



**NOAA NESDIS
CENTER for SATELLITE APPLICATIONS
and RESEARCH**

DOCUMENT GUIDELINE

**DG-10.3
CODE TEST DOCUMENT
GUIDELINE
Version 3.0**

NOAA NESDIS STAR

DOCUMENT GUIDELINE
DG-10.3
Version: 3.0
Date: October 1, 2009

TITLE: Code Test Document Guideline

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TITLE: DG-10.3: CODE TEST DOCUMENT GUIDELINE VERSION 3.0

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CODE TEST DOCUMENT GUIDELINE VERSION HISTORY SUMMARY

Version	Description	Revised Sections	Date
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3.0	Renamed DG-10.3 (Code Test Document) and revised by Ken Jensen (Raytheon Information Solutions) for version 3.	All	10/1/2009

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LIST OF ACRONYMS

ATBD	Algorithm Theoretical Basis Document
CICS	Cooperative Institute for Climate Studies
CIMSS	Cooperative Institute for Meteorological Satellite Studies
CIOSS	Cooperative Institute for Oceanographic Satellite Studies
CIRA	Cooperative Institute for Research in the Atmosphere
CL	Check List
CLI	Check List Item
CM/DM	Configuration Management/Data Management
CREST	Cooperative Remote Sensing and Technology Center
CTD	Code Test Document
CTR	Code Test Review
DDD	Detailed Design Document
DG	Document Guideline
DPP	Development Project Plan
EPL	Enterprise Product Lifecycle
IPT	Integrated Product Team
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
OCD	Operations Concept Document
PAR	Process Asset Repository
PBR	Project Baseline Report
PG	Process Guideline
PPS	Product Processing System
PRG	Peer Review Guideline
RAD	Requirements Allocation Document

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SG	Stakeholder Guideline
SOW	Statement Of Work
STAR	Center for Satellite Applications and Research
STP	System Test Plan
SWA	Software Architecture Document
TBD	To Be Determined
TD	Training Document
TG	Task Guideline
UTP	Unit Test Plan
UTR	Unit Test Report
VVP	Verification and Validation Plan

1. INTRODUCTION

The NOAA/NESDIS Center for Satellite Applications and Research (STAR) develops a diverse spectrum of complex, often interrelated, environmental algorithms and software systems. These systems are developed through extensive research programs, and transitioned from research to operations when a sufficient level of maturity and end-user acceptance is achieved. Progress is often iterative, with subsequent deliveries providing additional robustness and functionality. Development and deployment is distributed, involving STAR, the Cooperative Institutes (CICS, CIMSS, CIOSS, CIRA, CREST) distributed throughout the US, multiple support contractors, and NESDIS Operations.

NESDIS/STAR is implementing an increased level of process maturity to support the exchange of these software systems from one location or platform to another. The Code Test Document (CTD), a Microsoft PowerPoint file, is one component of this process.

1.1. Objective

The objective of this Document Guideline (DG) is to provide STAR standards for the CTD. The intended users of this DG are the personnel assigned by the Development Lead to the task of creating a CTD for the project.

1.2. The Code Test Document

The CTD is the presentation document for a project's Code Test Review (CTR)¹. The CTR is an important milestone of each project's product lifecycle. It reviews the results of the testing of the software units. The software units are the Layer-2 elements that are defined in the system-layer product software architecture, as described in the Software Architecture Document (SWA).

The CTD should accomplish the following objectives:

- » Identify relevant stakeholders and document their involvement according to the project plan.
- » Describe any changes to the unit test plan
- » Provide the results from the unit tests
- » Describe the system test plan

¹ Refer to the STAR EPL Process Guidelines (PG-1 and PG-1.A) for a description of the STAR EPL gates and reviews.

-
- » Identify and evaluate risks. Provide risk mitigation plans and associated actions.
 - » Document the closing of all actions since Test Readiness Review (TRR). Make recommendations for open actions and new actions.

The intended target audience is the CTR reviewers. Typically, the CTD is prepared by the project's development team under the direction of the Development Lead.

The CTD should be developed as a Microsoft PowerPoint document. Upon approval, the approved version of the CTD may be converted to an Adobe pdf file for storage in the project artifact repository.

1.3. Background

This DG defines standards and guidelines for producing a CTD. It contains all information needed for a project's development team to produce a CTD that enables the CTR reviewers to confirm that the project is in compliance with all CTR requirements.

1.4. Benefits

A CTD developed in accordance with the standards in this DG enables the CTR reviewers to confirm that the project is in compliance with all CTR requirements. It is therefore a requirement that a CTD be developed in accordance with the guidelines in this document before obtaining CTR approval. The CTD will be reviewed at the CTR to determine whether a project proceeds to the System Integration and Test step of the STAR Enterprise Product Lifecycle (EPL)².

1.5. Overview

This DG contains the following sections:

Section 1.0 -	Introduction
Section 2.0 -	References
Section 3.0 -	Standard Sections
Section 4.0 -	Section Guidelines
Appendix A -	Template File

² A description of the STAR EPL can be found in STAR EPL process asset PG-1 (c.f. Section 2 of this DG).

2. REFERENCE DOCUMENTS

TRD: Test Readiness Document is a Microsoft PowerPoint file that contains the TRR presentation slides. It is often convenient for the CTD developers to adopt or adapt these slides for inclusion in the TRD. This document will be available to approved users in a project artifact repository.

DG-10.3.A: Code Test Document Guideline Appendix v2r0 is a STAR EPL process asset (DG-10.3.A) that is intended to be an Appendix to DG-10.3 (this document). It contains Microsoft PowerPoint slide templates for the CTD slides described in DG-10.3. This document will be available to approved users in a STAR EPL process asset library (PAL).

DPP: Development Project Plan is an artifact for the CTR. It should include the project plan, schedule, and resources, identify stakeholders, identify CTR entry and exit criteria, provide the CTR Check List Items (CLI), and include the project objectives, tasks, milestones, stakeholders, and schedule. This information will be useful for the CTD developers in completing Section 1 of the CTD. This document should be made available to the approved users in a project artifact repository. The CTD developers should check with the Development Lead and STAR CM/DM to determine the latest approved version of the DPP. If an DPP update is being developed concurrently with the CTD, the CTD developers should consult with the DPP developers to ensure consistency of information in the CTD and the DPP.

TRRR: Test Readiness Review Report, a project artifact for the CTR, is the reviewer's report from the TRR. This information will be useful for the CTD developers in completing Section 2 of the CTD. This document will be available to approved users in a project artifact repository.

OCD: Operations Concept Document contains the timeline scenarios for product operation and user interaction for the project algorithm. This information will be useful for the CTD developers in completing Section 5 of the CTD. This document will be available to approved users in a project artifact repository.

RAD: Requirements Allocation Document, a project artifact, contains the basic and derived requirements for the work products and the allocation of the requirements to system components and product components. This information will be useful for the CTD developers in completing Section 5 of the CTD. The project RAD will be available to

approved users in the project artifact repository. The CTD developers should check with the Development Lead and STAR CM/DM to determine the latest approved version of the RAD. If an RAD update is being developed concurrently with the CTD, the CTD developers should consult with the RAD developers to ensure consistency of information in the CTD and the RAD.

SWA: Software Architecture Document is a project artifact that contains the software architecture and data flows for the project algorithm. This information will be useful for the CTD developers in completing Section 3 of the CTD. This document will be available to approved users in a project artifact repository. The CTD developers should check with the Development Lead and STAR Configuration Management/Data Management (CM/DM) to determine the latest approved version of the SWA. If a SWA update is being developed concurrently with the CTD, the CTD developers should consult with the SWA developers to ensure consistency of information in the CTD and the SWA.

DDD: Detailed Design Document is a project artifact that describes the product design at a level of detail that is sufficient for the development programmers to write fully functional pre-operational code. This information will be useful for the CTD developers in completing Section 3 of the CTD. A separate DDD is produced for each software unit that is part of the product processing system (PP). These documents will be available to approved users in a project artifact repository. The CTD developers should check with the Development Lead and STAR CM/DM to determine the latest approved version of the DDD. If a DDD update is being developed concurrently with the CTD, the CTD developers should consult with the DDD developers to ensure consistency of information in the CTD and the DDD.

PBR: Project Baseline Report, a project artifact for the CTR, provides a listing of all items in the project's baseline. This information will be useful for the CTD developers in providing pointers to the project artifacts and in completing Section 5.8 of the CTD. The PBR will be available to approved users in the project artifact repository. The CTD developers should check with the Development Lead and STAR CM/DM to determine the latest approved version of the PBR. If a PBR update is being developed concurrently with the CTD, the CTD developers should consult with the PBR developers to ensure consistency of information in the CTD and the PBR.

UTP: Unit Test Plan, a project artifact, provides a complete description of the plans for each unit test. This information will be useful for the CTD developers in completing Section 3 of the CTD. The project UTP will be available to approved users in the project artifact repository. The CTD developers should check with the Development Lead and STAR CM/DM to determine the latest approved version of the UTP. If a UTP update is being

developed concurrently with the CTD, the CTD developers should consult with the UTP developers to ensure consistency of information in the CTD and the UTP.

UTR: Unit Test Report v1r0, a project artifact for the CTR, documents the results obtained from each unit test. This information will be useful for the CTD developers in completing Section 4 of the CTD. The project UTR will be available to approved users in the project artifact repository. If UTR v1r0 is being developed concurrently with the CTD, the CTD developers should consult with the UTR developers to ensure consistency of information in the CTD and the UTR.

STP: System Test Plan v1r0, a project artifact for the CTR, provides a complete description of the plan for verification of the integrated PPS and the validation of user needs and operator needs. This information will be useful for the CTD developers in completing Section 5 of the CTD. The STP will be available to approved users in the project artifact repository. If STP v1r0 is being developed concurrently with the CTD, the CTD developers should consult with the STP developers to ensure consistency of information in the CTD and the STP.

VVP: Verification and Validation Plan is a project artifact that describes the work products to be verified and validated, the requirements for each selected work product and the verification and validation methods for each selected work product. This information will be useful for the CTD developers in completing Section 5 of the CTD. The VVP will be available to approved users in the project artifact repository. The CTD developers should check with the Development Lead and STAR CM/DM to determine the latest approved version of the VVP. If a VVP update is being developed concurrently with the CTD, the CTD developers should consult with the VVP developers to ensure consistency of information in the CTD and the VVP.

All of the following references are STAR EPL process assets that are accessible in a STAR EPL Process Asset Repository (PAR) on the STAR web site:

http://www.star.nesdis.noaa.gov/star/EPL_index.php.

PG-1: STAR EPL Process Guideline provides the definitive description of the standard set of processes of the STAR EPL.

PG-1.A: STAR EPL Process Guideline Appendix, an appendix to PG-1, is a Microsoft Excel file that contains the STAR EPL process matrix (Stakeholder/Process Step matrix), listings of the process assets and standard artifacts, descriptions of process gates and reviews, and descriptions of stakeholder roles and functions.

PRG-10: Code Test Review Guidelines are the guidelines for the CTR. It is useful for the CTD developers to understand what the reviewers will expect when reviewing the CTD.

DG-10.3.A: Code Test Document Guideline Appendix is an Appendix to DG-10.3 (this document). It contains Microsoft PowerPoint slide templates for the CTD slides described in DG-10.3.

SG-13: STAR EPL Development Lead Guidelines provides a description of standard tasks for Development Leads, including development of the CTD.

SG-14: STAR EPL Development Scientist Guidelines provides a description of standard tasks for Development Scientists, including development of the CTD.

SG-15: STAR EPL Development Tester Guidelines provides a description of standard tasks for Development Testers, including development of the CTD.

SG-16: STAR EPL Development Programmer Guidelines provides a description of standard tasks for Development Programmers, including development of the CTD.

TG-10: STAR EPL Code Test and Refinement Task Guidelines provides a description of standard tasks for process step 10, during which the CTD is developed.

3. STANDARD SECTIONS

The CTD slides are organized into sections. The standards sections are:

- 1.0 INTRODUCTION
 - 1.1 Development Project Plan
 - 1.2 Project Objectives
 - 1.3 Project Stakeholders
 - 1.4 Project Timeline
 - 1.5 Project Plan Changes
 - 1.6 Stakeholder Involvement
 - 1.7 CTR Guidelines and Check List
 - 1.8 CTR Report
 - 1.9 Review Objectives
- 2.0 TEST READINESS REVIEW REPORT
 - 2.1 Test Readiness Review Report
 - 2.2 TRR Check List Items
 - 2.3 TRR Exit Criteria
 - 2.4 TRR Risks and Actions
 - 2.5 CTR Entry Criteria
 - 2.6 CTR Exit Criteria
- 3.0 UNIT TEST PLAN
 - 3.1 Unit Test Plan Documentation
 - 3.2 Requirements Allocation Changes
 - 3.3 Code Design Changes
 - 3.4 Unit Test Plan Changes

4.0 UNIT TEST RESULTS

- 4.1 Unit Test Report
- 4.2 <Unit 1> Unit Test Results
- 4.3 <Unit 2> Unit Test Results
- 4.4
- 4.N+1 <Unit N> Unit Test Results

5.0 SYSTEM TEST PLAN

- 5.1 System Test Overview
- 5.2 System Readiness for Users
- 5.3 System Readiness for Operations and Maintenance
- 5.4 System Test Items
- 5.5 Requirements Trace
- 5.6 System Test Data
- 5.7 System Test Environment
- 5.8 System Test Configuration
- 5.9 System Test Methods
- 5.10 System Test Sequence
- 5.11 System Test Risks

6.0 RISKS AND ACTIONS

- 6.1 TRR Risks and Actions
- 6.2 New Risks and Actions
- 6.3 Risk Summary

7.0 SUMMARY AND CONCLUSIONS

- 7.1 Review Objectives Status
- 7.2 Issues, Actions and Risks
- 7.3 Next Steps
- 7.4 Open Discussion

4. SECTION GUIDELINES

This section contains the STAR guidelines for each section of the CTD. CTD developers will benefit greatly from using the slide templates contained in the “STAR_DG-10.3.A_CTD_v3r0.ppt” file, hereafter referred to as DG-10.3.A. DG-10.3.A is an Appendix to this document.

Note that the slides in DG-10.3.A include figures, tables, and bulleted text. All figures, tables and bulleted text should be adopted as they appear in these slides, except for text between delimiters, like this:

<Text>

Text between delimiters consists of guidelines. The CTD developers should replace this text with appropriate text, as suggested by the guidelines.

4.1. Slide Master

It is recommended, but not required, that CTD developers use the Slide Master from DG-10.3.A as the Slide Master for the CTD. A development team may wish to tailor its Slide Master. For example, a different slide background color that has been established as a “team color” may be used. Whether or not the Slide Master is tailored, the slide master shall include the STAR logo in the upper left corner of the slide, following the Slide Master in DG-10.3.A. The STAR logo should be identical to the Picture on the cover page of this document. Another example of tailoring is to add organization logos to the upper right corner of the slide, if the development team is non-STAR (e.g. a Cooperative Institute or Contractor). The Slide Master for DG-10.3.A includes the Raytheon logo as an example. This should be replaced by the appropriate logos, or no logo if the development team consists of STAR personnel.

4.2. Title Slide

The first slide shall be a Title Slide, labeled “Title Slide”³ in DG-10.3.A. The Title Slide shall include the Project and/or Product Name⁴ and the Preparer’s Names and Organizations.

³ The slide templates in DG-10.3.A are labeled in text boxes located in one of the lower corners of each slide.

⁴ In the slide templates, unspecified (generic) fields are indicated by the <generic name> convention. The CTD developers should fill these in with the appropriate information specific to the project’s CTR.

4.3. Review Outline Slide

The second slide shall be a *Review Outline* Slide, labeled “Review Outline Slide” in DG-10.3.A. The Review Outline Slide shall be a numbered list of each section of the presentation.

4.4. Review Agenda Slide

The second slide shall be a *Review Agenda* Slide, labeled “Review Agenda Slide” in DG-10.3.A. The Review Agenda Slide shall list each section of the presentation, the scheduled time interval for the presentation of the section, and the name of the presenter(s) for that section. It is not required that the locations of the Break and Lunch periods be exactly where they are indicated in this slide. The development team should tailor its schedule to fit the contents of each section.

4.5. Section 1 – Introduction

The CTD shall include an Introduction Section. This section shall include:

- A setup slide, labeled “Section 1 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 1 highlighted, as shown.
- A Section Title slide, labeled “Slide 1.0” in DG-10.3.A.
- Section 1.1: *Development Project Plan*, labeled “Section 1.1” in DG-10.3.A, introduces the DPP, a standard STAR EPL artifact for the CTR. Provide a pointer to the project’s DPP and to the DPP Document Guideline (DG-5.1).
- Section 1.2: *Project Objectives*, labeled “Section 1.2” in DG-10.3.A. These should be derived from customer needs and expectations and should have been captured in the project’s Statement of Work (SOW). Match the main bullets of this slide to the main sections of the SOW. One level of sub-bullets can be used at the discretion of the development team. These would add some high-level information typically derived from the explanatory text in each section of the SOW.
- Section 1.3: *Project Stakeholders*, labeled “Section 1.3” in DG-10.3.A. Identify relevant stakeholder roles and personnel. Each distinct stakeholder role should be

listed as a main bullet. Stakeholder roles are identified in the “Stakeholders” sheet of STAR EPL process asset PG-1.A. Stakeholders should be named when known. There may be more than one name for a stakeholder role. Unspecified stakeholders should be identified by role with a TBD. The ensemble of roles and named personnel constitutes the Integrated Product Team (IPT). Sub-bullets can be used to add a high-level description of the tasks expected for a given stakeholder. The level of detail of these descriptions is at the discretion of the development team, but should be sufficient to give the reviewers a good sense of the IPT. The development team may prefer to present the stakeholder information as a table. See “Section 1.3 – Table Alternative” in DG-10.3.A for an example. A project organization chart is recommended. This chart should include all stakeholders that have been identified in this section. See “Section 1.3 – Option” in DG-10.3.A as an example.

- Section 1.4: *Project Timeline*, labeled “Section 1.4” in DG-10.3.A, should include tasks (taken from the SOW), resources and schedule of milestones. Milestones should include the project reviews (with the CTR highlighted) and associated review dates. The STAR EPL standard reviews are shown in Section 1.4 of DG-9.2.A. Refer to the DPP for the project-specific reviews. Milestones may also include key deliveries (e.g. pre-operational code). Show the project plan as an object or objects taken from a Microsoft Project file of the project plan. Use superimposed text boxes to highlight notable accomplishments leading up to CTR. Note the CTR milestone. See Section 1.4 of DG-10.3.A for an example. Use more than one slide if necessary to make the objects visually presentable. For example, the project timeline could be partitioned into the major STAR EPL phases. See “Section 1.4 – Phase Partition” of DG-10.3.A for an example.
- Section 1.5: *Project Plan Changes*, labeled “Section 1.5” in DG-10.3.A. Describe any changes to the project plan – objectives, stakeholders, tasks, schedule and milestones – that have occurred since the CTR. Use multiple slides as necessary for clarity. If there have been no changes, state this.
- Section 1.6: *Stakeholder Involvement*, labeled “Section 1.6” in DG-10.3.A. Document the involvement of the stakeholders according to the project plan. Use a bullet for each type of stakeholder. Sub-bullets should describe the involvement in a way that shows the project plan is being followed. Section 1.6 of DG-10.3.A shows examples.
- Section 1.7: *CRR Guidelines and Check List*, labeled “Section 1.7 Alternative 1” and “Section 1.7 Alternative 2” in DG-10.3.A. This section provides the reviewers with

pointers to the CTR Peer Review Guideline (PRG-10) and CTR Check List that they will need to prepare for and dispose of the review. Use Alternative 1 or Alternative 2, depending on whether the standard CTR Check List (CL-10) is to be used (Alternative 1) or a tailored Check List has been documented in the DPP (Alternative 2).

- Section 1.8: *CTR Report*, labeled “Section 1.8” in DG-10.3.A. This section provides the reviewers with pointers to the CTR Report Document Guidelines (DG-10.4) that they will need to produce the CTR Report.
- Section 1.9: *Review Objectives*, labeled “Section 1.9” in DG-10.3.A, should provide a clear presentation of the Review Objectives. These should include STAR EPL standard objectives for a CTR and may include project-unique objectives at the discretion of the development team. Refer to the DPP to determine this. The review objectives should correspond to the major sections of the review (c.f. Section 3 of this DG). Match the main bullets of this slide to the main sections. One level of sub-bullets can be used at the discretion of the development team. These would add some high-level descriptive information.

4.6. Section 2 – Test Readiness Review Report

The CTD shall include a Test Readiness Review Report Section. This section shall include:

- A setup slide, labeled “Section 2 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 2 highlighted, as shown.
- A Section Title slide, labeled “Slide 2.0” in DG-10.3.A.
- Section 2.1: *Test Readiness Review Report*, labeled “Section 2.1” in DG-10.3.A. The first bullet should include a pointer to the Test Readiness Review Report (TRRR), so that reviewers can obtain access to it. The remainder of the slide should be as shown in Section 2.1 of DG-10.3.A.
- Section 2.2: *TRR Check List Items*, labeled “Section 2.2” in DG-10.3.A. This section provides a summary of the disposition status of the TRR CLI.
 - All TRR check list items that received a “Waive” disposition should be addressed here. List “Waive” items that are judged to carry no significant risk, providing a rationale for there being no risk. List “Waive” items that are judged

to carry a significant risk. For each of these, provide a risk number and risk statement, a risk assessment (HIGH, MEDIUM, or LOW), and an explanation of why this risk item was waived at TRR.

- Section 2.3: *TRR Exit Criteria*, labeled “Section 2.3” in DG-10.3.A. This section provides a summary of the disposition status of the TRR exit criteria items. Provide the status of the TRR exit criteria items, following the instructions in Section 2.3 of DG-10.3.A. If an item’s disposition is “N/A”, explain why. This should be rare, and permitted only if it is demonstrated why the item does not apply. If an item’s disposition is “Defer”, provide a list of actions that have been identified to pass the item.
- Section 2.4: *TRR Risks and Actions*, labeled “Section 2.4” in DG-10.3.A. This section provides a summary of the risks and actions documented in the TRRR. Follow the instructions in Section 2.4 of DG-10.3.A.
- Section 2.5: *CTR Entry Criteria*, labeled “Section 2.5” in DG-10.3.A. This section lists the CTR entry criteria. Present as bullets. Use multiple slides as necessary for clarity. The CTR entry criteria should have been established at the TRR and documented in the TRRR.
 - Section 2.5 of DG-10.3.A shows the standard STAR EPL entry criteria for the CTR. These should be used if the standard CTR entry criteria, documented in STAR EPL Check List CL-10, are used. If the entry criteria for a particular project have been tailored, revise these slides as necessary to capture the tailored entry criteria. Refer to the DPP Appendix C to determine this.
 - If applicable, list CTR entry criteria that are non-standard (added or revised from the standard set of entry criteria in STAR EPL Check List CL-10), explain the deviation, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 6. Follow the instructions on slide 42.
 - If applicable, list any standard entry criteria that have been waived for this CTR, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 6. Follow the instructions in Section 2.5 of DG-10.3.A.
- Section 2.6: *CTR Exit Criteria*, labeled “Section 2.6” in DG-10.3.A. This section lists the CTR exit criteria. Present as bullets. Use multiple slides as necessary for clarity.

The CTR exit criteria should have been established at the TRR and documented in the TRRR.

- Section 2.6 of DG-10.3.A shows the standard STAR EPL exit criteria for the CTR. These should be used if the standard CTR exit criteria, documented in STAR EPL Check List CL-10, are used. If the exit criteria for a particular project have been tailored, revise these slides as necessary to capture the tailored exit criteria. Refer to the DPP Appendix C to determine this.
- If applicable, list CTR exit criteria that are non-standard (added or revised from the standard set of exit criteria in STAR EPL Check List CL-10), explain the deviation, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 6. Follow the instructions on slide 46.
- If applicable, list any standard exit criteria that have been waived for this CTR, provide a rationale, and assess the risk, usually by reference to a risk # to be discussed in Section 6. Follow the instructions in Section 2.6 of DG-10.3.A.

4.7. Section 3 – Unit Test Plan

The CTD shall include a Unit Test Plan Section. The purpose of this section is to present any changes to the unit test plan since its approval at the TRR. Changes will be driven by changes to requirements, requirements allocation, and/or code design. Most of the content for this section should be obtained directly from revisions to the RAD, SWA, DDD, and UTP. This section shall include:

- A setup slide, labeled “Section 3 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 3 highlighted, as shown.
- A Section Title slide, labeled “Slide 3.0” in DG-10.3.A.
- Section 3.1: *Unit Test Plan Documentation*, labeled “Section 3.1” in DG-10.3.A. This section explains the UTP and provides a pointer to the latest version of the project UTP.
 - The remainder of Section 3 depends upon whether or not the unit test plan has been changed since its presentation at the TRR.
 - If there have been no changes, the CTD notes that the unit test results to be presented in Section 4 of the CTD are based on the UTP that was approved at the TRR.

- If there have been changes to the unit test plan, the CTD notes that changes to the requirements, requirements allocation, and/or design since the TRR have resulted in a revision to the UTP and the CTD will include subsections 3.2, 3.3, and 3.4.
- Section 3.2: *Requirements Allocation Changes*, labeled “Section 3.2” in DG-10.3.A. This section lists changes to requirements and requirements allocation that have resulted in changes to the unit test plan. If there are no such changes, omit this subsection.
 - Provide an overview of the contents of the RAD, and pointers to the latest version of the project’s RAD and the RAD Document Guidelines.
 - If there are new requirements since the TRR, list them here. Follow the instructions in Section 3.2 of DG-10.3.A.
 - If there are requirements changes since the TRR, list them here. Follow the instructions in Section 3.2 of DG-10.3.A.
 - If there are requirements allocation changes since the TRR, list them here. Follow the instructions in Section 3.2 of DG-10.3.A.
- Section 3.3: *Code Design Changes*, labeled “Section 3.3” in DG-10.3.A. This section describes changes to software architecture and detailed design that have resulted in changes to the unit test plan. If there are no such changes, omit this subsection.
 - Note that the code design has been revised to accommodate changes to the requirements allocation. Provide pointers to the latest version of the project’s SWA and the SWA Document Guidelines. Provide pointers to the latest version of the project’s DDDs and the DDD Document Guidelines.
 - Describe changes to the software architecture since TRR, as documented in the SWA revision. Follow the instructions in Section 3.3 of DG-10.3.A.
 - Describe changes to the detailed design since TRR, as documented in the DDD revision (slide 59). Follow the instructions in Section 3.3 of DG-10.3.A.
- Section 3.4: *Unit Test Plan Changes*, labeled “Section 3.4” in DG-10.3.A. This section describes changes to the unit test plan for each unit whose plan has been changed. Follow the instructions in Section 3.4 of DG-10.3.A.

4.8. Section 4 – Unit Test Results

The CTD shall include a section that describes the results of unit testing. This section shall include:

- A setup slide, labeled “Section 4 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 4 highlighted, as shown.
- A Section Title slide, labeled “Slide 4.0” in DG-10.3.A.
- Section 4.1: *Unit Test Report*, labeled “Section 4.1” in DG-10.3.A. This section introduces the UTR. Provide pointers to the project UTR and its Document Guidelines.
- Section 4.2: *<Unit 1 Name> Unit Test Results*, labeled “Section 4.2” in DG-10.3.A. Report the results from the first unit test. Use figures, graphs, tables as warranted for clarity. Use multiple slides as necessary for clarity. Follow the instructions in Section 4.2 of DG-10.3.A.
- Section 4.3: *<Unit 2 Name> Unit Test Results*, “Section 4.3” in DG-10.3.A.
 - Report the results from the second unit test, in the same manner as was done for the first unit test in Section 4.2.
 - Repeat for each additional unit test (Section 4.4 for the third unit test, Section 4.5 for the fourth unit test, etc.).
 - Typically, the software units are connected in the System-Layer data flow so that outputs from one unit are inputs to another unit. In that case, present the unit test results in a sequential order that corresponds best to the System-Layer flow.

4.9. Section 5 – System Test Plan

The CTD shall include a section that demonstrates the readiness of the PPS for system testing. This section shall include:

- A setup slide, labeled “Section 5 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 5 highlighted, as shown.

- A Section Title slide, labeled “Slide 5.0” in DG-10.3.A.
- Section 5.1: *System Test Overview*, labeled “Section 5.1” in DG-10.3.A. Follow the instructions in Section 5.1 of DG-10.3.A.
 - Explain the purpose of the system test, the system test plan, and the CTR review of the STP.
 - Explain the concepts of verification and validation.
 - Explain that the system test will test system readiness for users and for operations and maintenance (O&M).
- Section 5.2: *System Readiness for Users*, labeled “Section 5.2” in DG-10.3.A. This section describes the plan for testing the system’s ability to satisfy the customer/user needs and expectations.
 - List the identified product users and the product components to be delivered to each user, as documented in the RAD and the VVP. Use a bulleted list or a table. Examples of each are shown in Section 5.2 of DG-10.3.A.
 - State the identified needs for each user, as documented in the VVP. Use separate slides for each user. Follow the instructions in Section 5.2 of DG-10.3.A.
 - Explain how user needs will be validated, with reference to the VVP and STP. Follow the instructions in Section 5.2 of DG-10.3.A.
 - VVP describes the plan for ensuring that the product performance, delivery and support requirements, as documented in the project’s RAD, are properly derived from customer/user needs.
 - STP specifies how the VVP is to be implemented in the system test. Each identified user need should be validated with a specific system test sequence.
- Section 5.3: *System Readiness for Operations and Maintenance*, labeled “Section 5.3” in DG-10.3.A. This section describes the plan for testing the system’s ability to satisfy the operations and maintenance needs and expectations.
 - Identify the organization that will operate and maintain the operational PPS. Identify specific personnel who will perform O&M for this project, to the extent possible. At the minimum, provide the name of the Operations Lead. Follow the instructions in Section 5.3 of DG-10.3.A.

- State the identified needs of O&M personnel, as documented in the OCD, VVP, and RAD. Follow the instructions in Section 5.3 of DG-10.3.A.
- Explain how O&M needs will be validated, with reference to the VVP and STP. Follow the instructions in Section 5.3 of DG-10.3.A.
 - VVP describes the plan for ensuring that the product performance, delivery and support requirements, as documented in the project's RAD, are properly derived from operator needs.
 - STP specifies how the VVP is to be implemented in the system test. Each identified operator need should be validated with a specific system test sequence.
- Section 5.4: *System Test Items*, labeled "Section 5.4" in DG-10.3.A. List all system components that have been selected for the system test, as documented in the STP. Use multiple slides as necessary for clarity.
- Section 5.5: *Requirements Trace*, labeled "Section 5.5" in DG-10.3.A. List the requirements allocated to each system test item listed in Section 5.4, as documented in the STP. Use multiple slides as necessary for clarity.
- Section 5.6: *System Test Data*, labeled "Section 5.6" in DG-10.3.A.
 - List all data files that will be used as input files for the system test. "Test data" includes sensor data (real, proxy, or simulated), ancillary data, control files, parameter files, and look up tables. It is recommended that these be listed in a table. The DG-10.3.A slide labeled "Section 5.6 – Table 1" shows an example.
 - Describe each input data file in sufficient detail for a reviewer to be able to confirm that its contents and format matches the description of the appropriate input file documented in the DDDs.
 - List all "truth" data sets that will be used to assess system performance, as documented in the STP. Explain how each real or proxy truth data set has been obtained. Explain how each simulated truth data set has been constructed.
- Section 5.7: *System Test Environment*, labeled "Section 5.7" in DG-10.3.A.
 - Describe the environment in which the system test will be performed, as documented in the STP.

- Demonstrate that the planned test environment complies with the project's test environment requirements. The requirements should be documented in the RAD. The STP should demonstrate compliance with the requirements.
- Section 5.8: *System Test Configuration*, labeled "Section 5.8" in DG-10.3.A.
 - Identify all configuration items that will be used in the system test, including code modules, test data sets, utilities, libraries, etc. Follow the instructions in Section 5.8 of DG-10.3.A.
 - Introduce the PBR, and provide pointers to the PBR Document Guidelines (DG-5.4) and the project's PBR.
- Section 5.9: *System Test Methods*, labeled "Section 5.9" in DG-10.3.A.
 - Describe the method or methods that will be used to test each test item, as documented in the STP. Note which test items will be verified with each method or combination of methods.
 - Demonstrate that the methods selected for verification of a given item will address the requirements to be verified for that item.
 - Refer to the STP and the VVP as appropriate.
- Section 5.10: *System Test Sequence*, labeled "Section 5.10" in DG-10.3.A.
 - Describe the planned sequence of test actions in sufficient detail that a reviewer can confirm that all test items are exercised, all test data is utilized, all planned test methods are used as planned, and the planned output will allow a reviewer to confirm that the requirements will be satisfied.
 - Specifically note which sequence steps exercise which test items, utilize which test data sets, and use which test methods
 - Use material from the STP. Use as many slides as necessary for clarity.
- Section 5.11: *System Test Risks*, labeled "Section 5.11" in DG-10.3.A. Identify and evaluate risks to successful implementation of the system test plan. Follow the instructions in Section 5.11 of DG-10.3.A.

4.10. Section 6 – Risks and Actions

The CTD shall include a Risks and Actions Section. This section shall include:

- A setup slide, labeled “Section 6 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 6 highlighted, as shown.
- A Section Title slide, labeled “Slide 6.0” in DG-10.3.A.
- Section 6.1: *TRR Risks and Actions*, labeled “Section 6.1” in DG-10.3.A.
 - A section introduction slide should note the number of risks that were identified at the CTR and that were identified after the CTR, as shown in Section 6.1 of DG-10.3.A.
 - Report the status of the first risk identified at the CTR, as shown in Section 6.1 of DG-10.3.A. Use as many slides as necessary for a clear presentation of the status of each risk.
 - Report the status of each completed action that is associated with the risk, as shown in Section 6.1 of DG-10.3.A.
 - Report the status of each open action that is associated with the risk, as shown in Section 6.1 of DG-10.3.A.
 - Repeat for each additional risk, as shown in Section 6.1 of DG-10.3.A.
- Section 6.2: *New Risks and Actions*, labeled “Section 6.2” in DG-10.3.A.
 - Report the status of each risk that has been identified since the TRR, as shown in Section 6.2 of DG-10.3.A. Use as many slides as necessary for a clear presentation of the status of each risk.
 - Report the status of each completed action that is associated with the risk, as shown in Section 6.2 of DG-10.3.A.
 - Report the status of each open action that is associated with the risk, as shown in Section 6.2 of DG-10.3.A.
 - Repeat for each new risk. See slide 101 of DG-10.3.A.
- Section 6.3: *Risk Summary*, labeled “Section 6.3” in DG-10.3.A.
 - Present a bulleted list of the risk statements for the risks that can be closed. Risks can be closed when all associated actions are closed or withdrawn. For each risk, list the associated actions that can be closed or withdrawn. Each of these should have been presented in Sections 6.1 or 6.2 as a completed or withdrawn action. Use multiple slides as necessary for clarity.

- Present a bulleted list of the risk statements for the risks that are still open. For each risk, list the actions that must be closed to reduce the risk to an acceptable level, with closure plans and estimated closure dates.

4.11. Section 7 – Summary and Conclusions

The CTD shall include a Summary and Conclusions Section. This section shall include:

- A setup slide, labeled “Section 7 Setup Slide” in DG-10.3.A. This slide is a numbered list of all sections, with Section 7 highlighted, as shown.
- A Section Title slide, labeled “Slide 7.0” in DG-10.3.A.
- Section 7.1: *Review Objectives Status*, labeled “Section 7.1” in DG-10.3.A. This section explains how each review objective has been addressed. Follow the instructions in Section 7.1 of DG-10.3.A.
- Section 7.2: *Issues, Actions and Risks*, labeled “Section 7.2” in DG-10.3.A. List important issues, actions and risks that require attention. Use multiple slides as necessary for clarity. Use a major bullet for each item, with sub-bullets to note conclusions for that item.
- Section 7.3: *Next Steps*, labeled “Section 7.3” in DG-10.3.A. List recommendations for next steps after the CTR. Follow the instructions in Section 7.3 of DG-10.3.A.
- Section 7.4: *Open Discussion*, labeled “Section 7.4” in DG-10.3.A. Announce that the review is open for free discussion. Note: If you have prepared and conducted the review in accordance with standards and if the reviewers have prepared for the review in accordance with standards, there should be no need for additional discussion.

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DOCUMENT GUIDELINE
DG-10.3
Version: 3.0
Date: October 1, 2009

TITLE: Code Test Document Guideline

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APPENDIX A – TEMPLATE FILE

The slide templates that are referenced in this DG are available in the Microsoft PowerPoint file “STAR_DG-10.3.A_CTD_v3r0.ppt”. This file will be available to authorized users in the STAR EPL PAR.

END OF DOCUMENT