`

`--- Check file: {$CERESHOME}/instrument/CER1.3P2/test_suites`

`CER_GAIN_$SS1_$PS1_$CC1_4.{$CER1_3P2_year}{$CER1_3P2_month}.compare`

NOTE: All GAIN files in the directory matching the `$SS1`, `$PS1` and `$CC1_4` will be compared, this includes GAIN, QCSW, QCTL, QCWN and Log Files.

#### 10.1.3 Solutions to Possible Problems

All GAIN data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P2/rcf
source CER1.3P2-env.csh        (only if not previously sourced)
source temp-<instr>-env.csh
cd $CERESHOME/instrument/CER1.3P2/test_suites
test_cleanup_CER1.3P2.pl
```

where `<instr>` can be pfm, fm1, fm2, fm3 or fm4, depending on which instrument files you want to clean out of the directories.

## 11.0 Test and Evaluation Procedures for BDS Reprocessing

This section provides general information on how to execute PGE CER1.3P3, which reads a Science BDS created by CER1.1P1, CER1.1P3 or CER1.1P5 and recalculates the radiances based on updated gain coefficients, creating an updated BDS and IESs.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in Nov. 1997, Terra (also called AM1), launched in Dec. 1999 and Aqua (also called PM1), launched in May 2002. The Level-0 data is dependent on the Satellite, or platform, and Instrument which are the source of the data. This section deals with the reprocessing of the Science BDS file, based on an update to the gain coefficients.

### 11.1 CER1.3P3 BDS/IES Recalculate Radiances

#### 11.1.1 Stand-alone Test Procedures

##### 11.1.1.1 Execution

###### CER1.3P3: TRMM-PFM

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3-env.csh        (only if not previously sourced)
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.3P3/test_suites
run_CER1.3P3_test.pl -env
```

###### CER1.3P3: Terra-FM1

Only run this command if CER1.1P3 has **NOT** been run:

```
cp $CERESHOME/instrument/data/input/*BDS*FM1*
$CERESHOME/instrument/data/out_comp/
```

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3-env.csh        (only if not previously sourced)
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.3P3/test_suites
run_CER1.3P3_test.pl -env
```

**CER1.3P3: Terra-FM2**

Only run this command if CER1.1P3 has **NOT** been run:

```
cp $CERESHOME/instrument/data/input/*BDS*FM2*
$CERESHOME/instrument/data/out_comp/
```

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3-env.csh          (only if not previously sourced)
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.3P3/test_suites
run_CER1.3P3_test.pl -env
```

**CER1.3P3: Aqua-FM3**

Only run this command if CER1.1P5 has **NOT** been run:

```
cp $CERESHOME/instrument/data/input/*BDS*FM3*
$CERESHOME/instrument/data/out_comp/
```

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3-env.csh          (only if not previously sourced)
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.3P3/test_suites
run_CER1.3P3_test.pl -env
```

**CER1.3P3: Aqua-FM4**

Only run this command if CER1.1P5 has **NOT** been run:

```
cp $CERESHOME/instrument/data/input/*BDS*FM4*
$CERESHOME/instrument/data/out_comp/
```

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3-env.csh          (only if not previously sourced)
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.3P3/test_suites
run_CER1.3P3_test.pl -env
```

The BDS Reprocessor will read in a Science BDS and create a new Science BDS along with the associated IES files for the data date. The exact filenames can be found in **\$CERESHOME/instrument/data\_exp/Expected\_Output\_CER1.3P3\_<inst>.List**. Where <inst> is PFM, FM1, FM2, FM3 or FM4.

**11.1.1.2 Exit Codes**

- 0 - Normal Exit,
- 200 - Fatal Error.

**11.1.1.3 Test Summary****CER1.3P3: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3 and Aqua-FM4**

Total Run Time: 15 min

**11.1.2 Evaluation Procedures**

The main processor will complete with the following message on the screen:

\*\*\*\*\* TEST RESULTS \*\*\*\*\*

PGE	Results
CER1.3P3	SUCCESSFUL

And the following messages in the {\$SS1}\_CER1.3P3\_Test.out file:

CER1.3P3 SUCCESSFUL -- Exit Status = 0

CER1.3P3 Complete for PCF file

**CER1.3P3\_PCF\_{\$SS1}\_{\$PS1\_1}\_{\$CC1\_5}.{\$CER1\_3P3\_year}{\$CER1\_3P3\_month}{\$CER1\_3P3\_day}**where \$SS1, \$PS1\_1, \$CC1\_5, \$CER1\_3P3\_year, \$CER1\_3P3\_month and \$CER1\_3P3\_day are defined in the **temp-<inst>-env.csh** sourced in the above tests.**11.1.2.1 Log and Status File Results**The Error and Status Log file, LogReport, will be located in directory  
“\$CERESHOME/instrument/runlogs” after PGE CER1.3P3 has been executed.**11.1.2.2 Metadata Evaluation**

TBD

**11.1.2.3 Evaluation of Comparison Software Output**

All comparisons done in Section 11.1.1.1 by the test script should look like the following:

Comparing BDS file: **CER\_BDS\_TRMM-PFM\_Edition2\_000001.1998010501 ---**  
**SUCCESSFUL**

If an error in a file comparison is found the following message will be displayed:

Comparing BDS file:

**CER\_BDS\_\${\$SS1}\_\${\$PS1\_1}\_\${\$CC1\_5}.{\$CER1\_3P3\_year}{\$CER1\_3P3\_month}{\$CER1\_3P3\_day} -- ERROR**

--- Check file: **{\$CERESHOME}/instrument/CER1.3P3/test\_suites  
CER\_BDS\_\$\$S1\_\$PS1\_1\_\$CC1\_5.{\$CER1\_3P3\_year}{\$CER1\_3P3\_month}{\$CER1\_3P3\_day}.compare**

NOTE: The BDS and IES files in the directory matching the \$\$S1, \$PS1\_1 and \$CC1\_5 will be compared, this includes BQCBDS, BQCIES and Log Files.

### 11.1.3 Solutions to Possible Problems

All BDS, IES, BQCBDS and BQCIES data should be deleted before rerunning any of the above tests. This can be done by using the following commands:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT-env.csh      (only if not previously sourced)
cd $CERESHOME/instrument/CER1.3P3/rcf
source CER1.3P3-env.csh        (only if not previously sourced)
source temp-<instr>-env.csh
cd $CERESHOME/instrument/CER1.3P3/test_suites
test_cleanup_CER1.3P3.pl
```

where <instr> can be pfm, fm1, fm2, fm3 or fm4, depending on which instrument files you want to clean out of the directories.

## References

1. Toolkit User's Guide for the ECS Project, November 1996.
2. CERES Data Management System Data Products Catalog (DPC), Release 4, Version 10, June 2005.

## Appendix A

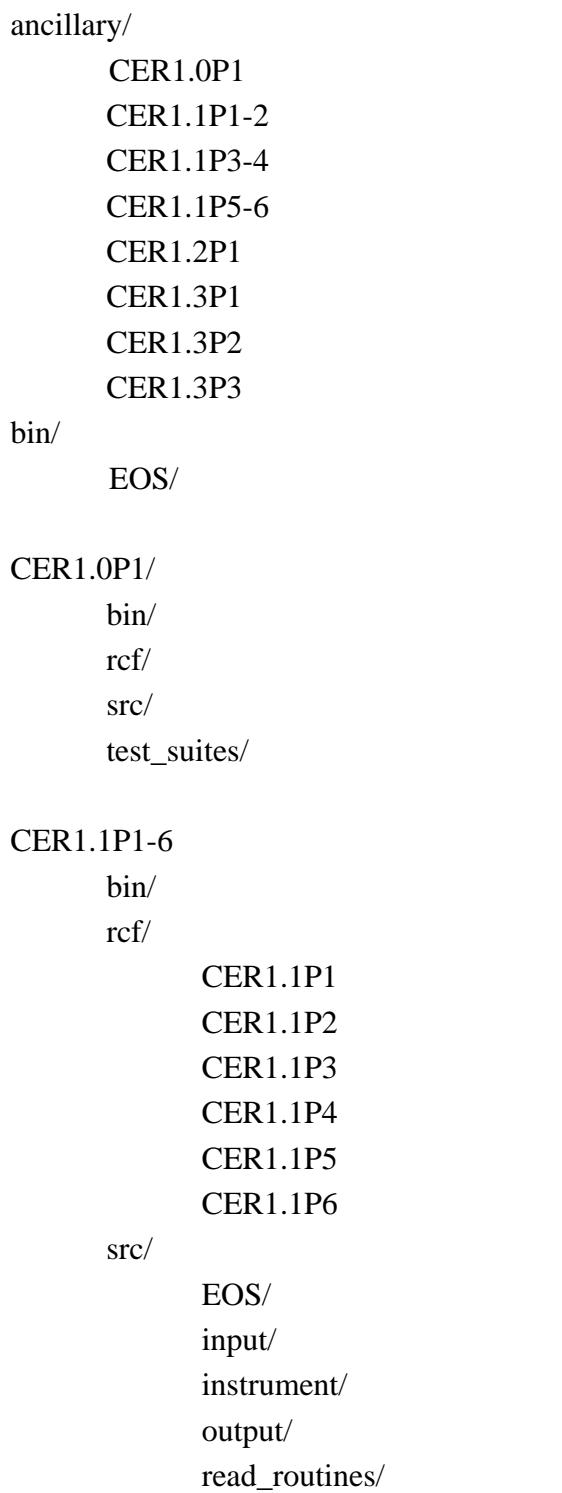
### Acronyms and Abbreviations

ASCII	American Standard Code Information Interchange
ASDC	Atmospheric Sciences Data Center
Aqua	alias for EOS-PM1
BDS	BiDirectional Scan
BDSD	Diagnostic BiDirectional Scan
BDSF	Fixed Pattern BiDirectional Scan
BDSG	Gimbal Error BiDirectional Scan
BDSI	Internal Calibration BiDirectional Scan
BDSM	Memory Dump BiDirectional Scan
BDSP	Processor Error BiDirectional Scan
BDSS	Solar Cal BiDirectional Scan
BINHS	Instrument Command History
BINEL	Instrument Command Error
BQCRP	Instrument Procession QC Report
BQCRPS	Instrument QC Statistics
CCSDS	Consultative Committee for Space Data Standards
CERES	Clouds and the Earth's Radiant Energy System
CERESlib	CERES library
DAAC	Distributed Active Archive Center
DMS	Data Management System
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOS-PM	EOS Afternoon Crossing Mission
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
HDF	Hierarchical Data Format
IES	Instrument Earth Scans
IPS	Instrument Processing System
LaTIS	Langley TRMM Information System
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
MCF	Metadata Configuration File
QA	Quality Assurance
SCF	Science Computing Facility

Terra alias for EOS-AM1  
TRMM Tropical Rainfall Measuring Mission

## Appendix B Directory Structure Diagram

Directory /CERES/instrument



**Directory /CERES/instrument**

science/

utilities/

test\_suites/

**CER1.2P1**

bin/

rcf/

src/

test\_suites/

**CER1.3P1**

bin/

rcf/

src/

test\_suites/

**CER1.3P2**

bin/

rcf/

src/

test\_suites/

**CER1.3P3**

bin/

rcf/

src/

test\_suites/

**EOS/**

src/

**data/**

ancillary/

dynamic/

input/

int\_prod/

## Directory /CERES/instrument

```
out_comp/  
data_exp/  
    CER1.0P1/  
    CER1.1P1/  
    CER1.1P2/  
    CER1.1P3/  
        FM1/  
        FM2/  
    CER1.1P4/  
    CER1.1P5/  
        FM3/  
        FM4/  
    CER1.1P6/  
    CER1.2P1/  
        FM1/  
        FM2/  
        FM3/  
        FM4/  
        PFM/  
    CER1.3P1/  
        FM1/  
        FM2/  
        FM3/  
        FM4/  
        PFM/  
    CER1.3P2/  
        FM1/  
        FM2/  
        FM3/  
        FM4/  
        PFM/  
    CER1.3P3/  
        FM1/  
        FM2/  
        FM3/  
        FM4/
```

**Directory /CERES/instrument****PFM/**

lib/  
smf/  
ref/  
read\_pkgs/  
runlogs/  
test\_suites/  
web/

## Appendix C

### File Description Tables

#### C.1 Production Script

Table C.1-1. Production Scripts

<b>File Name</b>	<b>Directory</b>	<b>Format</b>	<b>Description</b>
temp-pfm-env.csh	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P1 CER1.1P1-6/rcf/CER1.1P2 CER1.2P1/rcf CER1.3P1/rcf CER1.3P2/rcf CER1.3P3/rcf	ASCII	Test environment set-up script for TRMM-PFM
temp-fm1-env.csh	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P3 CER1.1P1-6/rcf/CER1.1P4 CER1.2P1/rcf CER1.3P1/rcf CER1.3P2/rcf CER1.3P3/rcf	ASCII	Test environment set-up script for Terra-FM1
temp-fm2-env.csh	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P3 CER1.1P1-6/rcf/CER1.1P4 CER1.2P1/rcf CER1.3P1/rcf CER1.3P2/rcf CER1.3P3/rcf	ASCII	Test environment set-up script for Terra-FM2
temp-fm3-env.csh	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P5 CER1.1P1-6/rcf/CER1.1P6 CER1.2P1/rcf CER1.3P1/rcf CER1.3P2/rcf CER1.3P3/rcf	ASCII	Test environment set-up script for Aqua-FM3
temp-fm4-env.csh	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P5 CER1.1P1-6/rcf/CER1.1P6 CER1.2P1/rcf CER1.3P1/rcf CER1.3P2/rcf CER1.3P3/rcf	ASCII	Test environment set-up script for Aqua-FM4
temp-sim-env.csh	\$CERESHOME/instrument/ CER1.0P1/rcf	ASCII	Test environment set-up script for TRMM IES Simulator
run_CER1.0P1.pl	\$CERESHOME/instrument/ CER1.0P1/rcf	ASCII	Perl script which executes the TRMM IES Simulator PGE CER1.0P1
run_CER1.1P1-6.pl	\$CERESHOME/instrument/ CER1.1P1-6/rcf	ASCII	Perl script which executes the main processor for PGEs CER1.1P1 through CER1.1P6

Table C.1-1. Production Scripts

File Name	Directory	Format	Description
run_CER1.2P1.pl	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	Perl script which executes the BDS to Pre-ES8 conversion, PGE CER1.2P1
run_CER1.3P1.pl	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	Perl script which executes the BDS to BDSI subset PGE CER1.3P1
run_CER1.3P2.pl	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Perl script which executes the Gain Analyzer program PGE CER1.3P2
run_CER1.3P3.pl	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	Perl script which executes the BDS Baseline to BDS Edition2 PGE CER1.3P3
read_input_map.csh	\$CERESHOME/instrument/rcf	ASCII	C-Shell script which is used to read logical IDs from the PCF_Parameter_Map.txt file.
CER1.1P2_pcf_gen.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P2	ASCII	PCF generator that takes the output file from CER1.1P2_input_find.csh as input to create the PCF
CER1.1P1_input_find.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1	ASCII	C-Shell script which generates the PCF generator input file for Level-0 data
INSTRUMENT-env.csh	\$CERESHOME/instrument/rcf	ASCII	C-Shell script which sets up the SCF test instrument environment
INSTRUMENT_env_PROD.csh	\$CERESHOME/instrument/rcf	ASCII	C-Shell script which sets up the DAAC Production instrument environment
CER1.3P1-env.csh	\$CERESHOME/instrument/CE R1.3P1/rcf	ASCII	C-Shell script which sets up the SCF test instrument environment for CER1.3P1
CER1.3P1-env_PROD.csh	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	C-Shell script which sets up the DAAC Production CER1.3P1 environment
CER1.3P2-env.csh	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	C-Shell script which sets up the SCF test instrument environment for CER1.3P2
CER1.3P2-env_PROD.csh	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	C-Shell script which sets up the DAAC Production CER1.3P2 environment
CER1.3P3-env.csh	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	C-Shell script which sets up the SCF test instrument environment for CER1.3P3
CER1.3P3-env_PROD.csh	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	C-Shell script which sets up the DAAC Production CER1.3P3 environment
ENVinstrument-env.csh	\$CERESHOME/instrument/rcf	ASCII	C-Shell script which sets up DAAC environment for Instrument
CER1.0P1_input_find.pl	\$CERESHOME/instrument/CER1.0P1/rcf	ASCII	Perl script which generates the PCF generator input file for the TRMM IES Simulator
CER1.0P1_pcf_gen.pl	\$CERESHOME/instrument/CER1.0P1/rcf	ASCII	PCF generator that takes the output from CER1.0P1_input_find.pl as input to create the PCF
CER1.1P1_input_find.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1	ASCII	Perl script which generates the PCF generator input file for PGE CER1.1P1, TRMM Level-0 Processor.
CER1.1P1_pcf_gen.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1	ASCII	PCF generator that takes the output file from CER1.1P1_input_find.pl as input to create the PCF
CER1.1P2_input_find.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P2	ASCII	C-shell script which generates the PCF generator input file for quicklook data

Table C.1-1. Production Scripts

File Name	Directory	Format	Description
CER1.2P1_input_find.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P2	ASCII	Perl script which generates the PCF generator input file for the BDS to PRE-ES8 conversion program.
CER1.2P1_pcf_gen.pl	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	PCF generator that takes the output file from CER1.2P1_input_find.pl as input to create the PCF for the BDS to PRE-ES8 conversion
CER1.1P3_input_find.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3	ASCII	Perl script which generates the PCF generator input file for Level-0 data
CER1.1P3_input_find_orbsim.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3	ASCII	C-Shell script which generates the PCF generator input file for Level-0 data, using ORBSIM ephemeris and attitude data
CER1.1P3_pcf_gen.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3	ASCII	PCF generator that takes the output file from CER1.1P3_input_find.pl as input to create the PCF
CER1.1P3_pcf_gen_orbsim.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3	ASCII	PCF generator that takes the output file from CER1.1P3_input_find_orbsim.csh as input to create the PCF
CER1.1P4_input_find.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P4	ASCII	C-shell script which generates the PCF generator input file for quicklook data
CER1.1P4_pcf_gen.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P4	ASCII	PCF generator that takes the output file from CER1.1P4_input_find.csh as input to create the PCF
CER1.1P5_input_find.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5	ASCII	Perl script which generates the PCF generator input file for Level-0 data
CER1.1P5_input_find_orbsim.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5	ASCII	C-Shell script which generates the PCF generator input file for Level-0 data, using ORBSIM ephemeris and attitude data
CER1.1P5_pcf_gen.pl	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5	ASCII	PCF generator that takes the output file from CER1.1P5_input_find.pl as input to create the PCF
CER1.1P5_pcf_gen_orbsim.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5	ASCII	PCF generator that takes the output file from CER1.1P5_input_find_orbsim.csh as input to create the PCF
CER1.1P6_input_find.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6	ASCII	C-shell script which generates the PCF generator input file for quicklook data
CER1.1P6_pcf_gen.csh	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6	ASCII	PCF generator that takes the output file from CER1.1P6_input_find.csh as input to create the PCF
CER1.3P1_input_find.pl	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	Perl script which generates the PCF generator input file for the BDS to BDSI subsetter
CER1.3P1_pcf_gen.pl	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	PCF generator that takes the output file from CER1.3P1_input_find.pl as input to create the PCF
CER1.3P2_input_find.pl	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Perl script which generates the PCF generator input file for Gain Analyzer

Table C.1-1. Production Scripts

File Name	Directory	Format	Description
CER1.3P2_pcf_gen.pl	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	PCF generator that takes the output file from CER1.3P2_input_find.pl as input to create the PCF
CER1.3P3_input_find.pl	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	Perl script which generates the PCF generator input file for BDS Baseline to Edition2 and creation of IES Edition2
CER1.3P3_pcf_gen.pl	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	PCF generator that takes the output file from CER1.3P3_input_find.pl as input to create the PCF

## C.2 Executables

Table C.2-1. Executables (\$CERESHOME/instrument/bin)

File Name <sup>1</sup>	Format	Description
PGE_CER1.0P1	Binary	TRMM IES Simulator executable (in subdirectory CER1.0P1)
PGE_CER1.1P1-6	Binary	Instrument executable for PGEs CER1.1P1 through CER1.1P6
PGE_CER1.2P1	Binary	BDS to PRE-ES8 conversion executable
PGE_CER1.3P1	Binary	BDS to BDSI subsetter executable
PGE_CER1.3P2	Binary	Gain Analyzer executable
PGE_CER1.3P3A	Binary	BDS Baseline to BDS Edition2 /Edition3 executable
PGE_CER1.3P3B	Binary	Create IES Edition2 /Edition3 from the Edition2 or Edition3 BDS executable

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

## C.3 Status Message Files(SMF)

Table C.3-1. Status Message Files

File Name	Format	Description
The following files can be found in \$CERESHOME/instrument/smf		
PGS_25002	ASCII	Level-0 read error messages
PGS_25100	ASCII	Level-0 read error messages

Table C.3-1. Status Message Files

<b>File Name</b>	<b>Format</b>	<b>Description</b>
PGS_25105	ASCII	IES write error messages
PGS_25107	ASCII	Radiance conversion error messages
PGS_25108	ASCII	Solar Presence Assembly package error messages
PGS_25110	ASCII	Scan package error messages
PGS_25111	ASCII	Time package error messages
PGS_25112	ASCII	math routine error messages
PGS_25120	ASCII	Instrument configuration error messages
PGS_25121	ASCII	Azimuth assembly package error messages
PGS_25122	ASCII	Elevation assembly package error messages
PGS_25123	ASCII	Main Cover package error messages
PGS_25124	ASCII	MAM package error messages
PGS_25125	ASCII	Black Body assembly package error messages
PGS_25126	ASCII	SWICS package error messages
PGS_25127	ASCII	Detector assembly package error messages
PGS_25128	ASCII	Solar assembly package error messages
PGS_25129	ASCII	Brake assembly package error messages
PGS_25130	ASCII	ICA package error messages
PGS_25131	ASCII	DAA package error messages
PGS_25132	ASCII	Command package error messages
PGS_25133	ASCII	PCA package error messages
PGS_25139	ASCII	Analog conversion error messages
PGS_25150	ASCII	Packet reader error messages

## C.4 PCF/MCF Templates

The Process Control Files included in the Software Delivery Package are listed in [Table C.4-2](#). Subsystem 1.0 Status Message Files are located in \$CERESHOME/instrument/smf.

Table C.4-1. Metadata Control Files (\$CERESHOME/instrument/rcf)

File Name	Format	Description
MCF_BDC	ASCII	Metadata Configuration File template for Calibration BDS
MCF_BDD	ASCII	Metadata Configuration File for Diagnostic No Archive BDS
MCF_BDS	ASCII	Metadata Configuration File for Science BDS
MCFIES	ASCII	Metadata Configuration File for IES
MCF_BIN	ASCII	Metadata Configuration File for Binary Files
MCF_CEL	ASCII	Metadata Configuration File for Command Error Files
MCF_CMH	ASCII	Metadata Configuration File for Command History Files
MCF_PRES8	ASCII	Metadata Configuration File for Pre-ES8
MCF_QCR	ASCII	Metadata Configuration File for Instrument Production Report
MCF_QCS	ASCII	Metadata Configuration File for Instrument Statistics QC Report
MCF_BDF	ASCII	Metadata Configuration File for Diagnostic Fixed Pattern BDS
MCF_BDG	ASCII	Metadata Configuration File for Diagnostic Gimbal Error BDS
MCF_BDI	ASCII	Metadata Configuration File for Internal Calibration BDS
MCF_BDP	ASCII	Metadata Configuration File for Diagnostic Processor BDS
MCF_BDM	ASCII	Metadata Configuration File for Diagnostic Memory Dump BDS

Table C.4-2. Process Control Files<sup>1</sup>

File Name	Directory	Format	Description
CER1.0P1_PCFin_TRMM-SIM\$_PS1_0\$_CC1_0.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.0P1/rcf	ASCII	ASCII Input file for TRMM Simulated IES
CER1.0P1_PCF_TRMM-SIM\$_PS1_0\$_CC1_0.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.0P1/rcf	ASCII	Process Control file for TRMM Simulated IES
CER1.1P1_PCFin_TRMM-PFM\$_PS1\$_CC1.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1	ASCII	Level Zero ASCII Input File for TRMM

Table C.4-2. Process Control Files<sup>1</sup>

File Name	Directory	Format	Description
CER1.1P1_PCF_TRMM- PFM\$_PS1\$_CC1.{\$L0_year}{\$L0_ month}{\$L0_day}	\$CERESHOME/instrument/ CER1.1P1-6/rcf	ASCII	Level Zero Process Control File for TRMM
CER1.1P2_PCFin_TRMM- PFM\$_PS1\$_CC1.{\$QL_year}{\$QL_ month}{\$QL_day}_QL{\$QL_hr}{\$QL_ min}-{\$QL_apid}	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P2	ASCII	Quicklook ASCII Input File for TRMM
CER1.1P2_PCF_TRMM- PFM\$_PS1\$_CC1.{\$QL_year}{\$QL_ month}{\$QL_day}_QL{\$QL_hr}{\$QL_ min}-{\$QL_apid}	\$CERESHOME/instrument/ CER1.1P1-6/rcf	ASCII	Quicklook Process Control File for TRMM
CER1.2P1_PCFin_TRMM- PFM\$_PS1\$_CC1_2.{\$L0_year} {\$L0_month}{\$L0_day}	\$CERESHOME/instrument/ CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion ASCII Input File for TRMM
CER1.2P1_PCF_TRMM- PFM\$_PS1\$_CC1_2.{\$L0_year}{\$L0_ month}{\$L0_day}	\$CERESHOME/instrument/ CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion Process Control File for TRMM
CER1.3P1_PCFin_TRMM- PFM\$_PS1\$_CC1_3.{\$CER1_3P1_year} {\$CER1_3P1_month}{\$CER1_3P1_day}	\$CERESHOME/instrument/ CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI ASCII Input File for TRMM
CER1.3P1_PCF_TRMM- PFM\$_PS1\$_CC1_3.{\$CER1_3P1_year} {\$CER1_3P1_month}{\$CER1_3P1_day}	\$CERESHOME/instrument/ CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for TRMM
CER1.3P2_PCFin_TRMM- PFM\$_PS1\$_CC1_4.{\$CER1_3P2_year} {\$CER1_3P2_month}	\$CERESHOME/instrument/ CER1.3P2/rcf	ASCII	Gain Analyzer ASCII Input File for TRMM
CER1.3P2_PCF_TRMM- PFM\$_PS1\$_CC1_4.{\$CER1_3P2_year} {\$CER1_3P2_month}	\$CERESHOME/instrument/ CER1.3P2/rcf	ASCII	Gain Analyzer Process Control File for TRMM
CER1.3P3_PCFin_TRMM- PFM\$_PS1\$_CC1_5.{\$CER1_3P3_year} {\$CER1_3P3_month}{\$CER1_3P3_day}	\$CERESHOME/instrument/ CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor ASCII Input File for TRMM
CER1.3P3_PCF_TRMM- PFM\$_PS1\$_CC1_5.{\$CER1_3P3_year} {\$CER1_3P3_month}{\$CER1_3P3_day}	\$CERESHOME/instrument/ CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor Process Control File for TRMM
CER1.1P3_PCFin_Terra- FM1\$_PS1\$_CC1.{\$L0_year}{\$L0_ month}{\$L0_day}	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P3	ASCII	Level Zero ASCII Input File for Terra FM1
CER1.1P3_PCF_Terra- FM1\$_PS1\$_CC1.{\$L0_year}{\$L0_ month}{\$L0_day}	\$CERESHOME/instrument/ CER1.1P1-6/rcf	ASCII	Level Zero Process Control File for Terra FM1
CER1.1P4_PCFin_Terra- FM1\$_PS1\$_CC1.{\$QL_year}{\$QL_ month}{\$QL_day}_QL{\$QL_hr}{\$QL_ min}-{\$QL_apid}	\$CERESHOME/instrument/ CER1.1P1-6/rcf/CER1.1P4	ASCII	Quicklook ASCII Input File for Terra FM1

Table C.4-2. Process Control Files<sup>1</sup>

File Name	Directory	Format	Description
CER1.1P4_PCF_Terra-FM1_\${PS1}_\${CC1}.{\$QL_year}{\$QL_month}{\$QL_day}_QL{\$QL_hr}{\$QL_min}-{\$QL_apid}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Quicklook Process Control File for Terra FM1
CER1.1P3_PCFin_Terra-FM2_\${PS1}_\${CC1}.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3	ASCII	Level Zero ASCII Input File for Terra FM2
CER1.1P3_PCF_Terra-FM2_\${PS1}_\${CC1}.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Level Zero Process Control File for Terra FM2
CER1.1P4_PCFin_Terra-FM2_\${PS1}_\${CC1}.{\$QL_year}{\$QL_month}{\$QL_day}_QL{\$QL_hr}{\$QL_min}-{\$QL_apid}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P4	ASCII	Quicklook ASCII Input File for Terra FM2
CER1.1P4_PCF_Terra-FM2_\${PS1}_\${CC1}.{\$QL_year}{\$QL_month}{\$QL_day}_QL{\$QL_hr}{\$QL_min}-{\$QL_apid}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Quicklook Process Control File for Terra FM2
CER1.2P1_PCFin_Terra-FM1_\${PS1}_\${CC1}.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion ASCII Input File for Terra FM1
CER1.2P1_PCF_Terra-FM1_\${PS1}_\${CC1}.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion Process Control File for Terra FM1
CER1.2P1_PCFin_Terra-FM2_\${PS1}_\${CC1}.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion ASCII Input File for Terra FM2
CER1.2P1_PCF_Terra-FM2_\${PS1}_\${CC1}.{\$L0_year}{\$L0_month}{\$L0_day}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion Process Control File for Terra FM2
CER1.3P1_PCFin_Terra-FM1_\${PS1}_\${CC1}_3.{\${CER1_3P1}_year}{\$CER1_3P1_month}{\$CER1_3P1_day}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI ASCII Input File for Terra FM1
CER1.3P1_PCF_Terra-FM1_\${PS1}_\${CC1}_3.{\${CER1_3P1}_year}{\$CER1_3P1_month}{\$CER1_3P1_day}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for Terra FM1
CER1.3P2_PCFin_Terra-FM1_\${PS1}_\${CC1}_4.{\${CER1_3P2}_year}{\$CER1_3P2_month}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer ASCII Input File for Terra FM1
CER1.3P2_PCF_Terra-FM1_\${PS1}_\${CC1}_4.{\${CER1_3P2}_year}{\$CER1_3P2_month}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer Process Control File for Terra FM1

Table C.4-2. Process Control Files<sup>1</sup>

File Name	Directory	Format	Description
CER1.3P3_PCFin_Terra-FM1_\${PS1}_\${CC1}_5.{\${CER1}_3P3_year}{\${CER1}_3P3_month}{\${CER1}_3P3_day}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor ASCII Input File for Terra FM1
CER1.3P3_PCF_Terra-FM1_\${PS1}_\${CC1}_5.{\${CER1}_3P3_year}{\${CER1}_3P3_month}{\${CER1}_3P3_day}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor Process Control File for Terra FM1
CER1.3P1_PCFin_Terra-FM2_\${PS1}_\${CC1}_3.{\${CER1}_3P1_year}{\${CER1}_3P1_month}{\${CER1}_3P1_day}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI ASCII Input File for Terra FM2
CER1.3P1_PCF_Terra-FM2_\${PS1}_\${CC1}_3.{\${CER1}_3P1_year}{\${CER1}_3P1_month}{\${CER1}_3P1_day}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for Terra FM2
CER1.3P2_PCFin_Terra-FM2_\${PS1}_\${CC1}_4.{\${CER1}_3P2_year}{\${CER1}_3P2_month}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer ASCII Input File for Terra FM2
CER1.3P2_PCF_Terra-FM2_\${PS1}_\${CC1}_4.{\${CER1}_3P2_year}{\${CER1}_3P2_month}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer Process Control File for Terra FM2
CER1.3P3_PCFin_Terra-FM2_\${PS1}_\${CC1}_5.{\${CER1}_3P3_year}{\${CER1}_3P3_month}{\${CER1}_3P3_day}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor ASCII Input File for Terra FM2
CER1.3P3_PCF_Terra-FM2_\${PS1}_\${CC1}_5.{\${CER1}_3P3_year}{\${CER1}_3P3_month}{\${CER1}_3P3_day}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor Process Control File for Terra FM2
CER1.1P5_PCFin_Aqua-FM3_\${PS1}_\${CC1}.{\$L0_year}{\${L0}_month}{\${L0}_day}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5	ASCII	Level Zero ASCII Input File for Aqua FM3
CER1.1P5_PCF_Aqua-FM3_\${PS1}_\${CC1}.{\$L0_year}{\${L0}_month}{\${L0}_day}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Level Zero Process Control File for Aqua FM3
CER1.1P6_PCFin_Aqua-FM3_\${PS1}_\${CC1}.{\$QL_year}{\${QL}_month}{\${QL}_day}_QL{\${QL}_hr}{\${QL}_min}-{\${QL}_apid}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6	ASCII	Quicklook ASCII Input File for Aqua FM3
CER1.1P6_PCF_Aqua-FM3_\${PS1}_\${CC1}.{\$QL_year}{\${QL}_month}{\${QL}_day}_QL{\${QL}_hr}{\${QL}_min}-{\${QL}_apid}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Quicklook Process Control File for Aqua FM3
CER1.1P5_PCFin_Aqua-FM4_\${PS1}_\${CC1}.{\$L0_year}{\${L0}_month}{\${L0}_day}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5	ASCII	Level Zero ASCII Input File for Aqua FM4

Table C.4-2. Process Control Files<sup>1</sup>

File Name	Directory	Format	Description
CER1.1P5_PCF_Aqua-FM4_\${PS1}_\$CC1.\${\$L0_year}{\${\$L0_month}\${\$L0_day}}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Level Zero Process Control File for Aqua FM4
CER1.1P6_PCFin_Aqua-FM4_\${PS1}_\$CC1.\${\$QL_year}{\${\$QL_month}\${\$QL_day}_QL\${\$QL_hr}}{\${\$QL_min}-{\$QL_apid}}	\$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6	ASCII	Quicklook ASCII Input File for Aqua FM4
CER1.1P6_PCF_Aqua-FM4_\${PS1}_\$CC1.\${\$QL_year}{\${\$QL_month}\${\$QL_day}_QL\${\$QL_hr}}{\${\$QL_min}-{\$QL_apid}}	\$CERESHOME/instrument/CER1.1P1-6/rcf	ASCII	Quicklook Process Control File for Aqua FM4
CER1.2P1_PCFin_Aqua-FM3_\${PS1}_\$CC1_2.\${\$L0_year}{\${\$L0_month}\${\$L0_day}}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion ASCII Input File for Aqua FM3
CER1.2P1_PCF_Aqua-FM3_\${PS1}_\$CC1_2.\${\$L0_year}{\${\$L0_month}\${\$L0_day}}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion Process Control File for Aqua FM3
CER1.2P1_PCFin_Aqua-FM4_\${PS1}_\$CC1_2.\${\$L0_year}{\${\$L0_month}\${\$L0_day}}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion ASCII Input File for Aqua FM4
CER1.2P1_PCF_Aqua-FM4_\${PS1}_\$CC1_2.\${\$L0_year}{\${\$L0_month}\${\$L0_day}}	\$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion Process Control File for Aqua FM4
CER1.3P1_PCFin_Aqua-FM3_\${PS1}_\$CC1_3.\${\$CER1_3P1_year}{\${\$CER1_3P1_month}\${\$CER1_3P1_day}}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI ASCII Input File for Aqua FM3
CER1.3P1_PCF_Aqua-FM3_\${PS1}_\$CC1_3.\${\$CER1_3P1_year}{\${\$CER1_3P1_month}\${\$CER1_3P1_day}}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for Aqua FM3
CER1.3P2_PCFin_Aqua-FM3_\${PS1}_\$CC1_4.\${\$CER1_3P2_year}{\${\$CER1_3P2_month}}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer ASCII Input File for Aqua FM3
CER1.3P2_PCF_Aqua-FM3_\${PS1}_\$CC1_4.\${\$CER1_3P2_year}{\${\$CER1_3P2_month}}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer Process Control File for Aqua FM3
CER1.3P3_PCFin_Aqua-FM3_\${PS1}_\$CC1_5.\${\$CER1_3P3_year}{\${\$CER1_3P3_month}\${\$CER1_3P3_day}}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor ASCII Input File for Aqua FM3
CER1.3P3_PCF_Aqua-FM3_\${PS1}_\$CC1_5.\${\$CER1_3P3_year}{\${\$CER1_3P3_month}\${\$CER1_3P3_day}}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor Process Control File for Aqua FM3

Table C.4-2. Process Control Files<sup>1</sup>

File Name	Directory	Format	Description
CER1.3P1_PCFin_Aqua-FM4_\${PS1}_\${CC1}_3.{\${CER1}_3P1_year}{\${CER1}_3P1_month}{\${CER1}_3P1_day}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI ASCII Input File for Aqua FM4
CER1.3P1_PCF_Aqua-FM4_\${PS1}_\${CC1}_3.{\${CER1}_3P1_year}{\${CER1}_3P1_month}{\${CER1}_3P1_day}	\$CERESHOME/instrument/CER1.3P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for Aqua FM4
CER1.3P2_PCFin_Aqua-FM4_\${PS1}_\${CC1}_4.{\${CER1}_3P2_year}{\${CER1}_3P2_month}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer ASCII Input File for Aqua FM4
CER1.3P2_PCF_Aqua-FM4_\${PS1}_\${CC1}_4.{\${CER1}_3P2_year}{\${CER1}_3P2_month}	\$CERESHOME/instrument/CER1.3P2/rcf	ASCII	Gain Analyzer Process Control File for Aqua FM4
CER1.3P3_PCFin_Aqua-FM4_\${PS1}_\${CC1}_5.{\${CER1}_3P3_year}{\${CER1}_3P3_month}{\${CER1}_3P3_day}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor ASCII Input File for Aqua FM4
CER1.3P3_PCF_Aqua-FM4_\${PS1}_\${CC1}_5.{\${CER1}_3P3_year}{\${CER1}_3P3_month}{\${CER1}_3P3_day}	\$CERESHOME/instrument/CER1.3P3/rcf	ASCII	BDS/IES Edition2 processor Process Control File for Aqua FM4

- These files will be generated on execution of Subsystem software and are not included in the tar file.  
The {values} can be found for TRMM in temp-pfm-env.csh, Terra-FM1 in temp-fm1-env.csh, Terra-FM2 in temp-fm2-env.csh, Aqua-FM3 in temp-fm3-env.csh and for Aqua-FM4 in temp-fm4-env.csh

## C.5 HDF Read Software

Table C.5-1. HDF Read Software Files

File Name	Format	Description
The following files can be found in \$CERESHOME/instrument/read_pkgs		
test_rdHDF.c	ASCII	Read HDF file program
readHDF funcs.c	ASCII	Read HDF subroutines
contentsHDF.c	ASCII	Show HDF file contents program
HDFread.h	ASCII	Read HDF header file
HDF_Interface.h	ASCII	HDF Interface header file
compile_rdHDF	ASCII	Make script for Read HDF
Makefile_cntnts	ASCII	Makescript for contentsHDF.c
CER_BDS_TRMM-PFM_ReadDemo_000022.yyyymmdd	HDF	HDF example file
CER_BDS_Terra-FM1_Sample_000048.yyyymmdd	HDF	HDF example file

Table C.5-1. HDF Read Software Files

File Name	Format	Description
CER_BDS_Aqua-FM3_Sample_000048.yyyymmdd	HDF	HDF example file
README_contents	ASCII	Readme
README_read	ASCII	Readme
The following files can be found in \$CERESHOME/instrument/test_suites		
cmp_HDF.c	ASCII	Compare HDF file program
cmp_pres8.f90	ASCII	Compare Pre-ES8 program
HDFread.h	ASCII	Read HDF header file
HDF_Interface.h	ASCII	HDF Interface header file
Makefile_HDF_cmp	ASCII	Makescript for cmp_HDF.c
Makefile_pres8_cmp	ASCII	Makescript for cmp_pres8.f90
README_cmp	ASCII	Readme
README_cmp_pres8	ASCII	Readme
The following files can be found in \$CERESHOME/instrument/lib		
Makefile_compress	ASCII	Makescript for BDS_cpress.c
HDFread.h	ASCII	Read HDF header file
HDF_Interface.h	ASCII	HDF Interface header file

## C.6 Ancillary Input Data

Table C.6-1. Ancillary Input Data

File Name	Format	Description
The following files can be found in \$CERESHOME/instrument/data/ancillary/dynamic		
TRMM_ED9D_OR_{\$L0_year}-{\$L0_month}-{\$L0_day}T00-00-00Z_V01.nat	Binary	TRMM Ephemeris File
TRMM_G500_LZ_{\$L0_year}-{\$L0_month}-{\$L0_day}T00-00-00Z_V01.DAT1.nat	Binary	TRMM Attitude File
TRMM_ED9D_OR_{\$L0_year}-{\$L0_month}-({\$L0_day}-1)T00-00-00Z_V01.nat	Binary	TRMM Ephemeris File
TRMM_G500_LZ_{\$L0_year}-{\$L0_month}-({\$L0_day}-1)T00-00-00Z_V01.DAT1.nat	Binary	TRMM Attitude File
TRMM_ED9D_OR_{\$L0_year}-{\$L0_month}-({\$L0_day}+1)T00-00-00Z_V01.nat	Binary	TRMM Ephemeris File
TRMM_G500_LZ_{\$L0_year}-{\$L0_month}-({\$L0_day}+1)T00-00-00Z_V01.DAT1.nat	Binary	TRMM Attitude File
Alldays_TRMM_ED9D_OR_{\$QL_year}-{\$QL_month}-({\$QL_day}-1)T00-00-00Z_V01.nat	Binary	TRMM Ephemeris File
TRMM_{\$QL_year}-{\$QL_month}-({\$QL_day}-1).att	Binary	TRMM simulated attitude data

Table C.6-1. Ancillary Input Data

File Name	Format	Description
TRMM_{SQL_year}-{SQL_month}-{SQL_day}.att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+1).att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+2).att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+3).att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+4).att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+5).att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+6).att	Binary	TRMM simulated attitude data
TRMM_{SQL_year}-{SQL_month}-({SQL_day}+7).att	Binary	TRMM simulated attitude data
AM1ATTNF001{\$L0_month}({\$L0_day}-1) {\$L0_year}2200000000000 or AM1ATTNF.A{\$L0_year}({\$L0_DOY}-1). 2200.001.yyydddhhmmss	Binary	Terra SpaceCraft Attitude File from previous day (Last 2 hour file of the day)
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}0000000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.0000.001. yyydddhhmmss	Binary	Terra SpaceCraft Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}0200000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.0200.001. yyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}0400000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.0400.001. yyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}0600000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.0600.001. yyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}0800000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.0800.001. yyydddhhmmss	Binary	Terra Definitive Attitude File

Table C.6-1. Ancillary Input Data

File Name	Format	Description
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}100000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.1000.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}120000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.1200.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}140000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.1400.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}160000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.1600.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}180000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.1800.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}200000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.2000.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{\$L0_day} {\$L0_year}220000000000 or AM1ATTNF.A{\$L0_year}{\$L0_DOY}.2200.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{\$L0_month}{(\$L0_day)+1} {\$L0_year}000000000000 or AM1ATTNF.A{\$L0_year}{(\$L0_DOY)+1}.0000. 001.yyyydddhhmmss	Binary	Terra Definitive Attitude File for the next day (First 2 hour file of the day)
AM1EPHN0001{\$L0_month}{(\$L0_day)-1} {\$L0_year}220000000000 or AM1EPHN0.A{\$L0_year}{(\$L0_DOY)-1}. 2200.001.yyyydddhhmmss	Binary	Terra Ephemeris File from the previous day (Last 2 hour file of the day)

Table C.6-1. Ancillary Input Data

File Name	Format	Description
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}000000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.0000.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}020000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.0200.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}040000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.0400.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}060000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.0600.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}080000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.0800.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}100000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.1000.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}120000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.1200.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}140000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.1400.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}160000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.1600.001. yyyydddhhmmss	Binary	Terra Ephemeris File

Table C.6-1. Ancillary Input Data

File Name	Format	Description
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}1800000000000 AM1EPHN0.A{\$L0_year}{\$L0_DOY}.1800.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}2000000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.2000.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{\$L0_day} {\$L0_year}2200000000000 or AM1EPHN0.A{\$L0_year}{\$L0_DOY}.2200.001. yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{\$L0_month}{(\$L0_day)+1} {\$L0_year}0000000000000 or AM1EPHN0.A{\$L0_year}{(\$L0_DOY)+1}.0000. 001.yyyydddhhmmss	Binary	Terra Ephemeris File for the next day (First 2 hour file of the day)
EOSAM1_{\$QL_year}-{\$QL_month}- {(\$QL_day)-1}.att	Binary	Terra simulated attitude data
EOSAM1_{\$QL_year}-{\$QL_month}- {(\$QL_day)}.att	Binary	Terra simulated attitude data
EOSAM1_{\$QL_year}-{\$QL_month}- {(\$QL_day)+1}.att	Binary	Terra simulated attitude data
EOSAM1_{\$QL_year}-{\$QL_month}- {(\$QL_day)-1}.eph	Binary	Terra simulated ephemeris data
EOSAM1_{\$QL_year}-{\$QL_month}- {(\$QL_day)}.eph	Binary	Terra simulated ephemeris data
EOSAM1_{\$QL_year}-{\$QL_month}- {(\$QL_day)+1}.eph	Binary	Terra simulated ephemeris data
PM1EPHND.P{\$L0_year}{(\$L0_DOY)-1}. 1200.001.yyyydddhhmmss	Binary	Aqua Ephemeris File for the previous day
PM1EPHND.P{\$L0_year}{\$L0_DOY}.1200.001. yyyydddhhmmss	Binary	Aqua Ephemeris File
PM1ATTNR.P{\$L0_year}{(\$L0_DOY)-1}. 2200.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File from previous day (Last 2 hour file of the day)
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.0000.001. yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.0200.001. yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.0400.001. yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.0600.001. yyyydddhhmmss	Binary	Aqua Definitive Attitude File

Table C.6-1. Ancillary Input Data

<b>File Name</b>	<b>Format</b>	<b>Description</b>
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.0800.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.1000.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.1200.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.1400.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.1600.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.1800.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.2000.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{\$L0_DOY}.2200.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{\$L0_year}{(\$L0_DOY)+1}.0000.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File for the next day (First 2 hour file of the day)
Currently no Aqua QuickLook data exists. These files are listed here as a placeholder for the time when QuickLook data becomes available.		
EOSPM1_{\$QL_year}-{\$QL_month}-{\$QL_day}-1.att	Binary	Aqua simulated attitude data
EOSPM1_{\$QL_year}-{\$QL_month}-{\$QL_day}.att	Binary	Aqua simulated attitude data
EOSPM1_{\$QL_year}-{\$QL_month}-{\$QL_day}+1.att	Binary	Aqua simulated attitude data
EOSPM1_{\$QL_year}-{\$QL_month}-{\$QL_day}-1.eph	Binary	Aqua simulated ephemeris data
EOSPM1_{\$QL_year}-{\$QL_month}-{\$QL_day}.eph	Binary	Aqua simulated ephemeris data
EOSPM1_{\$QL_year}-{\$QL_month}-{\$QL_day}+1.eph	Binary	Aqua simulated ephemeris data

The { values } can be found for TRMM in temp-pfm-env.csh, Terra-FM1 in temp-fm1-env.csh, Terra-FM2 in temp-fm2-env.csh, Aqua-FM3 in temp-fm3-env.csh and for Aqua-FM4 in temp-fm4-env.csh

## C.7 Temporary Files

Table C.7-1. Temporary Files Used by Metadata

File Name	Format	Description
MCFWrite_CER1.0P1_TRMM-SIM_\${PS1}_0_{\${L0}_year}(\${L0}_month)(\${L0}_day).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.1P1_SS1_PS1_{\${L0}_year}(\${L0}_month)(\${L0}_day).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.1P3_SS1_PS1_{\${L0}_year}(\${L0}_month)(\${L0}_day).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.1P5_SS1_PS1_{\${L0}_year}(\${L0}_month)(\${L0}_day).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.2P1_SS1_PS1_{\${L0}_year}(\${L0}_month)(\${L0}_day).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.1P2_SS1_PS1_{\${QL}_year}(\${QL}_month)(\${kQL}_day)_QL(\${QL}_hr)(\${QL}_min)-(\${QL}_apid).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.1P4_SS1_PS1_{\${QL}_year}(\${QL}_month)(\${kQL}_day)_QL(\${QL}_hr)(\${QL}_min)-(\${QL}_apid).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.1P6_SS1_PS1_{\${QL}_year}(\${QL}_month)(\${kQL}_day)_QL(\${QL}_hr)(\${QL}_min)-(\${QL}_apid).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.3P1_SS1_PS1_{\${CER1_3P1}_year}(\${CER1_3P1}_month)(\${CER1_3P1}_day).temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.

Table C.7-1. Temporary Files Used by Metadata

<b>File Name</b>	<b>Format</b>	<b>Description</b>
MCFWrite_CER1.3P2_SS1_PS1_ {\$CER1_3P2_year}{\$CER1_3P2_month} .temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.3P3_SS1_PS1_ {\$CER1_3P3_year}{\$CER1_3P3_month} {\$CER1_3P3_day}.temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.

The {values} can be found for TRMM in temp-pfm-env.csh, Terra-FM1 in temp-fm1-env.csh, Terra-FM2 in temp-fm2-env.csh, Aqua-FM3 in temp-fm3-env.csh and for Aqua-FM4 in temp-fm4-env.csh

## Appendix D Example Test Script Screen Output and Results File

The following pages show an example of the script output to the {\$SS1}\_L0\_Test.results file. The example is for \$SS1 = TRMM-PFM. {\$SS1}\_L0\_Test.results is an echo of the screen output from the run\_L0\_test.csh script. This output file echoes the screen output with one exception, that being the comparison program output only appears in the {\$SS1}\_L0\_Test.results file and not as part of the screen output. Since echoing the comparison output to the screen would require that the comparison program be run twice, the following message is printed to the screen instead of the detailed messages from the comparison program:

\*\*\*\*\* Comparing Test Output with Expected Output for CER1.1P1 \*\*\*\*\*

Comparison results can be viewed at the completion of this script in the following file:  
/CERES/instrument/development/cm\_test/rel2/rcf/TRMM-PFM\_L0\_Test.results

\*\*\*\*\* Testing and output comparison for CER1.1P1 is complete for TRMM-PFM  
\*\*\*\*\*

The following is a listing of the {\$SS1}\_L0\_Test.results file:

\*\*\*\*\* /CERES/instrument/development/cm\_test/rel2/rcf/TRMM-PFM\_L0\_Test.results  
\*\*\*\*\* will contain echoes of all the screen output from this test run

\*\*\*\*\* Testing CER1.1P1 TRMM-PFM Level-0 Processor \*\*\*\*\*

Step 1 : Creating ASCII Input File

trmm\_lz\_input\_find.csh -d 1998 01 05 -start 13:00:00.000000 -stop 21:00:00.000000

Created PCFin File :

-rw-r--r-- 1 cooper instrumen 6092 Oct 14 13:52 /CERES/instrument/development/cm\_test/rel2/rcf/CER1.1P1\_PCFin\_TRMM-PFM\_ReleaseTest\_000027.19980105

Step 2 : Creating PCF

trmm\_lz\_pcf\_gen.csh CER1.1P1\_PCFin\_TRMM-PFM\_ReleaseTest\_000027.19980105

Created PCF File :

-rw-r--r-- 1 cooper instrumen 24964 Oct 14 13:52 /CERES/instrument/development/cm\_test/rel2/rcf/CER1.1P1\_PCF\_TRMM-PFM\_ReleaseTest\_000027.19980105

Step 3 : Running CER1.1P1

run\_instrument.csh CER1.1P1\_PCF\_TRMM-PFM\_ReleaseTest\_000027.19980105 > TRMM-PFM\_L0\_Test.out

CER1.1P1 IS COMPLETE

Check /CERES/instrument/development/cm\_test/rel2/rcf/TRMM-PFM\_L0\_Test.out

Exit Status should = 0, if not contact system integrator

\* \* \* \* \* \* \* \* \* T E S T   R E S U L T S \* \* \* \* \* \* \* \* \*

PGE              Results

CER1.1P1        SUCCESSFUL

D-2

\*\*\*\*\* Test Output from /CERES/instrument/development/cm\_test/rel2/data/out\_comp/

```
-rw-r--r-- 1 cooper instrumen 2181703 Oct 14 15:28
/CERES/instrument/development/cm_test/rel2/data/out_comp//CER_BDSD_TRMM-PFM_ReleaseTest_000027.19980105
-rw-r--r-- 1 cooper instrumen 26076 Oct 14 15:28
/CERES/instrument/development/cm_test/rel2/data/out_comp//CER_BDSD_TRMM-PFM_ReleaseTest_000027.19980105.met
-rw-r--r-- 1 cooper instrumen 20453406 Oct 14 15:27
/CERES/instrument/development/cm_test/rel2/data/out_comp//CER_BDSS_TRMM-PFM_ReleaseTest_000027.19980105
-rw-r--r-- 1 cooper instrumen 26070 Oct 14 15:27
/CERES/instrument/development/cm_test/rel2/data/out_comp//CER_BDSS_TRMM-PFM_ReleaseTest_000027.19980105.met
-rw-r--r-- 1 cooper instrumen 275291355 Oct 14 15:25
/CERES/instrument/development/cm_test/rel2/data/out_comp//CER_BDS_TRMM-PFM_ReleaseTest_000027.19980105
-rw-r--r-- 1 cooper instrumen 26066 Oct 14 15:25
/CERES/instrument/development/cm_test/rel2/data/out_comp//CER_BDS_TRMM-PFM_ReleaseTest_000027.19980105.met
```

\*\*\*\*\* Test Output from /CERES/instrument/development/cm\_test/rel2/data/int\_prod/

```
-rw-r--r-- 1 cooper instrumen 36242707 Oct 14 14:05
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010513
-rw-r--r-- 1 cooper instrumen 26070 Oct 14 14:05
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010513.met
-rw-r--r-- 1 cooper instrumen 36640580 Oct 14 14:17
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010514
-rw-r--r-- 1 cooper instrumen 26071 Oct 14 14:17
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010514.met
-rw-r--r-- 1 cooper instrumen 36426310 Oct 14 14:30
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010515
-rw-r--r-- 1 cooper instrumen 26072 Oct 14 14:30
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010515.met
-rw-r--r-- 1 cooper instrumen 36237237 Oct 14 14:42
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010516
-rw-r--r-- 1 cooper instrumen 26071 Oct 14 14:42
/CERES/instrument/development/cm_test/rel2/data/int_prod//CER_IES_TRMM-PFM_ReleaseTest_000027.1998010516.met
```

-rw-r--r-- 1 cooper instrumen26127285 Oct 14 14:51  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010517  
-rw-r--r-- 1 cooper instrumen 26071 Oct 14 14:51  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010517.met  
-rw-r--r-- 1 cooper instrumen27693715 Oct 14 15:00  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010518  
-rw-r--r-- 1 cooper instrumen 26070 Oct 14 15:00  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010518.met  
-rw-r--r-- 1 cooper instrumen36223843 Oct 14 15:12  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010519  
-rw-r--r-- 1 cooper instrumen 26070 Oct 14 15:12  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010519.met  
-rw-r--r-- 1 cooper instrumen36214917 Oct 14 15:25  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010520  
-rw-r--r-- 1 cooper instrumen 26071 Oct 14 15:25  
/CERES/instrument/development/cm\_test/rel2/data/int\_prod//CER\_IIS\_TRMM-PFM\_ReleaseTest\_000027.1998010520.met

\*\*\*\*\* Test Output from /CERES/instrument/development/cm\_test/rel2/web/

-rw-r--r-- 1 cooper instrumen 4203 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BINEL\_TRMM-PFM\_ReleaseTest\_000027.19980105  
-rw-r--r-- 1 cooper instrumen 27433 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BINEL\_TRMM-PFM\_ReleaseTest\_000027.19980105.met  
-rw-r--r-- 1 cooper instrumen 17351 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BINHS\_TRMM-PFM\_ReleaseTest\_000027.19980105  
-rw-r--r-- 1 cooper instrumen 27434 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BINHS\_TRMM-PFM\_ReleaseTest\_000027.19980105.met  
-rw-r--r-- 1 cooper instrumen 79989 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BQCRPS\_TRMM-PFM\_ReleaseTest\_000027.19980105  
-rw-r--r-- 1 cooper instrumen 27436 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BQCRPS\_TRMM-PFM\_ReleaseTest\_000027.19980105.met  
-rw-r--r-- 1 cooper instrumen 131426 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BQCRP\_TRMM-PFM\_ReleaseTest\_000027.19980105

-rw-r--r-- 1 cooper instrumen 27435 Oct 14 15:28 /CERES/instrument/development/cm\_test/rel2/web//CER\_BQCRP\_TRMM-PFM\_ReleaseTest\_000027.19980105.met

\*\*\*\*\* Test Output from /CERES/instrument/development/cm\_test/rel2/runlogs/

-rw-r--r-- 1 cooper instrumen 13093 Oct 14 15:28  
/CERES/instrument/development/cm\_test/rel2/runlogs//CER1.1P1\_LogReport\_TRMM-PFM\_ReleaseTest\_000027.19980105  
-rw-r--r-- 1 cooper instrumen 14398 Oct 14 15:28  
/CERES/instrument/development/cm\_test/rel2/runlogs//CER1.1P1\_LogStatus\_TRMM-PFM\_ReleaseTest\_000027.19980105  
-rw-r--r-- 1 cooper instrumen 484 Oct 14 13:52  
/CERES/instrument/development/cm\_test/rel2/runlogs//CER1.1P1\_LogUser\_TRMM-PFM\_ReleaseTest\_000027.19980105

\*\*\*\*\* Test Output from /CERES/instrument/development/cm\_test/rel2/rcf

-rw-r--r-- 1 cooper instrumen 24964 Oct 14 13:52 /CERES/instrument/development/cm\_test/rel2/rcf/CER1.1P1\_PCF\_TRMM-PFM\_ReleaseTest\_000027.19980105  
-rw-r--r-- 1 cooper instrumen 6092 Oct 14 13:52 /CERES/instrument/development/cm\_test/rel2/rcf/CER1.1P1\_PCFin\_TRMM-PFM\_ReleaseTest\_000027.19980105

D-5

\*\*\*\*\* Comparing Test Output with Expected Output for CER1.1P1 \*\*\*\*\*

Comparing BDS file : CER\_BDSD\_TRMM-PFM\_ReleaseTest\_000027.19980105 --- SUCCESSFUL  
Checking BDS Metadata file : CER\_BDSD\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Comparing BDS file : CER\_BDSS\_TRMM-PFM\_ReleaseTest\_000027.19980105 --- SUCCESSFUL  
Checking BDS Metadata file : CER\_BDSS\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Comparing BDS file : CER\_BDS\_TRMM-PFM\_ReleaseTest\_000027.19980105 --- SUCCESSFUL  
Checking BDS Metadata file : CER\_BDS\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010513 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010513.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010514 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010514.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010515 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010515.met --- METADATA OK

Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010516 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010516.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010517 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010517.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010518 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010518.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010519 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010519.met --- METADATA OK  
Comparing IES file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010520 --- SUCCESSFUL  
Checking IES Metadata file : CER\_IES\_TRMM-PFM\_ReleaseTest\_000027.1998010520.met --- METADATA OK  
Checking QC Report Metadata file : CER\_BINEL\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Checking QC Report Metadata file : CER\_BINHS\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Checking QC Report Metadata file : CER\_BQCRPS\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Checking QC Report Metadata file : CER\_BQCRP\_TRMM-PFM\_ReleaseTest\_000027.19980105.met --- METADATA OK  
Comparing Log File : CER1.1P1\_LogReport\_TRMM-PFM\_ReleaseTest\_000027.19980105 --- SUCCESSFUL  
Comparing Log File : CER1.1P1\_LogStatus\_TRMM-PFM\_ReleaseTest\_000027.19980105 --- SUCCESSFUL  
Comparing Log File : CER1.1P1\_LogUser\_TRMM-PFM\_ReleaseTest\_000027.19980105 --- SUCCESSFUL

\*\*\*\*\* Comparison of test output vs. expected output files is complete \*\*\*\*\*

\*\*\*\*\* Testing and output comparison for CER1.1P1 is complete for TRMM-PFM \*\*\*\*\*

## **Appendix E Supplemental Test Plan for SCCR #237**

On Wednesday, March 14, 2001, Denise Cooper emailed the following Supplemental Test Plan for SCCR #237 to CERES CM. It is being included here in the Subsystem 1.0, Release 3 Version 3, Test Plan (March 2001) as [Appendix E](#) for reference and permanent storage.

For this special delivery the following supplemental information is being supplied in addition to the SS1 Release 3 Test Plan V2, draft June 2000. The test plan will be updated for future deliveries. Since this is a delta delivery this supplement is being provided.

To compile the BDS to Pre-ES8 Processor:

```
cd $CERESHOME/instrument/rcf
source INSTRUMENT_env.csh
cd $CERESHOME/instrument/src/output
make
```

Stand-Alone Test Procedures:

Follow the instructions provided in the SS1 Release 3 Test Plan V2, June 2000 Section 5.0 Test and Evaluation Procedures for BDS to Pre-ESS Processing.