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

Data Management System

Operator's Manual

Geolocate and Calibrate Earth Radiances
(Subsystem 1.0)

CER1.0P2, CER1.1P1, CER1.1P2, CER1.2P1, CER1.1P3, CER1.1P4, CER1.1P5, CER1.1P6, CER1.1P7, CER1.1P8, CER1.3P1, CER1.3P2, CER1.3P3

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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	• Modified release and version number.	All
			• Changed "Terra" to "Aqua" for PGEs CER1.1P5 and CER1.1P6.	6.0 & 7.0
			• Changed "FM1" and "FM2" to "FM3" and "FM4" for PGE CER1.1P5.	6.0
			• Updated format to comply with standards.	All
11/07/01	R4V2	306	• Modified PGE CER1.1P3 to only process when at least 90 Mb of Level-0 data is available.	4.3.1a
			• Updated format to comply with standards.	All
01/22/02	R4V3	319	• Added new PGE CER1.3P1.	8.0, App. C
			• Updated format to comply with standards.	All
03/21/02	R4V4	324	• Added preliminary draft information for CER1.3P2.	9.0
			• Changed script names to include PGE Name.	1.4, 1.5, 2.4, 2.5, 3.4, 4.4, 5.4, 6.4, 7.4
			• Added new file_cleanup script and instructions.	1.4.5, 2.4.5, 3.4.5, 4.4.5, 5.4.5, 6.4.5, 7.4.5, 8.4.5
			• Updated expected output tables.	1.6, 2.6, 3.6, 4.6, 5.6, 6.6, 7.6, 8.6
			• Added new exit code for CER1.2P1 to indicate no usable data to write to Pre-ES8.	3.5.2
			• Changed primary contact information.	8.0
			• Fixed error in filenames for CER1.3P1, CC code is CC1_3, not CC1.	8.4.1, 8.5.3
			• Updated format to comply with standards.	All
04/11/02	R4V5	336	• Updated information for CER1.3P2 to create final version.	9.0

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
04/11/02 (Cont'd)	R4V5	336	• Added information for CER1.3P2.	App. C & D
			• Added Special Case Considerations.	8.4.4
			• Fixed error in input filename.	8.3.1, 8.3.2
			• Fixed environment script name.	8.2.2, 8.4
			• Updated format to comply with standards.	All
06/06/02	R4V6	355	• Updated Destination for Expected Output File Listing.	Table 1-6, Table 2-5, Table 3-6, Table 4-6, Table 5-5, Table 6-6, Table 7-5, Table 8-6, Table 9-6
			• Added PGE CER1.3P3.	10.0
			• Added new CER1.3P3 info to Appendix C.	App. C.12
			• Updated CER1.3P3 in Appendix D.	App. D, D-1
			• Updated format to comply with standards.	All
07/03/02	R4V7	370	• Added new filenaming conventions for Terra and Aqua ephemeris and attitude data files. Existing files will not be renamed, so both filenaming conventions are listed in this document.	3.3.2, 4.3.2, 4.3.3, 6.3.2, 6.3.3, 10.3.2, 10.3.3
			• Updated format to comply with standards.	All
03/24/04	R4V8	514	• Added a new Input Dataset Name section.	10.3.4
			• Edited filename.	10.4.3 & 10.4.5
			• Changed /CERESHOME to $CERESHOME.	All
			• Updated format to comply with standards.	All
08/20/04	R4V9	552	• Updated Contacts.	1.1.1, 2.1.1, 4.1.1, 5.1.1, 6.1.1, 7.1.1, 8.1.1, 10.1.1
			• Updated to include new options for the ASCII Input File generator.	1.2.1, 2.2.1, 4.2.1, 5.2.1, 6.2.1, 7.2.1, 10.2.1

Document Revision Record

SCCR Approval Date	Release/ Version Number	SCCR Number	Description of Revision	Section(s) Affected
08/20/04 (Cont'd)	R4V9	552	• Took out old filenaming convention for Aqua ephemeris and attitude data files. Removed alternate dataset for Terra Attitude; no longer being received. Fixed filenames for Count Conversion data files. • Updated format to comply with standards.	3.3.2, 4.3.3, 6.3.2, 6.3.3, 10.3.2, 10.3.3, & 10.3.4 All
01/26/05	R4V10	573	• Added new environment variables set in INSTRUMENT_env_PROD.csh and ENVinstrument-env.csh. • Updated format to comply with standards.	1.2.2, 2.2.2, 3.2.2, 4.2.2, 5.2.2, 6.2.2, & 7.2.2 All
06/22/05	R4V11	589	• Updated to include new flags to turn off radiance QC checks. Needed to process data on Aqua-FM4 after the SW anomaly which began 3/30/05. • Added special instructions for creating the ASCII input file for Aqua-FM4 after the SW anomaly, which began on 3/30/05. • Updated format to comply with standards.	1.2.1, 2.2.1, 4.2.1, 5.2.1, 6.2.1, 7.2.1 6.4.1 All
11/18/05	R4V12	599	• Updated BDS file sizes due to addition of new Solar and Lunar Angle Additions per Requirement #1-5. • CER_BQCIES ... expected output file was changed from "m" to "o." • Updated format to comply with standards.	1.6, 2.6, 4.6, 5.6, 6.6, 7.6, 8.6, 10.6 Table 10-6 All
04/14/06	R4V13	621	• Updated Table 10-4 to include start and stop parameters. • A special case was added for 12/31/2005 for Terra and Aqua, due to the addition of a leap second on this date. • Updated format to comply with standards.	10.2.1 10.4.4 All
03/07/08	R5V1	610	• Updated to reflect new directory structure.	All
02/04/09	R5V2	698	• Added new PGE CER1.0P2 NPP Preprocessor.	1.0
04/06/09	R5V3	702	• Updated CER1.2P1 input info to include NPP. • Added new PGE CER1.1P7. • Added preliminary information for new PGE CER1.1P8.	4.3.1, 4.3.2 9.0 10.0

Preface

The Clouds and the Earth's Radiant Energy System (CERES) Data Management System supports the data processing needs of the CERES Science Team research to increase understanding of the Earth's climate and radiant environment. The CERES Data Management Team works with the CERES Science Team to develop the software necessary to support the science algorithms. This software, being developed to operate at the Langley Atmospheric Sciences Data Center (ASDC), produces an extensive set of science data products.

The Data Management System consists of 12 subsystems; each subsystem represents one or more stand-alone executable programs. Each subsystem executes when all of its required input data sets are available and produces one or more archival science products.

This Operator's Manual is written for the data processing operations staff at the Langley ASDC by the Data Management Team responsible for this Subsystem. Each volume describes all Product Generation Executables for a particular subsystem and contains the Runtime Parameters, Production Request Parameters, the required inputs, the steps used to execute, and the expected outputs for each executable included within this Subsystem. In addition, all subsystem error messages and subsequent actions required by the ASDC operations staff are included.

Acknowledgment is given to the CERES Documentation Team for their support in preparing this document.

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Introduction

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

Document Overview

This document, CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 Release 4 Operator's Manual is part of the CERES Subsystem 1.0 Release 4 delivery package provided to the Langley Atmospheric Sciences Data Center (ASDC). It provides a description of the CERES Geolocate and Calibrate software and explains the procedures for executing the software Process Generation Executives (PGEs). A description of acronyms and abbreviations is provided in Appendix A; a comprehensive list of error messages that can be generated during the execution of the PGEs, CER1.1P1, CER1.1P2, CER1.2P1, CER1.1P3, CER1.1P4, CER1.1P5, CER1.1P6, CER1.3P1, and CER1.3P2 are contained in Appendix B; Sample Input File Listings are provided in Appendix C; and Ancillary Data Files for Subsystem CER1.0 are provided in Appendix D.

This document is organized as follows:

Introduction
Document Overview
Subsystem Overview
1.0 PGEName: CER1.0P2
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3.0 PGEName: CER1.1P2
4.0 PGEName: CER1.2P1
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7.0 PGEName: CER1.1P5
8.0 PGEName: CER1.1P6
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Appendix A - Acronyms and Abbreviations
Appendix B - Error Messages for Subsystem CER1.0
Appendix C - Sample ASCII (PCFin) File Listing(s) for Subsystem CER1.0
Appendix D - Ancillary Data Files for Subsystem CER1.0

Subsystem Overview

CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5, and CER1.1P6 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 Main Processor

The CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5, and CER1.1P6 PGEs run the same Main Processor software. The difference between the six is the type of input data being processed. CER1.1P1 processes complete TRMM 24-hour Level-0 data files, CER1.1P2 processes TRMM Quicklook Level-0 data files, CER1.1P3 processes complete Terra 24-hour Level-0 data files, while CER1.1P4 processes Terra Quicklook Level-0 data files, CER1.1P5 processes complete Aqua 24-hour Level-0 data files, while CER1.1P6 processes Aqua Quicklook Level-0 data files.

The Main Processor converts CERES Level-0 data into CERES Level-1B data. It converts all raw radiance values into filtered radiances and geolocates each of the CERES footprints at both the Earth's surface and at the Top-of-Atmosphere (TOA). It also converts all raw instrument data (voltages and temperatures) to engineering units. There are four types of Level-0 data which are ingested by the ASDC for processing: these are Science (APID=54, 131, 141, 157 and 167), Calibration (APID=55, 132, 142, 158 and 168), Diagnostic (APID=56, 133, 143, 159 and 169), and Attitude (APID=500 for TRMM only) data. The Main Processor only processes Science, Calibration, and Diagnostic data. Attitude data is preprocessed by the EOSDIS Core System (ECS) provided DPREP software before it is used by the Main Processor for geolocation calculations.

The output of the Subsystem 1.0 Main Processor consists of several Hierarchical Data Format (HDF) files designated: BDS, BDSD, BDSF, BDSG, BDSM, BDSP, BDSS, and up to 24 IESs. The BDS is generated from a Science Level-0 file, the BDSS is generated from a Solar Calibration Level-0 file, while the remainder of the BDSx's are generated from a Diagnostic Level-0 file. Main Processor execution will not necessarily produce one of each of the above files; instead, it may create any combination of the above files. For example, CER1.1P2, CER1.1P4 and CER1.1P6 will not create any IES files and will create only one type of BDS, depending on which type of data was processed (Science, Calibration, or Diagnostic).

CER1.1P7 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 Main Processor for NPP-FM5

The CER1.1P7 Main Processor software processes complete NPP-FM5 24-hour Level-0 data files.

The Main Processor converts CERES Level-0 data into CERES Level-1B data. It converts all raw radiance values into filtered radiances and geolocates each of the CERES footprints at both the Earth's surface and at the Top-of-Atmosphere (TOA). It also converts all raw instrument data (voltages and temperatures) to engineering units. There are four types of Level-0 data which are ingested by the ASDC for processing: these are Science (APID=149), Calibration (APID=147), Diagnostic (APID=150).

The output of the Subsystem 1.0 Main Processor for NPP-FM5 consists of several Hierarchical Data Format (HDF) files designated: BDS, BDSD, BDSF, BDSG, BDSM, BDSP, BDSS, and up to 24 IESs. The BDS is generated from a Science Level-0 file, the BDSS is generated from a Solar Calibration Level-0 file, while the remainder of the BDSx's are generated from a Diagnostic Level-0 file. Main Processor execution will not necessarily produce one of each of the above files; instead, it may create any combination of the above files. For example, CER1.1P7 will not create any BDSS files unless there is Calibration data available for the processed data date.

CER1.1P8 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 Main Processor (C++)

The CER1.1P8 runs the Instrument Main Processor software for TRMM 24-hour Level-0 data files, Terra 24-hour Level-0 data files, Aqua 24-hour Level-0 data files and NPP 24-hour data files.

The Main Processor converts CERES Level-0 data into CERES Level-1B data. It converts all raw radiance values into filtered radiances and geolocates each of the CERES footprints at both the Earth's surface and at the Top-of-Atmosphere (TOA). It also converts all raw instrument data (voltages and temperatures) to engineering units. There are four types of Level-0 data which are ingested by the ASDC for processing: these are Science (APID=54, 131, 141, 149, 157 and 167), Calibration (APID=55, 132, 142, 147, 158 and 168), Diagnostic (APID=56, 133, 143, 150, 159 and 169), and Attitude (APID=500 for TRMM only) data. The Main Processor only processes Science, Calibration, and Diagnostic data. Attitude data is preprocessed by the EOSDIS Core System (ECS) provided DPREP software before it is used by the Main Processor for geolocation calculations.

The output of the Subsystem 1.0 Main Processor consists of several Hierarchical Data Format (HDF) files designated: BDS, BDSD, BDSF, BDSG, BDSM, BDSP, BDSS, and up to 24 IESs. The BDS is generated from a Science Level-0 file, the BDSS is generated from a Solar Calibration Level-0 file, while the remainder of the BDSx's are generated from a Diagnostic Level-0 file. Main Processor execution will not necessarily produce one of each of the above files; instead, it may create any combination of the above files. For example, CER1.1P8 will not create any BDSS files unless there is Calibration data available for the processed data date.

CER1.2P1 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 BDS to Pre-ES8 Conversion Postprocessor

CER1.2P1 executes the BDS to Pre-ES8 Conversion Postprocessor. CER1.2P1 reads a BDS file created by CER1.1P1, CER1.1P3 or CER1.1P5 and generates a binary PRES8 file which is used by the CERES Processors for ERBE-like Inversion to Instantaneous TOA Fluxes, Subsystem 2.

CER1.3P1, CER1.3P2, and CER1.3P3 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 Gain Analysis and BDS Reprocessing

CER1.3P1 reads the BDS and BDSD looking for internal calibration events. When an internal calibration event is detected, the PGE writes out the information as a subset of the BDS/BDSD as a BDSI. CER1.3P2 reads in all the BDSIs for a month and analyzes the internal calibration events to create gain trend files, which are used by analysts to determine if there has been a shift of the gain coefficients. CER1.3P3 is then run to reprocess the BDS data, using updated count conversion data supplied by the analysts, to create updated BDSs for release to the public.

CER1.0P2 - CERES (FM-5) NPP Preprocessor, NPP HDF5 Raw Data Records to Level-0

CER1.0P2 is specific to the NPOESS Preparatory Project (NPP). This PGE preprocesses HDF5 Raw Data Records (RDRs) sent by the the Interface Data Processing System (IDPS). These records contain Science (APID=149), Calibration (APID=147), Diagnostic (APID=150), and Diary (APID=11) application packets, which the preprocessor writes into Level-0 files and Toolkit Attitude and Ephemeris files that are then used by the main subsystem. A construction record for each Level-0 and a descriptive log file are also produced by this PGE.

1.0 PGEName: CER1.0P2

CER1.0P2 - CERES (FM-5) NPP Preprocessor , NPP HDF5 Raw Data Records to Level-0

PGE CER1.0P2 will be run once to process each day of NPP data.

1.1 PGE Details

1.1.1 Responsible Persons

Table 1-1. CER1.0P2 Software Analysts Contacts

Item	Primary	Alternate
Contact Name	J. Ashley Alford	Denise Cooper
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1929	951-1633
Fax	951-1900	951-1900
LaRC email	john.a.alford@nasa.gov	denise.l.cooper@nasa.gov

1.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 1-1.

1.1.3 Parent PGE(s): None

1.1.4 Target PGE(s):

Table 1-2. Target PGEs for CER1.0P2

PGEName	Description
CER1.1P7-8	CERES Main instrument subsystem

1.2 Operating Environment

1.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 1-3. Runtime Parameters for CER1.0P2

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
N/A	YYYYMMDD	Process Date	I(8)	2030 >YYYY>2000	m
				MM=01..12	m
				DD=01..31	m

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

1.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters. Only the CERES-lib environment script is needed for this PGE.

1.2.3 Execution Frequency (daily, hourly....)

Daily

1.2.4 Memory/Disk Space/Time Requirements

Memory: 340 MB
Disk Space: 440 MB
Total Run Time: 1-2 mins

1.3 Processor Dependencies (Previous PGEs, Ingest Data...)

1.3.1 Input Raw Data Records

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

CERESHOME/instrument/data/ingest/

RCERX_RNSCA_npp_dYYYYMMDD_tHHMMSS_eHHMMSS_bnnnnn_c YYYYMMDDSSSSSSSS_orgid_domain.h5 --

where dYYYYMMDD = data start date
tHHMMSS = data start time
eHHMMSS = data stop time
bnnnnn = orbit number
cYYYYMMDDHHMMSSSSSSSS = creation date

SSSSSSSS	**=**	**microseconds**
orgid	**=**	**a few ascii characters, unknown at this time**
domain	**=**	**a few ascii characters, unknown at this time**
X	**=**	**S, Science/Calibration RDR**
	=	**D, Diagnostic RDR**

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and DD-1 and DD+1.**
3. Waiting Period: **2 Days**

b. Provide the source of information (source PGE name or ingest source): **Interface Data Processing System (IDPS) via Land PEATE**

c. Alternate dataset, if one exists (maximum waiting period): **None.**

d. Typical file size: **1.34MB**

1.4 Operating Procedures

CER1.0P2 Perl production script, all necessary directories are set within this script and provided to the core executable. The location and name of a default PCF, **$CERESHOME/instrument/CER1.0P2/rcf/Default.PCF**, is also set within the script. The PCF in turns sets the path and name of Toolkit log files to be written during execution. No other information is needed from the PCF.

To run the production script, first source the relevant **ceres-env.csh** script, to set the environmental parameter **$CERESHOME**. To create **Default.PCF** from the provided file **System.PCF**, execute:

>./reset_PCF

Note that this script needs only to be run once for a given environment (i.e., for a given value of **$CERESHOME**). Now execute the following commands:

>cd $CERESHOME/instrument/CER1.0P2/rcf/
>./CER1.0P2_1.0R1.pl YYYYMMDD

where YYYYMMDD is the process data date.

1.5 Execution Evaluation

1.5.1 Exit Codes

CER1.0P2 is currently set to terminate with a FATAL ERROR Exit Code 200 for almost all errors, even if the error is simply that no input files are found. See the log file (described below) when an error occurs. If an error occurs, contact the responsible person and submit the related log file via email.

1.5.2 Screen Messages

A normal run of the production script, **CER1.0P2_1.0R1.pl**, will produce the following on standard out:

Starting CER1.0P2_1.0R1 with process date YYYYMMDD

Normal Return: 0
EXIT = 0

Ending CER1.0P2_1.0R1 with process date YYYYMMDD

1.5.3 Log and Status File Results

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.0P2_LogReport_NPP_Beta.log**

The Report Log File contains Instrument-related informational messages. These messages may be strictly informative (Error Type = Status or Warning) or may indicate a fatal condition that results in premature PGE termination (Error Type = Fatal).

2. **Status Log File: CER1.0P2_LogStatus_NPP_Beta.log**

The Status Log File contains all messages created by the ToolKit and Instrument-related messages that can lead to abnormal ending of the Preprocessor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types.

3. **User Log File: CER1.0P2_LogUser_NPP_Beta.log**

The User Log File is not used at this time, but exists to satisfy the ToolKit requirements. Typically the _U_ and _N_ (User information and Notice) will be written to User Log File and Status Log File.

4. **CER1.0P2 Log file**: This log file has the following name:

CER1.0P2__YYYYMMDD_datetime.log

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

CER1.0P2_20030228_Wed_Feb_18_11:31:18_2009.log

If the Toolkit log files (type 1,2,or 3) in the above do not exist in the **$CERESHOME/instrument/runlogs** directory when a run is started, then they will be created. If the log files do exist in the **$CERESHOME/instrument/runlogs/** directory, then they will be appended with information relevant to the new run.

If a run is successful, no warning or errors will be listed in any of the log files.

The top of the CER1.0P2 log file (type 4 in the above) will list the current date and number of input data files (Raw Data Records) found for the input process date.

For example:

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

Found 21 RDRs for process date 20030319.

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

For example:

```
Number of Packets
----------------------------------------
SCIENCE        =  0
CALIBRATION    =  290
DIAGNOSTIC     =  1417
DIARY          =  12421
----------------------------------------
```

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

For example:

```
Writing CALIBRATION L0 file

        done.

Writing DIAGNOSTIC L0 file

        done.
```

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

```
Writing Toolkit Attitude and Ephemeris files

        done.
```

1.6 Expected Output Datasets

Table 1-4. Expected Output for CER1.0P2

File Name/Directory	File Size MB	Freq/ PGE	Destination
NPP_Gaaa_LZ_YYYY-MM-DDTHH-mm-SSVnn.DAT/ @$CERESHOME/instrument/data/input where aaa = 3 digit APID number, mm = minute, nn = version number (usually 01) YYYY = year, MM = month, DD = day, HH =hour, SS= seconds	91.4	Daily	Archive
NPP_Gaaa_LZ_YYYY-MM-DDTHH-mm-SSVnn.CONS/ @$CERESHOME/instrument/data/input	.3-3 KB variable	Daily	Archive
NPPATT.NYYYYDOY.DAT where DOY = 3 digit day of year @$CERESHOME/instrument/data/ancillary/dynamic	5.5	Daily	Archive
NPPEPH.NYYYYDOY.DAT @$CERESHOME/instrument/data/ancillary/dynamic	5.5	Daily	Archive
CER1.0P2__YYYYMMDD_datetime.log/ @$CERESHOME/instrument/runlogs/ where YYYYMMDD refers to data processed, and datetime refers to the date and time on which processing data began. e.g., CER1.0P2__20030228_Wed_Feb_18_11:31:18_2009.log	~1 KB	Daily	Archive

2.0 PGEName: CER1.1P1

CER1.1P1 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for TRMM

2.1 PGE Details

2.1.1 Responsible Persons

Table 2-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

2.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 2-1.

2.1.3 Parent PGE(s)

Table 2-2. Parent PGEs for CER1.1P1

PGEName	Description
CER0.1P1	TRMM DPREP -- Ephemeris and Attitude Data preprocessor

2.1.4 Target PGE(s)

Table 2-3. Target PGEs after CER1.1P1

PGEName	Description
CER1.2P1	Convert BDS to PRES8
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud properties with CERES Footprint Point spread function

2.2 Operating Environment

2.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 2-4. Runtime Parameters for CER1.1P1

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-o	opt	Write_Products	A(8)	opt = Default, Override, BDS_Only, IES_Only	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-pge	opt	PGE Mode	A(20)	opt = CERES_Production, Instrument_Only	o
-partearth	opt	Write_Partial_Footprints	A(3)	opt = On, Off	o
-start	opt	Requested Start Time	time	hh:mm:ss.ssssss	o
-stop	opt	Requested Stop Time	time	hh:mm:ss.ssssss	o
-tcmode	opt	Second Time Constant Mode	A(3)	opt = On, Off	o
-apid	xx	APID to process	I(2)	54, 55, 56	o
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: *-env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter
o - optional parameter
hh - 2-digit hour
mm - 2-digit minute
ss - 2-digit seconds
ssssss - 6-digit milliseconds

2.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contain the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: From the Production Request[2], the PGE CER1.1P1 requires that the SAT and INST parameters be the following:

SAT = **TRMM** and INST = **PFM**

2.2.3 Execution Frequency (daily,hourly,..)

Daily (1/day) - This PGE is to be processed once per day, for a maximum of 31 days per month, when all required input data are available.

2.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	324 MB
Total Run Time:	6 hrs.

2.2.5 Restrictions Imposed in Processing Order

Data for the day before and the day after must be present to run the requested data day. However, it is possible to run the system if one or both of these files is missing, but the output products will have missing data. This should only be done in emergency situations, when data are needed for immediate analysis, and will be requested by the CERES Data Management Team (DMT).

2.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

2.3.1 Input Dataset Name (#1): Level-0 Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
TRMM_G0xx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1

where xx identifies the TRMM APID:
Science = 54
Calibration = 55
Diagnostic = 56

All APIDs may not be present for any one data date, however, there should be at least one of the above APIDs for each data date. For any typical data date, there should be a Science (APID 54) data file; however, not receiving a Science data file, does not mean the data cannot be processed.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source is PGE name or Ingest Source):

Satellite Data Processing Facility (SDPF)

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **93**

2.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
TRMM_ED9D_OR_YYYY-MM-DDT00-00-00Z_Vnn.nat

1. Mandatory/Optional: **This file is Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

CER0.1P1 - DPREP

c. Alternate Data Set, if one exists (maximum waiting period):
Alldays_TRMM_ED9D_OR_YYYY-MM-(DD-1)T00-00-00Z_Vnn.nat, do not use this file without a written request from the Data Management Team.

d. File Disposition after successful execution: **Do not remove, used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.9**

2.3.3 Input Dataset Name (#3): Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic/
TRMM_G500_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1.nat

1. Mandatory/Optional: **This file is Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

CER0.1P1 - DPREP

c. Alternate Data Set, if one exists (maximum waiting period):
$CERESHOME/instrument/data/ancillary/dynamic/
TRMM_YYYY-MM-DD.att
Do not use this file without a written request from the Data Management Team.

d. File Disposition after successful execution: **Do not remove, to be used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.09**

2.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P1-6.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P1_input_find.pl**, and the PCF generator, **CER1.1P1_pcf_gen.pl**.

2.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

Note: If additional runtime parameters are requested, they will appear as part of the ASCII file generator command line.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
> CER1.1P1_input_find.pl -d YYYY MM DD -env

The following file will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1:**

CER1.1P1_PCFin_$SS1_$PS1_$CC1.YYYYMMDD

2.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P1_pcf_gen.pl**, is executed using the newly created ASCII input filename and 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P1_pcf_gen.pl CER1.1P1_PCFin_$SS1_$PS1_$CC1.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf**:

CER1.1P1_PCF_$SS1_$PS1_$CC1.YYYYMMDD

2.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P1-6.pl**, followed by the PCF filename and the 4-character static code (-env) used to indicated that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf
> run_CER1.1P1-6.pl CER1.1P1_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

2.4.4 Special Case Considerations

If it becomes necessary to rerun only one type of Level-0 file (Science, Calibration or Diagnostic), this can be accomplished by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
> CER1.1P1_input_find.pl -d YYYY MM DD -apid APID -env

where the TRMM APID is one of the following:

Science = 54
Calibration = 55
Diagnostic = 56

This is only done by special request from the Data Management Team.

If a special request is made to run the Subsystem and only create the BDS, or IES products, it can be accomplished by using the following command to create the ASCII Input file:

BDS Only:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
> CER1.1P1_input_find.pl -d YYYY MM DD -o BDS_Only -env

IES Only:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
> CER1.1P1_input_find.pl -d YYYY MM DD -o IES_Only -env

Create IESs when simulated Attitude/Ephemeris data are used in processing, **this mode is only used during testing**, when "real" Attitude/Ephemeris data are not available. **It should never be used for routine processing**:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
> CER1.1P1_input_find.pl -d YYYY MM DD -o Override -env

If a special request is made to run the Subsystem using Instrument Only processing mode, this can be done by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1
> CER1.1P1_input_find.pl -d YYYY MM DD -pge Instrument_Only -env

All special requests must come from the Data Management Team.

2.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and IES files created during the previous run must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.1P1_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

2.5 Execution Evaluation

2.5.1 Exit Codes

The processor CER1.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 2-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or ToolKit related error. In these cases, contact the responsible person (see Table 2-1) for assistance.

Table 2-5. Exit Codes for CER1.1P1

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	WARNING: Error in processing or simulated data was requested by the Data Management Team. *Simulated data should only be used for Level-0 processing when requested by the Data Management Team. This data should not be sent to following subsystems. Data is for SS1 analysis purposes only.*

2.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P1-6.pl**, a "heartbeat" will be sent to the screen in the following format:

processing scan : 22690
processing scan : 22691
Starting Processing Loop for SCIENCE
processing scan : 22692
processing scan : 22693
processing scan : 22694
.
.
.
Finished Processing Loop, Beginning Finalize for SCIENCE
processing scan : 23235
processing scan : 23236
Finished Processing for SCIENCE

(above will repeat for Calibration and Diagnostic, if available)

Instrument Subsystem completed with Exit Status = 0
Instrument Subsystem PGE 1.1P1 Complete for PCF file <PCF filename>

The above two lines signify a successful execution. Any other message indicates an error has occurred, contact the responsible person (see Table 2-1) for assistance.

2.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.1P1_LogReport_$SS1_$PS1_$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). A comprehensive list of messages that can be generated during the execution of the PGE is contained in Appendix B.

2. **Status Log File: CER1.1P1_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.1P1_LogUser_$SS1_$PS1_$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.

2.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

2.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

If the Ephemeris or Attitude data cannot be processed through DPREP for any reason, then processing should be halted unless a special request to use simulated data has been issued by the Data Management Team. If simulated data are used, these data should not be passed to the Target PGEs.

b. Target PGE Termination

If simulated Ephemeris or Attitude data are used to process the data for any particular data day, the resulting file should not be sent on to the Target PGE for further processing.

2.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times maximum, once for each day of the month.

Table 2-6. Expected Output File Listing for CER1.1P1

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	700	1/day	CER1.2P1, CER1.3P1	Archive,/QA
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	12	1/day	N/A	Archive,/QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	1/day	CER1.3P1	Archive,/QA
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	6.7	1/day	N/A	Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1	1/day	N/A	Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	15.4	1/day	N/A	Archive,rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.6	1/day	N/A	Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	1/day	N/A	Archive, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.03	1/day	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.06	1/day	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.003	1/day	N/A	No Archive,/QA, rm
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.002	1/day	N/A	No Archive,/QA, rm
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH (.met) @($CERESHOME/instrument/data/int_prod)	o	39	1/hr	CER4.1-4.1P1	Archive
CER1.1P1_PCFin_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P1)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P1_PCF_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P1-6/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.1P1_LogReport_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P1_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P1_LogUser_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P1_PCF_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m	0.05	1/day	N/A	Archive, rm
CER1.1P1_QC_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/web)	m		1/day	N/A	Archive, rm

a. See Section 2.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month

2.7 Expected Temporary Files/Directories

Table 2-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P1-6/rcf	MCFWrite_CER1.1P1_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.1P1-6/rcf	GetAttr_CER1.1P1_$SS1_$PS1_YYYYMMDD.temp

3.0 PGEName: CER1.1P2

CER1.1P2 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, QuickLook Data for TRRM

PGE CER1.1P2 will only be processed when QuickLook data have been received by the ASDC. This processor will be executed manually upon demand. The QuickLook data are a result of 'On-demand' download of Level 0 data from the TRMM Satellite requested by the CERES Science Team members. Generally, the amount of data will span from a few minutes up to 3 hours. The output of this processor is not to be archived and can be deleted when the real data have been received and processed successfully.

3.1 PGE Details

3.1.1 Responsible Persons

Table 3-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

3.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 3-1.

3.1.3 Parent PGE(s)

Table 3-2. Parent PGEs for CER1.1P2

PGEName	Description
CER0.1P1	TRMM DPREP Process - Ephemeris and Attitude Data preprocessor

3.1.4 Target PGE(s)

There are no target PGEs for this PGE.

3.2 Operating Environment

3.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 3-3. Runtime Parameters for CER1.1P2

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-hr	HH	Hour of QuickLook file start time	I(2)	00..23	m
-min	mm	Minute of QuickLook file start time	I(2)	00..59	m
-apid	APID	Application ID of input QuickLook file. (APID can be found in the QuickLook filename TRMM_G0xx_QL_..., xx is the APID)	I(2)	54, 55, 56	m
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
HH - 2-digit hour
mm - 2-digit minute
m - mandatory parameter

3.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contains the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: The PGE CER1.1P2 requires that the SAT and INST parameters be the following:

SAT = **TRMM** and INST = **PFM**

3.2.3 Execution Frequency (daily,hourly,..)

When Available - This PGE is to be processed for each QuickLook data file received. One or more files may be received on any particular day. This processor will only process data that fall within a 24-hour dataday from midnight-to-midnight. See Section 3.4.4, for the treatment of QuickLook files that span the midnight hour.

3.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	99 MB
Total Run Time:	30 mins.

3.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

3.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

3.3.1 Input Dataset Name (#1): QuickLook Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/

TRMM_G0xx_QL_YYYY-MM-DDTHH-mm-ssZ_Vnn.DAT1

where xx is the TRMM APID:

Science = 54
Calibration = 55
Diagnostic = 56

1. Mandatory/Optional: **This file is Mandatory. Any one of the three APIDs may be received for any particular data date. It is not necessary to receive all 3 APIDs for processing.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD, HH, mm and APID.**
3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

Satellite Data Processing Facility (SDPF)

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **6**

3.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/ Alldays_TRMM_ED9D_OR_YYYY-MM-DBT00-00-00Z_Vnn.nat, where DB = DD-1

1. Mandatory/Optional: **This file is Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, (DB = DD-1). This is the complete 9 day Ephemeris file, where the first day is real data and the next 8 days are predicted data.**
3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

CER0.1P1 - DPREP

c. Alternate Data Set, if one exists (maximum waiting period): **Alldays data file which matches the Runtime Parameters YYYY, MM, (DD-2) to (DD-6), whichever file is the closest in date to the requested data date of YYYY, MM, DD, with real data.**

d. File Disposition after successful execution: **Do not remove for 10 days**

e. Typical file size (MB): **0.9**

3.3.3 Input Dataset Name (#3): Simulated Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

   $CERESHOME/instrument/data/ancillary/dynamic/TRMM_YYYY-MM-DB.att, where DB = DD-1, DD, DD+1, .., DD+7, etc. (see 2.3.2)

   1. Mandatory/Optional: **These files are Mandatory.**
   2. Time Related Dependency: **Data must match the data date and span of the Ephemeris data (Sec. 2.3.2). There will always be 9 of these datasets used for any one run of data. Attitude data only comes in 1/day chunks.**
   3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

   ORBSIM

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove for 10 days.**

e. Typical file size (MB): **0.9**

3.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P1-6.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P2_input_find.csh**, and the PCF generator, **CER1.1P2_pcf_gen.csh**.

3.4.1 How to Generate the ASCII File

The ASCII file generator requires eleven (11) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-apid)	5-character static code to indicate the APID follows,
(APID)	2-digit Application ID,
(-hr)	3-character static code to indicate that the start hour of the file follows,
(HH)	2-digit hour,
(-min)	4-character static code to indicate that the start minute of the file follows,
(mm)	2-digit minute,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/rcf
> CER1.1P2_input_find.csh -d YYYY MM DD -apid APID -hr HH -min mm -env

The following file will be generated in **$CERESHOME/instrument/rcf:**

CER1.1P2_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID

3.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P2_pcf_gen.csh**, is executed using the newly created ASCII input filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P2_pcf_gen.csh
CER1.1P2_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID -env

The following PCF will be generated in **$CERESHOME/instrument/rcf**:

CER1.1P2_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID

3.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P1-6.pl**, followed by <PCF filename> and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/rcf
> run_CER1.1P1-6.pl
CER1.1P2_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID -env

3.4.4 Special Case Considerations

This processor will only process data that fall with a 24 hour dataday from midnight-to-midnight. QuickLook (QL) files may span midnight. If this situation occurs, then two runs of CER1.1P2 are necessary to process all of the data from the QL file. To determine if a QL file spans the midnight hour, check the Hour (hh) parameter of the Level 0 Data Filename, see Section 3.3.1. Typically the QL files span 1 - 3 hours of data. If the parameter 'hh' is between 20 and 23, then proceed at follows:

a. View the header file: TRMM_G0xx_QL_YYYY-MM-DDThh-mm-ssZ_Vnn.SFDU, located in $CERESHOME/instrument/data/input/ directory.

b. Examine the parameters: Start Time and Stop Time. If the time span has crossed the Midnight hour by more than 5 minutes, then continue to c, otherwise proceed as instructed in Section 3.4.1 - 3.4.3.

c. First follow the instructions for creating the ASCII input file [CER1.1P2_PCFin_...], see Section 3.4.1. Now two sets of Processors must be executed.

d. First Process: proceed through the instructions in Sections 3.4.2 and 3.4.3 using CERDataDateDay = **DD**.

e. Second Process:

1. Edit the 'PCFin' file and set the parameters:

   Data_Date = YYYY-MM-**DD+1**
   Start_Time = YYYY-MM-**DD+1**T00:00:00.000000Z
   Stop_Time = YYYY-MM-**DD+1**T23:59:59.999999Z

2. Change all output filenames, see Table 3-5, and log filenames, see Section 3.5.3 to reflect the next dataday **(DD+1)** in the filenames.

3. Save the 'PCFin' file with a new name:
   CER1.1P2_PCFin_$SS1_$PS1_$CC1.YYYYMM**DD+1**_QLHHmm

4. Proceed through the instructions in Sections 3.4.2 and 3.4.3 using CERDataDateDay = **DD+1**.

3.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and QC files must be deleted before beginning reprocessing. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

```
> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl
    CER1.1P2_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHMM-APID -
    env
```

3.5 Execution Evaluation

3.5.1 Exit Codes

The processor CER1.1P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 3-4. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 3-1) for assistance.

Table 3-4. Exit Codes for CER1.1P2

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	Proceed normally. The data should not be processed through the following subsystems.
210	No Pre-ES8 records written to output	The Pre_ES8 was not created, there was no good data to write to the Pre-ES8.

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

3.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P1-6.pl** for Science Data (APID = 54), a "heartbeat" will be sent to the screen in the following format:

```
  processing scan : 22690
  processing scan : 22691
Starting Processing Loop for SCIENCE
  processing scan : 22692
  processing scan : 22693
  processing scan : 22694
                .
                .
                .
Finished Processing Loop, Beginning Finalize for SCIENCE
  processing scan : 23235
  processing scan : 23236
Finished Processing for SCIENCE

 ================================================================
= WARNING :  Simulated Ephemeris or Attitude data used for Processing Data  =
= WARNING :  PGE CER1.2P1 should not be run                                 =
=================================================================

Instrument Subsystem completed with Exit Status = 205
Instrument Subsystem PGE 1.1P2 Complete for PCF file <PCF filename>
```

The above two lines indicate a successful run.

3.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.1P2_LogReport_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.1P2_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

The Status Log File contains all messages created by the ToolKit and Instrument-related messages that can lead to abnormal ending of the Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.1P2_LogUser_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

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.

3.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

3.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None at this time.

b. Target PGE Termination

None at this time. The results from QuickLook processing are not passed on to any other PGEs.

3.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. The BDS files listed may or may not be created for any run of QuickLook data. Only the BDS associated with the requested APID will be created. The output files need not be archived. These files may be removed after the Level-0 data has been processed successfully.

Table 3-5. Expected Output File Listing for CER1.1P2

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	40	OD	N/A	No Archive,/QA, rm
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	12	OD	N/A	No Archive,/QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	OD	N/A	No Archive,/QA, rm
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10	OD	N/A	No Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	OD	N/A	No Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10	OD	N/A	No Archive,/QA, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met)* @($CERESHOME/instrument/data/out_comp)	o	1.6	OD	N/A	No Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	OD	N/A	No Archive,/QA, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.03	OD	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.06	OD	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.01	OD	N/A	No Archive,/QA, rm
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.01	OD	N/A	No Archive,/QA, rm
CER1.1P2_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P2)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P2_PCF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/CER1.1P1-6/rcf)	m	.02	1/day	N/A	No Archive, rm

Table 3-5. Expected Output File Listing for CER1.1P2

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER1.1P2_LogReport_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P2_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P2_LogUser_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P2_PCF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID.tar @($CERESHOME/instrument/runlogs)	m		OD	N/A	No Archive, rm
CER1.1P2_QC_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID.tar @($CERESHOME/instrument/web)	m		OD	N/A	No Archive, rm

a. See Section 3.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b.
VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
OD - On Demand
hr - hour

3.7 Expected Temporary Files/Directories

Table 3-6. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P1-6/rcf	MCFWrite_CER1.1P2_$SS1_$PS1_YYYYMMDD_QLHHmm.temp
$CERESHOME/instrument/CER1.1P1-6/rcf	GetAttr_CER1.1P2_$SS1_$PS1_YYYYMMDD_QLHHmm.temp

4.0 PGEName: CER1.2P1

CER1.2P1 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, BDS Conversion to Pre-ES8 (Satellite-Instrument independent processor)

4.1 PGE Details

4.1.1 Responsible Persons

Table 4-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Dale Walikainen
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1692
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	dale.r.walikainen@nasa.gov

4.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 4-1.

4.1.3 Parent PGE(s)

Table 4-2. Parent PGEs for CER1.2P1

PGEName	Description
CER1.1P1	TRMM Level 0 Data Processor
CER1.1P3	Terra Level 0 Data Processor
CER1.1P5	Aqua Level 0 Data Processor

4.1.4 Target PGE(s)

Table 4-3. Target PGEs for CER1.2P1

PGEName	Description
CER2.2P1	ERBE-like Averaging to Monthly TOA Fluxes Main Processor
CER2.3P1	ERBE-like Monthly Overlap Processor for FAPS+RAPS Data from the First Day of the Next Month
CER2.3P2	ERBE-like Monthly Overlap Processor for FAPS+RAPS Data from the Last Day of the Previous Month

4.2 Operating Environment

4.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 4-4. Runtime Parameters for CER1.2P1

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-env *	N/A	Source Instrument Environment	N/A	N/A	m

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory input parameter

4.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contains the following parameters:

SS1 - Sampling Strategy for Instrument: see ProductionRequest[2]

PS1 - Output Production Strategy for Instrument: see Production Request[2]

CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: The PGE CER1.2P1 is a Satellite/Instrument independent processor, but the SAT and INST parameters must be specified, "depending on the SamplingStrategy, SS1," in the .csh files as follows:

SAT = **TRMM** and INST = **PFM** or
SAT = **Terra** and INST = **FM1** or **FM2** or
SAT = **Aqua** and INST = **FM3** or **FM4**

4.2.3 Execution Frequency (daily,hourly,..)

Daily 1/day - This PGE is to be processed once per data-day, for a maximum total of 31 days per month, when input data are available.

4.2.4 Memory/Disk Space/Time Requirements

Memory:	318 Mb
Disk Space:	1140 Mb
Total Run Time:	2242 sec.

4.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

4.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

4.3.1 Input Dataset Name (#1): Science BDS

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/out_comp/
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD

1. Mandatory/Optional: **This file is Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD.**

3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

CER1.1P1, CER1.1P3, CER1.1P5, CER1.1P7, CER1.1P8 and CER1.3P3

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **500**

4.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
Filenames vary by spacecraft:
TRMM: (one file per day)
TRMM_ED9D_OR_YYYY-MM-DDT00-00-00Z_Vnn.nat
Terra: (12 files per day)
AM1EPHN0001MMDDYYYYHH00000000000
or
AM1EPHN0.AYYYYDDD.HH00.vvv.yyyydddhhmmss
Aqua: (one file per day)
PM1EPHND.PYYYYDDD.HH00.vvv.yyyydddhhmmss

where
DDD is the data day of year
vvv is the ESDT version number
yyyy is the production year
ddd is the production day of year
hh is the production hour
mm is the production minute
ss is the production second

NPP (one file per day):
NPPEPH.NYYYYDDD.yyyymmdd.dat

where
DDD is the data day of year
yyyy is the production year
mm is the production month
dd is the production day

1. Mandatory/Optional: **This file is Mandatory.**

2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 should also be available. For Terra DD-1, HH=22, DD+1, HH=00. For Terra new filenaming convention, DDD-1**

and DDD+1 should also be available. For Aqua new filenaming convention, DDD-1 should also be available.

3. Waiting Period: 2 days

b. Source of Information (Source PGE name or Ingest Source):

CER0.1P1 - DPREP

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, used by CER4.1-4.1P1.**

e. Typical file size (MB): **TRMM: 0.09**
Terra: 0.45
Aqua: 5.5

4.4 Operating Procedures (Procedure for each part of the processor's elements)

The BDS Conversion script, **run_CER1.2P1.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.2P1_input_find.pl**, and the PCF generator, **CER1.2P1_pcf_gen.pl**.

4.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/rcf
> CER1.2P1_input_find.pl -d YYYY MM DD -env

The following file will be generated in **$CERESHOME/instrument/rcf:**

CER1.2P1_PCFin_$SS1_$PS1_$CC1_2.YYYYMMDD

4.4.2 How to Generate the PCF File

The PCF generator, **CER1.2P1_pcf_gen.pl**, is executed using the newly created ASCII input filename and the 4-character static code (-env) to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.2P1_pcf_gen.pl CER1.2P1_PCFin_$SS1_$PS1_$CC1_2.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.2P1/rcf**:

CER1.2P1_PCF_$SS1_$PS1_$CC1_2.YYYYMMDD

4.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.2P1.pl**, followed by the PCF filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.
At the command line (>) type:

> cd $CERESHOME/instrument/CER1.2P1/rcf
> run_CER1.2P1.pl CER1.2P1_PCF_$SS1_$PS1_$CC1_2.YYYYMMDD -env

4.4.4 Special Case Considerations

Create PRES8 when simulated Attitude/Ephemeris data are used in processing, **this mode is only used during testing,** when "real" Attitude/Ephemeris data are not available. **It should never be used for routine processing:**

> cd $CERESHOME/instrument/CER1.2P1/rcf
> CER1.2P1_input_find.pl -d YYYY MM DD -o Override -env

All special requests must come from the Data Management Team.

4.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then the existing PRES8 file created by the initial run should be deleted before reprocessing is done. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.2P1_PCF_$SS1_$PS1_$CC1_2.YYYYMMDD -env

4.5 Execution Evaluation

4.5.1 Exit Codes

The processor CER1.1P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 4-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 4-1) for assistance.

4.5.2 Screen Messages (Use Table format for large number of messages)

Table 4-5. Exit Codes for CER1.2P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
203	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
204	Simulated Ephemeris or Attitude Data used in processing	Error in processing, BDSs which were created using simulated data should not be processed by this PGE. Do not proceed to target PGE.
210	Normal Exit	No records available to be written to Pre-ES8, no Pre-ES8 created. This occurs when all geolocation or all radiance data is set to the CERES Default value, usually due to special operations.

When running the production script, **run_CER1.2P1.pl** the following messages are written to Standard Output:

Creating Pre-ES8
Instrument Subsystem completed with Exit Status = 0
Instrument Subsystem PGE 1.2 Complete for PCF file <PCF filename>

4.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.2P1_LogReport_$SS1_$PS1_$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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.2P1_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.2P1_LogUser_$SS1_$PS1_$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.

4.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

4.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None at this time.

b. Target PGE Termination

If simulated Ephemeris or Attitude data was used to process the BDS data for any particular data day, the resulting file should not be sent on to the Target PGE for further processing. This is applicable when there are problems with the Ephemeris or Attitude data, but the Instrument housekeeping data needs to be processed.

4.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process daily.

Table 4-6. Expected Output File Listing for CER1.2P1

File Name[a.]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_PRES8_$SS1_$PS1_$CC1_2.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	m	283	1/day	CER2.2P1, CER2.3P1, CER2.3P2	Archive
CER1.2P1_PCFin_$SS1_$PS1_$CC1_2.YYYYMMDD @($CERESHOME/instrument/CER1.2P1/rcf)	m	0.006	1/day	N/A	No Archive, rm
CER1.2P1_PCF_$SS1_$PS1_$CC1_2.YYYYMMDD @($CERESHOME/instrument/CER1.2P1/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.2P1_LogReport_$SS1_$PS1_$CC1_2.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.2P1_LogStatus_$SS1_$PS1_$CC1_2.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.2P1_LogUser_$SS1_$PS1_$CC1_2.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.2P1_PCF_$SS1_$PS1_$CC1_2.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m		1/day	N/A	Archive, rm

a. See Section 4.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4 digit year
MM - 2 digit month {valid values: 01 .. 12}
DD - 2 digit day {valid values: 01 .. 31}
HH - 2 digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month

4.7 Expected Temporary Files/Directories

Table 4-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.2P1/rcf	MCFWrite_CER1.2P1_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.2P1/rcf	GetAttr_CER1.2P1_$SS1_$PS1_YYYYMMDD.temp

5.0 PGEName: CER1.1P3

CER1.1P3 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for Terra

5.1 PGE Details

5.1.1 Responsible Persons

Table 5-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

5.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 5-1.

5.1.3 Parent PGE(s)

Table 5-2. Parent PGEs for CER1.1P3

PGEName	Description
N/A	DPREP - Ephemeris and Attitude Data preprocessor for Terra, Source ECS Ingest

5.1.4 Target PGE(s)

Table 5-3. Target PGEs after CER1.1P3

PGEName	Description
CER1.2P1	Convert BDS to PRES8
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function

5.2 Operating Environment

5.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 5-4. Runtime Parameters for CER1.1P3

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-o	opt	Write_Products	A(8)	opt = Default, Override, BDS_Only, IES_Only	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-pge	opt	PGE Mode	A(20)	opt = CERES_Production, Instrument_Only	o
-partearth	opt	Write_Partial_Footprints	A(3)	opt = On, Off	o
-start	opt	Requested Start Time	time	hh:mm:ss.ssssss	o
-stop	opt	Requested Stop Time	time	hh:mm:ss.ssssss	o
-tcmode	opt	Second Time Constant Mode	A(3)	opt = On, Off	o
-apid	xx	APID to process	I(3)	131, 132, 133, 167, 168, 169	o
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter
o - optional parameter
hh - 2-digit hour
mm - 2-digit minute
ss - 2-digit seconds
ssssss - 6-digit milliseconds

5.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contain the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: From the Production Request[2], the PGE CER1.1P3 requires that the SAT and INST parameters be the following: (this must agree with the APID, see Section 5.3.1)

SAT = **Terra** and INST = **FM1** or **FM2**

5.2.3 Execution Frequency (daily,hourly,..)

Daily (1/day) - This PGE is to be processed once per day, for a maximum of 31 days per month, when all required input data are available.

5.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	324 MB
Total Run Time:	6 hrs.

5.2.5 Restrictions Imposed in Processing Order

Data for the day before and the day after must be present to run the requested data day. However, it is possible to run the system if one or both of these files is missing, but the output products will have missing data. This should only be done in emergency situations, when data are needed for immediate analysis, and will be requested by the CERES Data Management Team (DMT).

5.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

5.3.1 Input Dataset Name (#1): Level-0 Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
EOS_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.CONS
EOS_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1

where xxx identifies the **Terra** APID which are dependent upon the Instrument being processed, see Production Request[2].

	FM1	FM2
Science =	**131**	**167**
Calibration =	**132**	**168**
Diagnostic =	**133**	**169**
Fixed Pattern =	**134**	**170**

All APIDs may not be present for any one data date, however, the PGE should only be run when the combined file sizes of all the available Level-0 files for that data date exceed 90 Mb. For any typical data date, there should be a Science (APID 131 and 167, one for each instrument FM1 and FM2) data file; however, not receiving a Science data file, does not mean the data cannot be processed.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available. At Launch of the Terra Spacecraft, data for DD+1 need not be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source is PGE name or Ingest Source):

EOS Data Operations System (EDOS)

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **93**

5.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
AM1EPHN0001MMDDYYYYHH00000000000
or
AM1EPHN0.AYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution, see Item 2 below.

DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1, HH = 22 and DD+1, HH = 00 must also be available. At Launch of the Terra Spacecraft, DD-1, HH=22 and DD+1, HH = 00 need not be available. For the new filenaming convention, files for YYYY, DDD-1, HH=22**
   and DDD+1, HH=00 must also be available.
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.45 per file**

5.3.3 Input Dataset Name (#3): Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic/
AM1ATTNF001MMDDYYYYHH00000000000,
or
AM1ATTNF.AYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution, see Item 2 below.

DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1, hh = 22 and DD+1, hh = 00 must also be available. At Launch of the Terra Spacecraft, DD-1, hh= 22 and DD+1, hh = 00 need not be available. For the new filenaming convention, files for YYYY, DDD-1, HH=22 and DDD+1, HH=00 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

   ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, to be used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.45 per file**

5.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P1-6.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P3_input_find.pl**, and the PCF generator, **CER1.1P3_pcf_gen.pl**.

5.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

Note: If additional runtime parameters are requested, they will appear as part of the ASCII file generator command line.
At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
> CER1.1P3_input_find.pl -d YYYY MM DD -env

The following file will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3:**

CER1.1P3_PCFin_$SS1_$PS1_$CC1.YYYYMMDD

5.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P3_pcf_gen.pl**, is executed using the newly created ASCII input filename and 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P3_pcf_gen.pl CER1.1P3_PCFin_$SS1_$PS1_$CC1.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf**:

CER1.1P3_PCF_$SS1_$PS1_$CC1.YYYYMMDD

5.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P1-6.pl**, followed by the PCF filename and the 4-character static code (-env) used to indicated that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

```
> cd $CERESHOME/instrument/CER1.1P1-6/rcf
> run_CER1.1P1-6.pl CER1.1P3_PCF_$SS1_$PS1_$CC1.YYYYMMDD -
      env
```

5.4.4 Special Case Considerations

If it becomes necessary to rerun only one type of Level-0 file (Science, Calibration or Diagnostic), this can be accomplished by using the following command to create the ASCII Input file:

```
> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
> CER1.1P3_input_find.pl -d YYYY MM DD -apid APID -env
```

where APID is one of the following:

Science	**= 131 or 167**
Calibration	**= 132 or 168**
Diagnostic	**= 133 or 169**

This is only done by special request from the Data Management Team.
If a special request is made to run the Subsystem and only create the BDS, or IES products, it can be accomplished by using the following command to create the ASCII Input file:

BDS Only:

```
> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
> CER1.1P3_input_find.pl -d YYYY MM DD -o BDS_Only -env
```

IES Only:

```
> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
> CER1.1P3_input_find.pl -d YYYY MM DD -o IES_Only -env
```

Create IESs when simulated Attitude/Ephemeris data are used in processing, **this mode is only used during testing**, when "real" Attitude/Ephemeris data are not available. **It should never be used for routine processing**:

```
> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
> CER1.1P3_input_find_orbsim.csh -d YYYY MM DD -o Override -env
```

If a special request is made to run the Subsystem using Instrument Only processing mode, this can be done by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3
> CER1.1P3_input_find_orbsim.csh -d YYYY MM DD -pge Instrument_Only -env

All special requests must come from the Data Management Team.

5.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and IES files created during the previous run must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.1P3_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

5.5 Execution Evaluation

5.5.1 Exit Codes

The processor CER1.1P3 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 5-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or ToolKit related error. In these cases, contact the responsible person (see Table 5-1) for assistance.

Table 5-5. Exit Codes for CER1.1P3

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	WARNING: Error in processing or simulated data was requested by the Data Management Team. *Simulated data should only be used for Level-0 processing when requested by the Data Management Team. This data should not be sent to following subsystems. Data is for SS1 analysis purposes only.*

5.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P1-6.pl**, a "heartbeat" will be sent to the screen in the following format:

processing scan : 22690
processing scan : 22691
Starting Processing Loop for SCIENCE
processing scan : 22692
processing scan : 22693
processing scan : 22694
.
.
.
Finished Processing Loop, Beginning Finalize for SCIENCE
processing scan : 23235
processing scan : 23236
Finished Processing for SCIENCE

(above will repeat for Calibration and Diagnostic, if available)
Instrument Subsystem completed with Exit Status = 0
Instrument Subsystem PGE 1.1P3 Complete for PCF file <PCF filename>

The above two lines signify a successful execution. Any other message indicates an error has occurred, contact the responsible person (see Table 5-1) for assistance.

5.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.1P3_LogReport_$SS1_$PS1_$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). A comprehensive list of messages that can be generated during the execution of the PGE is contained in Appendix B.

2. **Status Log File: CER1.1P3_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.1P3_LogUser_$SS1_$PS1_$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.

5.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

5.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

If the Ephemeris or Attitude data cannot be processed through DPREP for any reason, then processing should be halted unless a special request to use simulated data has been issued by the Data Management Team. If simulated data are used, these data should not be passed to the Target PGEs.

b. Target PGE Termination

If simulated Ephemeris or Attitude data are used to process the data for any particular data day, the resulting file should not be sent on to the Target PGE for further processing.

5.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times maximum, once for each day of the month.

Table 5-6. Expected Output File Listing for CER1.1P3

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	700	1/day	CER1.2P1, CER1.3P1	Archive,/QA
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	12	1/day	N/A	Archive,/QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	1/day	CER1.3P1	Archive,/QA
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	1/day	N/A	Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.6	1/day	N/A	Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	1/day	N/A	Archive, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.03	1/day	N/A	Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.06	1/day	N/A	Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.003	1/day	N/A	Archive,/QA, rm

Table 5-6. Expected Output File Listing for CER1.1P3

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.002	1/day	N/A	Archive, /QA, rm
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH (.met) @($CERESHOME/instrument/data/int_prod)	o	39	1/hr	CER4.1-4.1P1	Archive
CER1.1P3_PCFin_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P3)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P3_PCF_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P1-6/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.1P3_LogReport_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P3_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P3_LogUser_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P3_PCF_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m		1/day	N/A	Archive, rm
CER1.1P3_QC_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/web)	m		1/day	N/A	Archive, rm

a. See Section 5.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month

5.7 Expected Temporary Files/Directories

Table 5-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P1-6/rcf	MCFWrite_CER1.1P3_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.1P1-6/rcf	GetAttr_CER1.1P3_$SS1_$PS1_YYYYMMDD.temp

6.0 PGEName: CER1.1P4

CER1.1P4 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, QuickLook Data for Terra

PGE CER1.1P4 will only be processed when QuickLook data have been received by the ASDC. This processor will be executed manually upon demand. The QuickLook data are a result of 'On-demand' download of Level 0 data from the Terra Satellite requested by the CERES Science Team members. Generally, the amount of data will span from a few minutes up to 3 hours. The output of this processor is not to be archived and can be deleted when the real data have been received and processed successfully.

6.1 PGE Details

6.1.1 Responsible Persons

Table 6-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

6.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 6-1.

6.1.3 Parent PGE(s)

Table 6-2. Parent PGEs for CER1.1P4

PGEName	Description
N/A	Simulated Ephemeris and Attitude data from the SDP ToolKit ORBSIM program

6.1.4 Target PGE(s)

There are no target PGEs for this PGE.

6.2 Operating Environment

6.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 6-3. Runtime Parameters for CER1.1P4

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-hr	HH	Hour of QuickLook file start time	I(2)	00..23	m
-min	mm	Minute of QuickLook file start time	I(2)	00..59	m
-apid	APID	Application ID of input QuickLook file. (APID can be found in the QuickLook filename EOS_Gxxx_QL_..., xxx is the APID)	I(3)	131, 132, 133, 167, 168, 169	m
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
HH - 2-digit hour
mm - 2-digit minute
m - mandatory parameter

6.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contains the following parameters:

SS1	-	Sampling Strategy for Instrument: see ProductionRequest[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: The PGE CER1.1P4 requires that the SAT and INST parameters be the following, according to the APID number on the input QL data file, see Section 6.3.1.

SAT = **Terra** and INST = **FM1** or **FM2**

6.2.3 Execution Frequency (daily,hourly,..)

When Available - This PGE is to be processed for each QuickLook data file received. One or more files may be received on any particular day. This processor will only process data that fall within a 24-hour dataday from midnight-to-midnight. See Section 6.4.4, for the treatment of QuickLook files that span the midnight hour.

6.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	99 MB
Total Run Time:	30 mins.

6.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

6.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

6.3.1 Input Dataset Name (#1): QuickLook Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
EOS_Gxxx_QL_YYYY-MM-DDTHH-mm-ssZ_Vnn.CONS
EOS_Gxxx_QL_YYYY-MM-DDTHH-mm-ssZ_Vnn.DAT1

where xxx identifies the **Terra** APID which is dependent upon the Instrument being processed.

	FM1	**FM2**
Science =	**131**	**167**
Calibration =	**132**	**168**
Diagnostic =	**133**	**169**
Fixed Pattern =	**134**	**170**

1. Mandatory/Optional: **This file is Mandatory. Any one of the three APIDs may be received for any particular data date. It is not necessary to receive all 4 APIDs for processing.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD, HH, mm and APID.**
3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

EOS Data Operations System (EDOS)

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **6**

6.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
EOSAM1_YYYY-MM-DB.eph

1. Mandatory/Optional: **This file is Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, (DB = DD-1, DD, DD+1)**
3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

ORBSIM

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove for 10 days.**

e. Typical file size (MB): **0.9**

6.3.3 Input Dataset Name (#3): Simulated Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/EOSAM1_YYYY-MM-DB.att,
where DB = DD-1, DD, DD+1.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD. Data for DD-1 and DD+1 must also be available.**
3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

ORBSIM

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove for 10 days**

e. Typical file size (MB): **0.9**

6.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P1-6.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P4_input_find.csh**, and the PCF generator, **CER1.1P4_pcf_gen.csh**.

6.4.1 How to Generate the ASCII File

The ASCII file generator requires eleven (11) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-apid)	5-character static code to indicate the APID follows,
(APID)	3-digit Application ID,
(-hr)	3-character static code to indicate that the start hour of the file follows,
(HH)	2-digit hour,
(-min)	4-character static code to indicate that the start minute of the file follows,
(mm)	2-digit minute,

(-env) 4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/rcf
> CER1.1P4_input_find.csh -d YYYY MM DD -apid APID -hr HH -min mm -env

The following file will be generated in **$CERESHOME/instrument/rcf:**

CER1.1P4_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID

6.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P4_pcf_gen.csh**, is executed using the newly created ASCII input filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P4_pcf_gen.csh
CER1.1P4_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID -env

The following PCF will be generated in **$CERESHOME/instrument/rcf**:

CER1.1P4_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID

6.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P1-6.pl**, followed by <PCF filename> and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/rcf
> run_CER1.1P1-6.pl
CER1.1P4_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm -APID-env

6.4.4 Special Case Considerations

This processor will only process data that fall with a 24 hour dataday from midnight-to-midnight. QuickLook (QL) files may span midnight. If this situation occurs, then two runs of CER1.1P4 are necessary to process all of the data from the QL file. To determine if a QL file spans the midnight hour, check the Hour (hh) parameter of the Level 0 Data Filename, see Section 6.3.1. Typically the QL files span 1 - 3 hours of data. If the parameter 'hh' is between 20 and 23, then proceed at follows:

a. First follow the instructions for creating the ASCII input file [CER1.1P4_PCFin_...], see Section 6.4.1. Now two sets of Processors must be executed.

b. First Process: proceed through the instructions in Sections 6.4.2 and 6.4.3 using CERDataDateDay = **DD**.

c. Second Process:

1. Edit the 'PCFin' file and set the parameters:

   Data_Date = YYYY-MM-**DD+1**
   Start_Time = YYYY-MM-**DD+1**T00:00:00.000000Z
   Stop_Time = YYYY-MM-**DD+1**T23:59:59.999999Z

2. Change all output filenames, see Table 6-5, and log filenames, see Section 6.5.3 to reflect the next dataday **(DD+1)** in the filenames.

3. Save the 'PCFin' file with a new name:
   CER1.1P4_PCFin_$SS1_$PS1_$CC1.YYYYMM**DD+1**_QLHHmm

4. Proceed through the instructions in Sections 6.4.2 and 6.4.3 using CERDataDateDay = **DD+1**.

6.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and QC files must be deleted before beginning reprocessing. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

```
> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl
    CER1.1P4_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID -
    env
```

6.5 Execution Evaluation

6.5.1 Exit Codes

The processor CER1.1P4 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 6-4. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 6-2) for assistance.

Table 6-4. Exit Codes for CER1.1P4

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	Proceed normally. The data should not be processed through the following subsystems.

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

6.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P1-6.pl** for Science Data (APID = 54), a "heartbeat" will be sent to the screen in the following format:

```
  processing scan : 22690
  processing scan : 22691
Starting Processing Loop for SCIENCE
  processing scan : 22692
  processing scan : 22693
  processing scan : 22694
                .
                .
                .
Finished Processing Loop, Beginning Finalize for SCIENCE
  processing scan : 23235
  processing scan : 23236
Finished Processing for SCIENCE

 ================================================================
= WARNING :  Simulated Ephemeris or Attitude data used for Processing Data  =
= WARNING :  PGE CER1.2P1 should not be run
                =
================================================================
Instrument Subsystem completed with Exit Status = 205
Instrument Subsystem PGE 1.1P4 Complete for PCF file <PCF filename>
```

The above two lines indicate a successful run.

6.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.1P4_LogReport_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.1P4_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

The Status Log File contains all messages created by the ToolKit and Instrument-related messages that can lead to abnormal ending of the Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.1P4_LogUser_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

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.

6.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

6.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None at this time.

b. Target PGE Termination

None at this time. The results from QuickLook processing are not passed on to any other PGEs.

6.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. The BDS files listed may or may not be created for any run of QuickLook data. Only the BDS associated with the requested APID will be created. The output files need not be archived. These files may be removed after the Level-0 data has been processed successfully.

Table 6-5. Expected Output File Listing for CER1.1P4

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	40	OD	N/A	No Archive,/QA, rm
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	12	OD	N/A	No Archive,/QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	OD	N/A	No Archive,/QA, rm
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10	OD	N/A	No Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	OD	N/A	No Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10	OD	N/A	No Archive,/QA, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met)* @($CERESHOME/instrument/data/out_comp)	o	1.6	OD	N/A	No Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	OD	N/A	No Archive,/QA, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.03	OD	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.06	OD	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.01	OD	N/A	No Archive,/QA, rm
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.01	OD	N/A	No Archive,/QA, rm
CER1.1P4_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P4)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P4_PCF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/CER1.1P1-6/rcf)	m	.02	1/day	N/A	No Archive, rm

Table 6-5. Expected Output File Listing for CER1.1P4

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER1.1P4_LogReport_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P4_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P4_LogUser_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P4_PCF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID.tar @($CERESHOME/instrument/runlogs)	m		OD	N/A	No Archive, rm
CER1.1P4_QC_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID.tar @($CERESHOME/instrument/web)	m		OD	N/A	No Archive, rm

a. See Section 6.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
OD - On Demand
hr - hour

6.7 Expected Temporary Files/Directories

Table 6-6. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P1-6/rcf	MCFWrite_CER1.1P4_$SS1_$PS1_YYYYMMDD_QLHHmm.temp
$CERESHOME/instrument/CER1.1P1-6/rcf	GetAttr_CER1.1P4_$SS1_$PS1_YYYYMMDD_QLHHmm.temp

7.0 PGEName: CER1.1P5

CER1.1P5 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for Aqua

7.1 PGE Details

7.1.1 Responsible Persons

Table 7-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

7.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 7-1.

7.1.3 Parent PGE(s)

Table 7-2. Parent PGEs for CER1.1P5

PGEName	Description
N/A	DPREP - Ephemeris and Attitude Data preprocessor for Aqua, Source ECS Ingest

7.1.4 Target PGE(s)

Table 7-3. Target PGEs after CER1.1P5

PGEName	Description
CER1.2P1	Convert BDS to PRES8
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function

7.2 Operating Environment

7.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 7-4. Runtime Parameters for CER1.1P5

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-o	opt	Write_Products	A(8)	opt = Default, Override, BDS_Only, IES_Only	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-pge	opt	PGE Mode	A(20)	opt = CERES_Production, Instrument_Only	o
-partearth	opt	Write_Partial_Footprints	A(3)	opt = On, Off	o
-start	opt	Requested Start Time	time	hh:mm:ss.ssssss	o
-stop	opt	Requested Stop Time	time	hh:mm:ss.ssssss	o
-tcmode	opt	Second Time Constant Mode	A(3)	opt = On, Off	o
-apid	xx	APID to process	I(3)	141, 142, 143, 157, 158, 159	o
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter
o - optional parameter
hh - 2-digit hour
mm - 2-digit minute
ss - 2-digit seconds
ssssss - 6-digit milliseconds

7.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contain the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: From the Production Request[2], the PGE CER1.1P3 requires that the SAT and INST parameters be the following: (this must agree with the APID, see Section 7.3.1).

SAT = **Aqua** and INST = **FM3** or **FM4**

7.2.3 Execution Frequency (daily,hourly,..)

Daily (1/day) - This PGE is to be processed once per day, for a maximum of 31 days per month, when all required input data are available.

7.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	324 MB
Total Run Time:	6 hrs.

7.2.5 Restrictions Imposed in Processing Order

Data for the day before and the day after must be present to run the requested data day. However, it is possible to run the system if one or both of these files is missing, but the output products will have missing data. This should only be done in emergency situations, when data are needed for immediate analysis, and will be requested by the CERES Data Management Team (DMT).

7.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

7.3.1 Input Dataset Name (#1): Level-0 Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
EOS_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.CONS
EOS_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1

where xxx identifies the **Aqua** APID which are dependent upon the Instrument being processed, see Production Request[2].

	FM3	FM4
Science =	**141**	**157**
Calibration =	**142**	**158**
Diagnostic =	**143**	**159**
Fixed Pattern =	**144**	**160**

All APIDs may not be present for any one data date, however, there should be at least one of the above APIDs for each data date. For any typical data date, there should be a Science (APID 141 and 157, one for each instrument FM3 and FM4) data file; however, not receiving a Science data file, does not mean the data cannot be processed.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available. At Launch of the Aqua Spacecraft, data for DD+1 need not be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source is PGE name or Ingest Source):

EOS Data Operations System (EDOS)

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **93**

7.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
PM1EPHND.PYYYYDDD.1200.vvv.yyyydddhhmmss

There is one file for each data day covering Noon to Noon, and a total of 2 files required for each PGE execution, see Item 2 below. Where DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY and DDD-1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, used by CER4.1-4.1P1.**

e. Typical file size (MB): **5.5**

7.3.3 Input Dataset Name (#3): Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic/
PM1ATTNR.PYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution, see Item 2 below. Where DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, DDD-1, HH = 22, and DDD+1, HH = 00 must also be available. At launch of Aqua Spacecraft DDD-1, HH = 22 and DDD+1, HH = 00 need not be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, to be used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.45 per file**

7.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P1-6.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P5_input_find.pl**, and the PCF generator, **CER1.1P5_pcf_gen.pl**.

7.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

On March 30, 2005 the Aqua-FM4 instrument experienced an anomaly which caused the loss of the Shortwave Channel. The following instructions should be used for all production processing of the Aqua-FM4 data beginning with this date:

The ASCII file generator requires five (9) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-ic)	3-character static code to indicate the status of the 3-channel intercomparison test,
(OFF)	3-character flag value to turn-off the 3-channel intercomparison test,
(-sat)	4-character static code to indicate the status of the radiance saturation test,
(SW_OFF)	7-character flag value to tell the software to not set all channel radiance values to the CERES fill-value when the Shortwave Channel data is saturated,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

Note: If additional runtime parameters are requested, they will appear as part of the ASCII file generator command line.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find.pl -d YYYY MM DD -env

For Aqua-FM4 after March 30, 2005 use the following:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find.pl -d YYYY MM DD -ic OFF -sat SW_OFF -env

The following file will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5:**

CER1.1P5_PCFin_$SS1_$PS1_$CC1.YYYYMMDD

7.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P5_pcf_gen.pl**, is executed using the newly created ASCII input filename and 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P5_pcf_gen.pl CER1.1P3_PCFin_$SS1_$PS1_$CC1.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf**:

CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD

7.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P1-6.pl**, followed by the PCF filename and the 4-character static code (-env) used to indicated that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf
> run_CER1.1P1-6.pl CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

7.4.4 Special Case Considerations

If it becomes necessary to rerun only one type of Level-0 file (Science, Calibration or Diagnostic), this can be accomplished by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find.pl -d YYYY MM DD -apid APID -env

where APID is one of the following:

Science	**= 141 or 157**
Calibration	**= 142 or 158**
Diagnostic	**= 143 or 159**

This is only done by special request from the Data Management Team.

If a special request is made to run the Subsystem and only create the BDS, or IES products, it can be accomplished by using the following command to create the ASCII Input file:

BDS Only:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find.pl -d YYYY MM DD -o BDS_Only -env

IES Only:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find.pl -d YYYY MM DD -o IES_Only -env

Create IESs when simulated Attitude/Ephemeris data are used in processing, **this mode is only used during testing**, when "real" Attitude/Ephemeris data are not available. **It should never be used for routine processing**:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find_orbsim.csh -d YYYY MM DD -o Override -env

If a special request is made to run the Subsystem using Instrument Only processing mode, this can be done by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5
> CER1.1P5_input_find_orbsim.csh -d YYYY MM DD -pge Instrument_Only -env

All special requests must come from the Data Management Team.

7.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and IES files created during the previous run must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

7.5 Execution Evaluation

7.5.1 Exit Codes

The processor CER1.1P5 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 7-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or ToolKit related error. In these cases, contact the responsible person (see Table 7-1) for assistance.

Table 7-5. Exit Codes for CER1.1P5

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	WARNING: Error in processing or simulated data was requested by the Data Management Team. *Simulated data should only be used for Level-0 processing when requested by the Data Management Team. This data should not be sent to following subsystems. Data is for SS1 analysis purposes only.*

7.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P1-6.pl**, a "heartbeat" will be sent to the screen in the following format:

processing scan : 22690
processing scan : 22691
Starting Processing Loop for SCIENCE
processing scan : 22692
processing scan : 22693
processing scan : 22694
.
.
.
Finished Processing Loop, Beginning Finalize for SCIENCE
processing scan : 23235
processing scan : 23236
Finished Processing for SCIENCE

(above will repeat for Calibration and Diagnostic, if available)
Instrument Subsystem completed with Exit Status = 0
Instrument Subsystem PGE 1.1P5 Complete for PCF file <PCF filename>

The above two lines signify a successful execution. Any other message indicates an error has occurred, contact the responsible person (see Table 7-1) for assistance.

7.5.3 Log and Status Files Results (Include <u>ALL</u> Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.1P5_LogReport_$SS1_$PS1_$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). A comprehensive list of messages that can be generated during the execution of the PGE is contained in Appendix B.

2. **Status Log File: CER1.1P5_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.1P5_LogUser_$SS1_$PS1_$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.

7.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

7.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

If the Ephemeris or Attitude data cannot be processed through DPREP for any reason, then processing should be halted unless a special request to use simulated data has been issued by the Data Management Team. If simulated data are used, these data should not be passed to the Target PGEs.

b. Target PGE Termination

If simulated Ephemeris or Attitude data are used to process the data for any particular data day, the resulting file should not be sent on to the Target PGE for further processing.

7.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times maximum, once for each day of the month.

Table 7-6. Expected Output File Listing for CER1.1P5

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	700	1/day	CER1.2P1, CER1.3P1	Archive,/QA
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	12	1/day	N/A	Archive, /QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	1/day	CER1.3P1	Archive,/QA
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	1/day	N/A	Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.6	1/day	N/A	Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	1/day	N/A	Archive, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.03	1/day	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.06	1/day	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.003	1/day	N/A	No Archive,/QA, rm
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.002	1/day	N/A	No Archive,/QA, rm
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH (.met) @($CERESHOME/instrument/data/int_prod)	o	39	1/hr	CER4.1-4.1P1	Archive
CER1.1P5_PCFin_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P5)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P1-6/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.1P5_LogReport_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P5_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P5_LogUser_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m		1/day	N/A	Archive, rm
CER1.1P5_QC_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/web)	m		1/day	N/A	Archive, rm

a. See Section 7.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month

7.7 Expected Temporary Files/Directories

Table 7-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P1-6/rcf	MCFWrite_CER1.1P5_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.1P1-6/rcf	GetAttr_CER1.1P5_$SS1_$PS1_YYYYMMDD.temp

8.0 PGEName: CER1.1P6

CER1.1P6 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, QuickLook Data for Aqua

PGE CER1.1P6 will only be processed when QuickLook data have been received by the ASDC. This processor will be executed manually upon demand. The QuickLook data are a result of 'On-demand' download of Level 0 data from the Aqua Satellite requested by the CERES Science Team members. Generally, the amount of data will span from a few minutes up to 3 hours. The output of this processor is not to be archived and can be deleted when the real data have been received and processed successfully.

8.1 PGE Details

8.1.1 Responsible Persons

Table 8-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

8.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 8-1.

8.1.3 Parent PGE(s)

Table 8-2. Parent PGEs for CER1.1P6

PGEName	Description
N/A	Simulated Ephemeris and Attitude data from the SDP ToolKit ORBSIM program

8.1.4 Target PGE(s)

There are no target PGEs for this PGE.

8.2 Operating Environment

8.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 8-3. Runtime Parameters for CER1.1P6

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-hr	HH	Hour of QuickLook file start time	I(2)	00..23	m
-min	mm	Minute of QuickLook file start time	I(2)	00..59	m
-apid	APID	Application ID of input QuickLook file. (APID can be found in the QuickLook filename EOS_Gxxx_QL_..., xxx is the APID)	I(3)	131, 132, 133, 167, 168, 169	m
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
HH - 2-digit hour
mm - 2-digit minute
m - mandatory parameter

8.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contains the following parameters:

SS1	-	Sampling Strategy for Instrument: see ProductionRequest[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: The PGE CER1.1P6 requires that the SAT and INST parameters be the following, according to the APID number on the input QL data file, see Section 8.3.1.

SAT = **Aqua** and INST = **FM3** or **FM4**

8.2.3 Execution Frequency (daily,hourly,..)

When Available - This PGE is to be processed for each QuickLook data file received. One or more files may be received on any particular day. This processor will only process data that fall within a 24-hour dataday from midnight-to-midnight. See Section 8.4.4, for the treatment of QuickLook files that span the midnight hour.

8.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	99 MB
Total Run Time:	30 mins.

8.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

8.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

8.3.1 Input Dataset Name (#1): QuickLook Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
EOS_Gxxx_QL_YYYY-MM-DDTHH-mm-ssZ_Vnn.CONS
EOS_Gxxx_QL_YYYY-MM-DDTHH-mm-ssZ_Vnn.DAT1

where xxx identifies the **Aqua** APID which is dependent upon the Instrument being processed.

	FM3	FM4
Science =	**141**	**157**
Calibration =	**142**	**158**
Diagnostic =	**143**	**159**
Fixed Pattern =	**144**	**160**

1. Mandatory/Optional: **This file is Mandatory. Any one of the three APIDs may be received for any particular data date. It is not necessary to receive all 4 APIDs for processing.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD, HH, mm and APID.**
3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

EOS Data Operations System (EDOS)

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **6**

8.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
EOSPM1_YYYY-MM-DB.eph

1. Mandatory/Optional: **This file is Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, (DB = DD-1, DD, DD+1).**
3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

ORBSIM

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove for 10 days.**

e. Typical file size (MB): **0.9**

8.3.3 Input Dataset Name (#3): Simulated Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/EOSPM1_YYYY-MM-DB.att,
where DB = DD-1, DD, DD+1.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD. Data for DD-1 and DD+1 must also be available.**
3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

ORBSIM

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove for 10 days.**

e. Typical file size (MB): **0.9**

8.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P1-6.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P6_input_find.csh**, and the PCF generator, **CER1.1P6_pcf_gen.csh**.

8.4.1 How to Generate the ASCII File

The ASCII file generator requires eleven (11) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-apid)	5-character static code to indicate the APID follows,
(APID)	3-digit Application ID,
(-hr)	3-character static code to indicate that the start hour of the file follows,
(HH)	2-digit hour,
(-min)	4-character static code to indicate that the start minute of the file follows,
(mm)	2-digit minute,

(-env) 4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6
> CER1.1P6_input_find.csh -d YYYY MM DD -apid APID -hr HH -min mm -env

The following file will be generated in **$CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6:**

CER1.1P6_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID

8.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P6_pcf_gen.csh**, is executed using the newly created ASCII input filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P6_pcf_gen.csh
CER1.1P6_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID -env

The following PCF will be generated in **$CERESHOME/instrument/rcf**:

CER1.1P6_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID

8.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P1-6.pl**, followed by <PCF filename> and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

>cd $CERESHOME/instrument/CER1.1P1-6/rcf
> run_CER1.1P1-6.pl
CER1.1P6_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm -APID -env

8.4.4 Special Case Considerations

This processor will only process data that fall with a 24 hour dataday from midnight-to-midnight. QuickLook (QL) files may span midnight. If this situation occurs, then two runs of CER1.1P4 are necessary to process all of the data from the QL file. To determine if a QL file spans the midnight hour, check the Hour (hh) parameter of the Level 0 Data Filename, see Section 8.3.1. Typically the QL files span 1 - 3 hours of data. If the parameter 'hh' is between 20 and 23, then proceed at follows:

a. First follow the instructions for creating the ASCII input file [CER1.1P6_PCFin_...], see Section 8.4.1. Now two sets of Processors must be executed.

b. First Process: proceed through the instructions in Sections 8.4.2 and 8.4.3 using CERDataDateDay = **DD**.

c. Second Process:

   1. Edit the 'PCFin' file and set the parameters:

      Data_Date = YYYY-MM-**DD+1**
      Start_Time = YYYY-MM-**DD+1**T00:00:00.000000Z
      Stop_Time = YYYY-MM-**DD+1**T23:59:59.999999Z

   2. Change all output filenames, see Table 8-5, and log filenames, see Section 8.5.3 to reflect the next dataday **(DD+1)** in the filenames.

   3. Save the 'PCFin' file with a new name:
      CER1.1P6_PCFin_$SS1_$PS1_$CC1.YYYYMM**DD+1**_QLHHmm

   4. Proceed through the instructions in Sections 8.4.2 and 8.4.3 using CERDataDateDay = **DD+1**.

8.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and QC files must be deleted before beginning reprocessing. A script to remove all files from the failed run is available.

The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

```
> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl
    CER1.1P6_PCF_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID -
    env
```

8.5 Execution Evaluation

8.5.1 Exit Codes

The processor CER1.1P6 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 8-4. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 8-1) for assistance.

Table 8-4. Exit Codes for CER1.1P6

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	Proceed normally. The data should not be processed through the following subsystems.

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

8.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P1-6.pl** for Science Data (APID = 141 or 157), a "heartbeat" will be sent to the screen in the following format:

```
  processing scan : 22690
  processing scan : 22691
Starting Processing Loop for SCIENCE
  processing scan : 22692
  processing scan : 22693
  processing scan : 22694
                .
                .
                .
Finished Processing Loop, Beginning Finalize for SCIENCE
  processing scan : 23235
  processing scan : 23236
Finished Processing for SCIENCE

 ================================================================
= WARNING :  Simulated Ephemeris or Attitude data used for Processing Data  =
= WARNING :  PGE CER1.2P1 should not be run                                 =
================================================================

Instrument Subsystem completed with Exit Status = 205
Instrument Subsystem PGE 1.1P6 Complete for PCF file <PCF filename>
```

The above two lines indicate a successful run.

8.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.1P6_LogReport_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.1P6_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

The Status Log File contains all messages created by the ToolKit and Instrument-related messages that can lead to abnormal ending of the Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.1P6_LogUser_$SS1_$PS1_$CC1.YYYYMMDD_QLHHmm-APID**

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.

8.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

8.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None at this time.

b. Target PGE Termination

None at this time. The results from QuickLook processing are not passed on to any other PGEs.

8.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. The BDS files listed may or may not be created for any run of QuickLook data. Only the BDS associated with the requested APID will be created. The output files need not be archived. These files may be removed after the Level-0 data has been processed successfully.

Table 8-5. Expected Output File Listing for CER1.1P6

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	40	OD	N/A	No Archive,/QA, rm
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	12	OD	N/A	No Archive,/QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	OD	N/A	No Archive,/QA, rm
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10	OD	N/A	No Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	OD	N/A	No Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	10	OD	N/A	No Archive,/QA, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met)* @($CERESHOME/instrument/data/out_comp)	o	1.6	OD	N/A	No Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	OD	N/A	No Archive,/QA, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.03	OD	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.06	OD	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.01	OD	N/A	No Archive,/QA, rm
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID (.met) @($CERESHOME/instrument/web)	m	0.01	OD	N/A	No Archive,/QA, rm
CER1.1P6_PCFin_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/CER1.1P1-6/rcf/CER1.1P6)	m	0.006	1/day	N/A	No Archive, rm

Table 8-5. Expected Output File Listing for CER1.1P6

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER1.1P6_PCF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/CER1.1P1-6/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.1P6_LogReport_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P6_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P6_LogUser_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P6_PCF_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID.tar @($CERESHOME/instrument/runlogs)	m		OD	N/A	No Archive, rm
CER1.1P6_QC_$SS1_$PS1_$CC1.YYYYMMDD_ QLHHmm-APID.tar @($CERESHOME/instrument/web)	m		OD	N/A	No Archive, rm

a. See Section 8.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
OD - On Demand
hr - hour

8.7 Expected Temporary Files/Directories

Table 8-6. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P1-6/rcf	MCFWrite_CER1.1P6_$SS1_$PS1_YYYYMMDD_QLHHmm.temp
$CERESHOME/instrument/CER1.1P1-6/rcf	GetAttr_CER1.1P6_$SS1_$PS1_YYYYMMDD_QLHHmm.temp

9.0 PGEName: CER1.1P7

CER1.1P5 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for NPP

9.1 PGE Details

9.1.1 Responsible Persons

Table 9-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

9.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 9-1.

9.1.3 Parent PGE(s)

Table 9-2. Parent PGEs for CER1.1P7

PGEName	Description
CER1.0P2	NPP RDR Pre-processor

9.1.4 Target PGE(s)

Table 9-3. Target PGEs after CER1.1P7

PGEName	Description
CER1.2P1	Convert BDS to PRES8
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function

9.2 Operating Environment

9.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 9-4. Runtime Parameters for CER1.1P7

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-o	opt	Write_Products	A(8)	opt = Default, Override, BDS_Only, IES_Only	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-pge	opt	PGE Mode	A(20)	opt = CERES_Production, Instrument_Only	o
-partearth	opt	Write_Partial_Footprints	A(3)	opt = On, Off	o
-start	opt	Requested Start Time	time	hh:mm:ss.ssssss	o
-stop	opt	Requested Stop Time	time	hh:mm:ss.ssssss	o
-tcmode	opt	Second Time Constant Mode	A(3)	opt = On, Off	o
-apid	xx	APID to process	I(3)	141, 142, 143, 157, 158, 159	o
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter
o - optional parameter
hh - 2-digit hour
mm - 2-digit minute
ss - 2-digit seconds
ssssss - 6-digit milliseconds

9.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contain the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: From the Production Request[2], the PGE CER1.1P7 requires that the SAT and INST parameters be the following: (this must agree with the APID, see Section 9.3.1).

SAT = **NPP** and INST = **FM5**

9.2.3 Execution Frequency (daily,hourly,..)

Daily (1/day) - This PGE is to be processed once per day, for a maximum of 31 days per month, when all required input data are available.

9.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	324 MB
Total Run Time:	6 hrs.

9.2.5 Restrictions Imposed in Processing Order

Data for the day before and the day after must be present to run the requested data day. However, it is possible to run the system if one or both of these files is missing, but the output products will have missing data. This should only be done in emergency situations, when data are needed for immediate analysis, and will be requested by the CERES Data Management Team (DMT).

9.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

9.3.1 Input Dataset Name (#1): Level-0 Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
NPP_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_yyyymmdd.CONS
NPP_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_yyyymmdd.DAT

where xxx identifies the **NPP** APID which are dependent upon the Instrument being processed, see Production Request[2].

	FM5
Science =	**149**
Calibration =	**147**
Diagnostic =	**150**

All APIDs may not be present for any one data date, however, there should be at least one of the above APIDs for each data date. For any typical data date, there should be a Science (APID 149) data file; however, not receiving a Science data file, does not mean the data cannot be processed.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available. At Launch of the Aqua Spacecraft, data for DD+1 need not be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source is PGE name or Ingest Source):

PGE CER1.0P2

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **93**

9.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic/
NPPEPH.NYYYYDDD.yyyymmdd.dat

There is one file for each data day covering Midnight to Midnight. Where DDD is the data day of year, yyyy is the production year, mm is the production month of the year, dd is the production day of year.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY and DDD-1, and DDD+1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

PGE CER1.0P2

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, used by CER4.1-4.1P1.**

e. Typical file size (MB): **5.5**

9.3.3 Input Dataset Name (#3): Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic/ NPPATT.NYYYYDDD.yyyymmdd.dat

where DDD is the data day of year, yyyy is the production year, mm is the production month of the year and dd is the production day of year.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, DDD-1, and DDD+1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

PGE CER1.0P2

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, to be used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.45 per file**

9.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P7.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P7_input_find.pl**, and the PCF generator, **CER1.1P7_pcf_gen.pl**.

9.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

The ASCII file generator requires five (9) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-ic)	3-character static code to indicate the status of the 3-channel intercomparison test,
(OFF)	3-character flag value to turn-off the 3-channel intercomparison test,
(-sat)	4-character static code to indicate the status of the radiance saturation test,
(SW_OFF)	7-character flag value to tell the software to not set all channel radiance values to the CERES fill-value when the Shortwave Channel data is saturated,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

Note: If additional runtime parameters are requested, they will appear as part of the ASCII file generator command line.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> CER1.1P7_input_find.pl -d YYYY MM DD -env

The following file will be generated in **$CERESHOME/instrument/CER1.1P7/rcf:**
CER1.1P7_PCFin_$SS1_$PS1_$CC1.YYYYMMDD

9.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P7_pcf_gen.pl**, is executed using the newly created ASCII input filename and 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P7_pcf_gen.pl CER1.1P3_PCFin_$SS1_$PS1_$CC1.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.1P7/rcf**:
CER1.1P7_PCF_$SS1_$PS1_$CC1.YYYYMMDD

9.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P7.pl**, followed by the PCF filename and the 4-character static code (-env) used to indicated that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> run_CER1.1P7.pl CER1.1P7_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

9.4.4 Special Case Considerations

If it becomes necessary to rerun only one type of Level-0 file (Science, Calibration or Diagnostic), this can be accomplished by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> CER1.1P7_input_find.pl -d YYYY MM DD -apid APID -env

where APID is one of the following:

Science = 149
Calibration = 147
Diagnostic = 150

This is only done by special request from the Data Management Team.

If a special request is made to run the Subsystem and only create the BDS, or IES products, it can be accomplished by using the following command to create the ASCII Input file:

BDS Only:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> CER1.1P7_input_find.pl -d YYYY MM DD -o BDS_Only -env

IES Only:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> CER1.1P7_input_find.pl -d YYYY MM DD -o IES_Only -env

Create IESs when simulated Attitude/Ephemeris data are used in processing, **this mode is only used during testing**, when "real" Attitude/Ephemeris data are not available. **It should never be used for routine processing**:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> CER1.1P7_input_find_orbsim.csh -d YYYY MM DD -o Override -env

If a special request is made to run the Subsystem using Instrument Only processing mode, this can be done by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P7/rcf
> CER1.1P7_input_find_orbsim.csh -d YYYY MM DD -pge Instrument_Only -env

All special requests must come from the Data Management Team.

9.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and IES files created during the previous run must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.1P7_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

9.5 Execution Evaluation

9.5.1 Exit Codes

The processor CER1.1P7 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 9-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or ToolKit related error. In these cases, contact the responsible person (see Table 9-1) for assistance.

Table 9-5. Exit Codes for CER1.1P7

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	WARNING: Error in processing or simulated data was requested by the Data Management Team. *Simulated data should only be used for Level-0 processing when requested by the Data Management Team. This data should not be sent to following subsystems. Data is for SS1 analysis purposes only.*

9.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P7.pl**, a "heartbeat" will be sent to the screen in the following format:

processing scan : 22690
processing scan : 22691
Starting Processing Loop for SCIENCE
processing scan : 22692

processing scan : 22693
processing scan : 22694
.
.
.
Finished Processing Loop, Beginning Finalize for SCIENCE
processing scan : 23235
processing scan : 23236
Finished Processing for SCIENCE

(above will repeat for Calibration and Diagnostic, if available)
Instrument Subsystem completed with Exit Status = 0
Instrument Subsystem PGE 1.1P7 Complete for PCF file <PCF filename>

The above two lines signify a successful execution. Any other message indicates an error has occurred, contact the responsible person (see Table 9-1) for assistance.

9.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

4. **Report Log File: CER1.1P7_LogReport_$SS1_$PS1_$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). A comprehensive list of messages that can be generated during the execution of the PGE is contained in Appendix B.

5. **Status Log File: CER1.1P7_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

6. **User Log File: CER1.1P7_LogUser_$SS1_$PS1_$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.

9.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

9.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

If the Ephemeris or Attitude data cannot be processed through CER1.0P2 for any reason, then processing should be halted unless a special request to use simulated data has been issued by the Data Management Team. If simulated data are used, these data should not be passed to the Target PGEs.

b. Target PGE Termination

If simulated Ephemeris or Attitude data are used to process the data for any particular data day, the resulting file should not be sent on to the Target PGE for further processing.

9.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times maximum, once for each day of the month.

Table 9-6. Expected Output File Listing for CER1.1P7

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	700	1/day	CER1.2P1, CER1.3P1	Archive,/QA, meta
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	12	1/day	N/A	Archive, /QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	1/day	CER1.3P1	Archive,/QA
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	1/day	N/A	Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.6	1/day	N/A	Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	1/day	N/A	Archive, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.03	1/day	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.06	1/day	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.003	1/day	N/A	No Archive,/QA, rm

Table 9-6. Expected Output File Listing for CER1.1P7

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.002	1/day	N/A	No Archive,/QA, rm
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH (.met) @($CERESHOME/instrument/data/int_prod)	o	39	1/hr	CER4.1-4.1P1	Archive
CER1.1P7_PCFin_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P7/rcf)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P7_PCF_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P7/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.1P7_LogReport_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P7_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P7_LogUser_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P7_PCF_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m		1/day	N/A	Archive, rm
CER1.1P7_QC_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/web)	m		1/day	N/A	Archive, rm

a. See Section 9.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month

9.7 Expected Temporary Files/Directories

Table 9-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P7/rcf	MCFWrite_CER1.1P7_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.1P7/rcf	GetAttr_CER1.1P7_$SS1_$PS1_YYYYMMDD.temp

10.0 PGEName: CER1.1P8

CER1.1P8 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for TRMM, Terra, Aqua and NPP

10.1 PGE Details

10.1.1 Responsible Persons

Table 10-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Thomas Grepiotis
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951- 1940
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	arthur.t.grepiotis@nasa.gov

10.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 10-1.

10.1.3 Parent PGE(s)

Table 10-2. Parent PGEs for CER1.1P8

PGEName	Description
N/A	DPREP - Ephemeris and Attitude Data preprocessor for Aqua, Source ECS Ingest
CER1.0P2	RDR Preprocessor for NPP

10.1.4 Target PGE(s)

Table 10-3. Target PGEs after CER1.1P8

PGEName	Description
CER1.2P1	Convert BDS to PRES8
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function

10.2 Operating Environment

10.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 10-4. Runtime Parameters for CER1.1P8

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-o	opt	Write_Products	A(8)	opt = Default, Override, BDS_Only, IES_Only	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-pge	opt	PGE Mode	A(20)	opt = CERES_Production, Instrument_Only	o
-partearth	opt	Write_Partial_Footprints	A(3)	opt = On, Off	o
-start	opt	Requested Start Time	time	hh:mm:ss.ssssss	o
-stop	opt	Requested Stop Time	time	hh:mm:ss.ssssss	o
-tcmode	opt	Second Time Constant Mode	A(3)	opt = On, Off	o
-apid	xx	APID to process	I(3)	141, 142, 143, 157, 158, 159	o
-ct	opt	Check for crosstalk and set radiance counts to fill value	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-ic	opt	Turn on/off radiance 3-channel intercomparison checking	A(3)	opt = On, Off	o

Table 10-4. Runtime Parameters for CER1.1P8

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
-sat	opt	Turn on/off radiance saturation checking for a specified set of channels	A(7)	opt = All_On, All_Off, SW_Off, TOT_Off, WN_Off, WS_Off, WT_Off, ST_Off	o

Note: * -env is a runtime parameter for all scripts

YYYY	-	4-digit year
MM	-	2-digit month
DD	-	2-digit day
m	-	mandatory parameter
o	-	optional parameter
hh	-	2-digit hour
mm	-	2-digit minute
ss	-	2-digit seconds
ssssss	-	6-digit milliseconds

10.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**ENVinstrument-env.csh**' and contain the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory
EOS_Dir	-	Directory containing the EOS Level-0 Construction Record reader
DS_FILE_PATH	-	Directory where Level-0 files are located
CLM_LOGMSGFIL	-	Error Log file for the EOS Construction Record reader
CLE_STDERRFIL	-	Message Log file for the EOS Construction Record reader

Note: From the Production Request[2], the PGE CER1.1P8 requires that the SAT and INST parameters be the following: (this must agree with the APID, see Section 10.3.1).

SAT = **Aqua** and INST = **FM3** or **FM4 or**
SAT = **TRMM and** INST = **PFM or**
SAT = **Terra and** INST = **FM1 or FM2 or**
SAT = **NPP and** INST = **FM5**

10.2.3 Execution Frequency (daily,hourly,..)

Daily (1/day) - This PGE is to be processed once per day, for a maximum of 31 days per month, when all required input data are available.

10.2.4 Memory/Disk Space/Time Requirements

Memory:	32 MB
Disk Space:	324 MB
Total Run Time:	6 hrs.

10.2.5 Restrictions Imposed in Processing Order

Data for the day before and the day after must be present to run the requested data day. However, it is possible to run the system if one or both of these files is missing, but the output products will have missing data. This should only be done in emergency situations, when data are needed for immediate analysis, and will be requested by the CERES Data Management Team (DMT).

10.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

10.3.1 Input Dataset Name (#1): Level-0 Data

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/input/
TRMM:
TRMM_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT
Terra and Aqua:
EOS_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.CONS
EOS_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1
NPP:
NPP_Gxxx_LZ_YYYY-MM-DDThh-mm-ssZ_yyyymmdd.DAT

where xxx identifies the APID which are dependent upon the Instrument being processed, see Production Request[2]. And for NPP yyyymmdd is the production date of the file assigned by PGE CER1.0P2.

	PFM	FM1	FM2	FM3	FM4	FM5
Science =	**54**	**131**	**167**	**141**	**157**	**149**
Calibration =	**55**	**132**	**168**	**142**	**158**	**147**
Diagnostic =	**56**	**133**	**169**	**143**	**159**	**150**
Fixed Pattern =	**N/A**	**134**	**170**	**144**	**160**	**N/A**

All APIDs may not be present for any one data date, however, there should be at least one of the above APIDs for each data date. For any typical data date, there should be a Science (APID 141 and 157, one for each instrument FM3 and FM4) data file; however, not receiving a Science data file, does not mean the data cannot be processed.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available. At Launch of the Aqua Spacecraft, data for DD+1 need not be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source is PGE name or Ingest Source):

SDPF for TRMM
EOS Data Operations System (EDOS) for Terra and Aqua
PGE CER1.0P2 for NPP

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **93**

10.3.2 Input Dataset Name (#2): Ephemeris Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/ancillary/dynamic

TRMM: TRMM_ED9D_OR_YYYY-MM-DDT00-00-00Z_Vnn.nat

Terra: AM1EPHN0001MMDDYYYYHH00000000000
or
AM1EPHN0.AYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution. For the new filenaming convention, DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

Aqua: PM1EPHND.PYYYYDDD.1200.vvv.yyyydddhhmmss

There is one file for each data day, covering Noon to Noon, there are 2 files required for each PGE execution. DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

NPP: NPPEPH.NYYYYDDD.yyyymmdd.dat

There is one file for each day. DDD is the data day of year, yyyymmdd is the production data date of the data file assigned by PGE CER1.0P2.

There is one file for each data day covering Noon to Noon, and a total of 2 files required for each PGE execution, see Item 2 below. Where DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY and DDD-1 must also be available.**
3. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, used by CER4.1-4.1P1.**

e. Typical file size (MB): **5.5**

10.3.3 Input Dataset Name (#3): Attitude Data

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic

TRMM: TRMM_G500_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1.nat

Terra: AM1ATTNF001MMDDYYYYHH00000000000
or
AM1ATTNF.AYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution. For the new filenaming convention, DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

Aqua: PM1ATTNR.YYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution. For the new filenaming convention, DDD is the data day of year, vvv is the ESDT version number, yyyy is the

production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

NPP: NPPATT.NYYYYDDD.yyyymmdd.dat
Where DDD is the data day of year and yyyymmdd is the production date of the data set assigned by PGE CER1.0P2.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1, HH = 22 and DD+1, HH = 00 must also be available. For the new filenaming convention DDD-1, HH = 22 and DDD+1, HH= 00 must also be available.**
3. Mandatory/Optional: **These files are Mandatory.**
4. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, DDD-1, HH = 22, and DDD+1, HH = 00 must also be available. At launch of Aqua Spacecraft DDD-1, HH = 22 and DDD+1, HH = 00 need not be available.**
5. Waiting Period: **2 days**

b. Source of Information (Source PGE name or Ingest Source):

TRMM DPREP
ECS DPREP, subscription from ECS for Terra and Aqua
PGE CER1.0P2 for NPP

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Do not remove, to be used by CER4.1-4.1P1.**

e. Typical file size (MB): **0.45 per file**

10.4 Operating Procedures (Procedure for each part of the processor's elements)

The Main Processor production script, **run_CER1.1P8.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **ENVinstrument-env.csh**, then executing an ASCII file generator **CER1.1P8_input_find.pl**, and the PCF generator, **CER1.1P8_pcf_gen.pl**.

10.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

On March 30, 2005 the Aqua-FM4 instrument experienced an anomaly which caused the loss of the Shortwave Channel. The following instructions should be used for all production processing of the Aqua-FM4 data beginning with this date:

The ASCII file generator requires five (9) command line arguments:

(-d)	2-character static code to indicate that a date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-ic)	3-character static code to indicate the status of the 3-channel intercomparison test,
(OFF)	3-character flag value to turn-off the 3-channel intercomparison test,
(-sat)	4-character static code to indicate the status of the radiance saturation test,
(SW_OFF)	7-character flag value to tell the software to not set all channel radiance values to the CERES fill-value when the Shortwave Channel data is saturated,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

Note: If additional runtime parameters are requested, they will appear as part of the ASCII file generator command line.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P8_input_find.pl -d YYYY MM DD -env

For Aqua-FM4 after March 30, 2005 use the following:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P8_input_find.pl -d YYYY MM DD -ic OFF -sat SW_OFF -env

The following file will be generated in **$CERESHOME/instrument/CER1.1P8/rcf:**
CER1.1P8_PCFin_$SS1_$PS1_$CC1.YYYYMMDD

10.4.2 How to Generate the PCF File

The PCF generator, **CER1.1P8_pcf_gen.pl**, is executed using the newly created ASCII input filename and 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.1P8_pcf_gen.pl CER1.1P3_PCFin_$SS1_$PS1_$CC1.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.1P8/rcf**:
CER1.1P8_PCF_$SS1_$PS1_$CC1.YYYYMMDD

10.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.1P8.pl**, followed by the PCF filename and the 4-character static code (-env) used to indicated that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.1P1-6/rcf
> run_CER1.1P1-6.pl CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

10.4.4 Special Case Considerations

If it becomes necessary to rerun only one type of Level-0 file (Science, Calibration or Diagnostic), this can be accomplished by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P5_input_find.pl -d YYYY MM DD -apid APID -env

where APID is one of the following:

Science	**= 54, 131, 167, 141, 157 or 149**
Calibration	**= 55, 132, 168, 142, 158 or 147**
Diagnostic	**= 56, 133, 169, 143, 159 or 150**

This is only done by special request from the Data Management Team.

If a special request is made to run the Subsystem and only create the BDS, or IES products, it can be accomplished by using the following command to create the ASCII Input file:

BDS Only:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P8_input_find.pl -d YYYY MM DD -o BDS_Only -env

IES Only:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P8_input_find.pl -d YYYY MM DD -o IES_Only -env

Create IESs when simulated Attitude/Ephemeris data are used in processing, **this mode is only used during testing**, when "real" Attitude/Ephemeris data are not available. **It should never be used for routine processing**:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P8_input_find_orbsim.csh -d YYYY MM DD -o Override -env

If a special request is made to run the Subsystem using Instrument Only processing mode, this can be done by using the following command to create the ASCII Input file:

> cd $CERESHOME/instrument/CER1.1P8/rcf
> CER1.1P8_input_find_orbsim.csh -d YYYY MM DD -pge Instrument_Only -env

All special requests must come from the Data Management Team.

10.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDS and IES files created during the previous run must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.1P8_PCF_$SS1_$PS1_$CC1.YYYYMMDD -env

10.5 Execution Evaluation

10.5.1 Exit Codes

The processor CER1.1P8 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 10-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or ToolKit related error. In these cases, contact the responsible person (see Table 10-1) for assistance.

Table 10-5. Exit Codes for CER1.1P5

Exit Code	Definition	Action
0	Normal Exit	Proceed Normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)
205	Simulated Ephemeris or Attitude Data used in processing	WARNING: Error in processing or simulated data was requested by the Data Management Team. *Simulated data should only be used for Level-0 processing when requested by the Data Management Team. This data should not be sent to following subsystems. Data is for SS1 analysis purposes only.*

10.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.1P8.pl**, a "heartbeat" will be sent to the screen in the following format:

processing scan : 22690
processing scan : 22691
Starting Processing Loop for SCIENCE
processing scan : 22692

processing scan : 22693
processing scan : 22694
.
.
.
Finished Processing Loop, Beginning Finalize for SCIENCE
processing scan : 23235
processing scan : 23236
Finished Processing for SCIENCE

(above will repeat for Calibration and Diagnostic, if available)
Instrument Subsystem completed with Exit Status = 0
Instrument Subsystem PGE 1.1P8 Complete for PCF file <PCF filename>

The above two lines signify a successful execution. Any other message indicates an error has occurred, contact the responsible person (see Table 10-1) for assistance.

10.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

7. **Report Log File: CER1.1P8_LogReport_$SS1_$PS1_$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). A comprehensive list of messages that can be generated during the execution of the PGE is contained in Appendix B.

8. **Status Log File: CER1.1P8_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

9. **User Log File: CER1.1P8_LogUser_$SS1_$PS1_$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.

10.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

10.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

If the Ephemeris or Attitude data cannot be processed through DPREP for any reason, then processing should be halted unless a special request to use simulated data has been issued by the Data Management Team. If simulated data are used, these data should not be passed to the Target PGEs.

b. Target PGE Termination

If simulated Ephemeris or Attitude data are used to process the data for any particular data day, the resulting file should not be sent on to the Target PGE for further processing.

10.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. This PGE is expected to process 31 times maximum, once for each day of the month.

Table 10-6. Expected Output File Listing for CER1.1P8

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	700	1/day	CER1.2P1, CER1.3P1	Archive,/QA, meta
CER_BDSS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	12	1/day	N/A	Archive, /QA, rm
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10.7	1/day	CER1.3P1	Archive,/QA
CER_BDSG_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive,/QA, rm
CER_BDSP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.5	1/day	N/A	Archive,/QA, rm
CER_BDSM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	10	1/day	N/A	Archive, rm
CER_BINMEM_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	1.6	1/day	N/A	Archive,/QA, rm
CER_BDSF_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)	o	0.5	1/day	N/A	Archive, rm
CER_BQCRP_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.03	1/day	N/A	No Archive,/QA, rm
CER_BQCRPS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.06	1/day	N/A	No Archive,/QA, rm
CER_BINHS_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.003	1/day	N/A	No Archive,/QA, rm
CER_BINEL_$SS1_$PS1_$CC1.YYYYMMDD (.met) @($CERESHOME/instrument/web)	m	0.002	1/day	N/A	No Archive,/QA, rm
CER_IES_$SS1_$PS1_$CC1.YYYYMMDDHH (.met) @($CERESHOME/instrument/data/int_prod)	o	39	1/hr	CER4.1-4.1P1	Archive
CER1.1P8_PCFin_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P8/rcf)	m	0.006	1/day	N/A	No Archive, rm
CER1.1P8_PCF_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/CER1.1P8/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.1P8_LogReport_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.1P8_LogStatus_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.1P8_LogUser_$SS1_$PS1_$CC1.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.1P5_PCF_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m		1/day	N/A	Archive, rm
CER1.1P8_QC_$SS1_$PS1_$CC1.YYYYMMDD.tar @($CERESHOME/instrument/web)	m		1/day	N/A	Archive, rm

a. See Section 10.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b.

VD	-	Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA	-	File is to be written to the DAAC designated /QA directory
DB	-	File content is to be entered into the LaTIS Database
rm	-	remove
YYYY	-	4-digit year
MM	-	2-digit month {valid values: 01 .. 12}
DD	-	2-digit day {valid values: 01 .. 31}
HH	-	2-digit hour of the day {valid values: 00 .. 23}
m	-	mandatory output
o	-	optional output
EOD	-	End of Data Month

10.7 Expected Temporary Files/Directories

Table 10-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.1P8/rcf	MCFWrite_CER1.1P8_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.1P8/rcf	GetAttr_CER1.1P8_$SS1_$PS1_YYYYMMDD.temp

11.0 PGEName: CER1.3P1

CER1.3P1 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, Create subsetted BDSI from BDS/BDSD for Internal Calibration Events

PGE CER1.3P1 will be run on a daily basis, however, BDSIs will only be created when an Internal Calibration Event is present in either the BDS or BDSD for that day.

11.1 PGE Details

11.1.1 Responsible Persons

Table 11-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

11.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 11-1.

11.1.3 Parent PGE(s)

Table 11-2. Parent PGEs for CER1.3P1

PGEName	Description
CER1.1P1	CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for TRMM
CER1.1P3	CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for Terra
CER1.1P5	CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0 for Aqua

11.1.4 Target PGE(s)

Table 11-3. Target PGEs after CER1.3P1

PGEName	Description
CER1.3P2	CERES Internal Calibration Analyzer

11.2 Operating Environment

11.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 11-4. Runtime Parameters for CER1.3P1

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-env *	N/A	Source Instrument Environment	N/A	N/A	m
-pret	mm	Time prior to Internal cal to start subset	I(2)	01..60	o
-postt	mm	Time after Internal cal to stop subset	I(2)	01..60	o
-nf	nn	Maximum Number of BDSI files that can be created	I(2)	01..99	o

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
mm> -> 2-digit minutes
m - mandatory parameter

11.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**CER1.3P1-env_PROD.csh**' and contains the following parameters:

SS1	-	Sampling Strategy for Instrument: see Production Request[2]
PS1	-	Output Production Strategy for Instrument: see Production Request[2]
CC1	-	Configuration Code for Instrument: see CM Database
CC1_3	-	Configuration Code for CER1.3P1: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
SW1_3	-	Software SCCR # for CER1.3P1: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
DATA1_3	-	Data SCCR # for CER1.3P1: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory

11.2.3 Execution Frequency (daily,hourly,..)

Daily, the PGE should be run for each data date, however, BDSI(s) will be created only when an Internal Calibration event is present for that data date.

11.2.4 Memory/Disk Space/Time Requirements

Memory:	318 MB
Disk Space:	1140 MB
Total Run Time:	2 mins.

11.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

11.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

11.3.1 Input Dataset Name (#1): BDS

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   $CERESHOME/instrument/data/out_comp/
   CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD

   1. Mandatory/Optional: **This file is Mandatory.**
   2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD.**
   3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

   CER1.1P1, CER1.1P3 or CER1.1P5

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **500**

11.3.2 Input Dataset Name (#2): BDSD

a. Directory Location/Inputs Expected (Including .met files, Header files, etc.)

$CERESHOME/instrument/data/out_comp/
CER_BDSD_$SS1_$PS1_$CC1.YYYYMMDD

1. Mandatory/Optional: **Optional**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD.**
3. Waiting Period: **None**

b. Source of Information (Source PGE name or Ingest Source):

CER1.1P1, CER1.1P3 or CER1.1P5

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **10.7**

11.4 Operating Procedures (Procedure for each part of the processor's elements)

CER1.3P1 production script, **run_CER1.3P1.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **CER1.3P1-env_PROD.csh**, then executing an ASCII file generator **CER1.3P1_input_find.pl**, and the PCF generator, **CER1.3P1_pcf_gen.pl**.

11.4.1 How to Generate the ASCII File

The ASCII file generator requires eleven (5) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

>cd $CERESHOME/instrument/CER1.3P1/rcf
> CER1.3P1_input_find.pl -d YYYY MM DD -env

The following file will be generated in **$CERESHOME/instrument/CER1.3P1/rcf:**

CER1.3P1_PCFin_$SS1_$PS1_$CC1_3.YYYYMMDD

11.4.2 How to Generate the PCF File

The PCF generator, **CER1.3P1_pcf_gen.pl**, is executed using the newly created ASCII input filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.3P1_pcf_gen.pl CER1.3P1_PCFin_$SS1_$PS1_$CC1_3.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.3P1/rcf**:

CER1.3P1_PCF_$SS1_$PS1_$CC1_3.YYYYMMDD

11.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.3P1.pl**, followed by <PCF filename> and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

>cd $CERESHOME/instrument/CER1.3P1/rcf
> run_CER1.3P1.pl
CER1.3P1_PCF_$SS1_$PS1_$CC1_3.YYYYMMDD -env

11.4.4 Special Case Considerations

This processor will only create BDSIs when Internal Calibration Data is present. A status code of ten (10) will be returned if no BDSIs are created.
It is possible that a run may create more than twelve (12) BDSIs for a data day, in this case the code will exit with an error code of 200 and a message that more than twelve (12) output files need to be created. In this case, it is possible to override the limit of twelve (12) BDSIs as follows:

> cd $CERESHOME/instrument/CER1.3P1/rcf
> CER1.3P1_input_find.pl -d YYYY MM DD -nf 20 -env

where -nf indicates the number of possible output files, in the example the number of files is set to 20.

Then follow the instructions to create the PCF in Section 11.4.2 and run the PGE following the instructions in Section 11.4.3.

11.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all BDSIs and QC files must be deleted before beginning reprocessing. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.3P1_PCF_$SS1_$PS1_$CC1_3.YYYYMMDD -env

11.5 Execution Evaluation

11.5.1 Exit Codes

The processor CER1.3P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 11-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 11-1) for assistance.

Table 11-5. Exit Codes for CER1.3P1

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
10	Normal Exit	No BDSI files were created, no internal cal data present
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

11.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.3P1.pl** for Terra Data, the following will be sent to the screen:

Compressing BDSI -- CER_BDSI_$SS1_$PS1_$CC1_3.YYYYMMDD01
compressing Internal_Calibration_BDS
BDS file to be compressed:
$CERESHOME/data/out_comp/CER_BDSI_$SS1_$PS1_$CC1_3.YYYYMMDD01

compressed BDS:
$CERESHOME/data/out_comp/CER_BDSI_$SS1_$PS1_$CC1_3.YYYYMMDD01_cpress

CER1.3P1 SUCCESSFUL -- Exit Status = 0
PGE CER1.3P1 Complete for PCF file <PCF filename>

The above two lines indicate a successful run.

NOTE: At this time for Aqua (FM3 and FM4) the following message will be seen:

CER1.3P1 SUCCESSFUL -- Exit Status = 0, no Internal Cal Events were found -- no BDSI files created
CER1.3P1 Complete for PCF file <PCF filename>

11.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.3P1_LogReport_$SS1_$PS1_$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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.3P1_LogStatus_$SS1_$PS1_$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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.3P1_LogUser_$SS1_$PS1_$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.

11.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

11.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

   None at this time.

b. Target PGE Termination

   None at this time. The target PGE does not exist at this time.

11.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE. The BDS files listed may or may not be created for any run of QuickLook data. Only the BDS associated with the requested APID will be created. The output files need not be archived. These files may be removed after the Level-0 data has been processed successfully.

Table 11-6. Expected Output File Listing for CER1.3P1

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDSI_$SS1_$PS1_$CC1_3.YYYYMMDDnn (.met) @($CERESHOME/instrument/data/out_comp)	o	50	1 or more/ day	CER1.3P2	Archive,/QA
CER1.3P1_PCFin_$SS1_$PS1_$CC1_3.YYYYMMDD @($CERESHOME/instrument/CER1.3P1/rcf)	m	0.006	1/day	N/A	No Archive, rm
CER1.3P1_PCF_$SS1_$PS1_$CC1_3.YYYYMMDD @($CERESHOME/instrument/CER1.3P1/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.3P1_LogReport_$SS1_$PS1_$CC1_3.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.3P1_LogStatus_$SS1_$PS1_$CC1_3.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.3P1_LogUser_$SS1_$PS1_$CC1_3.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.3P1_PCF_$SS1_$PS1_$CC1_3.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m	0.03	1/day	N/A	Archive, rm

a. See Section 11.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
OD - On Demand
hr - hour
nn - file number, there can be more than 1 BDSI for a day, in most cases, only 1 BDSI is produced

11.7 Expected Temporary Files/Directories

Table 11-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.3P1/rcf	MCFWrite_CER1.3P1_$SS1_$PS1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.3P1/rcf	GetAttr_CER1.3P1_$SS1_$PS1_YYYYMMDD.temp

12.0 PGEName: CER1.3P2

CER1.3P2 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, Analyze Gain Coefficients

PGE CER1.3P2 will be run on a monthly basis, and will create a file that will be manually analyzed to determine if there has been any drift in the gain coefficients.

12.1 PGE Details

12.1.1 Responsible Persons

Table 12-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Phil Hess	Denise L. Cooper
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1645	951-1633
Fax	951-1900	951-1900
LaRC email	phillip.c.hess@nasa.gov	denise.l.cooper@nasa.gov

12.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 12-1.

12.1.3 Parent PGE(s)

Table 12-2. Parent PGEs for CER1.3P2

PGEName	Description
CER1.3P1	Create subsetted BDSI from BDS/BDSD for Internal Calibration Events

12.1.4 Target PGE(s))

Table 12-3. Target PGEs for CER1.3P2

PGEName	Description
None	Gain Trend files used for Analysis only

12.2 Operating Environment

12.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 12-4. Runtime Parameters for CER1.3P2

Parameter ID(static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
-maxBDSI	nn	Maximum number of BDSIs per day	I(2)	01..99	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m

Note: * -env is a runtime parameter for all scripts

YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
mm> -> 2-digit minutes
m - mandatory parameter

12.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**CER1.3P2-env_PROD.csh**' and contains the following parameters:

SS1 - Sampling Strategy for Instrument: see Production Request[2]
PS1 - Output Production Strategy for Instrument: see Production Request[2]
CC1_3 - Configuration Code for CER1.3P1: see CM Database
CC1_4 - Configuration Code for CER1.3P2: see CM Database
SW1 - Software SCCR # for Instrument: see CM Database
SW1_4 - Software SCCR # for CER1.3P2: see CM Database

DATA1	-	Data SCCR # for Instrument: see CM Database
DATA1_4	-	Data SCCR # for CER1.3P2: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory

12.2.3 Execution Frequency (daily,hourly,..)

Monthly, the PGE should be run for each data month.

12.2.4 Memory/Disk Space/Time Requirements

Memory:	318 MB
Disk Space:	1140 MB
Total Run Time:	2 mins.

12.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

12.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

12.3.1 Input Dataset Name (#1): BDSI

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   $CERESHOME/instrument/data/out_comp/
   CER_BDSI_$SS1_$PS1_$CC1_3.YYYYMMDDnn

   1. Mandatory/Optional: **These files is Mandatory.**
   2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM.**
   3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

   CER1.3P1

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **37**

12.4 Operating Procedures (Procedure for each part of the processor's elements)

CER1.3P2 production script, **run_CER1.3P2.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **CER1.3P2-env_PROD.csh**, then executing an ASCII file generator **CER1.3P2_input_find.pl**, and the PCF generator, **CER1.3P2_pcf_gen.pl**.

12.4.1 How to Generate the ASCII File

The ASCII file generator requires four (4) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

>cd $CERESHOME/instrument/CER1.3P2/rcf
> CER1.3P2_input_find.pl -d YYYY MM -env

The following file will be generated in **$CERESHOME/instrument/CER1.3P2/rcf:**

CER1.3P2_PCFin_$SS1_$PS1_$CC1_4.YYYYMM

12.4.2 How to Generate the PCF File

The PCF generator, **CER1.3P2_pcf_gen.pl**, is executed using the newly created ASCII input filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> CER1.3P2_pcf_gen.pl CER1.3P2_PCFin_$SS1_$PS1_$CC1_4.YYYYMM -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.3P2/rcf**:

CER1.3P2_PCF_$SS1_$PS1_$CC1_4.YYYYMM

12.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.3P2.pl**, followed by <PCF filename> and the 4-character static code (-env) used to indicate that the Instrument ASDC environment is to be sourced.

At the command line (>) type:

>cd $CERESHOME/instrument/CER1.3P2/rcf
> run_CER1.3P2.pl
CER1.3P2_PCF_$SS1_$PS1_$CC1_4.YYYYMM -env

12.4.4 Special Case Considerations

It is possible that one or more of the data days in the month has more than twelve (12) BDSI files, in this case to ensure that all BDSI files are processed, the following must be done:

>cd $CERESHOME/instrument/CER1.3P2/rcf
> CER1.3P2_input_find.pl -d YYYY MM -maxBDSI 20 -env

where -maxBDSI indicates the maximum number of BDSIs to process for any data day. The example above sets the value to 20, however, the number should be set to the maximum number of BDSIs seen for any one data day in the month.

12.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all output files must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.3P2_PCF_$SS1_$PS1_$CC1_4.YYYYMM -env

12.5 Execution Evaluation

12.5.1 Exit Codes

The processor CER1.3P2 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 12-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 12-1) for assistance.

Table 12-5. Exit Codes for CER1.3P2

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

12.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.3P2.pl** for Terra Data , the following will be sent to the screen:

CER1.3P2 SUCCESSFUL -- Exit Status = 0
PGE CER1.3P2 Complete for PCF file <PCF filename>

The above two lines indicate a successful run.

12.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.3P2_LogReport_$SS1_$PS1_$CC1_4.YYYYMM**

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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.3P2_LogStatus_$SS1_$PS1_$CC1_4.YYYYMM**

The Status Log File contains all messages created by the ToolKit and Instrument-related messages that can lead to abnormal ending of the Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.3P2_LogUser_$SS1_$PS1_$CC1_4.YYYYMM**

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.

12.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

12.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None at this time.

b. Target PGE Termination

None at this time. The target PGE does not exist at this time.

12.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE.

Table 12-6. Expected Output File Listing for CER1.3P2

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_GAIN_$SS1_$PS1_$CC1_4.YYYYMM (.met) @($CERESHOME/instrument/data/out_comp)	m		1/month	N/A	No Archive,/QA, rm
CER_QCTL_$SS1_$PS1_$CC1_4.YYYYMM(.met) @($CERESHOME/instrument/data/out_comp)	m		1/month	N/A	No Archive,/QA, rm
CER_QCWN_$SS1_$PS1_$CC1_4.YYYYMM(.met) @($CERESHOME/instrument/data/out_comp)	m		1/month	N/A	No Archive,/QA, rm
CER_QCSW_$SS1_$PS1_$CC1_4.YYYYMM(.met) @($CERESHOME/instrument/data/out_comp)	m		1/month	N/A	No Archive,/QA, rm
CER1.3P2_PCFin_$SS1_$PS1_$CC1_4.YYYYMM @($CERESHOME/instrument/CER1.3P2/rcf)	m	0.006	1/month	N/A	No Archive, rm
CER1.3P2_PCF_$SS1_$PS1_$CC1_4.YYYYMM @($CERESHOME/instrument/CER1.3P2/rcf)	m	.02	1/month	N/A	No Archive, rm
CER1.3P2_LogReport_$SS1_$PS1_$CC1_4.YYYYMM @($CERESHOME/instrument/runlogs)	m	0.005	1/month	N/A	No Archive, rm
CER1.3P2_LogStatus_$SS1_$PS1_$CC1_4.YYYYMM @($CERESHOME/instrument/runlogs)	m	0.008	1/month	N/A	No Archive, rm
CER1.3P2_LogUser_$SS1_$PS1_$CC1_4.YYYYMM @($CERESHOME/instrument/runlogs)	m	0.001	1/month	N/A	No Archive, rm
CER1.3P2_PCF_$SS1_$PS1_$CC1_4.YYYYMM.tar @($CERESHOME/instrument/runlogs)	m		1/month	N/A	Archive, rm
CER1.3P2_QC_$SS1_$PS1_$CC1_4.YYYYMM.tar @($CERESHOME/instrument/web)	m		1/month	N/A	Archive, rm

a. See Section 12.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
OD - On Demand
hr - hour

12.7 Expected Temporary Files/Directories

Table 12-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.3P2/rcf	MCFWrite_CER1.3P2_$SS1_$PS1_YYYYMM.temp
$CERESHOME/instrument/CER1.3P2/rcf	GetAttr_CER1.3P2_$SS1_$PS1_YYYYMM.temp

13.0 PGEName: CER1.3P3

CER1.3P3 - CERES Geolocate and Calibrate Earth Radiances Subsystem 1.0, BDS Reprocessing

PGE CER1.3P3 will be run on a daily basis after a delta delivery of updated gain coefficients has been made for a data month. This processor will be run approximately 2 months after initial processing of a data month.

NOTE: At this time, this processor will only be run for Terra, however, in the future it may be used for Aqua and TRMM. The information in this section covers all spacecraft.

13.1 PGE Details

13.1.1 Responsible Persons

Table 13-1. Subsystem Software Analysts Contacts

Item	Primary	Alternate
Contact Name	Denise L. Cooper	Phil Hess
Organization	SSAI	SSAI
Address	1 Enterprise Parkway	1 Enterprise Parkway
City	Hampton	Hampton
State	VA 23666	VA 23666
Phone	951-1633	951-1645
Fax	951-1900	951-1900
LaRC email	denise.l.cooper@nasa.gov	phillip.c.hess@nasa.gov

13.1.2 E-mail Distribution List

E-mail distribution list can be obtained from the primary contact listed in Table 13-1.

13.1.3 Parent PGE(s)

Table 13-2. Parent PGEs for CER1.3P3

PGEName	Description
CER1.1P1	CERES Geolocate and Calibrate Earth Radiances main processor for TRMM
CER1.1P3	CERES Geolocate and Calibrate Earth Radiances main processor for Terra
CER1.1P5	CERES Geolocate and Calibrate Earth Radiances main processor for Aqua

13.1.4 Target PGE(s))

Table 13-3. Target PGEs for CER1.3P3

PGEName	Description
CER1.2P1	Convert BDS to Pre-ES8
CER4.1-4.1P1	Cloud Property Retrieval and Convolution of Imager Cloud Properties with CERES Footprint Point Spread Function

13.2 Operating Environment

13.2.1 Runtime Parameters (List all Dynamic Parameters needed at Runtime)

Table 13-4. Runtime Parameters for CER1.3P3

Parameter ID (static value)	Parameter	Description	Data Type	Valid Values	m/o
	YYYY	CERDataDateYear	I(4)	>1996	
-d	MM	CERDataDateMonth	I(2)	01..12	m
	DD	CERDataDateDay	I(2)	01..31	
-o	opt	Select BDS or IES Only processing	A(8)	BDS_Only, IES_Only	o
-tcmode	opt	Second Time Constant Mode	A(3)	opt = On, Off	o
-wn	opt	Turn on/off WN channel update	A(3)	opt = On, Off	o
-ddc	opt	Turn on/off Double Drift Correction	A(3)	opt = On, Off	o
-start	opt	Requested Start Time	time	hh:mm:ss.ss ssss	o
-stop	opt	Requested Stop Time	time	hh:mm:ss.ss ssss	o
-env *	N/A	Source Instrument Environment	N/A	N/A	m

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
mm> -> 2-digit minutes
m - mandatory parameter

13.2.2 Environment Script Requirements

Refer to the CERES internal paper (Reference 1) for a detailed description of the CERES environment parameters.

Two Environment Scripts are required. They are named '**INSTRUMENT_env_PROD.csh**' and '**CER1.3P3-env_PROD.csh**' and contains the following parameters:

SS1 - Sampling Strategy for Instrument: see Production Request[2]
PS1 - Input Production Strategy for CER1.3P3: see Production Request[2]
PS1_1 - Output Production Strategy for CER1.3P3: see Production Request[2]
CC1 - Configuration Code for Instrument: see CM Database

CC1_5	-	Configuration Code for CER1.3P3: see CM Database
SW1	-	Software SCCR # for Instrument: see CM Database
SW1_5	-	Software SCCR # for CER1.3P3: see CM Database
DATA1	-	Data SCCR # for Instrument: see CM Database
DATA1_5	-	Data SCCR # for CER1.3P3: see CM Database
SAT	-	Satellite: (see Note)
INST	-	Instrument: (see Note)
ADA_INCLUDE_PATH	-	Ada Include Libraries
INSTRHOME	-	Instrument Home Directory

13.2.3 Execution Frequency (daily,hourly,..)

Daily, the PGE should be run for each data month.

13.2.4 Memory/Disk Space/Time Requirements

Memory:	916 MB
Disk Space:	324 MB
Total Run Time:	90 mins.

13.2.5 Restrictions Imposed in Processing Order

N/A - may be processed in any order.

13.3 Processor Dependencies (Previous PGEs, Ingest Data,..)

Note: Include required .met files, header files, .. all required inputs

13.3.1 Input Dataset Name (#1): BDS

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

   $CERESHOME/instrument/data/out_comp/
   CER_BDS_$SS1_$PS1_$CC1.YYYYMMDD

   1. Mandatory/Optional: **These files are Mandatory.**
   2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and DD-1.**
   3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

   CER1.1P1, CER1.1P3 or CER1.1P5

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB): **450**

13.3.2 Input Dataset Name (#2): Ephemeris

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic

TRMM: TRMM_ED9D_OR_YYYY-MM-DDT00-00-00Z_Vnn.nat

Terra: AM1EPHN0001MMDDYYYYHH00000000000
or
AM1EPHN0.AYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution. For the new filenaming convention, DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

Aqua: PM1EPHND.PYYYYDDD.1200.vvv.yyyydddhhmmss

There is one file for each data day, covering Noon to Noon, there are 2 files required for each PGE execution. DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

1. Mandatory/Optional: **These files are Mandatory.**
2. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1 and DD+1 must also be available. For the new filenaming convention for Terra DDD-1, HH = 22 and DDD+1, HH = 00 must also be available. And for Aqua DDD-1 must also be available.**
3. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

TRMM: CER0.1P1 - DPREP
Terra: ECS DPREP, subscription from ECS
Aqua: ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB):

TRMM: 0.9
Terra: 0.45
Aqua: 5.5

13.3.3 Input Dataset Name (#3): Attitude

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/ancillary/dynamic

TRMM: TRMM_G500_LZ_YYYY-MM-DDThh-mm-ssZ_Vnn.DAT1.nat

Terra: AM1ATTNF001MMDDYYYYHH00000000000
or
AM1ATTNF.AYYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution. For the new filenaming convention, DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year, ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

Aqua: PM1ATTNR.YYYYDDD.HH00.vvv.yyyydddhhmmss

where HH = (00, 02, 04, ..., 22). There are 12 files for each data day, and a total of 14 files required for each PGE execution. For the new filenaming convention, DDD is the data day of year, vvv is the ESDT version number, yyyy is the production year,
ddd is the production day of year, hh is the production hour, mm is the production minute and ss is the production second.

4. Mandatory/Optional: **These files are Mandatory.**
5. Time Related Dependency: **Data must match the Runtime Parameters: YYYY, MM, DD and data for DD-1, HH = 22 and DD+1, HH = 00 must also be available. For the new filenaming convention DDD-1, HH = 22 and DDD+1, HH= 00 must also be available.**
6. Waiting Period: **None**

b. Source of Information (Source is PGE name or Ingest Source):

TRMM: CER0.1P1 - DPREP
Terra: ECS DPREP, subscription from ECS
Aqua: ECS DPREP, subscription from ECS

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Remove**

e. Typical file size (MB):

TRMM: 0.09
Terra: 0.45
Aqua: 0.45

13.3.4 Input Dataset Name (#4): Gain Coefficients

a. Directory Location/Inputs Expected (Including .met files, header files, etc.):

$CERESHOME/instrument/data/ancillary/static

TRMM: PFM_Count_Conversion_Data.YYYYMMDD

Terra: FM1_Count_Conversion_Data.YYYYMMDD
FM2_Count_Conversion_Data.YYYYMMDD

Aqua: FM3_Count_Conversion_Data.YYYYMMDD
FM4_Count_Conversion_Data.YYYYMMDD

where YYYYMMDD is the year, month and day the file was last updated. This date may vary for each of the above files. Several versions of each of these files may exist, however only the file with the most current date should be used in production.

1. Mandatory/Optional: **These files are Mandatory.**

b. Source of Information (Source is PGE name or Ingest Source):

These files are delivered through CERES CM from the Instrument Subsystem Team. Updates to these files are made approximately every 4 months, except for TRMM, which will not require updated files.

c. Alternate Data Set, if one exists (maximum waiting period): **None**

d. File Disposition after successful execution: **Permanent, do not remove**

e. Typical file size (MB): **0.005 (4500 bytes)**

13.4 Operating Procedures (Procedure for each part of the processor's elements)

CER1.3P3 production script, **run_CER1.3P3.pl**, references a Process Control File (PCF) which contains the correct file names and paths for the PGE. The PCF is created by first sourcing the instrument-specific environment scripts, **INSTRUMENT_env_PROD.csh** and **CER1.3P3-env_PROD.csh**, then executing an ASCII file generator **CER1.3P3_input_find.pl**, and the PCF generator, **CER1.3P3_pcf_gen.pl**.

13.4.1 How to Generate the ASCII File

The ASCII file generator requires five (5) command line arguments:

(-d)	2-character static code to indicate that the date follows,
(YYYY)	4-digit year,
(MM)	2-digit month,
(DD)	2-digit day,
(-env)	4-character static code used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

>cd $CERESHOME/instrument/CER1.3P3/rcf
> CER1.3P3_input_find.pl -d YYYY MM DD -env

The following file will be generated in **$CERESHOME/instrument/CER1.3P3/rcf:**

CER1.3P3_PCFin_$SS1_$PS1_1_$CC1_5.YYYYMMDD

13.4.2 How to Generate the PCF File

The PCF generator, **CER1.3P3_pcf_gen.pl**, is executed using the newly created ASCII input filename and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.
At the command line (>) type:

> CER1.3P3_pcf_gen.pl CER1.3P3_PCFin_$SS1_$PS1_1_$CC1_5.YYYYMMDD -env

The following PCF will be generated in **$CERESHOME/instrument/CER1.3P3/rcf**:

CER1.3P3_PCF_$SS1_$PS1_1_$CC1_5.YYYYMMDD

13.4.3 How to Execute the Main Processor

Execute the production script by typing the script name, **run_CER1.3P3.pl**, followed by <PCF filename> and the 4-character static code (-env) used to indicate that the Instrument DAAC environment is to be sourced.

At the command line (>) type:

> cd $CERESHOME/instrument/CER1.3P3/rcf
> run_CER1.3P3.pl
CER1.3P3_PCF_$SS1_$PS1_1_$CC1_5.YYYYMMDD -env

13.4.4 Special Case Considerations

It is possible that only BDS or IES files will be requested to be processed. The following will create only BDS output files:

> cd $CERESHOME/instrument/CER1.3P3/rcf
> CER1.3P3_input_find.pl -d YYYY MM DD -o BDS_Only -env

If only IESs are requested, the following will create only IES files:

> cd $CERESHOME/instrument/CER1.3P3/rcf
> CER1.3P3_input_find.pl -d YYYY MM DD -o IES_Only -env

The **IES_Only** option assumes that the BDS has already been processed and cannot be run if the following file does not exist:
CER_BDS_$SS1_$PS1_1_$CC1_5.YYYYMMDD

For 12/31/2005 when the leap second was introduced for Terra and Aqua, the existing IES creation code had a problem creating the IES for hour 23, therefore, a stop time is required to run this PGE. This is done as follows:

> cd $CERESHOME/instrument/CER1.3P3/rcf
> CER1.3P3_input_find.pl -d YYYY MM DD -stop 22:59:59.999999 -env

13.4.5 Special Reprocessing Instructions

If reprocessing is done to correct an error during production, then all output files must be deleted. A script to remove all files from the failed run is available. The script **file_cleanup.pl** takes as in input parameter the PCF filename for the failed run. The environment variable $CERESHOME must be set in order for this script to work.

> cd $CERESHOME/instrument/test_suites
> file_cleanup.pl CER1.3P3_PCF_$SS1_$PS1_1_$CC1_5.YYYYMMDD -env

13.5 Execution Evaluation

13.5.1 Exit Codes

The processor CER1.3P3 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS) as seen in Table 13-5. Other Exit Codes may appear from the program, which may be the result of a system, compiler, or Toolkit related error. In these cases, contact the responsible person (see Table 13-1) for assistance.

Table 13-5. Exit Codes for CER1.3P3

Exit Code	Definition	Action
0	Normal Exit	Proceed normally
200	Abnormal Exit	Check the Log Files and take the appropriate action (see Appendix B)

Note: * -env is a runtime parameter for all scripts
YYYY - 4-digit year
MM - 2-digit month
DD - 2-digit day
m - mandatory parameter

13.5.2 Screen Messages (Use Table format for large number of messages)

When running the production script, **run_CER1.3P3.pl** for Terra Data , the following will be sent to the screen:

CER1.3P3 SUCCESSFUL -- Exit Status = 0
PGE CER1.3P3 Complete for PCF file <PCF filename>

The above two lines indicate a successful run.

13.5.3 Log and Status Files Results (Include ALL Log Files)

The Log files contain all error and/or status messages produced by the PGE. The files are located in directory: **$CERESHOME/instrument/runlogs**.

1. **Report Log File: CER1.3P3_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). A comprehensive list of these messages, that can be generated during the execution of the PGE, is contained in Appendix B.

2. **Status Log File: CER1.3P3_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 Main Processor. If an abnormal exit is encountered by the PGE, this file should be examined for '_E_', (error) or '_F_' (fatal) message types. A comprehensive list of error messages produced within the Main Processor can be found in Appendix B.

3. **User Log File: CER1.3P3_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.

13.5.4 Solutions to Possible Problems

The majority of problems seen to date deal with errors in the PCF file. Checking the PCF file for errors should always be the first step when problems occur.

13.5.5 Conditions for Subsystem and/or Target PGE(s) Terminal Failure (Halt all further processing)

a. Subsystem Termination

None at this time.

b. Target PGE Termination

None at this time. The target PGE does not exist at this time.

13.6 Expected Output Dataset(s)

The expected Output Datasets are listed below for each instance of the PGE.

Table 13-6. Expected Output File Listing for CER1.3P3

File Name[a]/Directory	m/o	File Size (MB)	Freq/ PGE	Target PGE	Destination[b]
CER_BDS_$SS1_$PS1_1_$CC1_5.YYYYMMDD (.met) @($CERESHOME/instrument/data/out_comp)[c]	m	700	1/day	CER1.2P1	Archive
CER_IES_$SS1_$PS1_1_$CC1_5.YYYYMMDDHH(.met) @($CERESHOME/instrument/data/int_prod)[d]	o	37	1/hr	CER4.1-4.1P1	Archive
CER_BQCBDS_$SS1_$PS1_1_$CC1_5.YYYYMMDD(.met) @($CERESHOME/instrument/web)[c]	m	0.03	1/day	N/A	No Archive,/QA, rm
CER_BQCIES_$SS1_$PS1_1_$CC1_5.YYYYMMDD(.met) @($CERESHOME/instrument/web)[d]	o	0.03	1/day	N/A	No Archive,/QA, rm
CER1.3P3_PCFin_$SS1_$PS1_1_$CC1_5.YYYYMMDD @($CERESHOME/instrument/CER1.3P3/rcf)	m	0.004	1/day	N/A	No Archive, rm
CER1.3P3_PCF_$SS1_$PS1_1_$CC1_5.YYYYMMDD @($CERESHOME/instrument/CER1.3P3/rcf)	m	.02	1/day	N/A	No Archive, rm
CER1.3P3_LogReport_$SS1_$PS1_1_$CC1_5.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.005	1/day	N/A	No Archive, rm
CER1.3P3_LogStatus_$SS1_$PS1_1_$CC1_5.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.008	1/day	N/A	No Archive, rm
CER1.3P3_LogUser_$SS1_$PS1_1_$CC1_5.YYYYMMDD @($CERESHOME/instrument/runlogs)	m	0.001	1/day	N/A	No Archive, rm
CER1.3P3_PCF_$SS1_$PS1_1_$CC1_5.YYYYMMDD.tar @($CERESHOME/instrument/runlogs)	m		1/day	N/A	Archive, rm
CER1.3P3_QC_$SS1_$PS1_1_$CC1_5.YYYYMMDD.tar @($CERESHOME/instrument/web)	m		1/day	N/A	Archive, rm

a. See Section 13.2 for information on variable data values
If "**(.met)**" is written next to an expected Output Filename, then the metadata file **must** exist with the identical filename and .met extension.

b. VD - Validation Days in 1998 (Jan./5, 12, 19, 26/, Apr./6, 13, 20, 27/, July/6, 13, 20, 27/, Oct./5, 12, 19, 26/)
/QA - File is to be written to the DAAC designated /QA directory
DB - File content is to be entered into the LaTIS Database
rm - remove
YYYY - 4-digit year
MM - 2-digit month {valid values: 01 .. 12}
DD - 2-digit day {valid values: 01 .. 31}
HH - 2-digit hour of the day {valid values: 00 .. 23}
m - mandatory output
o - optional output
EOD - End of Data Month
OD - On Demand
hr - hour

c. Not created when option IES-Only.

d. Not created when option BDS-Only.

13.7 Expected Temporary Files/Directories

Table 13-7. Temporary Files Listing

Directory	File Name
$CERESHOME/instrument/CER1.3P3/rcf	MCFWrite_CER1.3P3_$SS1_$PS1_1_YYYYMMDD.temp
$CERESHOME/instrument/CER1.3P3/rcf	GetAttr_CER1.3P3_$SS1_$PS1_1_YYYYMMDD.temp

References

1. Reference "Proposal for Semi-Automated Sampling Strategy, Production Strategy, and Configuration Code Implementation" internal paper for detail description of the CERES environment parameters. URL:http://asd-www.larc.nasa.gov/ceres/intern_doc/
2. Reference "DMT to DAAC Production Request." URL: http://asd-www.larc.nasa.gov/ceres/dmt2daac/

Appendix A
Acronyms and Abbreviations

APID	Application ID
Aqua	alias for EOS-PM1
ASDC	Atmospheric Sciences Data Center
BDS	Science Bi-Directional Scan HDF data product
BDSD	No-Archive Bi-Directional Scan HDF data product
BDSF	Fixed Pattern Bi-Directional Scan HDF data product
BDSG	Gimbal Error Bi-Directional Scan HDF data product
BDSI	Internal Calibration Bi-Directional Scan HDF data product
BDSM	Memory Dump Bi-Directional Scan HDF data product
BDSS	Solar Calibration Bi-Directional Scan HDF data product
BINEL	Instrument Command Error Log ASCII QC Report
BINHS	Instrument Command History ASCII QC Report
BINMEM	Instrument Memory Dump Binary data product
BQCRP	Instrument Production ASCII QC Report
BQCRPS	Instrument Housekeeping Statistics ASCII QC Report
CERES	Clouds and the Earth's Radiant Energy System
CM	Configuration Management
DAAC	Distributed Active Archive Center
DB	Data Base
DMT	Data Management Team
ECS	EOSDIS Core 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 HDF data product
LaRC	Langley Research Center
LaTIS	Langley TRMM Information System
LW	Longwave
MB	Megabytes
met	metadata file
μm	microns
N/A	Not Applicable

NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCF	Process Control File
PGE	Product Generation Executives
QC	Quality Control
QL	QuickLook
PSF	Point Spread Function
PRE_SSF	Preliminary Single Satellite CERES Footprint TOA and Surface Fluxes
QC	Quality Control
SAIC	Science Applications International Corporation
SMF	Status Message File
SSF	Single Satellite CERES Footprint TOA and Surface Fluxes, Clouds
SW	Shortwave
Terra	alias for EOS-AM1
TOA	Top-of-Atmosphere
TRMM	Tropical Rainfall Measuring Mission
VD	Validation Days

Appendix B
Error Messages for Subsystem CER1.0

Appendix B contains a comprehensive list of messages that can be generated during the execution of a PGE. These messages are used to inform the operator or analyst of specific circumstances encountered during data processing. 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). All messages are written to the LogReport File and/or the LogStatus File of the processing instance.

Table B-1 contains a list of the PGE CER1.1P1 and CER1.1P2 diagnostic messages. The table entry includes a pneumonic, the text associated with that pneumonic, and a set of Action Keys. Multiple Action Keys may be displayed in the Action Keys column. When multiple Action Keys appear, they should be followed in the order shown. For example, if the Action Keys are "2,3", the first action would be to check for a problem with the Production System Hardware or Software. If the Production System does not have a problem then the next step would be to check the PCF itself to find any possible errors, including, checking to see if files listed in the PCF exist. Those errors would then be corrected and the Main Processor would be rerun.

Table B-2 contains all required support input files necessary to run Instrument Subsystem CER1.0.

PGE CER1.2P1 has no diagnostic messages that are reported to the Log Files. All messages are in standard output and are explained at the time.

Operator Instructions:

If a PGE prematurely terminates, then take the following steps:

1. Look at the last few records on the LogStatus file.
2. Find the error message in the following Error Message listing(s), and follow the appropriate ACTION.
3. If an error message is not in the LogStatus File, then repeat steps 1 and 2 using the LogReport File.
4. If no information is derived, then call the responsible person in Table 2-1.
5. If the appropriate ACTION failed, then call the responsible person in Table 2-1.
6. In all cases, log all steps that were taken after the PGE failure, and send a copy to the responsible person listed in Table 2-1.

Action Keys for Table B-1: (Note if an ACTION does not work, call the Responsible Person in Table 2-1.)

1. Verify that file (nn) in Table B-2 exists. (nn is the Number of the possible missing file).
2. Check for problem in the Production System (hardware/software), correct, rerun.
3. Check that PCF is correct, fix any errors, rerun.

4. Data Error, order replacement Level-0/Ephemeris/Attitude File, rerun with new file.
5. No Action, call the Responsible Person in Table 2-1.

Table B-1. Subsystem CER1.0 TK (SMF) Diagnostic Message Table

Message/Error Type		Action Key
INSTIES_E_ADVANCE_PAST_BUF_END	Attempt to move pointer past end of IES footprint linked list	5
INSTIES_E_BACKUP_BEFORE_BUF	Attempt to move pointer before beginning of IES footprint linked list	5
INSTIES_E_CREATE_ERROR	Vdata create error for IES Hour	2,3
INSTIES_E_DATA_WRITE_ERR	Vdata write error for IES Hour	2,3
INSTIES_E_END_OF_BUFFER	Dynamic Memory Allocation Problem when appending to the IES footprint linked list	5
INSTIES_E_FILE_NOT_AVAILABLE	Attempt to create a file number > hour 23, not allowed at this time	5
INSTIES_E_INVALID_INDEX	Invalid index passed to the IES footprint linked list	5
INSTIES_E_LIST_EMPTY	IES footprint linked list is empty	5
INSTIES_E_LIST_UNEXPECTED_ERR	Unexpected error encountered in linked list package	5
INSTIES_E_REC_ASSIGN_ERR	Vdata record assignment error for IES Hour	2
INSTIES_E_UNEXPECTED_EXCEPT	Unexpected Exception Encountered	2,5
INSTRAZ_E_INIT_TABLE	Azimuth Assy initialization error	1(28),2,3
INSTRBB_E_INIT_TABLE	Blackbody Assy initialization error	1(28),2,3
INSTRBRK_E_INIT_TABLE	Brake Assy initialization error	1(28),2,3
INSTRCFG_E_INIT_TABLE	Instrument Config initialization error	1(28),2,3
INSTRCMD_E_INIT_TABLE	Commanding initialization error	1(28),2,3
INSTRCVR_E_INIT_TABLE	Main Cover Assy initialization error	1(29),2,3
INSTRDAA_E_INIT_TABLE	DAA Assy initialization error	1(28),2,3
INSTRDET_E_INIT_TABLE	Detector Assy initialization error	1(28),2,3
INSTREL_E_INIT_TABLE	Elevation Assy initialization error	1(5,10,15,20.25, 33,28),2,3
INSTRICA_E_INIT_TABLE	ICA Assy initialization error	1(28),2,3
INSTRLO_E_CORRUPT_FILE_HDR	Unable to Open Level-0 File -- File Header Corrupt	4
INSTRLO_E_FILE_NOT_OPEN	Level-0 File not Open	2,3
INSTRLO_E_FIRST_PACKET_ERROR	Can't find first packet in Level-0 file	4
INSTRLO_E_HDR_APID_INVALID	Level-0 Header APID is not a valid APID	2,3,4
INSTRLO_E_HDR_BUF_SIZE_INVALID	Level-0 Variable Header buffer size is invalid	2,3,4
INSTRLO_E_HDR_CAL_APID_ERR	Level-0 Header APID not Calibration APID	3
INSTRLO_E_HDR_DIAG_APID_ERR	Level-0 Header APID not Diagnostic APID	3
INSTRLO_E_HDR_DT_UNKNOW	Level-0 Header Data Type flag does not indicate routine or QL processing, Data Type Flag	3
INSTRLO_E_HDR_NO_PKTS_ZER	Level-0 Header number of packets is zero	4
INSTRLO_E_HDR_SCI_APID_ERR	Level-0 Header APID not Science APID	3
INSTRLO_E_HDR_SELECT_OPTS	Level-0 Header Select Options Invalid	3,4
INSTRLO_E_HDR_TIME_ORDER	Level-0 Time of last packet earlier than first packet in file header	4

Table B-1. Subsystem CER1.0 TK (SMF) Diagnostic Message Table

Message/Error Type		Action Key
INSTRLO_E_INIT_TABLE_ERROR	Level-0 Failed to Initialize Internal File Table	2,3,4
INSTRLO_E_INVALID_HDR_NOAPID	Level-0 Header Number of APIDs /= 1	5
INSTRLO_E_INVALID_HDR_SC	Level-0 Header Spacecraft ID Invalid, SC ID	4
INSTRLO_E_INVALID_LOGICAL_ID	Level-0 Logical File ID is invalid	3
INSTRLO_E_MANAGE_TABLE_ERRO	Level-0 Manage Table Error	2
INSTRLO_E_NEXT_PHYSICAL_ERR	Level-0 Error opening next physical file	2,3
INSTRLO_E_PHYS_HEADER_ERROR	Level-0 Error reading Physical File Header	2,3,4
INSTRLO_E_PKT_NOT_FOUND	Level-0 Unable to find requested packet	5
INSTRLO_E_SEEK_1ST_PKT_ERROR	Level-0 Cannot find first packet in file	2,3,4
INSTRLO_E_SEEK_ERROR	Level-0 ToolKit seek error encountered	2,3,4
INSTRLO_E_START_STOP_TIME	Level-0 Start/Stop time for file is invalid	4
INSTRLO_E_UNABLE_TO_OPEN	Level-0 Unable to open physical file	3,4
INSTRLO_E_UNEXPECTED_EOF	Level-0 Unexpected EOF encountered	3,4
INSTRLO_E_UNEXPECTED_EXCEPT	Level-0 Unexpected Exception Encountered	5
INSTRLO_E_UNKNOWN_SPACECRAFT	Level-0 Unknown Spacecraft ID returned from ToolKit	5
INSTRLO_E_UNKNOWN_TOOLKIT_ERROR	Level-0 Unknown ToolKit Error	2,5
INSTRLO_E_UNKNOWN_UNIX	Level-0 Unknown UNIX error encountered	2,3
INSTRLO_E_VIRT_FILE_TABLE	Level-0 Error accessing Virtual File Table	2
INSTRLO_E_VS_NOT_OPEN	Level-0 Virtual Dataset not open	2
INSTRLO_W_START_NOT_FOUND	Level-0 Start Time not found	3
INSTRMAM_E_INIT_TABLE	MAM Assy initialization error	1(29),3
INSTRPK_E_ANALOG_INIT	Analog Lookup Table Initialize Failure	1(1),3
INSTRPK_E_DEVICE_ERROR	Device Error Found	2
INSTRPK_E_DIGITAL_INIT	Digital Lookup Table Initialize Failure	1(2),3
INSTRPK_E_PROGRAM_ERROR	Program Error Found	5
INSTRPK_E_STATUS_ERROR	Status Error Found	3
INSTRPK_E_STORAGE_ERROR	Storage Error Found	5
INSTRPK_E_UNEXPECTED_EXCEPT	Unexpected Exception Found	5
INSTRRAD_E_DEVICE_ERROR	Device Error Found	2,5
INSTRRAD_E_END_ERROR	End Error Found	5
INSTRRAD_E_NAME_ERROR	Name Error Found	1(2,3,4,8,9,13, 14,18,19,23,24, 31,32),3
INSTRRAD_E_NUMERIC_ERROR	Numeric Error Found	5
INSTRRAD_E_PROGRAM_ERROR	Program Error Found	5
INSTRRAD_E_STATUS_ERROR	Status Error Found	3
INSTRRAD_E_UNEXPECTED	Unexpected Exception Found	5
INSTRSCAN_E_GENERAL	Unanticipated Ada exception encountered	5
INSTRSOL_E_INIT_TABLE	Solar Assy initialization error	1(7,12,17,22,27, 28,35)3
INSTRSPA_E_NAME_ERROR	Name Error Found	3
INSTRSPA_E_PROGRAM_ERROR	Program Error Found	5

Table B-1. Subsystem CER1.0 TK (SMF) Diagnostic Message Table

Message/Error Type		Action Key
INSTRSPA_E_STATUS_ERROR	Status Error Found	3,5
INSTRSPA_E_UNEXPECTED_EXCEPT	Unexpected Exception Found	5
INSTRSWC_E_INIT_TABLE	Assy initialization error	3,5
INSTRTIME_E_CONSTRAINT	Unanticipated Ada constraint_error encountered	3,5
INSTRTIME_E_GENERAL	Unanticipated Ada exception encountered	5
INSTRTIME_N_MISC_TK_MSG	Return status from toolkit call is	2,5

Table B-2. Subsystem CER1.0 Support Input Files

No.	Location	Filename
1	$CERESHOME/instrument/data/ancillary/static	Analog_Location.19971031
2	$CERESHOME/instrument/data/ancillary/static	Digital_Location.19971223
3	$CERESHOME/instrument/data/ancillary/static	FM1_CC_Offsets.19991001
4	$CERESHOME/instrument/data/ancillary/static	FM1_CC_Parameters.19991001
5	$CERESHOME/instrument/data/ancillary/static	FM1_Elevation_Profiles.19991001
6	$CERESHOME/instrument/data/ancillary/static	FM1_Instrument_Engineering_Coefficients.19991001
7	$CERESHOME/instrument/data/ancillary/static	FM1_Instrument_Engineering_Limits.19991001
8	$CERESHOME/instrument/data/ancillary/static	FM2_CC_Offsets.19991001
9	$CERESHOME/instrument/data/ancillary/static	FM2_CC_Parameters.19990101
10	$CERESHOME/instrument/data/ancillary/static	FM2_Elevation_Profiles.19991001
11	$CERESHOME/instrument/data/ancillary/static	FM2_Instrument_Engineering_Coefficients.19991001
12	$CERESHOME/instrument/data/ancillary/static	FM2_Instrument_Engineering_Limits.19991001
13	$CERESHOME/instrument/data/ancillary/static	FM3_CC_Offsets.19991001
14	$CERESHOME/instrument/data/ancillary/static	FM3_CC_Parameters.19991001
15	$CERESHOME/instrument/data/ancillary/static	FM3_Elevation_Profiles.19991001
16	$CERESHOME/instrument/data/ancillary/static	FM3_Instrument_Engineering_Coefficients.19991001
17	$CERESHOME/instrument/data/ancillary/static	FM3_Instrument_Engineering_Limits.19991001
18	$CERESHOME/instrument/data/ancillary/static	FM4_CC_Offsets.19991001
19	$CERESHOME/instrument/data/ancillary/static	FM4_CC_Parameters.19991001
20	$CERESHOME/instrument/data/ancillary/static	FM4_Elevation_Profiles.19991001
21	$CERESHOME/instrument/data/ancillary/static	FM4_Instrument_Engineering_Coefficients.19991001
22	$CERESHOME/instrument/data/ancillary/static	FM4_Instrument_Engineering_Limits.19991001
23	$CERESHOME/instrument/data/ancillary/static	FM5_CC_Offsets.19991001
24	$CERESHOME/instrument/data/ancillary/static	FM5_CC_Parameters.19991001
25	$CERESHOME/instrument/data/ancillary/static	FM5_Elevation_Profiles.19991001
26	$CERESHOME/instrument/data/ancillary/static	FM5_Instrument_Engineering_Coefficients.19991001

Table B-2. Subsystem CER1.0 Support Input Files

No.	Location	Filename
27	$CERESHOME/instrument/data/ancillary/static	FM5_Instrument_Engineering_Limits.19991001
28	$CERESHOME/instrument/data/ancillary/static	Instrument_Config_Logic_Table.19980306
29	$CERESHOME/instrument/data/ancillary/static	MAM_Configuration_Logic_Table.19980205
30	$CERESHOME/instrument/data/ancillary/static	Main_Cover_Configuration_Logic_Table.19980112
31	$CERESHOME/instrument/data/ancillary/static	PFM_CC_Offsets.19991001
32	$CERESHOME/instrument/data/ancillary/static	PFM_CC_Parameters.19991001
33	$CERESHOME/instrument/data/ancillary/static	PFM_Elevation_Profiles.19991001
34	$CERESHOME/instrument/data/ancillary/static	PFM_Instrument_Engineering_Coefficients.19991001
35	$CERESHOME/instrument/data/ancillary/static	PFM_Instrument_Engineering_Limits.19991001
36	$CERESHOME/instrument/data/ancillary/static	PCF_Parameter_Map.txt

Appendix C
Sample ASCII (PCFin) File Listing(s) for Subsystem CER1.0

C.1 Sample ASCII (PCFin) File Listing for CER1.1P1

CER1.1P1_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P1
TK_Version = SCF B.0 TK5.2.5
Spacecraft_Class = TRMM
Spacecraft_ID = TRMM
Spacecraft_Instrument = PFM
Satellite = TRMM
Instrument = PFM
PGE_Mode = CERES_Production
Quick_Look = Off
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CrossTalk = ON
CC_Code =  000026
Software_SCCR = 151
Ancillary_SCCR = 151
Production_Strategy_Input =
Production_Strategy_Output = TestGen
Sampling_Strategy_Input = TRMM-PFM
Sampling_Strategy_Output = TRMM-PFM
Data_Date = 1998-01-05
Start_Time = 1998-01-05T00:00:00.000000Z
Stop_Time = 1998-01-05T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
Prev_Day_Science = TRMM_G054_LZ_1998-01-04T00-00-04Z_V01.DAT1
Req_Day_Science = TRMM_G054_LZ_1998-01-05T00-00-04Z_V01.DAT1
Next_Day_Science = TRMM_G054_LZ_1998-01-06T00-00-05Z_V01.DAT1
Prev_Day_Calibration = TRMM_G055_LZ_1998-01-04T12-45-46Z_V01.DAT1
Req_Day_Calibration = TRMM_G055_LZ_1998-01-05T17-44-07Z_V01.DAT1
Next_Day_Calibration = TRMM_G055_LZ_1998-01-06T13-33-46Z_V01.DAT1
```

Prev_Day_Diagnostic = TRMM_G056_LZ_1998-01-04T12-44-40Z_V01.DAT1
Req_Day_Diagnostic = TRMM_G056_LZ_1998-01-05T17-43-01Z_V01.DAT1
Next_Day_Diagnostic = TRMM_G056_LZ_1998-01-06T13-32-40Z_V01.DAT1
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = TRMM_ED9D_OR_1998-01-04T00-00-00Z_V01.nat
Req_Day_Ephemeris = TRMM_ED9D_OR_1998-01-05T00-00-00Z_V01.nat
Next_Day_Ephemeris = TRMM_ED9D_OR_1998-01-06T00-00-00Z_V01.nat
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = TRMM_G500_LZ_1998-01-04T00-00-00Z_V01.DAT1.nat
Req_Day_Attitude = TRMM_G500_LZ_1998-01-05T00-00-00Z_V01.DAT1.nat
Day+1_Attitude = TRMM_G500_LZ_1998-01-06T00-00-00Z_V01.DAT1.nat
Intermediate_File_Directory = /CERES/instrument/development/denise_area/rel2/data/int_prod/
Archived_File_Directory = /CERES/instrument/development/denise_area/rel2/data/out_comp/
Support_File_Directory =
/CERES/instrument/development/denise_area/rel2/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT-new/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT-new/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT-new/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/denise_area/rel2/runlogs/
MCF_Directory = /CERES/instrument/development/denise_area/rel2/rcf/
QCRP2 = CER_BQCRPS_TRMM-PFM_TestGen_000026.19980105
MEM = CER_BINMEM_TRMM-PFM_TestGen_000026.19980105
INHS1 = CER_BINHS_TRMM-PFM_TestGen_000026.19980105
INHS2 = CER_BINEL_TRMM-PFM_TestGen_000026.19980105
IES0 = CER_IES_TRMM-PFM_TestGen_000026.1998010500
IES1 = CER_IES_TRMM-PFM_TestGen_000026.1998010501
IES2 = CER_IES_TRMM-PFM_TestGen_000026.1998010502
IES3 = CER_IES_TRMM-PFM_TestGen_000026.1998010503
IES4 = CER_IES_TRMM-PFM_TestGen_000026.1998010504
IES5 = CER_IES_TRMM-PFM_TestGen_000026.1998010505
IES6 = CER_IES_TRMM-PFM_TestGen_000026.1998010506
IES7 = CER_IES_TRMM-PFM_TestGen_000026.1998010507
IES8 = CER_IES_TRMM-PFM_TestGen_000026.1998010508
IES9 = CER_IES_TRMM-PFM_TestGen_000026.1998010509
IES10 = CER_IES_TRMM-PFM_TestGen_000026.1998010510
IES11 = CER_IES_TRMM-PFM_TestGen_000026.1998010511
IES12 = CER_IES_TRMM-PFM_TestGen_000026.1998010512
IES13 = CER_IES_TRMM-PFM_TestGen_000026.1998010513
IES14 = CER_IES_TRMM-PFM_TestGen_000026.1998010514
IES15 = CER_IES_TRMM-PFM_TestGen_000026.1998010515
IES16 = CER_IES_TRMM-PFM_TestGen_000026.1998010516
IES17 = CER_IES_TRMM-PFM_TestGen_000026.1998010517
IES18 = CER_IES_TRMM-PFM_TestGen_000026.1998010518
IES19 = CER_IES_TRMM-PFM_TestGen_000026.1998010519
IES20 = CER_IES_TRMM-PFM_TestGen_000026.1998010520
IES21 = CER_IES_TRMM-PFM_TestGen_000026.1998010521

IES22 = CER_IES_TRMM-PFM_TestGen_000026.1998010522
IES23 = CER_IES_TRMM-PFM_TestGen_000026.1998010523
BDS = CER_BDS_TRMM-PFM_TestGen_000026.19980105
BDSS = CER_BDSS_TRMM-PFM_TestGen_000026.19980105
BDSD = CER_BDSD_TRMM-PFM_TestGen_000026.19980105
BDSG = CER_BDSG_TRMM-PFM_TestGen_000026.19980105
BDSM = CER_BDSM_TRMM-PFM_TestGen_000026.19980105
BDSP = CER_BDSP_TRMM-PFM_TestGen_000026.19980105
BDSF = CER_BDSF_TRMM-PFM_TestGen_000026.19980105
QCRP1 = CER_BQCRP_TRMM-PFM_TestGen_000026.19980105
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = PFM_Instrument_Engineering_Limits.19991001
ANAL2 = PFM_Elevation_Profiles.19991001
ANAL3 = PFM_Instrument_Engineering_Coefficients.19990917
INLO2 = Instrument_Config_Logic_Table.19980306
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = PFM_CC_Parameters.19991001
RDCO4 = PFM_CC_Offsets.19991001
RDCO5 = PFM_Scan_Mode_Offset_Map.19991001
LOG1 = CER1.1P1_LogStatus_TRMM-PFM_TestGen_000026.19980105
LOG2 = CER1.1P1_LogReport_TRMM-PFM_TestGen_000026.19980105
LOG3 = CER1.1P1_LogUser_TRMM-PFM_TestGen_000026.19980105

C.2 Sample ASCII (PCFin) File Listing for CER1.1P2

CER1.1P2_PCFin_$PS1_$SS1_$CC1_2.YYYYMMDD_QLHHmm-apid

PGE_Name = CER1.1P2
TK_Version = SCF B.0 TK5.2.5
Satellite = TRMM
Instrument = PFM
Spacecraft_Class = TRMM
Spacecraft_ID = TRMM
Spacecraft_Instrument = PFM
PGE_Mode = CERES_Production
Quick_Look = On
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CrossTalk = ON
CC_Code = 000026
Software_SCCR = 151
Ancillary_SCCR = 151
Production_Strategy_Input =
Production_Strategy_Output = TestGen
Sampling_Strategy_Input = TRMM-PFM
Sampling_Strategy_Output = TRMM-PFM
Data_Date = 1997-06-13
Start_Time = 1997-06-13T00:00:00.000000Z
Stop_Time = 1997-06-13T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
Req_Day_Science = TRMM_G054_QL_1997-06-13T07-50-05Z_V01.DAT1
Req_Day_Calibration =
Req_Day_Diagnostic =
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = Alldays_TRMM_ED9D_OR_1997-06-12T00-00-00Z_V01.nat
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = TRMM_1997-06-12.att
Req_Day_Attitude = TRMM_1997-06-13.att

Day+1_Attitude = TRMM_1997-06-14.att
Day+2_Attitude = TRMM_1997-06-15.att
Day+3_Attitude = TRMM_1997-06-16.att
Day+4_Attitude = TRMM_1997-06-17.att
Day+5_Attitude = TRMM_1997-06-18.att
Day+6_Attitude = TRMM_1997-06-19.att
Day+7_Attitude = TRMM_1997-06-20.att
Intermediate_File_Directory = /CERES/instrument/development/denise_area/rel2/data/int_prod/
Archived_File_Directory = /CERES/instrument/development/denise_area/rel2/data/out_comp/
Support_File_Directory =
/CERES/instrument/development/denise_area/rel2/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT-new/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT-new/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT-new/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/denise_area/rel2/runlogs/
MCF_Directory = /CERES/instrument/development/denise_area/rel2/rcf/
Production_Output_Strategy = TestGen
QCRP2 = CER_BQCRPS_TRMM-PFM_TestGen_000026.19970613_QL0750-54
MEM = CER_BINMEM_TRMM-PFM_TestGen_000026.19970613_QL0750-54
INHS1 = CER_BINHS_TRMM-PFM_TestGen_000026.19970613_QL0750-54
INHS2 = CER_BINEL_TRMM-PFM_TestGen_000026.19970613_QL0750-54
IES0 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075000
IES1 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075001
IES2 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075002
IES3 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075003
IES4 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075004
IES5 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075005
IES6 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075006
IES7 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075007
IES8 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075008
IES9 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075009
IES10 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075010
IES11 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075011
IES12 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075012
IES13 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075013
IES14 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075014
IES15 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075015
IES16 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075016
IES17 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075017
IES18 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075018
IES19 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075019
IES20 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075020
IES21 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075021
IES22 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075022
IES23 = CER_IES_TRMM-PFM_TestGen_000026.19970613_QL075023
BDS = CER_BDS_TRMM-PFM_TestGen_000026.19970613_QL0750-54

BDSS = CER_BDSS_TRMM-PFM_TestGen_000026.19970613_QL0750-54
BDSD = CER_BDSD_TRMM-PFM_TestGen_000026.19970613_QL0750-54
BDSG = CER_BDSG_TRMM-PFM_TestGen_000026.19970613_QL0750-54
BDSM = CER_BDSM_TRMM-PFM_TestGen_000026.19970613_QL0750-54
BDSP = CER_BDSP_TRMM-PFM_TestGen_000026.19970613_QL0750-54
BDSF = CER_BDSF_TRMM-PFM_TestGen_000026.19970613_QL0750-54
QCRP1 = CER_BQCRP_TRMM-PFM_TestGen_000026.19970613_QL0750-54
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = PFM_Instrument_Engineering_Limits.19991001
ANAL2 = PFM_Elevation_Profiles.19991001
ANAL3 = PFM_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19980306
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = PFM_CC_Parameters.19991001
RDCO4 = PFM_CC_Offsets.19991001
RDCO5 = PFM_Scan_Mode_Offset_Map.19991001
LOG1 = CER1.1P2_LogStatus_TRMM-PFM_TestGen_000026.19970613_QL0750-54
LOG2 = CER1.1P2_LogReport_TRMM-PFM_TestGen_000026.19970613_QL0750-54
LOG3 = CER1.1P2_LogUser_TRMM-PFM_TestGen_000026.19970613_QL0750-54

C.3 Sample ASCII (PCFin) File Listing for CER1.2P1

CER1.2P1_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

Satellite = TRMM
Instrument = PFM
TK_Version = SCF B.0 TK5.2.3
Write_IES_PRES8 = Default
BDS = CER_BDS_TRMM-PFM_ReleaseTest_000021.19970613
CC_Code = 000021
Software_SCCR = 095
Ancillary_SCCR = 095
Production_Strategy_Input =
Production_Strategy_Output = ReleaseTest
Sampling_Strategy_Input = TRMM-PFM
Sampling_Strategy_Output = TRMM-PFM
Data_Date = 1997-06-13
Input_File_Dir = /CERES/instrument//data/input
Intermediate_File_Directory = /CERES/instrument/data/int_prod/
Archived_File_Directory = /CERES/instrument/data/out_comp/
Support_File_Directory = /CERES/instrument/data/ancillary/static/
LogFile_Directory = /CERES/instrument/runlogs/
MCF_Directory = /CERES/instrument/rcf/
PRES8 = CER_PRES8_TRMM-PFM_ReleaseTest_000021.19970613
LOG1 = CER1.2P1_LogStatus_TRMM-PFM_ReleaseTest_000021.19970613
LOG2 = CER1.2P1_LogReport_TRMM-PFM_ReleaseTest_000021.19970613
LOG3 = CER1.2P1_LogUser_TRMM-PFM_ReleaseTest_000021.19970613

C.4 Sample ASCII (PCFin) File Listing for CER1.1P3

CER1.1P3_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P3
TK_Version = SCF B.0 TK5.2.5
Spacecraft_Class = EOS_AM
Spacecraft_ID = EOS_AM_1
Satellite = Terra
Instrument = FM1
Spacecraft_Instrument = FM1
PGE_Mode = CERES_Production
Quick_Look = Off
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CrossTalk = ON
CC_Code =  000026
Software_SCCR = 151
Ancillary_SCCR = 151
Production_Strategy_Input =
Production_Strategy_Output = TestGen
Sampling_Strategy_Input = Terra-FM1
Sampling_Strategy_Output = Terra-FM1
Data_Date = 1999-07-08
Start_Time = 1999-07-08T00:00:00.000000Z
Stop_Time = 1999-07-08T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
APID = 0
Prev_Header =
num_s_prev = 0
Req_Header = EOS_G131_LZ_1999-07-08T12-00-03Z_V01.CONS
num_s_req = 1
Req_Day_Science1 = EOS_G131_LZ_1999-07-08T12-00-03Z_V01.DAT1
Next_Header = EOS_G131_LZ_1999-07-09T00-00-00Z_V01.CONS
num_s_next = 1
```

Next_Day_Science1 = EOS_G131_LZ_1999-07-09T00-00-00Z_V01.DAT1
Prev_Cal_Header =
num_cal_prev = 0
Req_Cal_Header = EOS_G132_LZ_1999-07-08T18-06-34Z_V01.CONS
num_cal_req = 1
Req_Day_Calibration1 = EOS_G132_LZ_1999-07-08T18-06-34Z_V01.DAT1
Next_Cal_Header = EOS_G132_LZ_1999-07-09T08-58-41Z_V01.CONS
num_cal_next = 1
Next_Day_Calibration1 = EOS_G132_LZ_1999-07-09T08-58-41Z_V01.DAT1
Prev_Diag_Header =
num_diag_prev = 0
Req_Diag_Header = EOS_G133_LZ_1999-07-08T11-26-16Z_V01.CONS
num_diag_req = 1
Req_Day_Diagnostic1 = EOS_G133_LZ_1999-07-08T11-26-16Z_V01.DAT1
Next_Diag_Header = EOS_G133_LZ_1999-07-09T00-49-56Z_V01.CONS
num_diag_next = 1
Next_Day_Diagnostic1 = EOS_G133_LZ_1999-07-09T00-49-56Z_V01.DAT1
Prev_Fix_Header =
num_fix_prev = 0
Req_Fix_Header =
num_fix_req = 0
Next_Fix_Header =
num_fix_next = 0
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = EOSAM1_1999-07-07.eph
Req_Day_Ephemeris_HR00 =
Req_Day_Ephemeris_HR02 =
Req_Day_Ephemeris_HR04 =
Req_Day_Ephemeris_HR06 =
Req_Day_Ephemeris_HR08 =
Req_Day_Ephemeris_HR10 =
Req_Day_Ephemeris_HR12 = AM1EPHN000107081999120000000000
Req_Day_Ephemeris_HR14 = AM1EPHN000107081999140000000000
Req_Day_Ephemeris_HR16 = AM1EPHN000107081999160000000000
Req_Day_Ephemeris_HR18 = AM1EPHN000107081999180000000000
Req_Day_Ephemeris_HR20 = AM1EPHN000107081999200000000000
Req_Day_Ephemeris_HR22 = AM1EPHN000107081999220000000000
Next_Day_Ephemeris = AM1EPHN000107091999000000000000
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = EOSAM1_1999-07-07.att
Req_Day_Attitude_HR00 =
Req_Day_Attitude_HR02 =
Req_Day_Attitude_HR04 =
Req_Day_Attitude_HR06 =
Req_Day_Attitude_HR08 =
Req_Day_Attitude_HR10 =

Req_Day_Attitude_HR12 = AM1ATTN000107081999120000000000
Req_Day_Attitude_HR14 = AM1ATTNF001070819991400000000000
Req_Day_Attitude_HR16 = AM1ATTNF001070819991600000000000
Req_Day_Attitude_HR18 = AM1ATTNF001070819991800000000000
Req_Day_Attitude_HR20 = AM1ATTNF001070819992000000000000
Req_Day_Attitude_HR22 = AM1ATTNF001070819992200000000000
Day+1_Attitude = AM1ATTNF001070919990000000000000
Intermediate_File_Directory = /CERES/instrument/development/denise_area/rel2/data/int_prod/
Archived_File_Directory = /CERES/instrument/development/denise_area/rel2/data/out_comp/
Support_File_Directory =
/CERES/instrument/development/denise_area/rel2/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT-new/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT-new/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT-new/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/denise_area/rel2/runlogs/
MCF_Directory = /CERES/instrument/development/denise_area/rel2/rcf/
QCRP2 = CER_BQCRPS_Terra-FM1_TestGen_000026.19990708
MEM = CER_BINMEM_Terra-FM1_TestGen_000026.19990708
INHS1 = CER_BINHS_Terra-FM1_TestGen_000026.19990708
INHS2 = CER_BINEL_Terra-FM1_TestGen_000026.19990708
IES0 = CER_IES_Terra-FM1_TestGen_000026.1999070800
IES1 = CER_IES_Terra-FM1_TestGen_000026.1999070801
IES2 = CER_IES_Terra-FM1_TestGen_000026.1999070802
IES3 = CER_IES_Terra-FM1_TestGen_000026.1999070803
IES4 = CER_IES_Terra-FM1_TestGen_000026.1999070804
IES5 = CER_IES_Terra-FM1_TestGen_000026.1999070805
IES6 = CER_IES_Terra-FM1_TestGen_000026.1999070806
IES7 = CER_IES_Terra-FM1_TestGen_000026.1999070807
IES8 = CER_IES_Terra-FM1_TestGen_000026.1999070808
IES9 = CER_IES_Terra-FM1_TestGen_000026.1999070809
IES10 = CER_IES_Terra-FM1_TestGen_000026.1999070810
IES11 = CER_IES_Terra-FM1_TestGen_000026.1999070811
IES12 = CER_IES_Terra-FM1_TestGen_000026.1999070812
IES13 = CER_IES_Terra-FM1_TestGen_000026.1999070813
IES14 = CER_IES_Terra-FM1_TestGen_000026.1999070814
IES15 = CER_IES_Terra-FM1_TestGen_000026.1999070815
IES16 = CER_IES_Terra-FM1_TestGen_000026.1999070816
IES17 = CER_IES_Terra-FM1_TestGen_000026.1999070817
IES18 = CER_IES_Terra-FM1_TestGen_000026.1999070818
IES19 = CER_IES_Terra-FM1_TestGen_000026.1999070819
IES20 = CER_IES_Terra-FM1_TestGen_000026.1999070820
IES21 = CER_IES_Terra-FM1_TestGen_000026.1999070821
IES22 = CER_IES_Terra-FM1_TestGen_000026.1999070822
IES23 = CER_IES_Terra-FM1_TestGen_000026.1999070823
BDS = CER_BDS_Terra-FM1_TestGen_000026.19990708
BDSS = CER_BDSS_Terra-FM1_TestGen_000026.19990708

BDSD = CER_BDSD_Terra-FM1_TestGen_000026.19990708
BDSG = CER_BDSG_Terra-FM1_TestGen_000026.19990708
BDSM = CER_BDSM_Terra-FM1_TestGen_000026.19990708
BDSP = CER_BDSP_Terra-FM1_TestGen_000026.19990708
BDSF = CER_BDSF_Terra-FM1_TestGen_000026.19990708
QCRP1 = CER_BQCRP_Terra-FM1_TestGen_000026.19990708
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = Instrument_Engineering_Limits.19980205
ANAL2 = FM1_Elevation_Profiles.19991001
ANAL3 = FM1_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19980306
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = FM1_CC_Parameters.19991001
RDCO4 = FM1_CC_Offsets.19991001
RDCO5 = FM1_Scan_Mode_Offset_Map.19991001
LOG1 = CER1.1P3_LogStatus_Terra-FM1_TestGen_000026.19990708
LOG2 = CER1.1P3_LogReport_Terra-FM1_TestGen_000026.19990708
LOG3 = CER1.1P3_LogUser_Terra-FM1_TestGen_000026.19990708

C.5 Sample ASCII (PCFin) File Listing for CER1.1P3 (using ORBSIM eph/att data -- terra_lz_input_find_orbsim.csh)

CER1.1P3_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P3
TK_Version = SCF B.0 TK5.2.5
Spacecraft_Class = EOS_AM
Spacecraft_ID = EOS_AM_1
Satellite = Terra
Instrument = FM1
Spacecraft_Instrument = FM1
PGE_Mode = CERES_Production
Quick_Look = Off
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CrossTalk = ON
CC_Code =  000026
Software_SCCR = 151
Ancillary_SCCR = 151
Production_Strategy_Input =
Production_Strategy_Output = TestGenORBSIM
Sampling_Strategy_Input = Terra-FM1
Sampling_Strategy_Output = Terra-FM1
Data_Date = 1999-07-09
Start_Time = 1999-07-09T00:00:00.000000Z
Stop_Time = 1999-07-09T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
APID = 0
Prev_Header = EOS_G131_LZ_1999-07-08T12-00-03Z_V01.CONS
num_s_prev = 1
Prev_Day_Science1 = EOS_G131_LZ_1999-07-08T12-00-03Z_V01.DAT1
Req_Header = EOS_G131_LZ_1999-07-09T00-00-00Z_V01.CONS
num_s_req = 1
Req_Day_Science1 = EOS_G131_LZ_1999-07-09T00-00-00Z_V01.DAT1
```

Next_Header =
num_s_next = 0
Prev_Cal_Header = EOS_G132_LZ_1999-07-08T18-06-34Z_V01.CONS
num_cal_prev = 1
Prev_Day_Calibration1 = EOS_G132_LZ_1999-07-08T18-06-34Z_V01.DAT1
Req_Cal_Header = EOS_G132_LZ_1999-07-09T08-58-41Z_V01.CONS
num_cal_req = 1
Req_Day_Calibration1 = EOS_G132_LZ_1999-07-09T08-58-41Z_V01.DAT1
Next_Cal_Header =
num_cal_next = 0
Prev_Diag_Header = EOS_G133_LZ_1999-07-08T11-26-16Z_V01.CONS
num_diag_prev = 1
Prev_Day_Diagnostic1 = EOS_G133_LZ_1999-07-08T11-26-16Z_V01.DAT1
Req_Diag_Header = EOS_G133_LZ_1999-07-09T00-49-56Z_V01.CONS
num_diag_req = 1
Req_Day_Diagnostic1 = EOS_G133_LZ_1999-07-09T00-49-56Z_V01.DAT1
Next_Diag_Header =
num_diag_next = 0
Prev_Fix_Header =
num_fix_prev = 0
Req_Fix_Header =
num_fix_req = 0
Next_Fix_Header =
num_fix_next = 0
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = EOSAM1_1999-07-08.eph
Req_Day_Ephemeris = EOSAM1_1999-07-09.eph
Next_Day_Ephemeris = EOSAM1_1999-07-10.eph
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = EOSAM1_1999-07-08.att
Req_Day_Attitude = EOSAM1_1999-07-09.att
Day+1_Attitude = EOSAM1_1999-07-10.att
Intermediate_File_Directory = /CERES/instrument/development/denise_area/rel2/data/int_prod/
Archived_File_Directory = /CERES/instrument/development/denise_area/rel2/data/out_comp/
Support_File_Directory =
/CERES/instrument/development/denise_area/rel2/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT-new/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT-new/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT-new/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/denise_area/rel2/runlogs/
MCF_Directory = /CERES/instrument/development/denise_area/rel2/rcf/
QCRP2 = CER_BQCRPS_Terra-FM1_TestGenORBSIM_000026.19990709
MEM = CER_BINMEM_Terra-FM1_TestGenORBSIM_000026.19990709
INHS1 = CER_BINHS_Terra-FM1_TestGenORBSIM_000026.19990709
INHS2 = CER_BINEL_Terra-FM1_TestGenORBSIM_000026.19990709
IES0 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070900

IES1 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070901
IES2 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070902
IES3 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070903
IES4 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070904
IES5 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070905
IES6 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070906
IES7 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070907
IES8 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070908
IES9 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070909
IES10 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070910
IES11 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070911
IES12 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070912
IES13 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070913
IES14 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070914
IES15 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070915
IES16 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070916
IES17 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070917
IES18 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070918
IES19 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070919
IES20 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070920
IES21 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070921
IES22 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070922
IES23 = CER_IES_Terra-FM1_TestGenORBSIM_000026.1999070923
BDS = CER_BDS_Terra-FM1_TestGenORBSIM_000026.19990709
BDSS = CER_BDSS_Terra-FM1_TestGenORBSIM_000026.19990709
BDSD = CER_BDSD_Terra-FM1_TestGenORBSIM_000026.19990709
BDSG = CER_BDSG_Terra-FM1_TestGenORBSIM_000026.19990709
BDSM = CER_BDSM_Terra-FM1_TestGenORBSIM_000026.19990709
BDSP = CER_BDSP_Terra-FM1_TestGenORBSIM_000026.19990709
BDSF = CER_BDSF_Terra-FM1_TestGenORBSIM_000026.19990709
QCRP1 = CER_BQCRP_Terra-FM1_TestGenORBSIM_000026.19990709
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = FM1_Instrument_Engineering_Limits.19991001
ANAL2 = FM1_Elevation_Profiles.19991001
ANAL3 = FM1_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19980306
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = FM1_CC_Parameters.19991001
RDCO4 = FM1_CC_Offsets.19991001
RDCO5 = FM1_Scan_Mode_Offset_Map.19991001
LOG1 = CER1.1P3_LogStatus_Terra-FM1_TestGenORBSIM_000026.19990709
LOG2 = CER1.1P3_LogReport_Terra-FM1_TestGenORBSIM_000026.19990709
LOG3 = CER1.1P3_LogUser_Terra-FM1_TestGenORBSIM_000026.19990709

C.6 Sample ASCII (PCFin) File Listing for CER1.1P4

CER1.1P4_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P4
TK_Version = SCF B.0 TK5.2.5
Spacecraft_Class = EOS_AM
Spacecraft_ID = EOS_AM_1
Spacecraft_Instrument = FM1
Satellite = Terra
Instrument = FM1
PGE_Mode = CERES_Production
Quick_Look = On
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CrossTalk = ON
CC_Code =  000026
Software_SCCR = 151
Ancillary_SCCR = 151
Production_Strategy_Input =
Production_Strategy_Output = TestGen
Sampling_Strategy_Input = Terra-FM1
Sampling_Strategy_Output = Terra-FM1
Data_Date = 1998-08-18
Data_Hour = 13
Data_Min = 18
Start_Time = 1998-08-18T00:00:00.000000Z
Stop_Time = 1998-08-18T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
APID = 131
Cur_Header = EOS_G131_QL_1998-08-18T13-18-32Z_V04.CONS
num_s_req = 1
Req_Day_Science1 = EOS_G131_QL_1998-08-18T13-18-32Z_V04.DAT1
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = EOSAM1_1998-08-17.eph
Req_Day_Ephemeris = EOSAM1_1998-08-18.eph
Next_Day_Ephemeris = EOSAM1_1998-08-19.eph
```

Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = EOSAM1_1998-08-17.att
Req_Day_Attitude = EOSAM1_1998-08-18.att
Day+1_Attitude = EOSAM1_1998-08-19.att
Intermediate_File_Directory = /CERES/instrument/development/denise_area/rel2/data/int_prod/
Archived_File_Directory = /CERES/instrument/development/denise_area/rel2/data/out_comp/
Support_File_Directory =
/CERES/instrument/development/denise_area/rel2/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT-new/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT-new/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT-new/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/denise_area/rel2/runlogs/
MCF_Directory = /CERES/instrument/development/denise_area/rel2/rcf/
Production_Output_Strategy = TestGen
QCRP2 = CER_BQCRPS_Terra-FM1_TestGen_000026.19980818_QL1318-131
MEM = CER_BINMEM_Terra-FM1_TestGen_000026.19980818_QL1318-131
INHS1 = CER_BINHS_Terra-FM1_TestGen_000026.19980818_QL1318-131
INHS2 = CER_BINEL_Terra-FM1_TestGen_000026.19980818_QL1318-131
IES0 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131800
IES1 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131801
IES2 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131802
IES3 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131803
IES4 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131804
IES5 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131805
IES6 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131806
IES7 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131807
IES8 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131808
IES9 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131809
IES10 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131810
IES11 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131811
IES12 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131812
IES13 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131813
IES14 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131814
IES15 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131815
IES16 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131816
IES17 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131817
IES18 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131818
IES19 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131819
IES20 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131820
IES21 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131821
IES22 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131822
IES23 = CER_IES_Terra-FM1_TestGen_000026.19980818_QL131823
BDS = CER_BDS_Terra-FM1_TestGen_000026.19980818_QL1318-131
BDSS = CER_BDSS_Terra-FM1_TestGen_000026.19980818_QL1318-131
BDSD = CER_BDSD_Terra-FM1_TestGen_000026.19980818_QL1318-131
BDSG = CER_BDSG_Terra-FM1_TestGen_000026.19980818_QL1318-131

BDSM = CER_BDSM_Terra-FM1_TestGen_000026.19980818_QL1318-131
BDSP = CER_BDSP_Terra-FM1_TestGen_000026.19980818_QL1318-131
BDSF = CER_BDSF_Terra-FM1_TestGen_000026.19980818_QL1318-131
QCRP1 = CER_BQCRP_Terra-FM1_TestGen_000026.19980818_QL1318-131
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = FM1_Instrument_Engineering_Limits.19991001
ANAL2 = FM1_Elevation_Profiles.19991001
ANAL3 = FM1_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19980306
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = FM1_CC_Parameters.19991001
RDCO4 = FM1_CC_Offsets.19991001
RDCO5 = FM1_Scan_Mode_Offset_Map.19991001
LOG1 = CER1.1P4_LogStatus_Terra-FM1_TestGen_000026.19980818_QL1318-131
LOG2 = CER1.1P4_LogReport_Terra-FM1_TestGen_000026.19980818_QL1318-131
LOG3 = CER1.1P4_LogUser_Terra-FM1_TestGen_000026.19980818_QL1318-131

C.7 Sample ASCII (PCFin) File Listing for CER1.1P5

CER1.1P5_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P5
TK_Version = SCF TK5.2.7
Spacecraft_Class = EOS_PM
Spacecraft_ID = EOS_PM_1
Satellite = Aqua
Instrument = FM3
Spacecraft_Instrument = FM3
PGE_Mode = CERES_Production
Quick_Look = Off
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CC_Code =  000031
Software_SCCR = 228
Ancillary_SCCR = 228
Production_Strategy_Input =
Production_Strategy_Output = testAquaDPREP
Sampling_Strategy_Input = Aqua-FM3
Sampling_Strategy_Output = Aqua-FM3
Data_Date = 1998-09-13
Start_Time = 1998-09-13T00:00:00.000000Z
Stop_Time = 1998-09-13T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
APID = 0
Prev_Header =
num_s_prev = 0
Req_Header = EOS_G141_LZ_1998-09-13T00-00-01Z_V04.CONS
num_s_req = 1
Req_Day_Science1 = EOS_G141_LZ_1998-09-13T00-00-01Z_V04.DAT1
Next_Header = EOS_G141_LZ_1998-09-14T00-00-01Z_V02.CONS
num_s_next = 1
Next_Day_Science1 = EOS_G141_LZ_1998-09-14T00-00-01Z_V02.DAT1
```

Prev_Cal_Header =
num_cal_prev = 0
Req_Cal_Header =
num_cal_req = 0
Next_Cal_Header =
num_cal_next = 0
Prev_Diag_Header =
num_diag_prev = 0
Req_Diag_Header =
num_diag_req = 0
Next_Diag_Header =
num_diag_next = 0
Prev_Fix_Header =
num_fix_prev = 0
Req_Fix_Header =
num_fix_req = 0
Next_Fix_Header =
num_fix_next = 0
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = PM1EPHND001091219980000000000000
Req_Day_Ephemeris = PM1EPHND001091319980000000010000
Next_Day_Ephemeris = PM1EPHND001091419980000000000000
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = PM1ATTNR001091219982200000000000
Req_Day_Attitude_HR00 = PM1ATTNR001091319980000000000000
Req_Day_Attitude_HR02 = PM1ATTNR001091319980200000000000
Req_Day_Attitude_HR04 = PM1ATTNR001091319980400000000000
Req_Day_Attitude_HR06 = PM1ATTNR001091319980600000000000
Req_Day_Attitude_HR08 = PM1ATTNR001091319980800000000000
Req_Day_Attitude_HR10 = PM1ATTNR001091319981000000000000
Req_Day_Attitude_HR12 = PM1ATTNR001091319981200000000000
Req_Day_Attitude_HR14 = PM1ATTNR001091319981400000000000
Req_Day_Attitude_HR16 = PM1ATTNR001091319981600000000000
Req_Day_Attitude_HR18 = PM1ATTNR001091319981800000000000
Req_Day_Attitude_HR20 = PM1ATTNR001091319982000000000000
Req_Day_Attitude_HR22 = PM1ATTNR001091319982200000000000
Day+1_Attitude = PM1ATTNR001091419980000000000000
Intermediate_File_Directory = /CERES/instrument/data/int_prod/
Archived_File_Directory = /CERES/instrument/data/out_comp/
Support_File_Directory = /CERES/instrument/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/runlogs/
MCF_Directory = /CERES/instrument/rcf/
QCRP2 = CER_BQCRPS_Aqua-FM3_testAquaDPREP_000031.19980913

MEM = CER_BINMEM_Aqua-FM3_testAquaDPREP_000031.19980913
INHS1 = CER_BINHS_Aqua-FM3_testAquaDPREP_000031.19980913
INHS2 = CER_BINEL_Aqua-FM3_testAquaDPREP_000031.19980913
IES0 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091300
IES1 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091301
IES2 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091302
IES3 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091303
IES4 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091304
IES5 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091305
IES6 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091306
IES7 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091307
IES8 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091308
IES9 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091309
IES10 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091310
IES11 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091311
IES12 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091312
IES13 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091313
IES14 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091314
IES15 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091315
IES16 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091316
IES17 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091317
IES18 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091318
IES19 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091319
IES20 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091320
IES21 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091321
IES22 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091322
IES23 = CER_IES_Aqua-FM3_testAquaDPREP_000031.1998091323
BDS = CER_BDS_Aqua-FM3_testAquaDPREP_000031.19980913
BDSS = CER_BDSS_Aqua-FM3_testAquaDPREP_000031.19980913
BDSD = CER_BDSD_Aqua-FM3_testAquaDPREP_000031.19980913
BDSG = CER_BDSG_Aqua-FM3_testAquaDPREP_000031.19980913
BDSM = CER_BDSM_Aqua-FM3_testAquaDPREP_000031.19980913
BDSP = CER_BDSP_Aqua-FM3_testAquaDPREP_000031.19980913
BDSF = CER_BDSF_Aqua-FM3_testAquaDPREP_000031.19980913
QCRP1 = CER_BQCRP_Aqua-FM3_testAquaDPREP_000031.19980913
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = FM3_Instrument_Engineering_Limits.19991001
ANAL2 = FM3_Elevation_Profiles.19991001
ANAL3 = FM3_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19991001
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = FM3_Count_Conversion_Data.19991015
RDCO4 = FM3_Offsets.19991015

RDCO5 = FM3_Scan_Mode_Offset_Map.20000808
LOG1 = CER1.1P5_LogStatus_Aqua-FM3_testAquaDPREP_000031.19980913
LOG2 = CER1.1P5_LogReport_Aqua-FM3_testAquaDPREP_000031.19980913
LOG3 = CER1.1P5_LogUser_Aqua-FM3_testAquaDPREP_000031.19980913

C.8 Sample ASCII (PCFin) File Listing for CER1.1P5 (using ORBSIM eph/att data -- aqua_lz_input_find_orbsim.csh)

CER1.1P5_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P5
TK_Version = SCF TK5.2.7
Spacecraft_Class = EOS_PM
Spacecraft_ID = EOS_PM_1
Satellite = Aqua
Instrument = FM3
Spacecraft_Instrument = FM3
PGE_Mode = CERES_Production
Quick_Look = Off
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CC_Code =  000031
Software_SCCR = 228
Ancillary_SCCR = 228
Production_Strategy_Input =
Production_Strategy_Output = checkAqua
Sampling_Strategy_Input = Aqua-FM3
Sampling_Strategy_Output = Aqua-FM3
Data_Date = 2001-03-21
Start_Time = 2001-03-21T00:00:00.000000Z
Stop_Time = 2001-03-21T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
APID = 0
Prev_Header =
num_s_prev = 0
Req_Header = EOS_G141_LZ_2001-03-21T01-49-09Z_V01.CONS
num_s_req = 1
Req_Day_Science1 = EOS_G141_LZ_2001-03-21T01-49-09Z_V01.DAT1
Next_Header =
num_s_next = 0
```

Prev_Cal_Header =
num_cal_prev = 0
Req_Cal_Header =
num_cal_req = 0
Next_Cal_Header =
num_cal_next = 0
Prev_Diag_Header =
num_diag_prev = 0
Req_Diag_Header =
num_diag_req = 0
Next_Diag_Header =
num_diag_next = 0
Prev_Fix_Header =
num_fix_prev = 0
Req_Fix_Header =
num_fix_req = 0
Next_Fix_Header =
num_fix_next = 0
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = EOSPM1_2001-03-20.eph
Req_Day_Ephemeris = EOSPM1_2001-03-21.eph
Next_Day_Ephemeris = EOSPM1_2001-03-22.eph
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = EOSPM1_2001-03-20.att
Req_Day_Attitude = EOSPM1_2001-03-21.att
Day+1_Attitude = EOSPM1_2001-03-22.att
Intermediate_File_Directory = /CERES/instrument/data/int_prod/
Archived_File_Directory = /CERES/instrument/data/out_comp/
Support_File_Directory = /CERES/instrument/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/runlogs/
MCF_Directory = /CERES/instrument/rcf/
QCRP2 = CER_BQCRPS_Aqua-FM3_checkAqua_000031.20010321
MEM = CER_BINMEM_Aqua-FM3_checkAqua_000031.20010321
INHS1 = CER_BINHS_Aqua-FM3_checkAqua_000031.20010321
INHS2 = CER_BINEL_Aqua-FM3_checkAqua_000031.20010321
IES0 = CER_IES_Aqua-FM3_checkAqua_000031.2001032100
IES1 = CER_IES_Aqua-FM3_checkAqua_000031.2001032101
IES2 = CER_IES_Aqua-FM3_checkAqua_000031.2001032102
IES3 = CER_IES_Aqua-FM3_checkAqua_000031.2001032103
IES4 = CER_IES_Aqua-FM3_checkAqua_000031.2001032104
IES5 = CER_IES_Aqua-FM3_checkAqua_000031.2001032105
IES6 = CER_IES_Aqua-FM3_checkAqua_000031.2001032106
IES7 = CER_IES_Aqua-FM3_checkAqua_000031.2001032107

IES8 = CER_IES_Aqua-FM3_checkAqua_000031.2001032108
IES9 = CER_IES_Aqua-FM3_checkAqua_000031.2001032109
IES10 = CER_IES_Aqua-FM3_checkAqua_000031.2001032110
IES11 = CER_IES_Aqua-FM3_checkAqua_000031.2001032111
IES12 = CER_IES_Aqua-FM3_checkAqua_000031.2001032112
IES13 = CER_IES_Aqua-FM3_checkAqua_000031.2001032113
IES14 = CER_IES_Aqua-FM3_checkAqua_000031.2001032114
IES15 = CER_IES_Aqua-FM3_checkAqua_000031.2001032115
IES16 = CER_IES_Aqua-FM3_checkAqua_000031.2001032116
IES17 = CER_IES_Aqua-FM3_checkAqua_000031.2001032117
IES18 = CER_IES_Aqua-FM3_checkAqua_000031.2001032118
IES19 = CER_IES_Aqua-FM3_checkAqua_000031.2001032119
IES20 = CER_IES_Aqua-FM3_checkAqua_000031.2001032120
IES21 = CER_IES_Aqua-FM3_checkAqua_000031.2001032121
IES22 = CER_IES_Aqua-FM3_checkAqua_000031.2001032122
IES23 = CER_IES_Aqua-FM3_checkAqua_000031.2001032123
BDS = CER_BDS_Aqua-FM3_checkAqua_000031.20010321
BDSS = CER_BDSS_Aqua-FM3_checkAqua_000031.20010321
BDSD = CER_BDSD_Aqua-FM3_checkAqua_000031.20010321
BDSG = CER_BDSG_Aqua-FM3_checkAqua_000031.20010321
BDSM = CER_BDSM_Aqua-FM3_checkAqua_000031.20010321
BDSP = CER_BDSP_Aqua-FM3_checkAqua_000031.20010321
BDSF = CER_BDSF_Aqua-FM3_checkAqua_000031.20010321
QCRP1 = CER_BQCRP_Aqua-FM3_checkAqua_000031.20010321
PARAM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = FM3_Instrument_Engineering_Limits.19991001
ANAL2 = FM3_Elevation_Profiles.19991001
ANAL3 = FM3_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19991001
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = FM3_Count_Conversion_Data.19991015
RDCO4 = FM3_Offsets.19991015
RDCO5 = FM3_Scan_Mode_Offset_Map.20000808
LOG1 = CER1.1P5_LogStatus_Aqua-FM3_checkAqua_000031.20010321
LOG2 = CER1.1P5_LogReport_Aqua-FM3_checkAqua_000031.20010321
LOG3 = CER1.1P5_LogUser_Aqua-FM3_checkAqua_000031.20010321

C.9 Sample ASCII (PCFin) File Listing for CER1.1P6

CER1.1P6_PCFin_$PS1_$SS1_$CC1.YYYYMMDD

```
PGE_Name = CER1.1P6
TK_Version = SCF B.0 TK5.2.7
Spacecraft_Class = EOS_PM
Spacecraft_ID = EOS_PM_1
Spacecraft_Instrument = FM3
Satellite = Aqua
Instrument = FM3
PGE_Mode = CERES_Production
Quick_Look = On
Instrument_Debug_Mode = Off
Radiance_Debug_Mode = Off
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Number_of_Pre_Scans = 2
Number_of_Post_Scans = 2
Ignore_Cover_Mode = On
Write_Products = Default
Write_Part_Earth = ON
CrossTalk = ON
CC_Code =  000026
Software_SCCR = 151
Ancillary_SCCR = 151
Production_Strategy_Input =
Production_Strategy_Output = TestGen
Sampling_Strategy_Input = Aqua-FM3
Sampling_Strategy_Output = Aqua-FM3
Data_Date = 1998-08-18
Data_Hour = 13
Data_Min = 18
Start_Time = 1998-08-18T00:00:00.000000Z
Stop_Time = 1998-08-18T23:59:59.999999Z
Input_File_Dir = /CERES/instrument/data/input
APID = 131
Cur_Header = EOS_G141_QL_1998-08-18T13-18-32Z_V04.CONS
num_s_req = 1
Req_Day_Science1 = EOS_G141_QL_1998-08-18T13-18-32Z_V04.DAT1
Ephemeris_File_Dir = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Ephemeris = EOSPM1_1998-08-17.eph
```

Req_Day_Ephemeris = EOSPM1_1998-08-18.eph
Next_Day_Ephemeris = EOSPM1_1998-08-19.eph
Attitude_File_Directory = /CERES/instrument/data/ancillary/dynamic/
Prev_Day_Attitude = EOSPM1_1998-08-17.att
Req_Day_Attitude = EOSPM1_1998-08-18.att
Day+1_Attitude = EOSPM1_1998-08-19.att
Intermediate_File_Directory = /CERES/instrument/development/denise_area/rel2/data/int_prod/
Archived_File_Directory = /CERES/instrument/development/denise_area/rel2/data/out_comp/
Support_File_Directory =
/CERES/instrument/development/denise_area/rel2/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT-new/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT-new/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT-new/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/denise_area/rel2/runlogs/
MCF_Directory = /CERES/instrument/development/denise_area/rel2/rcf/
Production_Output_Strategy = TestGen
QCRP2 = CER_BQCRPS_Aqua-FM3_TestGen_000026.19980818_QL1318-141
MEM = CER_BINMEM_Aqua-FM3_TestGen_000026.19980818_QL1318-141
INHS1 = CER_BINHS_Aqua-FM3_TestGen_000026.19980818_QL1318-141
INHS2 = CER_BINEL_Aqua-FM3_TestGen_000026.19980818_QL1318-141
IES0 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131800
IES1 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131801
IES2 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131802
IES3 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131803
IES4 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131804
IES5 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131805
IES6 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131806
IES7 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131807
IES8 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131808
IES9 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131809
IES10 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131810
IES11 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131811
IES12 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131812
IES13 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131813
IES14 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131814
IES15 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131815
IES16 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131816
IES17 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131817
IES18 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131818
IES19 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131819
IES20 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131820
IES21 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131821
IES22 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131822
IES23 = CER_IES_Aqua-FM3_TestGen_000026.19980818_QL131823
BDS = CER_BDS_Aqua-FM3_TestGen_000026.19980818_QL1318-141
BDSS = CER_BDSS_Aqua-FM3_TestGen_000026.19980818_QL1318-141

BDSD = CER_BDSD_Aqua-FM3_TestGen_000026.19980818_QL1318-141
BDSG = CER_BDSG_Aqua-FM3_TestGen_000026.19980818_QL1318-141
BDSM = CER_BDSM_Aqua-FM3_TestGen_000026.19980818_QL1318-141
BDSP = CER_BDSP_Aqua-FM3_TestGen_000026.19980818_QL1318-141
BDSF = CER_BDSF_Aqua-FM3_TestGen_000026.19980818_QL1318-141
QCRP1 = CER_BQCRP_Aqua-FM3_TestGen_000026.19980818_QL1318-141
PARPM = PCF_Parameter_Map.txt
PLOC1 = Analog_Location.19971031
PLOC2 = Digital_Location.19971223
ANAL1 = FM3_Instrument_Engineering_Limits.19991001
ANAL2 = FM3_Elevation_Profiles.19991001
ANAL3 = FM3_Instrument_Engineering_Coefficients.19991001
INLO2 = Instrument_Config_Logic_Table.19980306
INLO3 = MAM_Configuration_Logic_Table.19980205
INLO4 = Main_Cover_Configuration_Logic_Table.19980112
RDCO1 = FM3_CC_Parameters.19991001
RDCO4 = FM3_CC_Offsets.19991001
RDCO5 = FM3_Scan_Mode_Offset_Map.19991001
LOG1 = CER1.1P6_LogStatus_Aqua-FM3_TestGen_000026.19980818_QL1318-141
LOG2 = CER1.1P6_LogReport_Aqua-FM3_TestGen_000026.19980818_QL1318-141
LOG3 = CER1.1P6_LogUser_Aqua-FM3_TestGen_000026.19980818_QL1318-141

C.10 Sample ASCII (PCFin) File Listing for CER1.3P1

CER1.3P1_PCFin_$PS1_$SS1_$CC1_3.YYYYMMDD

```
PGE_Name = CER1.3P1
TK_Version = SCF TK5.2.7
Satellite = Aqua
Instrument = FM4
Input_BDS = CER_BDS_Aqua-FM4_MissionTest2_022017.20011128
Input_BDSD = CER_BDSD_Aqua-FM4_MissionTest2_022017.20011128
CC_Code =  000001
Software_SCCR = 319
Ancillary_SCCR = 319
Production_Strategy_Input = MissionTest2
Production_Strategy_Output = MissionTest2
Sampling_Strategy_Input = Aqua-FM4
Sampling_Strategy_Output = Aqua-FM4
Data_Date = 2001-11-28
Pre_Event_Time = 15
Post_Event_Time = 60
Input_File_Dir = /CERES/instrument/development/cm_test/rel4/data/out_comp/
Archived_File_Directory = /CERES/instrument/development/cm_test/rel4/data/out_comp/
Support_File_Directory = /CERES/instrument/development/cm_test/rel4/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/cm_test/rel4/runlogs/
MCF_Directory = /CERES/instrument/development/cm_test/rel4/rcf/
no_BDSIs = 12
BDSI01 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112801
BDSI02 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112802
BDSI03 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112803
BDSI04 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112804
BDSI05 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112805
BDSI06 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112806
BDSI07 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112807
BDSI08 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112808
BDSI09 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112809
BDSI10 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112810
BDSI11 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112811
BDSI12 = CER_BDSI_Aqua-FM4_MissionTest2_000001.2001112812
PARAM = PCF_Parameter_Map.txt
```

LOG1 = CER1.3P1_LogStatus_Aqua-FM4_MissionTest2_000001.20011128
LOG2 = CER1.3P1_LogReport_Aqua-FM4_MissionTest2_000001.20011128
LOG3 = CER1.3P1_LogUser_Aqua-FM4_MissionTest2_000001.20011128

C.11 Sample ASCII (PCFin) File Listing for CER1.3P2

CER1.3P2_PCFin_$PS1_$SS1_$CC1_4.YYYYMM

PGE_Name = CER1.3P2
TK_Version = SCF TK5.2.7
Satellite = Terra
Spacecraft_Class = EOS_AM
Spacecraft_ID = EOS_AM_1
Instrument = FM1
Data_Date = 2000-06-01
Start_Time = 2000-06-01T00:00:00.000000Z
Stop_Time = 2000-06-30T23:59:59.999999Z
CC_Code = 000001
Software_SCCR = 336
Ancillary_SCCR = 336
Production_Strategy_Input = Edition1
Production_Strategy_Output = Edition1
Sampling_Strategy_Input = Terra-FM1
Sampling_Strategy_Output = Terra-FM1
Input_File_Directory = /CERES/instrument/development/cm_test/rel4/data/out_comp/
Archived_File_Directory = /CERES/instrument/development/cm_test/rel4/data/out_comp/
Support_File_Directory = /CERES/instrument/development/cm_test/rel4/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT/database/sgi32/TD
LogFile_Directory = /CERES/instrument/development/cm_test/rel4/runlogs/
MCF_Directory = /CERES/instrument/development/cm_test/rel4/rcf/
Planet_Eph_Directory = /opt/net/TOOLKIT/database/sgi32/CBP
UTCPOLE_Directory = /opt/net/TOOLKIT/database/sgi32/CSC
Input_BDSI_01 = CER_BDSI_Terra-FM1_Edition1_000002.2000060701
Input_BDSI_02 = CER_BDSI_Terra-FM1_Edition1_000002.2000061401
Input_BDSI_03 = CER_BDSI_Terra-FM1_Edition1_000002.2000062101
Input_BDSI_04 = CER_BDSI_Terra-FM1_Edition1_000002.2000062301
Input_BDSI_05 = CER_BDSI_Terra-FM1_Edition1_000002.2000062302
Input_BDSI_06 = CER_BDSI_Terra-FM1_Edition1_000002.2000062303
Input_BDSI_07 = CER_BDSI_Terra-FM1_Edition1_000002.2000062304
Input_BDSI_08 = CER_BDSI_Terra-FM1_Edition1_000002.2000062401
Input_BDSI_09 = CER_BDSI_Terra-FM1_Edition1_000002.2000062402
Input_BDSI_10 = CER_BDSI_Terra-FM1_Edition1_000002.2000062403
Input_BDSI_11 = CER_BDSI_Terra-FM1_Edition1_000002.2000062801
Num_BDSI_Files = 11
PLOC2 = Digital_Location.20010701
RDCO4 = IC_Gnd_Ref_Data
RDCO5 = ceres_SI_FM1_day.20020328.dat
WRCO1 = CER_GAIN_Terra-FM1_Edition1_000001.200006

WRCO2 = CER_QCTL_Terra-FM1_Edition1_000001.200006
WRCO3 = CER_QCWN_Terra-FM1_Edition1_000001.200006
WRCO4 = CER_QCSW_Terra-FM1_Edition1_000001.200006
LOG1 = CER1.3P2_LogStatus_Terra-FM1_Edition1_000001.200006
LOG2 = CER1.3P2_LogReport_Terra-FM1_Edition1_000001.200006
LOG3 = CER1.3P2_LogUser_Terra-FM1_Edition1_000001.200006
PARAM = PCF_Parameter_Map.txt

C.12 Sample ASCII (PCFin) File Listing for CER1.3P3

CER1.3P3_PCFin_$PS1_1_$SS1_$CC1_5.YYYYMM

PGE_Name = CER1.3P3
TK_Version = SCF TK5.2.7
Spacecraft_Class = EOS_AM
Spacecraft_ID = EOS_AM_1
Satellite = Terra
Instrument = FM2
Spacecraft_Instrument = FM2
SMF_Console_Mode = Off
Space_Clamp_Mode = Dual_Scan
Offset_Mode = Table
Time_Constants_Mode = On
Write_Products = Default
Write_Part_Earth = ON
Start_Time = 2000-03-01T00:00:00.000000Z
Stop_Time = 2000-03-01T23:59:59.999999Z
Prev_Day_Ephemeris = AM1EPHN000102292000220000000000
Req_Day_Ephemeris_HR00 = AM1EPHN000103012000000000000000
Req_Day_Ephemeris_HR02 = AM1EPHN000103012000020000000000
Req_Day_Ephemeris_HR04 = AM1EPHN000103012000040000000000
Req_Day_Ephemeris_HR06 = AM1EPHN000103012000060000000000
Req_Day_Ephemeris_HR08 = AM1EPHN000103012000080000000000
Req_Day_Ephemeris_HR10 = AM1EPHN000103012000100000000000
Req_Day_Ephemeris_HR12 = AM1EPHN000103012000120000000000
Req_Day_Ephemeris_HR14 = AM1EPHN000103012000140000000000
Req_Day_Ephemeris_HR16 = AM1EPHN000103012000160000000000
Req_Day_Ephemeris_HR18 = AM1EPHN000103012000180000000000
Req_Day_Ephemeris_HR20 = AM1EPHN000103012000200000000000
Req_Day_Ephemeris_HR22 = AM1EPHN000103012000220000000000
Next_Day_Ephemeris = AM1EPHN000103022000000000000000
Prev_Day_Attitude = AM1ATTNF001022920002200000000000
Req_Day_Attitude_HR00 = AM1ATTNF001030120000000000000000
Req_Day_Attitude_HR02 = AM1ATTNF001030120000200000000000
Req_Day_Attitude_HR04 = AM1ATTNF001030120000400000000000
Req_Day_Attitude_HR06 = AM1ATTNF001030120000600000000000
Req_Day_Attitude_HR08 = AM1ATTNF001030120000800000000000
Req_Day_Attitude_HR10 = AM1ATTNF001030120001000000000000
Req_Day_Attitude_HR12 = AM1ATTNF001030120001200000000000
Req_Day_Attitude_HR14 = AM1ATTNF001030120001400000000000
Req_Day_Attitude_HR16 = AM1ATTNF001030120001600000000000
Req_Day_Attitude_HR18 = AM1ATTNF001030120001800000000000

Req_Day_Attitude_HR20 = AM1ATTNF0010301200020000000000000
Req_Day_Attitude_HR22 = AM1ATTNF0010301200022000000000000
Next_Day_Attitude = AM1ATTNF0010302200000000000000000
CC_Code = 000001
Software_SCCR = 355
Ancillary_SCCR = 355
Production_Strategy_Input = Edition1
Production_Strategy_Output = Edition2
Sampling_Strategy_Input = Terra-FM2
Sampling_Strategy_Output = Terra-FM2
Data_Date = 2000-03-01
Input_File_Dir = /DAAC/instrument/data/out_comp
Attitude_File_Dir = /DAAC/instrument/data/ancillary/dynamic
Ephemeris_File_Dir = /DAAC/instrument/data/ancillary/dynamic
Archived_File_Directory = /CERES/instrument/development/cm_test/rel4/data/out_comp/
Intermediate_File_Directory = /CERES/instrument/development/cm_test/rel4/data/int_prod/
Support_File_Directory = /CERES/instrument/development/cm_test/rel4/data/ancillary/static/
LeapSec_Directory = /opt/net/TOOLKIT/database/sgi32/TD
UTCPOLE_Directory = /opt/net/TOOLKIT/database/sgi32/CSC
Planet_Eph_Directory = /opt/net/TOOLKIT/database/sgi32/CBP
LogFile_Directory = /CERES/instrument/development/cm_test/rel4/runlogs/
MCF_Directory = /CERES/instrument/development/cm_test/rel4/rcf/
IES0 = CER_IES_Terra-FM2_Edition2_000001.2000030100
IES1 = CER_IES_Terra-FM2_Edition2_000001.2000030101
IES2 = CER_IES_Terra-FM2_Edition2_000001.2000030102
IES3 = CER_IES_Terra-FM2_Edition2_000001.2000030103
IES4 = CER_IES_Terra-FM2_Edition2_000001.2000030104
IES5 = CER_IES_Terra-FM2_Edition2_000001.2000030105
IES6 = CER_IES_Terra-FM2_Edition2_000001.2000030106
IES7 = CER_IES_Terra-FM2_Edition2_000001.2000030107
IES8 = CER_IES_Terra-FM2_Edition2_000001.2000030108
IES9 = CER_IES_Terra-FM2_Edition2_000001.2000030109
IES10 = CER_IES_Terra-FM2_Edition2_000001.2000030110
IES11 = CER_IES_Terra-FM2_Edition2_000001.2000030111
IES12 = CER_IES_Terra-FM2_Edition2_000001.2000030112
IES13 = CER_IES_Terra-FM2_Edition2_000001.2000030113
IES14 = CER_IES_Terra-FM2_Edition2_000001.2000030114
IES15 = CER_IES_Terra-FM2_Edition2_000001.2000030115
IES16 = CER_IES_Terra-FM2_Edition2_000001.2000030116
IES17 = CER_IES_Terra-FM2_Edition2_000001.2000030117
IES18 = CER_IES_Terra-FM2_Edition2_000001.2000030118
IES19 = CER_IES_Terra-FM2_Edition2_000001.2000030119
IES20 = CER_IES_Terra-FM2_Edition2_000001.2000030120
IES21 = CER_IES_Terra-FM2_Edition2_000001.2000030121
IES22 = CER_IES_Terra-FM2_Edition2_000001.2000030122
IES23 = CER_IES_Terra-FM2_Edition2_000001.2000030123

Input_BDS = CER_BDS_Terra-FM2_Edition1_023018.20000301
Next_BDS = CER_BDS_Terra-FM2_Edition1_023018.20000302
Output_BDS = CER_BDS_Terra-FM2_Edition2_000001.20000301
QCRP1 = CER_BQCBDS_Terra-FM2_Edition2_000001.20000301
QCRP2 = CER_BQCIES_Terra-FM2_Edition2_000001.20000301
PARAM = PCF_Parameter_Map.txt
RDCO1 = FM2_Count_Conversion_Data.20020522
RDCO4 = FM2_Offsets.20001004
RDCO5 = FM2_Scan_Mode_Offset_Map.20010625
LOG1 = CER1.3P3_LogStatus_Terra-FM2_Edition2_000001.20000301
LOG2 = CER1.3P3_LogReport_Terra-FM2_Edition2_000001.20000301
LOG3 = CER1.3P3_LogUser_Terra-FM2_Edition2_000001.20000301

Appendix D
Ancillary Data Files for Subsystem CER1.0

Table D-1. Ancillary Data Files for CER1.0

Filename	Format	Description	Used By PGE
The following files can be found in $CERESHOME/instrument/data/ancillary/static			
PCF_Parameter_Map.txt	ASCII	PCF Logical ID to file mapping	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5, CER1.1P6, CER1.2P1, CER1.3P1, CER1.3P2, CER1.3P3
Analog_Location.YYYYMMDD	ASCII	Location of all Analog Parameters in data stream	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4
Digital_Location.YYYYMMDD	ASCII	Location of all Digital Parameters in data stream	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.3P2
Instrument_Config_Logic_Table.YYYYMMDD	ASCII	Overall instrument configuration logic table	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4
MAM_Configuration_Logic_Table.YYYYMMDD	ASCII	Configuration logic table for MAM	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4
Main_Cover_Configuration_Logic_Table.YYYYMMDD	ASCII	Look-up table for Main-Cover	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4
FM1_CC_Offsets.YYYMMDD	ASCII	Count Conversion offset values for FM1	CER1.1P3, CER1.1P4, CER1.3P3
FM1_Count_Conversion_Data.YYYYMMDD	ASCII	Count Conversion coefficient values for FM1	CER1.1P3, CER1.1P4, CER1.3P3

Table D-1. Ancillary Data Files for CER1.0

Filename	Format	Description	Used By PGE
FM1_Scan_Mode_Offset_ Map.YYYYMMDD	ASCII	Count Conversion mapping of Instrument Mode to Offset Table used	CER1.1P3, CER1.1P4, CER1.3P3
FM1_Elevation_Profiles.YYYY MMDD	ASCII	Input file for instrument processing for FM1	CER1.1P3, CER1.1P4
FM1_Instrument_Engineering _Coefficients.YYYYMMDD	ASCII	Input file for instrument processing for FM1	CER1.1P3, CER1.1P4
FM1_Instrument_Engineering _Limits.YYYYMMDD	ASCII	Input file for instrument processing for FM1	CER1.1P3, CER1.1P4
FM2_CC_Offsets.YYYMMDD	ASCII	Count Conversion offset values for FM2	CER1.1P3, CER1.1P4, CER1.3P3
FM2_Count_Conversion_Data .YYYYMMDD	ASCII	Count Conversion coefficient values for FM2	CER1.1P3, CER1.1P4, CER1.3P3
FM2_Scan_Mode_Offset_ Map.YYYYMMDD	ASCII	Count Conversion mapping of Instrument Mode to Offset Table used	CER1.1P3, CER1.1P3, CER1.3P3
FM2_Elevation_Profiles.YYYY MMDD	ASCII	Input file for instrument processing for FM2	CER1.1P3, CER1.1P4
FM2_Instrument_Engineering _Coefficients.YYYYMMDD	ASCII	Input file for instrument processing for FM2	CER1.1P3, CER1.1P4
FM2_Instrument_Engineering _Limits.YYYYMMDD	ASCII	Input file for instrument processing for FM2	CER1.1P3, CER1.1P4
FM3_CC_Offsets.YYYMMDD	ASCII	Count Conversion offset values for FM3	CER1.1P5, CER1.1P6, CER1.3P3
FM3_Count_Conversion_Data .YYYYMMDD	ASCII	Count Conversion coefficient values for FM3	CER1.1P5, CER1.1P6, CER1.3P3
FM3_Scan_Mode_Offset_ Map.YYYYMMDD	ASCII	Count Conversion mapping of Instrument Mode to Offset Table used	CER1.1P5, CER1.1P6, CER1.3P3
FM3_Elevation_Profiles.YYYY MMDD	ASCII	Input file for instrument processing for FM3	CER1.1P5, CER1.1P6
FM3_Instrument_Engineering _Coefficients.YYYYMMDD	ASCII	Input file for instrument processing for FM3	CER1.1P5, CER1.1P6
FM3_Instrument_Engineering _Limits.YYYYMMDD	ASCII	Input file for instrument processing for FM3	CER1.1P5, CER1.1P6
FM4_CC_Offsets.YYYMMDD	ASCII	Count Conversion offset values for FM4	CER1.1P5, CER1.1P6, CER1.3P3

Table D-1. Ancillary Data Files for CER1.0

Filename	Format	Description	Used By PGE
FM4_Count_Conversion_Data .YYYYMMDD	ASCII	Count Conversion coefficient values for FM4	CER1.1P5, CER1.1P6, CER1.3P3
FM4_Scan_Mode_Offset_ Map.YYYYMMDD	ASCII	Count Conversion mapping of Instrument Mode to Offset Table used	CER1.1P5, CER1.1P6, CER1.3P3
FM4_Elevation_Profiles.YYYY MMDD	ASCII	Input file for instrument processing for FM4	CER1.1P5, CER1.1P6
FM4_Instrument_Engineering _Coefficients.YYYYMMDD	ASCII	Input file for instrument processing for FM4	CER1.1P5, CER1.1P6
FM4_Instrument_Engineering _Limits.YYYYMMDD	ASCII	Input file for instrument processing for FM4	CER1.1P5, CER1.1P6
FM5_CC_Offsets.YYYMMDD	ASCII	Count Conversion offset values for FM5	N/A
FM5_Count_Conversion_Data .YYYYMMDD	ASCII	Count Conversion coefficient values for FM5	N/A
FM5_Scan_Mode_Offset_ Map.YYYYMMDD	ASCII	Count Conversion mapping of Instrument Mode to Offset Table used	N/A
FM5_Elevation_Profiles.YYYY MMDD	ASCII	Input file for instrument processing for FM5	N/A
FM5_Instrument_Engineering _Coefficients.YYYYMMDD	ASCII	Input file for instrument processing for FM5	N/A
FM5_Instrument_Engineering _Limits.YYYYMMDD	ASCII	Input file for instrument processing for FM5	N/A
PFM_CC_Offsets.YYYMMDD	ASCII	Count Conversion offset values for PFM	CER1.1P1, CER1.1P2
PFM_Count_Conversion_Dat a.YYYYMMDD	ASCII	Count Conversion coefficient values for PFM	CER1.1P1, CER1.1P2
PFM_Scan_Mode_Offset_ Map.YYYYMMDD	ASCII	Count Conversion mapping of Instrument Mode to Offset Table used	CER1.1P1, CER1.1P2
PFM_Elevation_Profiles.YYY YMMDD	ASCII	Input file for instrument processing for PFM	CER1.1P1, CER1.1P2
PFM_Instrument_Engineering _Coefficients.YYYYMMDD	ASCII	Input file for instrument processing for PFM	CER1.1P1, CER1.1P2
PFM_Instrument_Engineering _Limits.YYYYMMDD	ASCII	Input file for instrument processing for PFM	CER1.1P1, CER1.1P2
IC_Gnd_Ref_Data	ASCII	Internal Calibration Ground Reference Data	CER1.3P2
The following files can be found in $CERESLIB/data			

Table D-1. Ancillary Data Files for CER1.0

Filename	Format	Description	Used By PGE
CERES_constants.dat	ASCII	CERES Constants data file	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5 CER1.1P6
CERES_defaults.dat	ASCII	CERES Defaults data file	CER1.1P1, CER1.1P2, CER1.1P3, CER1.1P4, CER1.1P5 CER1.1P6
ceres_SI_FM1_day.YYYY MMDD.dat	ASCII	Spectral Response Function information for Terra-FM1	CER1.3P2
ceres_SI_FM2_day.YYYY MMDD.dat	ASCII	Spectral Response Function information for Terra-FM2	CER1.3P2
ceres_SI_PFM_day.YYYY MMDD.dat	ASCII	Spectral Response Function information for TRMM-PFM	CER1.3P2
ceres_SI_FM3_day.YYYY MMDD.dat	ASCII	Spectral Response Function information for Aqua-FM3	CER1.3P2
ceres_SI_FM4_day.YYYY MMDD.dat	ASCII	Spectral Response Function information for Aqua-FM4	CER1.3P2

YYYY 4-digit year
MM 2-digit month (valid values: 01 .. 12)
DD 2-digit day (valid values: 01 .. 31)