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

Data Management System

CERES Instrument Geolocate and Calibrate Earth Radiances Subsystem 1.0

Release 6 Test Plan
Version 4

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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

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
06/21/01	R4V1	272	• Updated to include Aqua testing information. • Updated format to comply with standards.	All All
11/07/01	R4V2	306	• Aqua testing now uses “real” data. • Updated CER1.2P1 to allow separate delivery of this PGE from the other instrument PGEs. • Updated format to comply with standards.	Secs. 3.1.1.1, 3.1.2, 5.1.1.1, & App. C.6 Secs. 2.2.1, 2.2.2, & 2.2.3 All
01/22/02	R4V3	319	• Added new PGE CER1.3P1. • Updated format to comply with standards.	Sec. 6.0 All
03/21/02	R4V4	324	• Added Preliminary Draft for new PGE CER1.3P2. • Added new environment variables used for PGE CER1.3P2 and CER1.3P3. • Added instructions for compilation of CER1.3P2. • Changed name of all compilation and run scripts for all PGEs to include PGE name. • Changed usage of clean-up script. • Added new exit code for CER1.2P1 to indicate that no usable data was available to write to the Pre-ES8. • Updated format to comply with standards.	Sec. 7.0 2.1 Sec. 2.2.3 Secs. 2.2.4, 3.1.1.1, 4.1.1.1, & 5.1.1.1 Secs. 3.1.3, 4.1.3, 5.1.3, & 6.1.3 Sec. 5.1.1.2 All
04/11/02	R4V5	336	• Updated information for PGE CER1.3P2. • Fixed references to L0 environment variables for CER1.3P1 to reflect the proper names. • Updated environment script information. • Updated format to comply with standards.	Sec. 7.0 Sec. 6.1.2 App. C All
06/06/02	R4V6	355	• Added new PGE CER1.3P3 information. • Updated format to comply with standards.	Sec. 8.0 All
07/03/02	R4V7	370	• Updated Table C.4-2 to include new CER1.3Pn PGE files. • 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.	App. C App. C

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07/03/02 (Cont'd)	R4V7	370	• Updated Table C.7-1 to include new CER1.3Pn PGE files. • Updated format to comply with standards.	App. C All
11/21/02	R4V8	402	• Updated with new environment scripts to take compile environment out of the run environment scripts. Added new compile environment script instructions. • Updated format to comply with standards.	Secs. 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	• Added comment to all TRMM Testing stating that the TRMM tests should not be run at this time. • Added comment that Quicklook PGEs should not be run at this time. • Added comment to not copy data from the input subdirectory if prior tests had been run. • Updated format to comply with standards.	Secs. 3.1.1.1, 5.1.1.1, & 6.1.1.1 Sec. 4.1.1.1 Secs. 7.1.1.1 & 8.1.1.1 All
4/29/04	R4V10	524	• Added BDSS to files created in out_comp directory under CER1.1P5 - Aqua FM3. • Deleted text concerning hours 12-19 in CER1.1P1 - TRMM PFM. • Deleted text concerning hours 00-04 in CER1.1P3 – Terra FM1. • Deleted text concerning hours 00-04 in CER1.1P3 - Terra FM2. • Deleted text concerning hours 00-11 in CER1.1P5 - Aqua FM3. • Deleted text concerning hours 00-11 in CER1.1P5 - Aqua FM4. • Deleted text concerning hours 00-23 from IES files created. • Updated format to comply with standards.	Sec. 3.1.1.1 Sec. 3.1.2.3 All
1/26/05	R4V11	573	• Added new environment variables needed to create PCFs for CER1.1P3 through CER1.1P5. • Updated format to comply with standards.	Sec. 2.1 All
3/07/05	R4V12	579	• 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. • Added the compilation instructions for the EOS Construction Record reader software. • Updated format to comply with standards.	Secs. 2.2.6 & 2.2.7 Sec. 2.2.6 All

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6/22/05	R4V13	589	• Revised wording to show actual month of Aqua launch, instead of predicted launch. • Added new environment variable for test environment script which sets the radiance QC switches. This was necessary due to the SW anomaly on the Aqua-FM4 instrument which began on 3/30/2005. • Updated format to comply with standards.	Secs. 3.0, 4.0, 5.0, 6.0, 7.0, & 8.0 Sec. 2.1 All
11/18/05	R4V14	599	• Updated Test Run times. • Remove notation that TRMM tests are not to be run. • Updated format to comply with standards.	Secs. 3.1.1.3 & 5.1.1.3 Secs. 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	• Added new environment variables, start and stop, for CER1.3P3. • Updated format to comply with standards.	Sec. 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.	Sec. 3.1
4/06/09	R5V3	702	• Added new PGE CER1.1P7, NPP-FM5 main processor (Ada). • Updated contents in Introduction. • Added compile instructions for new PGE. • Added preliminary information for PGE CER1.1P8, Instrument Main processor for all spacecraft/instruments (C++).	Sec. 5.0 Sec. 1.1 Sec. 2.2.8 Secs. 1.1, 2.2.9, & 6.0
4/22/09	R5V4	709	• Updated PGE CER1.0P2 with requested operational procedure and new file naming convention.	Secs. 2.2.2 & 3.0
4/06/09	R5V5	703	• Updated preliminary info. for CER1.1P8, Instrument Main processor for all spacecraft/instruments (C++). • Updated information in the Appendices, added acronym definitions for NPP & NPOESS, and updated directory structure and the file description tables. • Removed unnecessary lines. (06/17/2009) • Modification made in compilation instructions. (08/05/2009)	Secs. 2.2.9, 2.2.10, & 6.0 Apps. A, B, & C Sec. 2.2.2 Sec. 2.2.9
9/21/09	R5V6	723	• Add new environment variable InputArchive. • Add general compilation instructions for multiple platforms. • Modify compilation instructions for the instrument library. • Modify compilation instructions for CER1.2P1.	Sec. 2.1 Sec. 2.2 Sec. 2.2.1 Sec. 2.2.3

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9/21/09 (Cont'd)	R5V6	723	• Modify compilation instructions for comparison software. • Modify test run instructions for CER1.2P1 to add test clean-up before running any test. • Add HOSTTYPE to Expected Output filename.	Sec. 2.2.11 Sec. 8.1.1.1 Sec. 8.1.1.1
10/28/09	R5V7	731	• Modify compilation instructions for PGE CER1.1P8. • Change run instructions to show files now being created. • Update runtimes for CER1.1P8 test cases. • Change to show BDS comparisons now taking place. • Remove PCFin file for CER1.1P8 no longer being created. • Update executable names for *AMI*, for PGEs CER1.1P8 and CER1.2P1. • Update to remove PCFin files for CER1.2P1.	Sec. 2.2.9 Sec. 6.1.1.1 Sec. 6.1.1.3 Sec. 6.1.2.2 Table C.1-1 Table C.2-1 Table C.4-2
07/28/09 & 07/29/09	R5V8	716 & 717	• Update compilation instructions with new binary filenames and adding make clean before compilations; also adding platform information for *AMI*. • Update test instructions with proper binary filenames and directories for *AMI*. • Remove files no longer needed on *AMI*. • Update binary filenames with new filenaming convention for *AMI*. • Remove PCFin files no longer being created on *AMI*. • Update sample run example. • Remove Appendix E; no longer needed. This information has been added to the main body of the Test Plan.	Sec. 2.0 Secs. 4, 5, 8, 9, 10, & 11 Table C.1-1 Table C.2-1 Table C.4-2 App. D App. E
07/29/09	R5V9	717	• Corrected compilation instructions for PGE CER1.1P7.	Sec. 2.2.8
01/19/10	R5V10	747	• Corrected compilation instructions for PGE CER1.0P2. • Directory paths were modified for BDS, BDSS, BDSD, BDSG, and IES files. (This was corrected in the SCCR 716 Instrument Test Plan, so we also needed to update this test plan with the same information.) (03/09/2010) • Modifications were made in filenames. (03/10/2010)	Sec. 2.2.2 Sec. 4.1.1.1 Sec. 3.1.1.1

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SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
02/18/10	R5V11	756	• Added sections for CER1.4P1, the C++ version of the BDSI subsetter, and CER1.4P2, the C++ version of the Gain Analyzer. • Added instructions for testing with SGE. (04/16/2010) • Compilation instructions were modified. (05/21/2010) • Updated format to match formatting of other test cases. (07/02/2010) • Added compilation instructions for CER1.4P2. (07/02/2010) • Modified instructions for testing with SGE, submission script name changed from PGE-FileCheck.pl to PGE-SGE_Driver.pl. (07/21/2010) • Removed the word “DRAFT” from the top of the Test Plan. (08/06/2010) • Corrected test procedures in PGE CER1.0P2. (08/11/2010) • Corrected “$CERSHOME” to read “$CERESHOME.” (08/12/2010) • A command line was out of order. (08/20/2010) • Modified “source temp-fm5-env.csh” to read “source temp-fm5-env_T1.csh.” (12/07/2010) • Modifications were made to directory paths. (03/17/2011) • Modified compilation instructions. (05/18/2011)	Secs. 12 & 13 All Secs. 2.2.1, 2.2.11, 2.2.13, 5.1.1.1, & 5.1.3 Sec. 3.0 Sec. 2.2.8 All All Secs. 2.0 & 3.0 All Sec. 10.1.1.1 Sec. 6.1.1.1 (CER1.1P8 NPP-FM5) Sec. 4.1.1.1 Sec. 2.2.12
03/30/11 & 04/04/11	R5V12	838 & 843	• Added “-platform” option to Driver script. • Corrected FM5 environment script name. • Removed reference to second FM5 test case.	Secs. 4.1.1.1, 5.1.1.1, & 6.1.1.1 Secs. 5.1.1.1, 5.1.2, & 5.1.3 Secs. 5.1.1.1, 5.1.1.2, 5.1.2, & 5.1.3
04/04/11	R5V13	842	• Updated the compilation instructions for CER1.0P2. • Updated the compilation instructions for the CER1.0P2’s test_suites. • Updated the description for the NPP RDR Preprocessor. • Updated Tests for CER1.0P2. • Added exit code of 1 to the list of possible exit codes.	Sec. 2.2.3 Sec. 2.2.13 Sec. 3.0 Sec. 3.1.1.1 Sec. 3.1.1.2

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04/04/11 (Cont'd)	R5V13	842	• Updated "Required Disk Space" for the CER1.0P2's Test Summary. • Updated the Evaluation Procedures. • Updated the QCLog output description. • Updated the success status message for the comparison software. • Added Test 5 to the Solutions to Possible Problems.	Sec. 3.1.1.3 Sec. 3.1.2 Sec. 3.1.2.1 Sec. 3.1.2.3 Sec. 3.1.3
07/20/11 & 08/19/11	R5V14	855 & 863	• Updated Test 3 to inform user of new expected output message. • Updated compilation instructions for CER1.2P1. • Updated compilation instructions for CER1.2P1's test_suites. • Removed references to CPUTYPE in the expected output listings, changed the location of InputArchive to point to ASDC_archive, and changed the location of the expected output file lists. • Removed references to CPUTYPE in the expected output listings. • Added instructions to ignore PCF comparison failures when comparing against SGE produced data.	Sec. 3.1.1.1 Sec. 2.2.4 Sec. 2.2.13 Sec. 8.1.1.1 Sec. 8.1.2 Sec. 8.1.2.3
04/06/10	R5V15	770	• Removed note which stated that the TRMM test case and evaluation shouldn't be run. • Corrected the names of the expected output list files.	Secs. 13.1.1.1 & 13.1.2 Sec. 13.1.2
11/16/11	R5V16	873	• Added executable names for Instrument comparison software. • Updated CER1.0P2 comparison directions to include setting the PGS_PC_INFO_FILE environment variable. • Updated Appendix B to include CER1.0P2.	Sec. 2.2.13 Sec. 3.1.2 App. B
02/08/12	R5V17	882	• Updated Test for CER1.0P2. • Updated execution instructions for CER1.0P2 to run tests on both the *P6* and *x86* platforms. • Removed sections containing compilation instructions for disabled PGEs CER1.1P1, 3, 5, and 7, which have been replaced by PGE CER1.1P8. • Removed sections containing testing for disabled PGEs CER1.1P1, 3, 5, & 7, which have been replaced by PGE CER1.1P8.	Secs. 3.1.1 & 3.1.2 Sec. 3.1.1.1 Secs. 2.2.10 & 2.2.11 Secs. 4.0 & 5.0

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02/08/12 (Cont'd)	R5V17	882	• Removed section containing test cases for the disabled Quicklook processing PGEs CER1.1P2, 4, & 6. These PGEs will not be run in production. • Removed sections containing compilation instructions for disabled PGEs CER1.3P1 and CER1.3P2, which have been replaced by CER1.4P1 and CER1.4P2, respectively. • Removed sections containing test cases for disabled PGEs CER1.3P1 and CER1.3P2, which have been replaced by CER1.4P1 and CER1.4P2, respectively.	Sec. 7.0 Secs. 2.2.5 & 2.2.7 Secs. 9.0 & 10.0
05/24/12	R5V18	900	• Removed note about not testing for NPP-FM5. • Updated to set PROD to "yes" and point the InputArchive variable to /ASDC_archive/CERES.	Secs. 8.1.1.1 & 8.1.2 Sec. 8.1.1.1
12/22/11	R5V19	878	• Updated compile instructions for CER1.1P8 to include *x86*. • Updated to add *x86* in title of section for CER1.1P8 testing. • Updated test cases for NPP to show PROD now set to YES, since we now have actual NPP data. • Updated runtimes to add times for *x86*, which differ from those for *P6*. • Updated expected output filenames to replace CPUTYPE with SCCR number in the name, since expected output files are not created for each platform, and added a note for TRMM and NPP comparisons about different warning/error messages that show up between *P6* and *x86* runs in the LogStatus files. • Updated to remove disabled PGEs and correct directory structure where in error.	Sec. 2.2.8 Sec. 4.1 Sec. 4.1.1.1 Sec. 4.1.1.3 Sec. 4.1.2 App. B
07/12/12	R5V20	911	• Updated CER1.0P2 compile to use perl script to call make file. • Updated CER1.0P2 SGE Driver testing instructions to include "-p p6 (for ppc64 architecture)" and "-p x86 (for x86_64 architecture)" to force the Grid Engine to execute the PGE of the specified architecture. • Updated test_suites aview and eview executable filenames to include ".exe" to the end of each filename. • Modified the section to read ".List" instead of ".list." (08/29/2012)	Sec. 2.2.3 Sec. 3.1.1.1 Sec. 2.2.9 Sec. 3.0

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12/22/11	R6V1	877	• Removed Command Line Test Cases from all PGE testing -- it was not removed from Section 6.1.1.1 because this PGE CER1.3P3 will be deleted once it is replaced in production by the new CER1.4P3.	Secs. 3.1.1.1, 4.1.1.1, 5.1.1.1, 7.1.1.1, & 8.1.1.1
			• Updated to add the new Section 9.0 for CER1.4P3. Also updated to show Rel6 and running on *AMI* instead of *samantha*.	Sec. 1.1
			• Updated to change from CER1.3P1/2 to CER1.4P1/2 as the CER1.3P1/2 have been replaced by CER1.4P1/2.	Sec. 2.1
			• Added compilation instructions for PGE CER1.4P3.	Sec. 2.2.9
			• Removed Ada PGEs from description and added new PGE CER1.4P3. Updated to show PGE CER1.1P8 runs on both platforms.	Sec. 2.2.10
			• Updated to show that NPP launched in October 2011.	Secs. 4.0, 5.0. 7.0 & 8.0
			• Added new section for PGE CER1.4P3.	Sec. 9.0
			• Updated Tables to take out old Ada PGE information and add new PGE CER1.4P3.	Tables C.1-1, C.2-1, C.4-2, & C.7-1
			• Updated to use new testing and evaluation instructions, and to use new temp*csh files for setting up per-test environments. Updated test summary to reflect new execution times.	Secs. 9.1.1.1, 9.1.1.3, & 9.1.2
			• Updated to include information on differences seen in the PCF comparison to state when the differences are acceptable and when they should be reported back to the subsystem for resolution.	Sec. 9.1.2
03/21/13	R6V2	956	• Removed Section on compilation of CER1.3P3, which is being replaced by CER1.4P3.	Sec. 2.2.7
			• Removed testing instructions for CER1.3P3, which is being replaced by CER1.4P3.	Sec. 6.0
			• Updated to include new tests for CER1.1P8.	Sec. 4.1.1.1
			• Updated to include new comparisons for CER1.1P8.	Sec. 4.1.2
			• Updated to include new testing for Edition4 processing.	Sec. 8.1.1.1
			• Updated to include new comparisons for Edition4.	Sec. 8.1.2
			• Notes were added. (05/09/2013)	Secs. 4.1.2 & 8.1.2

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12/12/13	R6V3	979	• Added PGE CER1.4P3 runlogs subdirectory and removed all PGE CER1.3P3 subdirectories from directory structure.	App. B
			• Removed information for PGE CER1.3P3.	Tables C.1-1 & C.1-2
			• Updated script names for PGE CER1.4P3 and removed scripts no longer being used.	Table C.1-1
			• Removed information for TRMM for PGE CER1.4P3 and updated test environment variable names.	Table C.4-2
			• Removed TRMM information no longer used in testing. Updated directories for ephemeris and attitude data files which are now being read from the DPO.	Table C.6-1
			• Removed PGE CER1.3P3 information. This PGE is no longer being used. Also, updated environment variables being used in filenames.	Table C.7-1
			• Removed Appendix D. This information is for an older way of running tests that is no longer being used.	App. D
			• Updated environment variables for PGE CER1.4P3. Variable names have changed. Removed variables for PGE CER1.3P3.	Sec. 2.1
			• Removed information for PGE CER1.3P3 and for QL processing. PGE CER1.3P3 had been replaced by PGE CER1.4P3 and we are not doing QL processing in production.	Sec. 2.2.9
			• Removed information for TRMM which is no longer being tested. Added NPP Edition1 test cases and removed Edition3/4 test cases for NPP.	Sec. 8.1.1.1
			• Removed "--" from script calls as this is no longer required. Updated environment variable names for test dates for all spacecraft and instruments.	Sec. 8.1.1.1
			• Updated the comparison and file creation checks. Removed TRMM information as TRMM will no longer be tested.	Sec. 8.1.2
			• Updated NPP information to run Edition1 and take out Edition3/4.	Sec. 8.1.2
			• Updated instructions to use the latest test environment scripts in the example.	Sec. 8.1.3
			• Removed information to compile this PGE for P6. This delivery will make this PGE x86-only.	Sec.2.2.8
			• Removed references to P6 for running this PGE. This PGE will be delivered as x86-only.	Secs. 8.1, 8.1.1.1

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04/30/14	R6V4	1012	• Removed all references to PGE CER1.3P3.	Sec. 2.1
			• Changed L0_start and L0_stop to CER1_1P8_start and CER1_1P8_stop.	Sec. 2.1
			• Removed variables no longer used: L0_input_script, L0_pcf_script and L0_PGE.	Sec. 2.1
			• Added new temporary environment script names: temp-env.csh, temp-env-Ed1.csh, temp-env-Ed2.csh, temp-env-Ed3.csh, and temp-env-Ed4.csh.	Sec. 2.1
			• Updated the compilation instructions for the new Instrument libraries.	Sec. 2.2.1
			• Updated note to include the new Instrument libraries for utilities and HDF utilities.	Sec. 2.2.7
			• Added new note to not run the TRMM test cases. Although TRMM is still included in the Test Plan, no testing for TRMM needs to be done at this time.	Sec. 4.1.1.1
			• Removed "--" for the Aqua-FM4 test cases, the scripts have been updated to no longer use this to designate additional parameters.	Sec. 4.1.1.1
			• Replaced test environment scripts with a new script.	Secs. 4.1.1.1, 4.1.2
			• Added a note that TRMM-PFM comparisons do not need to be run, as the TRMM-PFM test cases are not being run at this time.	Sec. 4.1.2
			• Updated the evaluation instructions with the newest evaluation and comparison directions.	Sec. 4.1.2
			• Added new CER1.1P8 subdirectory under the runlogs directory. Also add HDF_utils subdirectory under the upper-level lib directory.	App. B
			• Added new test environment script for CER1.1P8 and removed CER1.1P8/rcf from the previous test environment scripts.	Table C-1

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1.0 Introduction

CERES is a key component of EOS and NPP. The first CERES instrument (PFM) flew on TRMM, four instruments are currently operating on the EOS Terra (FM1 and FM2) and Aqua (FM3 and FM4) platforms, and NPP (FM5) platform. CERES measures radiances in three broadband channels: a shortwave channel (0.3 - 5 μm), a total channel (0.3 - 200 μm), and an infrared window channel (8 - 12 μm). The last data processed from the PFM instrument aboard TRMM was March 2000; no additional data are expected. Until June 2005, one instrument on each EOS platform operated in a fixed azimuth scanning mode and the other operated in a rotating azimuth scanning mode; now all are typically operating in the fixed azimuth scanning mode. The NPP platform carries the FM5 instrument, which operates in the fixed azimuth scanning mode though it has the capability to operate in a rotating azimuth scanning mode.

CERES climate data records involve an unprecedented level of data fusion: CERES measurements are combined with imager data (e.g., MODIS on Terra and Aqua, VIIRS on NPP), 4-D weather assimilation data, microwave sea-ice observations, and measurements from five geostationary satellites to produce climate-quality radiative fluxes at the top-of-atmosphere, within the atmosphere and at the surface, together with the associated cloud and aerosol properties.

The CERES project management and implementation responsibility is at NASA Langley. The CERES Science Team is responsible for the instrument design and the derivation and validation of the scientific algorithms used to produce the data products distributed to the atmospheric sciences community. The CERES DMT is responsible for the development and maintenance of the software that implements the science team's algorithms in the production environment to produce CERES data products. The Langley ASDC is responsible for the production environment, data ingest, and the processing, archival, and distribution of the CERES data products.

1.1 Document Overview

The Release 4 delivery Test Plan to the Langley Atmospheric Science 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 6 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 *AMI*.

This document, the CERES Instrument Geolocate and Calibrate Earth Radiances Subsystem 1.0 Release 6 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 C++ Level-0 Data Processing
Section 5.0 – Test and Evaluation Procedures for BDS to Pre-ES8 Data Processing
Section 6.0 – Test and Evaluation Procedures for BDS/BDSD to BDSI Processing
Section 7.0 – Test and Evaluation Procedures for Gain Analysis Processing
Section 8.0 – Test and Evaluation Procedures for BDS Reprocessing
Appendix A – Acronyms and Abbreviations
Appendix B – Directory Structure Diagram
Appendix C – File Description Tables

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 uncompressing 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
PGSMSG	-	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
InputArchive	-	ASDC archive area, where CERES product inputs are stored
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

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

SS1	-	Instrument Subsystem Sampling Strategy
CC1	-	Instrument Subsystem Configuration Code
CC1_2	-	PGE1.2P1 Configuration Code
CC1_3	-	PGE1.4P1 Configuration Code
CC1_4	-	PGE1.4P2 Configuration Code
CC1_5	-	CER1.4P3 Configuration Code
CC1_0P2	-	PGE1.0P2 Configuration Code
SW1	-	Instrument Subsystem Software SCCR number
SW1_2	-	PGE1.2P1 Software SCCR number
SW1_3	-	PGE1.4P1 Software SCCR number
SW1_4	-	PGE1.4P2 Software SCCR number
SW1_5	-	CER1.4P3 Software SCCR number
DATA1	-	Instrument Subsystem Data SCCR number
DATA1_2	-	PGE1.2P1 Data SCCR number
DATA1_3	-	PGE1.4P1 Data SCCR number
DATA1_4	-	PGE1.4P2 Data SCCR number
DATA1_5	-	CER1.4P3 Data SCCR number
PS1_0	-	Instrument Subsystem Production Strategy Output or CER1.4P3 Production Strategy Input
PS1_1	-	PGE CER1.4P3 Production Strategy Output
PS1_0P2	-	PGE CER1.0P2 Production Strategy Output
SAT	-	Satellite (valid values: TRMM, Terra or Aqua)
INST	-	Instrument (valid values: PFM, FM1, FM2, FM3 or FM4)
PROD	-	Production Flag, input will be read from subsystem directory for all input read from the DPO when this flag is set to NO
Prod_Date	-	Production Date for PGE CER1.0P2

The following environment variables are set by the **temp-<inst>-env.csh**, **temp-env.csh**, **temp-env-Ed1.csh**, **temp-env-Ed2.csh**, **temp-env-Ed3.csh** or **temp-env-Ed4** scripts and are necessary for testing:

compare_sw_dir	-	Test Suites software directory
compare_dir	-	Expected output directory for this PGE
PGE	-	PGE being tested
PCF_script	-	PCF generator script
L0_year	-	Level-0/Pre-ES8 Test data date year
L0_month	-	Level-0/Pre-ES8 Test data date month
L0_day	-	Level-0/Pre-ES8 Test data date day
CER1_1P8_start	-	CER1.1P8 Test processing start time
CER1_1P8_stop	-	CER1.1P8 Test processing stop time

L0_flags	-	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
QL_PGE	-	QuickLook processor PGE designator
QL_input_script	-	QuickLook Test ASCII input file generator script name
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_4P1_PGE	-	PGE CER1.4P1 PGE designator
CER1_4P1_input_script	-	PGE CER1.4P1 ASCII input file generator script name
CER1_4P1_pcf_script	-	PGE CER1.4P1 PCF file generator script name
CER1_4P1_year	-	PGE CER1.4P1 Test data date year
CER1_4P1_month	-	PGE CER1.4P1 Test data date month
CER1_4P1_day	-	PGE CER1.4P1 Test data date day
CER1_4P2_PGE	-	PGE CER1.4P2 PGE designator
CER1_4P2_input_script	-	PGE CER1.4P2 ASCII input file generator script name
CER1_4P2_pcf_script	-	PGE CER1.4P2 PCF file generator script name
CER1_4P2_year	-	PGE CER1.4P2 Test data date year
CER1_4P2_month	-	PGE CER1.4P2 Test data date month
CER1_4P2_day	-	PGE CER1.4P2 Test data date day
pcf_script	-	PGE CER1.4P3 PCF file generator script name
year	-	PGE CER1.4P3 Test start data date year
month	-	PGE CER1.4P3 Test start data date month
day	-	PGE CER1.4P3 Test start data date day
endyear	-	PGE CER1.4P3 Test end data date year
endmonth	-	PGE CER1.4P3 Test end data date month
endday	-	PGE CER1.4P3 Test end data date day
start	-	PGE CER1.4P3 Test data start time
stop	-	PGE CER1.4P3 Test data stop time
T1_year	-	PGE CER1.0P2 test 1 data date year
T1_month	-	PGE CER1.0P2 test 1 data date month
T1_day	-	PGE CER1.0P2 test 1 data date day
T1_date	-	PGE CER1.0P2 test 1 data date combined as YYYYMMDD
T2_year	-	PGE CER1.0P2 test 2 data date year
T2_month	-	PGE CER1.0P2 test 2 data date month
T2_day	-	PGE CER1.0P2 test 2 data date day
T2_date	-	PGE CER1.0P2 test 2 data date combined as YYYYMMDD
T3_year	-	PGE CER1.0P2 test 3 data date year
T3_month	-	PGE CER1.0P2 test 3 data date month
T3_day	-	PGE CER1.0P2 test 3 data date day

T3_date	-	PGE CER1.0P2 test 3 data date combined as YYYYMMDD
T4_year	-	PGE CER1.0P2 test 4 data date year
T4_month	-	PGE CER1.0P2 test 4 data date month
T4_day	-	PGE CER1.0P2 test 4 data date day
T4_date	-	PGE CER1.0P2 test 4 data date combined as YYYYMMDD

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

Now that we have multiple platforms that use one central disk storage system, it is suggested that all compilation and tests be totally completed for one system and then for the next system. This will avoid any issues related to test data products from one system being compared against those created on a different system. It will also allow better tracking of issues related to one system that may not occur on another system.

2.2.1 Compilation Instructions for Instrument Libraries

These steps will create the Instrument utilities library modules (**utilities_ppc64.a** on the *P6*s, and **utilities_x86_64.a** on the *x86*s) in the **$CERESHOME/instrument/lib** directory. And the Instrument HDF library modules (**HDFutilities_ppc64.a** on the *P6s*, and **HDFutilities_x86_64.a** on the *x86s*) in the **$CERESHOME/instrument/lib/HDF_utils** directory. Type the following commands:

```
source $CERESENV
setenv INSTRHOME $CERESHOME/instrument
cd $CERESHOME/instrument/lib
Utilities_compile.pl
```

2.2.2 Compilation Instructions for the SMF message files

This compilation only needs to occur when all, or the first Instrument PGE(s) are being delivered to a system and not for each individual PGE delivery.

These steps will create the message include and actual message files needed by the Instrument PGEs for production. Since message files are ASCII, it is not necessary to run these steps on both the *x86* and *P6* platforms.

```
source $CERESENV
cd $CERESHOME/instrument/smf
smfcompileall.pl
cp *.h $PGSDIR/include/.
cp *.f $PGSDIR/include/.
cp PGS_25* $PGSDIR/message/.
```

2.2.3 Compilation Instructions for PGE CER1.0P2 on the *P6* and *x86* Platforms

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

source $CERESENV
cd $CERESHOME/instrument/CER1.0P2/rcf
CER1.0P2_compile.pl

will create the executables

$CERESHOME/instrument/CER1.0P2/bin/PGE_CER1.0P2_$CPUTYPE.exe

where $CPUTYPE is ppc64 for the *P6* platform or x86_64 for the *x86* platform.

2.2.4 Compilation Instructions for PGE CER1.2P1 on the *P6* and *x86* Platforms

The compilation of this PGE requires that you have **not** sourced **CER1.xPx_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_$CPUTYPE.exe** in directory **$CERESHOME/instrument/CER1.2P1/bin,** type the following commands:

source $CERESENV
setenv INSTRHOME $CERESHOME/instrument
cd $INSTRHOME/CER1.2P1/src
make clean
make

where $CPUTYPE is ppc64 for the *P6* platform or x86_64 for the *x86* platform.

NOTE: This compilation requires that the Instrument library, **utilities_$CPUTYPE.a** in directory **$CERESHOME/instrument/lib** has already been compiled.

2.2.5 Compilation Instructions for PGE CER1.4P1 on the *P6* and *x86* Platforms

Begin this compilation in a new window.

To create the executable **PGE_CER1.4P1_$CPUTYPE.exe** in directory **$CERESHOME/instrument/CER1.4P1/bin**, type the following commands:

source $CERESENV
setenv INSTRHOME $CERESHOME/instrument
cd $CERESHOME/instrument/CER1.4P1/rcf
source CER1.4P1_compile-env.csh

cd $CERESHOME/instrument/CER1.4P1/src
make -f Makefile_CER1.4P1 clean
make -f Makefile_CER1.4P1

where $CPUTYPE is ppc64 for the *P6* platform or x86_64 for the *x86* platform.

NOTE: This compilation requires that the Instrument library, **utilities_$CPUTYPE.a** in directory **$CERESHOME/instrument/lib** has already been compiled.

2.2.6 Compilation Instructions for PGE CER1.4P2 on the *P6* and *x86* Platforms

Begin this compilation in a new window.

To create the executable **PGE_CER1.4P2_$CPUTYPE.exe** in directory **$CERESHOME/instrument/CER1.4P2/bin**, type the following commands:

source $CERESENV
setenv INSTRHOME $CERESHOME/instrument
cd $CERESHOME/instrument/CER1.4P2/rcf
source CER1.4P2_compile-env.csh
cd $CERESHOME/instrument/CER1.4P2/src
make -f Makefile_CER1.4P2 clean
make -f Makefile_CER1.4P2

where $CPUTYPE is ppc64 for the *P6* platform or x86_64 for the *x86* platform.

NOTE: This compilation requires that the Instrument library, **utilities_$CPUTYPE.a** in directory **$CERESHOME/instrument/lib** has already been compiled.

2.2.7 Compilation Instructions for PGEs CER1.1P8 on the *P6* and *x86* Platforms

Begin this compilation in a new window.

To create the executable **PGE_CER1.1P8_$CPUTYPE.exe** in directory "**$CERESHOME/instrument/CER1.1P8/bin**," type the following commands:

NOTE: This compilation requires that the Instrument libraries, **utilities_$CPUTYPE.a** in directory **$CERESHOME/instrument/lib** and **HDFutilities_$CPUTYPE.a** in directory **$CERESHOME/instrument/lib/HDF_utils** have already been compiled.

source $CERESENV
setenv INSTRHOME $CERESHOME/instrument
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8_compile.pl

where $CPUTYPE is ppc64 for the *P6* platform or x86_64 for the *x86* platform.

2.2.8 Compilation Instructions for PGE CER1.4P3 on the *x86* Platforms

Begin this compilation in a new window.

To create the executable **PGE_CER1.4P3_$CPUTYPE.exe** in directory **$CERESHOME/instrument/CER1.4P3/bin,** type the following commands:

```
source $CERESENV
setenv INSTRHOME $CERESHOME/instrument
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3_compile.pl
```

where $CPUTYPE is ppc64 for the *P6* platform or x86_64 for the *x86* platform.

NOTE: This compilation requires that the Instrument library, **utilities_$CPUTYPE.a** in directory **$CERESHOME/instrument/lib** has already been compiled.

2.2.9 Compiling the Comparison Software

For PGE CER1.0P2 on the *P6* and *x86* platforms:

1. Change directories to the test_suites area:

   ```
   source $CERESENV
   cd $CERESHOME/instrument/CER1.0P2/test_suites
   ```

2. Compile the **aview_$CPUTYPE.exe** and **eview_$CPUTYPE.exe** programs in **$CERESHOME/instrument/CER1.0P2/test_suites/aview** and **$CERESHOME/instrument/CER1.0P2/test_suites/eview**, respectively:

   ```
   make clean
   make
   ```

For PGEs: CER1.1P8, CER1.4P1, CER1.4P2, and CER1.4P3 on both the *P6* and *x86* platforms:

1. Change directories to the test_suites area:

   ```
   cd $CERESHOME/instrument/test_suites
   ```

2. Compile the HDF compare program, **hcmp_$CPUTYPE**, in **$CERESHOME/instrument/test_suites**:

   ```
   setenv INSTRHOME $CERESHOME/instrument
   make -f Makefile_HDF_cmp clean
   make -f Makefile_HDF_cmp
   ```

For PGE CER1.2P1 on the *P6* and *x86* platforms:

1. Compile the PRES8 compare program (must be done for each platform the software is delivered to):

   ```
   cd $CERESHOME/instrument/CER1.2P1/rcf
   setenv INSTRHOME $CERESHOME/instrument
   cd $INSTRHOME/CER1.2P1/test_suites
   ```

2. Compile the Pre-ES8 comparison program, **cmps8_$CPUTYPE**, in **$CERESHOME/instrument/CER1.2P1/test_suites**:

   make clean
   make

2.2.10 Compiling the Compression Software on the *P6* and *x86* Platform

These steps will create the BDS compression routine **BDS_cpress_$CPUTYPE.exe** in **$CERESHOME/instrument/lib**. Type the following commands:

setenv INSTRHOME $CERESHOME/instrument
cd $CERESHOME/instrument/lib
make -f Makefile_compress clean
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) data from the NPP FM5 satellite. 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

NOTE: All test cases below should be run on both the *P6* and *x86* platforms.

CER1.0P2: NPP-FM5

Test 1:

A list of the exact filenames that will be created can be found in:
$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test1.List

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T1.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
test_cleanup_CER1.0P2.pl
cd $CERESHOME/instrument/CER1.0P2/rcf
CER1.0P2-SGE_Driver.pl -date $Test_Date -p p6 (for ppc64 architecture), or
CER1.0P2-SGE_Driver.pl -date $Test_Date -p x86 (for x86_64 architecture)
```

Test 2:

A list of the exact filenames created will be found in:
$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test2.List

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T2.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
test_cleanup_CER1.0P2.pl
```

cd $CERESHOME/instrument/CER1.0P2/rcf
CER1.0P2-SGE_Driver.pl -date $Test_Date -p p6 (for ppc64 architecture), or
CER1.0P2-SGE_Driver.pl -date $Test_Date -p x86 (for x86_64 architecture)

Test 3:

A list of the exact filenames created will be found in:
$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test3.List

cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T3.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
test_cleanup_CER1.0P2.pl
cd $CERESHOME/instrument/CER1.0P2/rcf
CER1.0P2-SGE_Driver.pl -date $Test_Date -p p6 (for ppc64 architecture), or
CER1.0P2-SGE_Driver.pl -date $Test_Date -p x86 (for x86_64 architecture)

Test 4 (SGE Ranged Submission):

This test exercises CER1.0P2's ranged submission capability.

A list of the exact filenames created will be found in:
$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test4.List

cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T4.csh
CER1.0P2-Cleanup.pl -start $Start_Date -end $End_Date
CER1.0P2-SGE_Driver.pl -start $Start_Date -end $End_Date -p p6 (for ppc64 architecture), or
CER1.0P2-SGE_Driver.pl -start $Start_Date -end $End_Date -p x86 (for x86_64 architecture)

Test 5 (SGE Ranged Submission):

This test exercises CER1.0P2's ranged submission capability.

A list of the exact filenames created will be found in:
$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test5.List

cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T5.csh
CER1.0P2-Cleanup.pl -start $Start_Date -end $End_Date

CER1.0P2-SGE_Driver.pl -start $Start_Date -end $End_Date -p p6 (for ppc64 architecture), or
CER1.0P2-SGE_Driver.pl -start $Start_Date -end $End_Date -p x86 (for x86_64 architecture)

3.1.1.2 Exit Codes

0 - Normal Exit,
152 - Error creating PCF file,
200 - If exit 200 is returned check corresponding log files (see below).

3.1.1.3 Test Summary

CER1.0P2: NPP-FM5, Test 1

Total Run Time (*P6*):	3 min
Total Run Time (*x86*):	1 min
Memory:	300 MB
Required Disk Space:	200 MB

CER1.0P2: NPP-FM5, Test 2

Total Run Time (*P6*):	3 min
Total Run Time (*x86*):	1 min
Memory:	300 MB
Required Disk Space:	200 MB

CER1.0P2: NPP-FM5, Test 3

Total Run Time (*P6*):	3 min
Total Run Time (*x86*):	1 min
Memory:	300 MB
Required Disk Space:	200 MB

CER1.0P2: NPP-FM5, Test 4

Total Run Time (*P6*):	2 min
Total Run Time (*x86*):	1 min
Memory:	300 MB
Required Disk Space:	200 MB

CER1.0P2: NPP-FM5, Test 5

Total Run Time (*P6*):	2 min
Total Run Time (*x86*):	1 min
Memory:	300 MB
Required Disk Space:	200 MB

3.1.2 Evaluation Procedures

The Main Processor will complete with Exit Status = 0 and will create the products listed in the **Expected_Output_CER1.0P2-TestX.List**, where X = 1, 2, 3, 4, or 5 for the specific test case.

CER1.0P2: NPP-FM5, Test 1

A list of the exact filenames created will be found in:

$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test1.List

To compare the output data, type the following commands:

```
unlimit
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T1.csh
setenv PGS_PC_INFO_FILE
    $CERESHOME/instrument/CER1.0P2/test_suites/PCF_$CPUTYPE\_default
cd $CERESHOME/instrument/CER1.0P2/test_suites
compare_CER1.0P2_files.pl
```

CER1.0P2: NPP-FM5, Test 2

A list of the exact filenames created will be found in:

$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test2.List

To compare the output data, type the following commands:

```
unlimit
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T2.csh
setenv PGS_PC_INFO_FILE
    $CERESHOME/instrument/CER1.0P2/test_suites/PCF_$CPUTYPE\_default
cd $CERESHOME/instrument/CER1.0P2/test_suites
compare_CER1.0P2_files.pl
```

CER1.0P2: NPP-FM5, Test 3

A list of the exact filenames created will be found in:

$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test3.List

To compare the output data, type the following commands:

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

```
source temp-fm5-env_T3.csh
setenv PGS_PC_INFO_FILE
    $CERESHOME/instrument/CER1.0P2/test_suites/PCF_$CPUTYPE\_default
cd $CERESHOME/instrument/CER1.0P2/test_suites
compare_CER1.0P2_files.pl
```

CER1.0P2: NPP-FM5, Test 4

A list of the exact filenames created will be found in:

$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test4.List

To compare the output data, type the following commands:

```
unlimit
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T4.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
setenv PGS_PC_INFO_FILE
    $CERESHOME/instrument/CER1.0P2/test_suites/PCF_$CPUTYPE\_default
setenv Test_Date 20120228
compare_CER1.0P2_files.pl
setenv Test_Date 20120229
compare_CER1.0P2_files.pl
setenv Test_Date 20120301
compare_CER1.0P2_files.pl
```

CER1.0P2: NPP-FM5, Test 5

A list of the exact filenames created will be found in:

$CERESHOME/instrument/data_exp/CER1.0P2/Expected_Output_CER1.0P2_FM5-Test5.List

To compare the output data, type the following commands:

```
unlimit
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T5.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
setenv PGS_PC_INFO_FILE
    $CERESHOME/instrument/CER1.0P2/test_suites/PCF_$CPUTYPE\_default
setenv Test_Date 20120630
compare_CER1.0P2_files.pl
setenv Test_Date 20120701
compare_CER1.0P2_files.pl
setenv Test_Date 20120702
```

compare_CER1.0P2_files.pl
setenv Test_Date 20120703
compare_CER1.0P2_files.pl
setenv Test_Date 20120704
compare_CER1.0P2_files.pl

3.1.2.1 Log File Results

There are six Log files associated with this PGE. The first three listed below are required by the Toolkit. The Toolkit Log files contain all error and/or status messages produced by the PGE during processing.

1. Report Log File: **$CERESHOME/instrument/runlogs/CER1.0P2_LogReport_NPP-FM5_$PS1_02_$CC1_02_$Prod_Date.YYYYMMDD**
   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: **$CERESHOME/instrument/runlogs/CER1.0P2_LogStatus_NPP-FM5_$PS1_02_$CC1_02_$Prod_Date.YYYYMMDD**
   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: **$CERESHOME/instrument/runlogs/CER1.0P2_LogUser_NPP-FM5_$PS1_02_$CC1_02_$Prod_Date.YYYYMMDD**
   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. PCF Log File: **$CERESHOME/instrument/CER1.0P2/rcf/pcf/CER1.0P2_PCF_NPP-FM5_$PS1_02_$CC1_02_$Prod_Date.YYYYMMDD.log**

This log file is created when the PCF is generated and contains a listing of all the environment variables set when the PCF was created along with a listing of all the files used to create this PCF. There is also a listing of any missing optional and mandatory files. This file may also contain the listing of any missing mandatory data files or a list of existing output data files. The list of existing output data files will only be created if the PGE is run more than once without clean-up.

5. CER1.0P2 Log file: This log file is specific to CER1.0P2 and has the following name: **$CERESHOME/instrument/runlogs/CER1.0P2_QCLog_NPP-FM5_$PS1_02_$CC1_02_$Prod_Date.YYYYMMDD**

A new log file of type 5 is created for each new run, except in the case that the file already exists for the current run date, data date, production strategy and CC code, in which case the existing log file will be overwritten.

The top of the CER1.0P2 QC Log file (type 5) should appear similar to

${INSTRHOME}/runlogs/CER1.0P2_QCLog_NPP-FM5_Baseline1-QC_000030_20110519.20100906

```
-----------------------------------------------------------------
CER1.0P2 NPP Preprocessor QC log opened    Wed May 18 15:17:52 2011
-----------------------------------------------------------------

    Host Platform = x86_64
```

A listing of each RDR file name processed for the current run will then be displayed along with a verification of the data granules contained within the file. Any duplicate data granules read from the file will be indicated after the RDR file name with a warning message that the granule will not be processed into the resulting level-0 file. The number of resulting packets from the (unique) granule is then displayed.

After all RDR files have been read, the total (unique) packet count from all files is then displayed similar to the output below:

```
--------------------------------------
    unique SCI-packet count = 8661
    unique CAL-packet count = 1275
    unique DIA-packet count = 1834
    unique DIARY-packet count = 78072
--------------------------------------
```

Each generated Level-0 file name is then printed along with its accompanying Level-0 construction file name similar to the output below:

```
-----------------------------------------------------------------
    writing Level-0 file:
${INSTRHOME}/data/Level0/NPP/2010/NPP_G149_LZ_2010-09-06T04-32-04Z_20110519.DAT

    writing Level-0 Construction file:
${INSTRHOME}/data/Level0/NPP/2010/NPP_G149_LZ_2010-09-06T04-32-04Z_20110519.CONS
```

The generated attitude and ephemeris file names are then printed similar to the output below:

```
-----------------------------------------------------------------
    writing attitude file:

${INSTRHOME}/data/NPPATT/2010/NPPATT.N2010249.20110519.DAT
    writing ephemeris file:
${INSTRHOME}/data/NPPEPH/2010/NPPEPH.N2010249.20110519.DAT
```

Finally, the last entry in the file indicates the PGE exit status with output similar to below for a success exit:

```
-----------------------------------------------------------------
CER1.0P2 NPP Preprocessor QC log closed with status Success
-----------------------------------------------------------------
```

3.1.2.2 Metadata Evaluation

NONE

3.1.2.3 Evaluation of Comparison Software Output

A successful comparison of the actual versus the expected output data products will result in the following message printed to the console:

```
################
#  SUCCESS!!!   #
################

SUCCESS - The actual output has compared against the expected output correctly!
```

An unsuccessful comparison will result in a "FAILURE!" message printed to the console. In the event that this message is encountered, please contact the PGE maintainer(s).

3.1.3 Solutions to Possible Problems

All output data should be deleted before rerunning any of the above tests. The comparison tests will not run correctly if this is not done. This can be done by executing:

NOTE: Be sure that **$Date_Tested** is set to the Production Date found in the file names of the files you want to delete.

CER1.0P2: NPP-FM5, Test 1:

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T1.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
test_cleanup_CER1.0P2.pl
```

CER1.0P2: NPP-FM5, Test 2:

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T2.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
test_cleanup_CER1.0P2.pl
```

CER1.0P2: NPP-FM5, Test 3:

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T3.csh
cd $CERESHOME/instrument/CER1.0P2/test_suites
test_cleanup_CER1.0P2.pl
```

CER1.0P2: NPP-FM5, Test 4:

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T4.csh
CER1.0P2-Cleanup.pl -start $Start_Date -end $End_Date
```

CER1.0P2: NPP-FM5, Test 5:

```
cd $CERESHOME/instrument/CER1.0P2/rcf
source temp-fm5-env_T5.csh
CER1.0P2-Cleanup.pl -start $Start_Date -end $End_Date
```

4.0 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 November 1997, Terra (also called AM1), launched in December 1999, Aqua (also called PM1), launched in May 2002, and NPP launched in October 2011. 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 CER1.1P8 C++ Level-0 Data Processing on the *P6* and *x86* Platforms

4.1.1 Stand-alone Test Procedures

These test procedures should be run on both the *x86* and *P6* platforms. They should not be processed on both platforms at the same time, as the output filenames and locations are the same for each platform.

4.1.1.1 Execution

CER1.1P8: TRMM-PFM

Note: It is no longer necessary to test TRMM-PFM for this PGE. These instructions remain in this document for completeness.

Test 1:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh pfm 1
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -date $year$month$day -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -date $year$month$day -platform p6 (for *P6* architecture)

Test 2:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh pfm 2
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform p6 (for *P6* architecture)

CER1.1P8: Terra-FM1

Test 1:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm1 1
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -date $year$month$day -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -date $year$month$day -platform p6 (for *P6* architecture)

Test 2:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm1 2
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform p6 (for *P6* architecture)

CER1.1P8: Terra-FM2

Test 1:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm2 1
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -date $year$month$day -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -date $year$month$day -platform p6 (for *P6* architecture)

Test 2:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm2 2
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform p6 (for *P6* architecture)

CER1.1P8: Aqua-FM3

Test 1:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm3 1
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -date $year$month$day -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -date $year$month$day -platform p6 (for *P6* architecture)

Test 2:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm3 2
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform p6 (for *P6* architecture)

CER1.1P8: Aqua-FM4

Test 1:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm4 1
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl

cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -date $year$month$day -platform x86 -ic OFF -sat SW_OFF (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -date $year$month$day -platform p6 -ic OFF -sat SW_OFF (for *P6* architecture)

Test 2:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm4 2
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform x86 -ic OFF -sat SW_OFF (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform p6 -ic OFF -sat SW_OFF (for *P6* architecture)

CER1.1P8: NPP-FM5

Test 1:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm5 1
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -date $year$month$day -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -date $year$month$day -platform p6 (for *P6* architecture)

Test 2:

setenv PROD yes (read input from **/ASDC_archive/CERE**S)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm5 2
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl
cd $CERESHOME/instrument/CER1.1P8/rcf
CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform x86 (for *x86* architecture)

and

CER1.1P8-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -platform p6 (for *P6* architecture)

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

TRMM-PFM

Total Run Time: 1.5 hrs – *P6*
45 mins – *x86*

Terra-FM1

Total Run Time: 1.5 hrs – *P6*
45 mins – *x86*

Terra-FM2

Total Run Time: 1.5 hrs – *P6*
45 mins – *x86*

Aqua-FM3

Total Run Time:	1.5 hrs – *P6*
	45 mins – *x86*

Aqua-FM4

Total Run Time:	1.5 hrs – *P6*
	45 mins – *x86*

NPP-FM5

Total Run Time:	1.5 hrs – *P6*
	45 mins – *x86*

4.1.2 Evaluation Procedures

The Main Processor PGE will complete with Exit Status = 0 and the script **check_pge_test_data.pl** can be run to check for the existence of all required output files.

CER1.1P8: TRMM

Note: It is no longer necessary to test TRMM-PFM for this PGE. These instructions remain in this document for completeness.

To check that all the expected output products were created and to compare the created output data:

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

```
unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh pfm 1
cd $CERESHOME/instrument/test_suites
```

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

```
check_pge_test_data.pl
```

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_pfm_Test1.out**:

```
compare_test_files.pl >> compare_pfm_Test1.out
```

Check that all of the comparisons were successful:

vi compare_pfm_Test1.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – TRMM-PFM_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_TRMM-PFM_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh pfm 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_pfm_Test2.out**:

compare_test_files.pl >> compare_pfm_Test2.out

Check that all of the comparisons were successful:

vi compare_pfm_Test2.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – TRMM-PFM_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_TRMM-PFM_Edition1-CV_$CC1 - YYYYMMDD-Missingfiles.log to see the list of missing files --

For this instrument, the following lines may show up in the comparison for the LogStatus file and they can be ignored providing all the data files compare successfully:

```
< PGS_CSC_GetFOV_Pixel():PGSCSC_W_ZERO_PIXEL_VECTOR:35865
< ZERO Pixel Vector, offset Number 0
<
< PGS_CSC_GetFOV_Pixel():PGSCSC_W_ZERO_PIXEL_VECTOR - 1 additional occurrences
---
> PGS_CSC_GetFOV_Pixel():PGSCSC_W_BAD_EPH_FOR_PIXEL - 1 additional occurrences
```

CER1.1P8: Terra-FM1

To check that all the expected output products were created and to compare the created output data:

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

```
unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm1 1
cd $CERESHOME/instrument/test_suites
```

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

```
check_pge_test_data.pl
```

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm1_Test1.out**:

compare_test_files.pl >> compare_fm1_Test1.out

Check that all of the comparisons were successful:

vi compare_fm1_Test1.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Terra-FM1_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Terra-FM1_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm1 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm1_Test2.out**:

compare_test_files.pl >> compare_fm1_Test2.out

Check that all of the comparisons were successful:

vi compare_fm1_Test2.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Terra-FM1_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Terra-FM1_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.1P8: Terra-FM2

To check that all the expected output products were created and to compare the created output data:

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm2 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm2_Test1.out**:

compare_test_files.pl >> compare_fm2_Test1.out

Check that all of the comparisons were successful:

vi compare_fm2_Test1.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Terra-FM2_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Terra-FM2_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm2 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm2_Test2.out**:

compare_test_files.pl >> compare_fm2_Test2.out

Check that all of the comparisons were successful:

vi compare_fm2_Test2.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Terra-FM2_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Terra-FM2_Edition1-CV_$CC1 - YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.1P8: Aqua-FM3

To check that all the expected output products were created and to compare the created output data:

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm3 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm3_Test1.out**:

compare_test_files.pl >> compare_fm3_Test1.out

Check that all of the comparisons were successful:

vi compare_fm3_Test1.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Aqua-FM3_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Aqua-FM3_Edition1-CV_$CC1 - YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm3 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm3_Test2.out**:

compare_test_files.pl >> compare_fm3_Test2.out

Check that all of the comparisons were successful:

vi compare_fm3_Test2.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Aqua-FM3_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Aqua-FM3_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.1P8: Aqua-FM4

To check that all the expected output products were created and to compare the created output data:

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm4 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm4_Test1.out**:

compare_test_files.pl >> compare_fm4_Test1.out

Check that all of the comparisons were successful:

vi compare_fm4_Test1.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Aqua-FM4_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Aqua-FM4_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm4 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm4_Test2.out**:

compare_test_files.pl >> compare_fm4_Test2.out

Check that all of the comparisons were successful:

vi compare_fm4_Test2.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – Aqua-FM4_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_Aqua-FM4_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.1P8: NPP-FM5

To check that all the expected output products were created and to compare the created output data:

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm5 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm5_Test1.out**:

compare_test_files.pl >> compare_fm5_Test1.out

Check that all of the comparisons were successful:

vi compare_fm5_Test1.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – NPP-FM5_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_NPP-FM5_Edition1-CV_$CC1 -YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

unlimit
cd $CERESHOME/instrument/CER1.1P8/rcf
source temp-env.csh fm5 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files and puts the output from the comparisons into a file **compare_fm5_Test2.out**:

compare_test_files.pl >> compare_fm5_Test2.out

Check that all of the comparisons were successful:

vi compare_fm5_Test2.out

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.1P8 – NPP-FM5_Edition1-CV_$CC1 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.1P8_NPP-FM5_Edition1-CV_$CC1 - YYYYMMDD-Missingfiles.log to see the list of missing files --

For this instrument, the following lines may show up in the comparison for the LogStatus file and they can be ignored providing all the data files compare successfully:

< PGS_CSC_GetFOV_Pixel():PGSCSC_W_BAD_EPH_FOR_PIXEL:35867

> PGS_CSC_GetFOV_Pixel():PGSCSC_W_ZERO_PIXEL_VECTOR:35865

4.1.2.1 Log and Status File Results

There are five Log files associated with this PGE. The first three listed below are required by the Toolkit. The Toolkit Log files contain all error and/or status messages produced by the PGE during processing.

1. Report Log File:
   $CERESHOME/instrument/runlogs/CER1.1P8/CER1.1P8_LogReport_$SS1_$PS1_0_$CC1.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.1P8/CER1.1P8_LogStatus_$SS1_$PS1_0_$CC1.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.1P8/CER1.1P8_LogUser_$SS1_$PS1_0_$CC1.YYYYMMDD
   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. PCF Log File:
   $CERESHOME/instrument/CER1.1P8/rcf/pcf/CER1.1P8_PCF_$SS1_$PS1_0_$CC1.YYYYMMDD.log

This log file is created when the PCF is generated and contains a listing of all the environment variables set when the PCF was created along with a listing of all the files used to create this PCF. There is also a listing of any missing optional and mandatory files. This file may also contain the listing of any missing mandatory data files or a list of existing output data files. The list of existing output data files will only be created if the PGE is run more than once without clean-up.

4.1.2.2 Metadata Evaluation

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

Checking BDS Metadata file:
CER_BDS_{$SS1}_{$PS1}_{$CC1}.{$L0_year}{$L0_month}{$L0_day}.met --- SUCCESSFUL

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:
CER_IES_{$SS1}_{$PS1}_{$CC1}.{$L0_year}{$L0_month}{$L0_day}HH - ERROR

--- Check file:
{**$CERESHOME}/instrument/CER1.1P8/test_suites/CER_IES_{$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/CER1.1P8/rcf
source temp-env.csh <inst> <test_number>
cd $CERESHOME/instrument/CER1.1P8/test_suites
test_cleanup_CER1.1P8.pl

where <instr> can be pfm, fm1, fm2, fm3, fm4, or fm5, and <test_number> can be 1 or 2, depending on which instrument files you want to clean out of the directories.

5.0 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 four satellites: TRMM, launched in November 1997, Terra (also called AM1), launched in December 1999, Aqua (also called PM1), launched in May 2002, and NPP launched in October 2011. 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.

5.1 CER1.2P1 BDS Conversion to Pre-ES8 on the *P6* and *x86* Platforms

5.1.1 Stand-alone Test Procedures

These test procedures should be run on both the *x86* and *P6* platforms. They should not be processed on both platforms at the same time, as the output filenames and locations are the same for each platform.

5.1.1.1 Execution

CER1.2P1: TRMM-PFM

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.2P1/rcf
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/rcf
CER1.2P1-SGE_Driver.pl -date $L0_year$L0_month$L0_day

CER1.2P1: Terra-FM1

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.2P1/rcf
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/rcf
CER1.2P1-SGE_Driver.pl -date $L0_year$L0_month$L0_day

CER1.2P1: Terra-FM2

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.2P1/rcf
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/rcf
CER1.2P1-SGE_Driver.pl -date $L0_year$L0_month$L0_day

CER1.2P1: Aqua-FM3

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.2P1/rcf
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/rcf
CER1.2P1-SGE_Driver.pl -date $L0_year$L0_month$L0_day

CER1.2P1: Aqua-FM4

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.2P1/rcf
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/rcf
CER1.2P1-SGE_Driver.pl -date $L0_year$L0_month$L0_day

CER1.2P1: NPP-FM5

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.2P1/rcf
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
test_cleanup_CER1.2P1.pl
cd $CERESHOME/instrument/CER1.2P1/rcf
CER1.2P1-SGE_Driver.pl -date $L0_year$L0_month$L0_day

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

The exact filenames can be found in **$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_<inst>.List**. Where <inst> is PFM, FM1, FM2, FM3, FM4, or FM5.

5.1.1.2 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.

5.1.1.3 Test Summary

CER1.2P1: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3, Aqua-FM4 and NPP-FM5

Total Run Time: 2 min

5.1.2 Evaluation Procedures

The processor will complete and create the following output data products:

CER1.2P1: TRMM-PFM

The exact filenames can be found in **$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_PFM.List.**

To compare the Output data, type the following commands:

```
cd $CERESHOME/instrument/CER1.2P1/rcf
unlimit
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
compare_CER1.2P1_files.pl
```

CER1.2P1: Terra-FM1

The exact filenames can be found in
$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_FM1.List.

To compare the Output data, type the following commands:

```
cd $CERESHOME/instrument/CER1.2P1/rcf
unlimit
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
compare_CER1.2P1_files.pl
```

CER1.2P1: Terra-FM2

The exact filenames can be found in
$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_FM2.List.

To compare the Output data, type the following commands:

```
cd $CERESHOME/instrument/CER1.2P1/rcf
unlimit
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
compare_CER1.2P1_files.pl
```

CER1.2P1: Aqua-FM3

The exact filenames can be found in
$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_FM3.List.

To compare the Output data, type the following commands:

```
cd $CERESHOME/instrument/CER1.2P1/rcf
unlimit
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
compare_CER1.2P1_files.pl
```

CER1.2P1: Aqua-FM4

The exact filenames can be found in
$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_FM4.List.

To compare the Output data, type the following commands:

cd $CERESHOME/instrument/CER1.2P1/rcf
unlimit
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
compare_CER1.2P1_files.pl

CER1.2P1: NPP-FM5

The exact filenames can be found in
$CERESHOME/instrument/data_exp/CER1.2P1/Expected_Output_CER1.2P1_FM5.List.

To compare the Output data, type the following commands:

cd $CERESHOME/instrument/CER1.2P1/rcf
unlimit
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.2P1/test_suites
compare_CER1.2P1_files.pl

5.1.2.1 Log and Status File Results

There are five Log files associated with this PGE. The first three listed below are required by the Toolkit. The Toolkit Log files contain all error and/or status messages produced by the PGE during processing.

1. Report Log File:
   $CERESHOME/instrument/runlogs/CER1.2P1_LogReport_$SS1_$PS1_0_$CC1_2.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.2P1_LogStatus_$SS1_$PS1_0_$CC1_2.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.2P1_LogUser_$SS1_$PS1_0_$CC1_2.YYYYMMDD
   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. PCF Log File:
   $CERESHOME/instrument/CER1.2P1/rcf/pcf/CER1.2P1_PCF_$SS1_$PS1_0_$CC1_2.YYYYMMDD.log

This log file is created when the PCF is generated and contains a listing of all the environment variables set when the PCF was created along with a listing of all the files used to create this PCF. There is also a listing of any missing optional and mandatory files. The list of existing output data files will only be created if the PGE is run more than once without clean-up.

5.1.2.2 Metadata Evaluation

TBD

5.1.2.3 Evaluation of Comparison Software Output

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

********** Comparing Test Output with Expected Output for CER1.2P1 **********

Name "main::grparr" used only once: possible typo at
/SCF/CERES/instrument/development/Release/rel6/test_suites/compare_pcf.pl line 144.

Comparing PRES8 file: **CER_PRES8_TRMM-PFM_ReleaseTest_000027.19980105 --- SUCCESSFUL**

NOTE: The Perl error above is expected and can be ignored.

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

Comparing PRES8 file:
CER_PRES8_$SS1_$PS1_0_$CC1_2.{$L0_year}{$L0_month}{$L0_day} -- ERROR
--- Check file: **{$CERESHOME}/instrument/CER1.2P1/test_suites**
CER_PRES8_$SS1_$PS1_0_$CC1_2.{$L0_year}{$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.

NOTE: If a PCF comparison error is displayed when executing the comparison software on a SGE run's output, then please check the following file:

$CERESHOME/instrument/CER1.2P1/rcf/pcf/CER1.2P1_PCF_$SS1_$PS1_0_$CC1_2.YYYYMMDD

If the only difference is for Logical ID 1755 being present only in the actual PCF file, that is okay. This entry is only available when executing within an SGE session.

5.1.3 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/CER1.2P1/rcf
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, fm4, or fm5, depending on which instrument files you want to clean out of the directories.

6.0 Test and Evaluation Procedures for BDS/BDSD to BDSI Processing

This section provides general information on how to execute PGE CER1.4P1, 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. (CER1.4P1 is the C++ translation of CER1.3P1)

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in November 1997, Terra (also called AM1), launched in December 1999, Aqua (also called PM1), launched in May 2002, and NPP launched in October 2011. Since TRMM data are no longer being processed, however, the test for these data have been included. 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.

6.1 CER1.4P1 BDS/BDSD Subsetting of Internal Calibration Data into BDSIs on the *P6* and *x86* Platforms

6.1.1 Stand-alone Test Procedures

6.1.1.1 Execution

CER1.4P1: TRMM-PFM

NOTE: At this time, the data required to run this test for TRMM is not available on the DPO on *AMI*. However, it is included for completeness.

setenv PROD no (read input from **$CERESHOME/instrument/data**)
setenv InputArchive $CERESHOME/instrument/data
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
test_cleanup_CER1.4P1.pl
cd $CERESHOME/instrument/CER1.4P1/rcf
CER1.4P1-SGE_Driver.pl -date
$CER1_4P1_year$CER1_4P1_month$CER1_4P1_day

CER1.4P1: Terra-FM1

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
test_cleanup_CER1.4P1.pl
cd $CERESHOME/instrument/CER1.4P1/rcf

CER1.4P1-SGE_Driver.pl -date
$CER1_4P1_year$CER1_4P1_month$CER1_4P1_day

CER1.4P1: Terra-FM2

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
test_cleanup_CER1.4P1.pl
cd $CERESHOME/instrument/CER1.4P1/rcf
CER1.4P1-SGE_Driver.pl -date
$CER1_4P1_year$CER1_4P1_month$CER1_4P1_day

CER1.4P1: Aqua-FM3

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
test_cleanup_CER1.4P1.pl
cd $CERESHOME/instrument/CER1.4P1/rcf
CER1.4P1-SGE_Driver.pl -date
$CER1_4P1_year$CER1_4P1_month$CER1_4P1_day

CER1.4P1: Aqua-FM4

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
test_cleanup_CER1.4P1.pl
cd $CERESHOME/instrument/CER1.4P1/rcf
CER1.4P1-SGE_Driver.pl -date
$CER1_4P1_year$CER1_4P1_month$CER1_4P1_day

CER1.4P1: NPP-FM5

setenv PROD no (read input from **$CERESHOME/instrument/data**)
setenv InputArchive $CERESHOME/instrument/data
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites

test_cleanup_CER1.4P1.pl
cd $CERESHOME/instrument/CER1.4P1/rcf
CER1.4P1-SGE_Driver.pl -date
$CER1_4P1_year$CER1_4P1_month$CER1_4P1_day

6.1.1.2 Exit Codes

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

6.1.1.3 Test Summary

CER1.4P1: Terra-FM1, Terra-FM2, Aqua-FM3 and Aqua-FM4

Total Run Time: 2 min.

6.1.2 Evaluation Procedures

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).

CER1.4P1: TRMM-PFM

NOTE: At this time, the data necessary to run this PGE for TRMM is not available on the DPO on *AMI*. However, these instructions have been included for completeness.

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P1_PFM_$CPUTYPE.List.

To compare the output data:

unlimit
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
compare_CER1.4P1_files.pl

CER1.4P1: Terra-FM1

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P1_FM1_$CPUTYPE.List.

To compare the output data:

unlimit
cd $CERESHOME/instrument/CER1.4P1/rcf

source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
compare_CER1.4P1_files.pl

CER1.4P1: Terra-FM2

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P1_FM2_$CPUTYPE.List.
To compare the output data:

unlimit
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
compare_CER1.4P1_files.pl

CER1.4P1: Aqua-FM3

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P1_FM3_$CPUTYPE.List.

To compare the output data:

unlimit
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
compare_CER1.4P1_files.pl

CER1.4P1: Aqua-FM4

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P1_FM4_$CPUTYPE.List.

To compare the output data:

unlimit
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
compare_CER1.4P1_files.pl

CER1.4P1: NPP-FM5

NOTE: At this time, the data necessary to run this PGE for NPP does not exist. However, these instructions have been included for completeness.

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P1_FM5_$CPUTYPE.List.

To compare the output data:

unlimit
cd $CERESHOME/instrument/CER1.4P1/rcf
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
compare_CER1.4P1_files.pl

6.1.2.1 Log and Status File Results

There are five Log files associated with this PGE. The first three listed below are required by the Toolkit. The Toolkit Log files contain all error and/or status messages produced by the PGE during processing.

1. Report Log File:
   $CERESHOME/instrument/runlogs/CER1.4P1_LogReport_$SS1_$PS1_0_$CC1_3.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.4P1_LogStatus_$SS1_$PS1_0_$CC1_3.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.4P1_LogUser_$SS1_$PS1_0_$CC1_3.YYYYMMDD
   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. PCF Log File:
   $CERESHOME/instrument/CER1.4P1/rcf/pcf/CER1.1P7_PCF_$SS1_$PS1_0_$CC1_3.YYYYMMDD.log

This log file is created when the PCF is generated and contains a listing of all the environment variables set when the PCF was created along with a listing of all the files used to create this PCF. There is also a listing of any missing optional and mandatory files. The list of existing output data files will only be created if the PGE is run more than once without clean-up.

6.1.2.2 Metadata Evaluation

TBD

6.1.2.3 Evaluation of Comparison Software Output

All comparisons done in Section 6.1.1.1 by the test script should look like the following:

Comparing BDSI file: **CER_BDSI_Terra-FM1_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: **{$CERESHOME}/instrument/CER1.4P1/test_suites CER_BDSI_$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.

6.1.3 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/CER1.4P1/rcf
source temp-<instr>-env.csh
cd $CERESHOME/instrument/CER1.4P1/test_suites
test_cleanup_CER1.4P1.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 Gain Analysis Processing

This section provides general information on how to execute PGE CER1.4P2, which reads a months worth of BDSIs created by CER1.3P1 or CER1.4P1 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 November 1997, Terra (also called AM1), launched in December 1999, Aqua (also called PM1), launched in May 2002, and NPP launched in October 2011. Since TRMM data are no longer being processed; however, the test for these data have been included. 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.

7.1 CER1.4P2 Gain Analysis on the *P6* and *x86* Platforms

7.1.1 Stand-alone Test Procedures

7.1.1.1 Execution

CER1.4P2: TRMM-PFM

setenv PROD no (read input from **$CERESHOME/instrument/data**)
setenv InputArchive $CERESHOME/instrument/data
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
cd $CERESHOME/instrument/CER1.4P2/rcf
CER1.4P2-SGE_Driver.pl -date $CER1_4P2_year$CER1_4P2_month

CER1.4P2: Terra-FM1

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
cd $CERESHOME/instrument/CER1.4P2/rcf
CER1.4P2-SGE_Driver.pl -date $CER1_4P2_year$CER1_4P2_month

CER1.4P2: Terra-FM2

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
cd $CERESHOME/instrument/CER1.4P2/rcf
CER1.4P2-SGE_Driver.pl -date $CER1_4P2_year$CER1_4P2_month

CER1.4P2: Aqua-FM3

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
cd $CERESHOME/instrument/CER1.4P2/rcf
CER1.4P2-SGE_Driver.pl -date $CER1_4P2_year$CER1_4P2_month

CER1.4P2: Aqua-FM4

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
cd $CERESHOME/instrument/CER1.4P2/rcf
CER1.4P2-SGE_Driver.pl -date $CER1_4P2_year$CER1_4P2_month

CER1.4P2: NPP-FM5

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
cd $CERESHOME/instrument/CER1.4P2/rcf
CER1.4P2-SGE_Driver.pl -date $CER1_4P2_year$CER1_4P2_month

7.1.1.2 Exit Codes

0 - Normal Exit,
200 - Fatal Error.

7.1.1.3 Test Summary

CER1.4P2: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3, Aqua-FM4, and NPP-FM5

Total Run Time: 2 min

7.1.2 Evaluation Procedures

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.

CER1.4P2: TRMM-PFM

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P2_PFM.List.

To compare the output data files:

```
unlimit
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-pfm-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
compare_CER1.4P2_files.pl
```

CER1.4P2: Terra-FM1

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P2_FM1.List.

To compare the output data files:

```
cd $CERESHOME/instrument/CER1.4P2/rcf
unlimit
source temp-fm1-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
compare_CER1.4P2_files.pl
```

CER1.4P2: Terra-FM2

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P2_FM2.List.

To compare the output data files:

unlimit
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm2-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
compare_CER1.4P2_files.pl

CER1.4P2: Aqua-FM3

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P2_FM3.List.

To compare the output data files:

unlimit
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm3-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
compare_CER1.4P2_files.pl

CER1.4P2: Aqua-FM4

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P2_FM4.List.

To compare the output data files:

unlimit
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm4-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
compare_CER1.4P2_files.pl

CER1.4P2: NPP-FM5

The exact filenames can be found in
$CERESHOME/instrument/data_exp/Expected_Output_CER1.4P2_FM5.List.

To compare the output data files:

unlimit
cd $CERESHOME/instrument/CER1.4P2/rcf
source temp-fm5-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
compare_CER1.4P2_files.pl

7.1.2.1 Log and Status File Results

There are five Log files associated with this PGE. The first three listed below are required by the Toolkit. The Toolkit Log files contain all error and/or status messages produced by the PGE during processing.

1. Report Log File:
   $CERESHOME/instrument/runlogs/CER1.4P2_LogReport_$SS1_$PS1_0_$CC1_4.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.4P2_LogStatus_$SS1_$PS1_0_$CC1_4.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.4P2_LogUser_$SS1_$PS1_0_$CC1_4.YYYYMMDD
   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. PCF Log File:
   $CERESHOME/instrument/CER1.4P2/rcf/pcf/CER1.4P2_PCF_$SS1_$PS1_0_$CC1_4.YYYYMMDD.log

This log file is created when the PCF is generated and contains a listing of all the environment variables set when the PCF was created along with a listing of all the files used to create this PCF. There is also a listing of any missing optional and mandatory files. The list of existing output data files will only be created if the PGE is run more than once without clean-up.

7.1.2.2 Metadata Evaluation

TBD

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 GAIN file: **CER_GAIN_Terra-FM1_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/CER1.4P2/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.

7.1.3 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/CER1.4P2/rcf
source temp-<instr>-env.csh
cd $CERESHOME/instrument/CER1.4P2/test_suites
test_cleanup_CER1.4P2.pl
```

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

8.0 Test and Evaluation Procedures for BDS Reprocessing

This section provides general information on how to execute PGE CER1.4P3, which reads a Science BDS created by CER1.1P8 and recalculates the radiances based on updated gain coefficients, creating an updated BDS and IESs. Default processing mode is Edition3.

The IPS is designed to process the Level-0 (LZ) and QuickLook (QL) data from three satellites: TRMM, launched in November 1997, Terra (also called AM1), launched in December 1999, Aqua (also called PM1) launched in May 2002 and NPP launched in October 2011. 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.

8.1 CER1.4P3 BDS/IES Recalculate Radiances on the *x86* Platform

8.1.1 Stand-alone Test Procedures

8.1.1.1 Execution

NOTE: This PGE is being delivered as x86-only and does not require a -platform option.

CER1.4P3: Terra-FM1

Edition3:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)

Test 1:

```
cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm1 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end
    $endyear$endmonth$endday
```

Edition4:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)

Test 1:

```
cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm1 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -date $year$month$day -ed 4
```

Test 2:

```
cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm1 2
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end
    $endyear$endmonth$endday -ed 4
```

CER1.4P3: Terra-FM2

Edition3:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)

Test 1:

```
cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm2  1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end
    $endyear$endmonth$endday
```

Edition4:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)

Test 1:

```
cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm2  1
cd $CERESHOME/instrument/CER1.4P3/test_suites
```

test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -date $year$month$day -ed 4

Test 2:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm2 2
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -ed 4

CER1.4P3: Aqua-FM3

Edition3:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)

Test 1:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm3 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday

Edition4:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to “no”)

Test 1:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm3 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -date $year$month$day -ed 4

Test 2:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm3 2
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -ed 4

CER1.4P3: Aqua-FM4

Edition3:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")

Test 1:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm4 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday

Edition4:

setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")

Test 1:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm4 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -date $year$month$day -ed 4

Test 2:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm4 2
cd $CERESHOME/instrument/CER1.4P3/test_suites

test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -ed 4

CER1.4P3: NPP-FM5

Edition1:

unlimit
setenv PROD yes (read input from **/ASDC_archive/CERES**)
setenv InputArchive /ASDC_archive/CERES (only if PROD previously set to "no")

Test 1:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed1.csh fm5 1
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -ed 1

Test 2:

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed1.csh fm5 2
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl
cd $CERESHOME/instrument/CER1.4P3/rcf
CER1.4P3-SGE_Driver.pl -start $year$month$day -end $endyear$endmonth$endday -ed 1

8.1.1.2 Exit Codes

0 - Normal Exit,
200 - Fatal Error.

8.1.1.3 Test Summary

CER1.4P3: TRMM-PFM, Terra-FM1, Terra-FM2, Aqua-FM3, Aqua-FM4 and NPP-FM5

Total Run Time (*x86*): 20 min

8.1.2 Evaluation Procedures

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.

CER1.4P3: Terra-FM1

To check that all the expected output products were created and to compare the created output data:

Edition3:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm1 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Terra-FM1_Edition3_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Terra-FM1_Edition3_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Edition4:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm1 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Terra-FM1_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Terra-FM1_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm1 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Terra-FM1_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Terra-FM1_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.4P3: Terra-FM2

To check that all the expected output products were created and to compare the created output data:

Edition3:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm2 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Terra-FM2_Edition3_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Terra-FM2_Edition3_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Edition4:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm2 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Terra-FM2_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Terra-FM2_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm2 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Terra-FM2_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Terra-FM2_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.4P3: Aqua-FM3

To check that all the expected output products were created and to compare the created output data:

Edition3:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm3 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Aqua-FM3_Edition3_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Aqua-FM3_Edition3_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Edition4:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm3 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Aqua-FM3_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Aqua-FM3_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm3 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Aqua-FM3_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Aqua-FM3_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.4P3: Aqua-FM4

To check that all the expected output products were created and to compare the created output data:

Edition3:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed3.csh fm4 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Aqua-FM4_Edition3_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Aqua-FM4_Edition3_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Edition4:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm4 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

********** for PGE CER1.4P3 – Aqua-FM4_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Aqua-FM4_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed4.csh fm4 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

NOTE: If the following message is seen during the **check_pge_test_data.pl**, check the SGE log to ensure that the job(s) completed successfully:

********** for PGE CER1.4P3 – Aqua-FM4_Edition4_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_Aqua-FM4_Edition4_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

CER1.4P3: NPP-FM5

To check that all the expected output products were created and to compare the created output data:

Edition1:

unlimit

Test 1:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed1.csh fm5 1
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

********** for PGE CER1.4P3 – NPP-FM5_Edition1_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_NPP-FM5_Edition1_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

Test 2:

NOTE: Comparisons cannot be run on the head node (ab01). Log onto either a *P6* (ba102) or an *x86* (aa09) blade to run the following commands.

cd $CERESHOME/instrument/CER1.4P3/rcf
source temp-env-Ed1.csh fm5 2
cd $CERESHOME/instrument/test_suites

The following command checks that the test run created all of the expected output data, by comparing filenames from the data_exp directory to the files created by the test:

check_pge_test_data.pl

The following command compares the test results to the expected output files:

compare_test_files.pl

********** for PGE CER1.4P3 – NPP-FM5_Edition1_$CC1_5 **********

****** Checking that all data was created for -- Test $Test -- $month/$day/$year thru $endmonth/$endday/$endyear ******

----- Checking that all data for YYYYMMDD was created -----

-- Files missing for YYYYMMDD, check $CERESHOME/instrument/test_suites/CER1.4P3_NPP-FM5_Edition1_$CC1_5-YYYYMMDD-Missingfiles.log to see the list of missing files --

8.1.2.1 Log and Status File Results

There are five Log files associated with this PGE. The first three listed below are required by the Toolkit. The Toolkit Log files contain all error and/or status messages produced by the PGE during processing.

1. Report Log File:
   $CERESHOME/instrument/runlogs/CER1.4P3_LogReport_$SS1_$PS1_1_$CC1_5.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.4P3_LogStatus_$SS1_$PS1_1_$CC1_5.YYYYMMDD
   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:
   $CERESHOME/instrument/runlogs/CER1.4P3_LogUser_$SS1_$PS1_1_$CC1_5.YYYYMMDD
   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. PCF Log File:
   $CERESHOME/instrument/CER1.4P3/rcf/pcf/CER1.4P3_PCF_$SS1_$PS1_1_$CC1_5.YYYYMMDD.log

This log file is created when the PCF is generated and contains a listing of all the environment variables set when the PCF was created along with a listing of all the files used to create this PCF. There is also a listing of any missing optional and mandatory files. The list of existing output data files will only be created if the PGE is run more than once without clean-up.

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 BDS file: **CER_BDS_Terra-FM1_Edition3_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_$CC1_5.{$year}{$month}{$day} -- ERROR**

--- Check file: **{$CERESHOME}/instrument/CER1.4P3/test_suites CER_BDS_$SS1_$PS1_1_$CC1_5.{$year}{$month}{$day}.compare**

NOTE: The BDS and IES files in the directory matching the $SS1, $PS1_1, and $CC1_5 will be compared; this includes BQCBDS, BQCIES, and Log Files.

8.1.3 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/CER1.4P3/rcf
source temp-env-Edx.csh <instr> t
(where x = 1, 2, 3 or 4 (edition number), and <instr> = pfm, fm1, fm2, fm3, fm4 or fm5, and t = 1 or 2 (test number))
cd $CERESHOME/instrument/CER1.4P3/test_suites
test_cleanup_CER1.4P3.pl

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 Science 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
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NPP	NPOESS Preparatory Project
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

```
ancillary/
        CER1.1P8
        CER1.2P1
        CER1.4P1
        CER1.4P2
        CER1.4P3
bin/
        EOS/
CER1.0P2
        bin/
        rcf/
                pcf/
                        summary/
        src/
        test_suites/
CER1.1P8
        bin/
        rcf/
                pcf/
        src/
                c++/
        test_suites/
CER1.2P1
        bin/
        lib/
        rcf/
                pcf/
        src/
        test_suites/
CER1.4P1
        bin/
        lib/
        rcf/
```

Directory /CERES/instrument

```
                pcf/
        src/
                output
        test_suites/
CER1.4P2
        bin/
        lib/
        rcf/
                pcf/
        src/
                instrument
                output
                utilities
        test_suites/
CER1.4P3
        bin/
        lib/
        rcf/
                pcf
        src/
                output
                science
        test_suites/
data/
         AM1ATTNF
         AM1EPHN0
         BDS
         BDSD
         BDSF
         BDSG
         BDSI
         BDSM
         BDSP
         BDSS
         GAIN
         IES
```

Directory /CERES/instrument

```
        Level0
        MEM
        NPPATT
        NPPEPH
        NPPRDR
        PM1ATTNR
        PM1EPHND
        PRES8
        QCSW
        QCTL
        QCWN
        TRMM_ED9D
        TRMM_G500
data_exp/
        CER1.1P8/
                FM1/
                FM2/
                FM3/
                FM4/
                FM5/
                PFM/
        CER1.2P1/
                FM1/
                FM2/
                FM3/
                FM4/
                FM5/
                PFM/
        CER1.4P1/
                FM1/
                FM2/
                FM3/
                FM4/
                FM5/
                PFM/
        CER1.4P2/
```

Directory /CERES/instrument

```
                FM1/
                FM2/
                FM3/
                FM4/
                FM5/
                PFM/
        CER1.4P3/
                FM1/
                FM2/
                FM3/
                FM4/
                FM5/
                PFM/
lib/
        HDF_utils
rcf/
runlogs/
        CER1.1P8
        CER1.4P3
sge_logs/
        CER1.0P2
        CER1.1P8
        CER1.2P1
        CER1.4P1
        CER1.4P2
        CER1.4P3
smf/
test_suites/
web/
```

Appendix C
File Description Tables

C.1 Production Script

Table C.1-1. Production Scripts

File Name	Directory	Format	Description
temp-pfm-env.csh	$CERESHOME/instrument/ CER1.2P1/rcf CER1.4P1/rcf CER1.4P2/rcf	ASCII	Test environment set-up script for TRMM-PFM
temp-fm1-env.csh	$CERESHOME/instrument/ CER1.2P1/rcf CER1.4P1/rcf CER1.4P2/rcf	ASCII	Test environment set-up script for Terra-FM1
temp-fm2-env.csh	$CERESHOME/instrument/ CER1.2P1/rcf CER1.4P1/rcf CER1.4P2/rcf	ASCII	Test environment set-up script for Terra-FM2
temp-fm3-env.csh	$CERESHOME/instrument/ CER1.2P1/rcf CER1.4P1/rcf CER1.4P2/rcf	ASCII	Test environment set-up script for Aqua-FM3
temp-fm4-env.csh	$CERESHOME/instrument/ CER1.2P1/rcf CER1.4P1/rcf CER1.4P2/rcf	ASCII	Test environment set-up script for Aqua-FM4
temp-env.csh	$CERESHOME/instrument/ CER1.1P8/rcf	ASCII	Test environment set-up script for all instruments (PFM, FM1, FM2, FM2, FM4 & FM5)
temp-env-Ed1.csh	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Test environment set-up script for Edition1 NPP
temp-env-Ed2.csh	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Test environment set-up script for Edition2 Terra, Aqua and NPP
temp-env-Ed3.csh	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Test environment set-up script for Edition3 Terra, Aqua and NPP
temp-env-Ed4.csh	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Test environment set-up script for Edition4 Terra, Aqua and NPP
temp-fm5-env.csh	$CERESHOME/instrument/ CER1.2P1/rcf CER1.4P1/rcf CER1.4P2/rcf	ASCII	Test environment set-up script for NPP-FM5
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
CER1.0P2-SGE_Driver.pl	$CERESHOME/instrument/ CER1.0P1/rcf	ASCII	Perl script to process one or more days of CER1.0P2 thru UGE

Table C.1-1. Production Scripts

File Name	Directory	Format	Description
CER1.0P2-Launch.pl	$CERESHOME/instrument/ CER1.0P1/rcf	ASCII	Perl script used to launch jobs to UGE for CER1.0P2
run_CER1.0P2.pl	$CERESHOME/instrument/ CER1.0P2/rcf	ASCII	Perl script which executes the NPP-FM5 RDR Preprocessor
CER1.1P8-SGE_Driver.pl	$CERESHOME/instrument/ CER1.1P8/rcf	ASCII	Perl script to process one or more days of CER1.1P8 thru UGE
CER1.1P8-Launch.pl	$CERESHOME/instrument/ CER1.1P8/rcf	ASCII	Perl script used to launch jobs to UGE for CER1.1P8
run_CER1.1P8.pl	$CERESHOME/instrument/ CER1.1P8/rcf	ASCII	Perl script which executes the main processor for PGE CER1.1P8
CER1.2P1-SGE_Driver.pl	$CERESHOME/instrument/ CER1.2P1/rcf	ASCII	Perl script to process one or more days of CER1.2P1 thru UGE
CER1.2P1-Launch.pl	$CERESHOME/instrument/ CER1.2P1/rcf	ASCII	Perl script used to launch jobs to UGE for CER1.2P1
run_CER1.2P1.pl	$CERESHOME/instrument/ CER1.2P1/rcf	ASCII	Perl script which executes the BDS to Pre-ES8 conversion, PGE CER1.2P1
CER1.4P1-SGE_Driver.pl	$CERESHOME/instrument/ CER1.4P1/rcf	ASCII	Perl script to process one or more days of CER1.4P1 thru UGE
CER1.4P1-Launch.pl	$CERESHOME/instrument/ CER1.4P1/rcf	ASCII	Perl script used to launch jobs to UGE for CER1.4P1
run_CER1.4P1.pl	$CERESHOME/instrument/ CER1.4P1/rcf	ASCII	Perl script which executes the BDS to BDSI subset PGE CER1.4P1
CER1.4P2-SGE_Driver.pl	$CERESHOME/instrument/ CER1.4P2/rcf	ASCII	Perl script to process one or more days of CER1.4P2 thru UGE
CER1.4P2-Launch.pl	$CERESHOME/instrument/ CER1.4P2/rcf	ASCII	Perl script used to launch jobs to UGE for CER1.4P2
run_CER1.4P2.pl	$CERESHOME/instrument/ CER1.4P2/rcf	ASCII	Perl script which executes the Gain Analyzer program PGE CER1.4P2
CER1.4P3-SGE_Driver.pl	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Perl script to process one or more days of CER1.4P3 thru UGE
CER1.4P3-Launch.pl	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Perl script used to launch jobs to UGE for CER1.4P3
run_CER1.4P3.pl	$CERESHOME/instrument/ CER1.4P3/rcf	ASCII	Perl script which executes the BDS Baseline to BDS Edition2/3 PGE CER1.4P3
INSTRUMENT-env.csh	$CERESHOME/instrument/rcf	ASCII	C-Shell script which sets up the SCF test instrument environment
CER1.0P2-env.csh	$CERESHOME/instrument/ CER1.0P2/rcf	ASCII	C-shell script which sets up the SCF test instrument environment for CER1.0P2
CER1.0P2_compile-env.csh	$CERESHOME/instrument/ CER1.0P2/rcf	ASCII	C-shell script which sets up the environment necessary for compilation of PGE CER1.0P2
CER1.4P1_compile-env.csh	$CERESHOME/instrument/ CER1.4P1/rcf	ASCII	C-shell script which sets up the environment necessary for compilation of PGE CER1.4P1

Table C.1-1. Production Scripts

File Name	Directory	Format	Description
CER1.4P2_compile-env.csh	$CERESHOME/instrument/CER1.4P2/rcf	ASCII	C-shell script which sets up the environment necessary for compilation of PGE CER1.4P2
CER1.4P3_compile.pl	$CERESHOME/instrument/CER1.4P3/rcf	ASCII	Perl script which compiles PGE CER1.4P3
CER1.1P8_compile.pl	$CERESHOME/instrument/CER1.1P8/rcf	ASCII	Perl script which compiles PGE CER1.1P8
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
CER1.0P2_pcf_gen.pl	$CERESHOME/instrument/CER1.0P2/rcf	ASCII	PCF generator for CER1.0P2
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
CER1.1P8_pcf_gen.pl	$CERESHOME/instrument/CER1.1P8/rcf	ASCII	PCF generator for CER1.1P8
CER1.4P1_pcf_gen.pl	$CERESHOME/instrument/CER1.4P1/rcf	ASCII	PCF generator that takes the output file from CER1.4P1_input_find.pl as input to create the PCF
CER1.4P2_pcf_gen.pl	$CERESHOME/instrument/CER1.4P2/rcf	ASCII	PCF generator that takes the output file from CER1.4P2_input_find.pl as input to create the PCF
CER1.4P3_pcf_gen.pl	$CERESHOME/instrument/CER1.4P3/rcf	ASCII	PCF generator that takes the output file from CER1.4P3_input_find.pl as input to create the PCF

C.2 Executables

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

File Name[1]	Format	Description
PGE_CER1.0P1	Binary	TRMM IES Simulator executable (in subdirectory CER1.0P1)
PGE_CER1.0P2_$CPUTYPE.exe	Binary	NPP-FM5 RDR Preprocessor executable
PGE_CER1.1P8_$CPUTYPE.exe	Binary	Instrument executable for PGE CER1.1P8, Instrument Main processor for all spacecraft/instruments
PGE_CER1.2P1_$CPUTYPE.exe	Binary	BDS to PRE-ES8 conversion executable
PGE_CER1.4P1_$CPUTYPE.exe	Binary	BDS to BDSI subsetter executable
PGE_CER1.4P2_$CPUTYPE.exe	Binary	Gain Analyzer executable
PGE_CER1.4P3_$CPUTYPE.exe	Binary	BDS Baseline to BDS Edition1/2/3/4 executable (C++)

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
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
MCF_IES	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[1]

File Name	Directory	Format	Description
CER1.0P1_PCF_TRMM-SIM_$PS1_0_$CC1_0.{$L0_year}{$L0_month}{$L0_day}	$CERESHOME/instrument/CER1.0P1/rcf	ASCII	Process Control file for TRMM Simulated IES
CER1.0P2_PCF_NPP-FM5_$PS1_02_$CC1_02_$Prod_Date.YYYYMMDD	$CERESHOME/instrument/CER1.0P2/rcf	ASCII	Process Control file for the NPP-FM5 RDR preprocessor
CER1.2P1_PCF_$SS1_$PS1_0_$CC1.{$L0_year}{$L0_month}{$L0_day}	$CERESHOME/instrument/CER1.2P1/rcf	ASCII	BDS to Pre-ES8 Conversion Process Control File for Terra, Aqua and NPP

Table C.4-2. Process Control Files[1]

File Name	Directory	Format	Description
CER1.4P1_PCF_$SS1_$PS1_$CC1_3.{$CER1_4P1_year} {$CER1_4P1_month}{$CER1_4P1_day}	$CERESHOME/instrument/CER1.4P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for Terra, Aqua and NPP
CER1.4P1_PCF_$SS1 $PS1_0_$CC1_3.{$CER1_4P1_year} {$CER1_4P1_month}{$CER1_4P1_day}	$CERESHOME/instrument/CER1.4P1/rcf	ASCII	BDS/BDSD Internal Cal Subset to BDSI Process Control File for Terra, Aqua and NPP
CER1.4P2_PCF_$SS1_$PS1_0_$CC1_4.{$CER1_4P2_year} {$CER1_4P2_month}	$CERESHOME/instrument/CER1.4P2/rcf	ASCII	Gain Analyzer Process Control File for Terra, Aqua and NPP
CER1.4P3_PCF_$SS1_$PS1_1_$CC1_5.{$year} {$month}{$day}	$CERESHOME/instrument/CER1.4P3/rcf	ASCII	BDS/IES Edition1/2/3/4 processor Process Control File for Terra, Aqua (Edition2/3/4) and NPP (Edition1)
CER1.1P8_PCF_$SS1_$PS1_0_$CC1.{$L0_year} {$L0_month}{$L0_day}	$CERESHOME/instrument/CER1.1P8/rcf	ASCII	Level Zero Process Control File for $SS1 (TRMM, Terra, Aqua or NPP all instruments)

1. 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
readHDFfuncs.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
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 $InputArchive/CERES/AM1ATTNF/YYYY		
AM1ATTNF001{$L0_month}({$L0_day}-1) {$L0_year}2200000000000 or AM1ATTNF.A{$L0_year}({$L0_DOY}-1). 2200.001.yyyydddhhmmss	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}{$L0_DOY}.0000.001. yyyydddhhmmss	Binary	Terra SpaceCraft Attitude File
AM1ATTNF001{$L0_month}{$L0_day} {$L0_year}0200000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.0200.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day} {$L0_year}0400000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.0400.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day} {$L0_year}0600000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.0600.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day} {$L0_year}0800000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.0800.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day} {$L0_year}1000000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.1000.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day} {$L0_year}1200000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.1200.001. yyyydddhhmmss	Binary	Terra Definitive Attitude File

Table C.6-1. Ancillary Input Data

File Name	Format	Description
AM1ATTNF001{$L0_month}{$L0_day}{$L0_year}1400000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.1400.001.yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day}{$L0_year}1600000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.1600.001.yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day}{$L0_year}1800000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.1800.001.yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day}{$L0_year}2000000000000 or AM1ATTNF.A{$L0_year}{$L0_DOY}.2000.001 yyyydddhhmmss	Binary	Terra Definitive Attitude File
AM1ATTNF001{$L0_month}{$L0_day}{$L0_year}2200000000000 or AM1ATTNF.A{$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)
The following files can be found in $InputArchive/CERES/AM1EPHN0/YYYY		
AM1EPHN0001{$L0_month}({$L0_day}-1){$L0_year}2200000000000 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)
AM1EPHN0001{$L0_month}{$L0_day}{$L0_year}0000000000000 or AM1EPHN0.A{$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

Table C.6-1. Ancillary Input Data

File Name	Format	Description
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}0600000000000 or AM1EPHN0.A{$L0_year}{$L0_DOY}.0600.001.yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{$L0_month}{$L0_day}{$L0_year}0800000000000 or AM1EPHN0.A{$L0_year}{$L0_DOY}.0800.001.yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{$L0_month}{$L0_day}{$L0_year}1000000000000 or AM1EPHN0.A{$L0_year}{$L0_DOY}.1000.001.yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{$L0_month}{$L0_day}{$L0_year}1200000000000 or AM1EPHN0.A{$L0_year}{$L0_DOY}.1200.001.yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{$L0_month}{$L0_day}{$L0_year}1400000000000 or AM1EPHN0.A{$L0_year}{$L0_DOY}.1400.001.yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{$L0_month}{$L0_day}{$L0_year}1600000000000 or AM1EPHN0.A{$L0_year}{$L0_DOY}.1600.001.yyyydddhhmmss	Binary	Terra Ephemeris File
AM1EPHN0001{$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

Table C.6-1. Ancillary Input Data

File Name	Format	Description
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)
The following files can be found in $InputArchive/CERES/PM1EPHND/YYYY		
PM1EPHND.P{$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
The following files can be found in $InputArchive/CERES/PM1ATTNR/YYYY		
PM1ATTNR.P{$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}{$L0_DOY}.0600.001.yyyydddhhmmss	Binary	Aqua Definitive Attitude File
PM1ATTNR.P{$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

Table C.6-1. Ancillary Input Data

File Name	Format	Description
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)
The following files can be found in $InputArchive/CERES/NPPATT/YYYY		
NPPATT.NYYYYDOY-1.$Prod_Date.DAT	Binary	NPP Attitude data for the previous data date YYYYDOY-1 created on $Prod_Date
NPPATT.NYYYYDOY.$Prod_Date.DAT	Binary	NPP Attitude data for data date YYYYDOY created on $Prod_Date
NPPATT.NYYYYDOY+1.$Prod_Date.DAT	Binary	NPP Attitude data for data date YYYYDOY+1 created on $Prod_Date
The following files can be found in $InputArchive/CERES/NPPEPH/YYYY		
NPPEPH.NYYYYDOY-1.$Prod_Date.DAT	Binary	NPP Ephemeris data for the previous data date YYYYDOY-1 created on $Prod_Date
NPPEPH.NYYYYDOY.$Prod_Date.DAT	Binary	NPP Ephemeris data for data date YYYYDOY created on $Prod_Date
NPPEPH.NYYYYDOY+1.$Prod_Date.DAT	Binary	NPP Ephemeris data for data date YYYYDOY+1 created on $Prod_Date

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_CER1.0P2_NPP-FM5_$PS1_02_ {$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_CER1.1P8_$SS1_$PS1_0_ {$L0_year}{$L0_month}{$L0_day}.temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.2P1_$SS1_$PS1_0_ {$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_CER1.4P1_$SS1_$PS1_0_ {$CER1_4P1_year}{$CER1_4P1_month} {$CER1_4P1_day}.temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.4P2_$SS1_$PS1_0_ {$CER1_4P2_year}{$CER1_4P2_month} .temp	ASCII	Temporary file used by the ToolKit for writing Metadata to an output file. Deleted by run script at the completion of a run.
MCFWrite_CER1.4P3_$SS1_$PS1_1 {$year}{$month} {$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