Satellite Products and Services Review Board

**System Maintenance Manual**

**Template**

***Compiled by the***

**SPSRB Common Standards Working Group**

**Version 2.2**

**January, 2012**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Title: system maintenance manual template VERSION 2.1

AUTHORS:

Ken Jensen (Raytheon MOS)

Donna McNamara (OSPO)

**DOCUMENT HISTORY**

**DOCUMENT REVISION LOG**

The Document Revision Log identifies the series of revisions to this document since the baseline release. Please refer to the above page for version number information.

|  |
| --- |
| **DOCUMENT TITLE: System Maintenance Manual Template** |
| **DOCUMENT CHANGE HISTORY** |
| **Revision No.** | **Date** | **Revision Originator Project Group** | **CCR Approval # and Date** |
| 1.0 | N/A | No version 1 | N/A |
| 2.0 | July 2010 | Initial Release by CSWG. named version 2 to align it with the version 2 SPSRB Document Guidelines | August 2010 |
| 2.1 | May 2011 | Minor revisions to v2.0 | May 2011 |
| 2.2 | January 2012 | Minor revisions to v2.1 |  |
| 2.3 | September 2012 | Added writers for all sections |  |
| 2.3 | September 2012 | Minor revision |  |
|  |  |  |  |

**LIST OF CHANGES**

Significant alterations made to this document are annotated in the List of Changes table.

|  |
| --- |
| **DOCUMENT TITLE: System Maintenance Manual Template** |
| **LIST OF CHANGE-AFFECTED PAGES/SECTIONS/APPENDICES** |
| **Version Number** | **Date** | **Changed By** | **Page** | **Section** | **Description of Change(s)** |
| 2.1 | 04/28/11 | Jensen | 14 | 4.4.1 | “for SAB tool” changed to “including those for SAB tools”. |
| 2.1 | 04/28/11 | Jensen | 17 | 5.3.4 | DO 70 content added |
| 2.1 | 04/28/11 | Jensen | 18 | 6.1.1 | “flags” changed to “flags that are included in the output product files”. |
| 2.1 | 04/21/11 | Jensen | 22 | 7.6 | “operator” changed to “operator or user” |
| 2.1 | 04/28/11 | Jensen | 22 | 7.7 | “Data Submission Agreement” changed to “Submission Agreement”. |
| 2.1 | 04/28/11 | Jensen | 22 | 7.7 | DO 96 content added |
| 2.1 | 5/12/11 | Shontz | 9 | 4.5.1 | DO 8 content revised |
| 2.1 | 5/12/11 | Shontz | 14 | 4.4.1 | Changed Section 4.4.1 heading from “Normal Operations” to “Procedures for Normal Operations” |
| 2.1 | 5/12/11 | Shontz | 17 | 5.4.4 | Changed Section 5.4.4 heading from “Special Procedures” to “Special Maintenance Procedures” |
| 2.1 | 5/12/11 | Shontz | 18 | 5.5 | Changed Section 5.5 heading from “Program Backup” to “Program Backup Procedures” |
| 2.1 | 5/12/11 | Shontz | 21 | 7.4 | Changed Section 7.4 heading from “Reference Data Files” to “Look Up Tables” |
| 2.1 | 5/12/11 | Shontz | 22 | 7.5 | Changed Section 7.5 heading from “Intermediate Data Files” to “Intermediate Data Set Description” |
| 2.1 | 5/12/11 | Shontz | 22 | 7.6 | Changed Section 7.6 heading from “Output Data Files” to “Output Data Set Description” |
| 2.1 | 5/12/11 | Shontz | 22 | 7.7 | Changed Section 7.7 heading from “Archive Data Files” to “Archive Format Description” |
| 2.2 | 1/24/12 | King | 13 | 3.3 | Changed content of Document Object 80 (Source Code Description) |
| 2.2 | 1/24/12 | King | 14 | 4.2.1 | Changed heading of Document Object: 75 to “Installation Items” |
| 2.2 | 1/24/12 | King | 14 | 4.2.2 | Changed heading of Section 4.2.2 to “Compilation Procedures” |
| 2.2 | 1/24/12 | King | 15 | 4.2.3 | Added Section 4.2.3 – “Installation Procedures” |
| 2.2 | 1.24.12 | King | 15 | 4.3 | Changed heading of Section 4.3 to “Configuration Procedures” |
| 2.2 | 1/24/12 | King | 15 | 4.3.1 | Changed heading of Section 4.3 to “Production Rules” |
| 2.2 | 1.24.12 | King | 15 | 4.3.1 | Added Document Object 99 |
| 2.2 | 1/24/12 | King | 15 | 4.3.2 | Removed Section 4.3.2 – Build Procedure |
| 2.2 | 1/24/12 | King | 15 | 4.5.4 | Changed description of Document Object 53 |
| 2.3 | 9/21/12 | Cheng | 10-24 | All sections | Added writers for all sections |
| 2.3 | 09/27/12 | Roy | 10 | Executive Summary | Added description |

**TABLE OF CONTENTS**

Page

LIST OF TABLES AND FIGURES 9

EXECUTIVE SUMMARY 10

1. INTRODUCTION 12

1.1. Product Overview 12

1.2. Algorithm Overview 12

1.3. Interfaces Overview 12

2. HARDWARE 13

2.1. Hardware Description 13

2.2. Operating System 13

2.3. System Requirements 13

2.3.1. Storage Requirements 13

2.3.2. Computer Resource Requirements 13

2.3.3. Communication Needs 14

3. SOFTWARE 14

3.1. Software Description 14

3.2. Directory Description 14

3.3. Source Code Description 14

4. NORMAL OPERATIONS 15

4.1. System Control 15

4.1.1. System Control Files 15

4.1.2. Processing Controls 15

4.2. Installation 15

4.2.1. Installation items 15

4.2.2. Compilation Procedures 15

4.2.3. Installation Procedures 15

4.3. Configuration Procedures 16

4.3.1. Production Rules 16

4.4. Operations Procedures 16

4.4.1. Normal Operations 16

4.4.2. Data Preparation 16

4.5. Distribution 16

4.5.1. Data Transfer / Communications 16

4.5.2. Distribution Restrictions 17

4.5.3. Product Retention Requirements 17

4.5.4. External Product Tools 17

5. MONITORING AND MAINTENANCE 18

5.1. Job Monitoring 18

5.2. Data Signal Monitoring 18

5.3. Product Monitoring 18

5.3.1. Unit Test Plans 18

5.3.2. Internal Product Tools 18

5.3.3. Performance Statistics 18

5.3.4. Product Monitoring 19

5.3.5. Product Criticality 19

5.4. Maintenance 19

5.4.1. Monitoring 19

5.4.2. Science Maintenance 19

5.4.3. Library Maintenance 19

5.4.4. Special Maintenance Procedures 19

5.4.5. Maintenance Utilities 20

5.5. Program Backup Procedures 20

6. TROUBLESHOOTING 20

6.1. Problem Diagnosis and Recovery 20

6.1.1. Quality Control Output 20

6.1.2. Error Correction 20

6.1.3. Problem Diagnosis and Recovery Procedures 21

6.1.4. Data Recovery Procedures 21

6.1.5. Program Recovery Procedures 21

6.2. Application Shutdown and Restart 21

6.2.1. Application Shutdown Procedures 21

6.2.2. Application Restart Procedures 22

6.3. System Shutdown and Restart 22

6.3.1. System Shutdown Procedures 22

6.3.2. System Restart Procedures 22

6.3.3. System Reboot Procedures 22

7. APPENDIX 23

7.1. Data Flow 23

7.2. Input Data Files 23

7.3. Ancillary Data Files 23

7.4. Look Up Tables 23

7.5. Intermediate Data Set Description 24

7.6. Output Data Set Description 24

7.7. Archive Data Description 24

# LIST OF TABLES AND FIGURES

Page

[Table X – Table Title 6](#_Toc267305514)

[Figure X – Figure Caption 6](#_Toc267305515)

Figure X – Figure Caption

Table X – Table Title

Note that these figure captions and table titles are generic placeholders. When actual figures and tables are inserted into the SMM, they should be numbered according to this convention:

The first figure for a given main section (e.g. Section 3) should be numbered Figure 3-1, etc.

The first table for a given main section (e.g. Section 4) should be numbered Table 4-1, etc.

# EXECUTIVE SUMMARY

Begin the SMM with a high-level summary of the system. The purpose is to describe the key components of the system at a level of detail necessary for senior management to determine if it meets organizational goals. The summary can also be used as a quick reference for maintenance programmers and as orientation material for new maintenance personnel. *(Document Object 8)*

State what the system produces. This should be a list of end products that are to be distributed to users. *(Document Object 35)[[1]](#footnote-1)*

**Writers:** Development Lead and PAL should collaborate.

State the maintenance level (24x7, 8x5), return to service times etc. *(Document Object 86)*

**Writers:** PAL.

State the requirements for each product, either explicitly or by reference to the project's requirements document, if available. Product requirements should include content, format, latency, quality. (Development Lead) *(Document Object 1)*

**Writers:** Development Lead.

State the product team members (development, help desk and operations), roles, and contact information. Generic contacts - PAL, Development Lead, help desk. *(Document Object 2)*

**Writers:** Development Lead and PAL should collaborate.

Provide a high-level description of the hardware environment *(Document Object 5)*

**Writers:** Integration Programmers

Provide a high-level description of the software, including the programming languages *(Document Object 7)*

**Writers:** Development Programmers.

List of external interfaces (data suppliers, consumers) to the system for management. *(Document Object 8)*

**Writers:** PAL.

Provide a high-level description of the algorithm, including a reference to the ATBD, if available. *(Document Object 27)*

**Writers:** Algorithm Scientists.

Provide the Information that each user needs to obtain the data products intended for them. This includes the location of the data products, procedures for obtaining them, and an identification of stakeholders who ensure maintenance and access. *(Document Object 36)*

**Writers:** PAL.

Figures used in this section should be numbered Figure E-1, Figure E-2, etc.

Tables used in this section should be numbered Table E-1, Table E-2, etc.

#  INTRODUCTION

Figures used in Section 1 should be numbered Figure 1-1, Figure 1-2, etc.

Tables used in Section 1 should be numbered Table 1-1, Table 1-2, etc.

##  Product Overview

State what the system produces. This should be a list of end products that are to be distributed to users. *(Document Object 35)*

**Writers:** Development Lead and PAL should collaborate.

##  Algorithm Overview

Provide a high-level description of the algorithm, including a reference to the ATBD, if available. *(Document Object 27da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Algorithm Scientists.

##  Interfaces Overview

List of external interfaces (data suppliers, consumers) to the system for management. *(Document Object 8da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL.

#  HARDWARE

Figures used in Section 2 should be numbered Figure 2-1, Figure 2-2, etc.

Tables used in Section 2 should be numbered Table 2-1, Table 2-2, etc.

##  Hardware Description

List all hardware elements of the system. Provide a description of each element at a level of detail sufficient for design reviewers, system administrators and maintenance personnel to verify the function, capabilities and limitations of each element. *(Document Object 4da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

##  Operating System

Describe the operating system for the operational environment *(Document Object 64da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

##  System Requirements

###  Storage Requirements

State the volume required to store data during processing, including all input, intermediate, output, and ancillary data *(Document Object 59da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

State the volume required to store code and other non-data files (e.g., LUTs). *(Document Object 60da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

###  Computer Resource Requirements

Describe the computer hardware and software resources needed for the operations environment, including - storage capacity, timeliness requirements. Refer to IT Planning slides "IT\_Planning\_Slides\_SPSRB\_Project\_Plan\_V14-2 lpc 9-11-09.ppt" for guidelines. *(Document Object 61da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

###  Communication Needs

Describe bandwidth or special communications issues. *(Document Object 62da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

#  SOFTWARE

Figures used in Section 3 should be numbered Figure 3-1, Figure 3-2, etc.

Tables used in Section 3 should be numbered Table 3-1, Table 3-2, etc.

##  Software Description

List all software elements of the system. Provide a description of each element at a level of detail sufficient for design reviewers, system administrators and maintenance personnel to verify the function, capabilities and limitations of each element. This information may be in the developer’s SWA. Refer to the SWA in the developer’s artifact repository, if available. *(Document Object 6da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

##  Directory Description

Provide the complete directory tree for the application. Include a brief description of the purpose and contents of each directory. *(Document Object 74da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

##  Source Code Description

Describe each piece of source code including associated subroutines, functions, and parameters. Refer to the developer's design documents, if available. Headers in program files should conform to the SPSRB standards. However, if they follow another format (as in the case of legacy code), please include a sample of the header block. *(Document Object 80da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

#  NORMAL OPERATIONS

Figures used in Section 4 should be numbered Figure 4-1, Figure 4-2, etc.

Tables used in Section 4 should be numbered Table 4-1, Table 4-2, etc.

##  System Control

###  System Control Files

Describe the process control file. *(Document Object 54da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

###  Processing Controls

Describe the processing options contained in control files. *(Document Object 79da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

##  Installation

###  Installation items

List all items that are required for installation, including source files, make files, configuration files, data files, scripts and libraries. The directory location of each listed item should be given. *(Document Object 75da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

###  Compilation Procedures

Explain how the software is compiled in test and operations environments. (*Document Object 76)*

**Writers:** Development and Integration Programmers

###  Installation Procedures

Describe the specific steps that are customarily taken to install the application executable in the operating environment. These steps should be listed in the order in which they are customarily done. *(Document Object 77)*

**Writers:** Integration Programmers

##  Configuration Procedures

###  Production Rules

Describe the production rules and how to configure the system to use these rules. Production rules describe what is required to trigger the various processing components of the system. These rules typically define the triggers, such as required input files, and the logic used to select those files (e.g. spatial or temporal criteria). This section should then describe how these production rules are entered into the system.*(Document Object 99da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers and Integration programmers

##  Operations Procedures

###  Normal Operations

Describe the standard procedures for producing the operational products (including those for internal SAB tools) *(Document Object 10da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL andIntegration Programmers should collaborate

###  Data Preparation

Describe any steps that may be needed to ensure that the required input data are available to run the system. Explain what has to be done to ensure that there are no read errors. *(Document Object 81da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

##  Distribution

###  Data Transfer / Communications

List all file distribution protocols (e.g., ftp) and software packages (e.g., ADDE) that are used for primary and backup transfer of input and output files. Describe product distribution methods (i.e. data distribution server, ftp, webpage). *(Document Object 73da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  Distribution Restrictions

Describe any special restrictions regarding the distribution or release of data/products or software. *(Document Object 85da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL.

###  Product Retention Requirements

State the retention requirement for each product (how long we keep the various products on the operations servers or SAN). *(Document Object 87da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL.

###  External Product Tools

Provide a description of each program and/or application that is supplied to external users for display and analysis of the product output files, including the purpose and function of the tool and how to operate them. This could also include readers for product files. You may also describe any files that may be supplied to an external user (e.g. BUFR tables, coefficient files, etc) *(Document Object 53da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

#  MONITORING AND MAINTENANCE

Figures used in Section 5 should be numbered Figure 5-1, Figure 5-2, etc.

Tables used in Section 5 should be numbered Table 5-1, Table 5-2, etc.

##  Job Monitoring

Describe how and how often to monitor the status of a job. *(Document Object 68da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL.

##  Data Signal Monitoring

Describe how and how often to monitor the quality of the input data streams. *(Document Object 67da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL.

##  Product Monitoring

###  Unit Test Plans

Describe all test plans that were produced during development, including links or references to the artifacts. *(Document Object 48da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Testers

###  Internal Product Tools

Describe each program and/or application that is supplied to internal users for display and analysis of the product output files, including the purpose and function of the tool and how to operate them. *(Document Object 52da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers.

###  Performance Statistics

Describe the software and hardware (e.g., image displays) that should be used to produce and display statistics for monitoring product performance. Explain how and how often to perform performance statistics monitoring. *(Document Object 63da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers and PAL should collaborate.

###  Product Monitoring

Describe how and how often to monitor the condition of the products produced. Include image display if appropriate. *(Document Object 69da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL

Describe how often to monitor the condition of image display software and hardware. *(Document Object 70)*

**Writers:** PAL

###  Product Criticality

State the maintenance level (24x7, 8x5), return to service times etc. *(Document Object 86da website) this is on the S in the System Maintenance Manual Guideliness)*

##  Maintenance

###  Monitoring

Describe normal and special maintenance procedures for the operational environment. *(Document Object 65da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  Science Maintenance

Describe how and how often to monitor performance to determine whether science maintenance is needed to improve quality and/or recover degraded performance. *(Document Object 66da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Lead

###  Library Maintenance

Describe the procedures required to maintain the system software libraries. *(Document Object 71da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  Special Maintenance Procedures

Describe all non-routine maintenance procedures, including how to decide when to implement them. These may include procedures for new satellite implementation, adding a new job, data recovery and modification of the system hardware and/or software. *(Document Object 72da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  Maintenance Utilities

Provide a listing and description of any programs that are available to a system analyst or operator for looking at data. The use can be for observational, analytical, or troubleshooting purposes. *(Document Object 84da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

##  Program Backup Procedures

Describe project specific procedures for backing up programs outside the norm of the data center. These procedures should include information on the frequency of backups. *(Document Object 88da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PAL

#  TROUBLESHOOTING

Figures used in Section 6 should be numbered Figure 6-1, Figure 6-2, etc.

Tables used in Section 6 should be numbered Table 6-1, Table 6-2, etc.

##  Problem Diagnosis and Recovery

###  Quality Control Output

Describe the quality flags that are included in the output product files. *(Document Object 38da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers

###  Error Correction

List and describe warnings that operators of the tool could encounter. Include criteria for when operators should call maintenance personnel. *(Document Object 43da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

List and describe error codes that the operators could encounter and procedures for fixing the problems. Include criteria for when operators should call maintenance personnel. *(Document Object 44da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  Problem Diagnosis and Recovery Procedures

Explain the meaning of all automatically generated error messages along with verified recovery procedures. State recommended actions for cases when there are no verified recovery procedures. If there are known potential problems that will not generate an automatic error message, these should be noted, along with verified recovery procedures or recommended actions. Procedures to deal with extended system down time should be listed. Known potential problems should be itemized. For each known potential problem, the following should be explained:

1) Error message

2) Diagnosis of the problem

3) Recovery procedure (or recommended actions, if no recovery procedure exists)

*(Document Object 82da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers and Integration Programmers should collaborate

###  Data Recovery Procedures

Describe any procedures for recovering data and removing bad data. Include methods regarding switchovers to backup processors (if available) and data recovery. Include flushing bad data from multi-day datasets for example. *(Document Object 89da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers and Integration Programmers should collaborate

###  Program Recovery Procedures

Describe program recovery procedures. These procedures could include methods to switch over to backup processors and job resubmission if this is the responsibility of the operators. *(Document Object 90da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

##  Application Shutdown and Restart

###  Application Shutdown Procedures

Describe procedures operators should complete prior to a planned or required application shutdown. *(Document Object 94da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  Application Restart Procedures

Describe specific procedures needed to restart an application after a failure or a shutdown. *(Document Object 92da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

##  System Shutdown and Restart

###  System Shutdown Procedures

Describe procedures operators should complete prior to a planned or required system shutdown or reboot. *(Document Object 95da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  System Restart Procedures

Describe specific procedures needed to restart the system after a failure on either the primary or backup system. *(Document Object 93da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

###  System Reboot Procedures

Itemize the steps required to reboot the system. This applies in situations where the verified recovery procedure is a system reboot. It is intended for system administrators; operators should be alerted here to contact the system administrator. *(Document Object 83da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Integration Programmers

#  APPENDIX

Figures used in Section 7 should be numbered Figure 7-1, Figure 7-2, etc.

Tables used in Section 7 should be numbered Table 7-1, Table 7-2, etc.

##  Data Flow

Describe the system flow and program flow. A full data flow description may be in the developer's Software Architecture Document (SWA) and/or ATBD. If so, data flow diagrams may be copied from the SWA or ATBD. Refer to the SWA and ATBD in the developer’s project artifact repository, if available. *(Document Object 41da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Algorithm Scientists and Development Programmers should collaborate

##  Input Data Files

List each input file that contains satellite data. State the purpose of the file. Include contact information for the supplier of the file. Provide details on data format/type, range of values and special error values at a level of detail that is sufficient for the operator to verify that the required input data files are available for a run. This information may be in the developer’s Detailed Design Document (DDD). Refer to the DDD in the developer’s project artifact repository, if available. *(Document Object 49da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers

##  Ancillary Data Files

List each input file that contains ancillary data. Describe the ancillary data content of each file, either explicitly or by reference to the developer's design documents. This information may be in the developer’s Detailed Design Document (DDD). Refer to the DDD in the developer’s project artifact repository, if available. *(Document Object 32da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Algorithm Scientists andDevelopment Programmers should collaborate

##  Look Up Tables

List each input file that contains reference data (e.g. Look Up Tables, parameter files). Describe the content and format of each reference data file. This information may be in the developer’s Detailed Design Document (DDD). Refer to the DDD in the developer’s project artifact repository, if available. *(Document Object 55da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Algorithm Scientists andDevelopment Programmers should collaborate

##  Intermediate Data Set Description

List each file that is created internally during a processing run. State the purpose of the file. Provide details on data format/type, range of values and special error values at a level of detail that is sufficient for the operator to verify that the expected intermediate files are created during a run. This information may be in the developer’s Detailed Design Document (DDD). Refer to the DDD in the developer’s project artifact repository, if available. *(Document Object 50da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers

##  Output Data Set Description

List each output file that is produced during a processing run. For each output data file, provide details on data format/type, range of values and special error values at a level of detail that is sufficient for the operator or user to verify that the required output data files are produced correctly. Include data volume and file size. Include all information needed to verify that the required output data is created by a run; i.e. to verify that all expected datasets are produced in the expected format. This information may be in the developer’s Detailed Design Document (DDD). Refer to the DDD in the developer’s project artifact repository, if available. *(Document Object 51da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** Development Programmers

##  Archive Data Description

List each output file that will be sent to the archive. Provide details on data format/type at a level of detail that is sufficient for the operator to verify that the archive files are produced correctly. This information will be in the Submission Agreement (SA) and may be in the developer’s Detailed Design Document (DDD). Refer to the SA. Refer to the DDD in the developer’s project artifact repository, if available. *(Document Object 37da website) this is on the S in the System Maintenance Manual Guideliness)*

**Writers:** PALs, Development Programmers.

Note the contents of any collection level and granule level metadata provided to the archives per the Submission Agreement (SA) by the algorithm. This information should adhere to the NESDIS Data Center's best practice for metadata, specifically the ISO 19115-2 standards for Geographic information. Metadata content is worked in coordination with SA and the Data Center representative. Refer to the SA and coordinating guidance from the SPSRB.  *(Document Object 96)*

**Writers:** Development Lead and PAL should collaborate.

END OF DOCUMENT

1. If Document Objects have been written, the indicated object should be directly inserted to satisfy each template instruction. Document Objects are described in the System Maintenance Manual Standards and Guidelines <http://projects.osd.noaa.gov/spsrb/standards_data_mtg.htm> [↑](#footnote-ref-1)