National Aeronautics and
Space Administration

Lyndon B. Johnson Space Center
Houston, Texas 77058

NSTS 07700, VOLUME XX
BOOK 2

SPACE SHUTTLE

SPACE SHUTTLE CLOSEOUT REQUIREMENTS

BOOK 2

CLOSEOUT REQUIREMENTS

MAY 12, 2011

REVISION LOG

REV LTR	CHANGE NO	DESCRIPTION	DATE
		BASELINE ISSUE (Reference: Space Shuttle PRCBD S100101D, dated 3/24/11) also includes PRCBDs S100101H, dated 4/27/11; S100101P, dated 4/17/11; CAR S100101D, dated 3/17/11 and SSP DOC-728.	05/12/11

CHANGE SHEET

FOR

PROGRAM DEFINITION AND REQUIREMENTS
VOLUME XX - Space Shuttle
Closeout Requirements
BOOK 2
CLOSEOUT REQUIREMENTS

CHANGE NO. 12

Program Requirements Control Board Directive No. DIR000177/(1-1), dated 4/12/12.(1)

April 20, 2012

Carol C. Horton
Secretary, Program Requirements
Control Board

CHANGE INSTRUCTIONS

1. Remove the following listed pages and replace with the same numbered attached pages:

BOOK 2 - CLOSEOUT REQUIREMENTS

NO CHANGES

BOOK 2 - CLOSEOUT REQUIREMENTS APPENDICES

Page	PRCBD No.
08-9	DIR000177
08-10 - 08-11	
08-12 - 08-14	DIR000177
08-19 - 08-20	DIR000177

08-45 - 08-52	DIR000177
08-53 - 08-54 (Add)	DIR000177

NOTE: A black bar in the margin indicates the information that was changed.

2. Remove the List of Effective Pages, dated April 11, 2012 and replace with List of Effective Pages, dated April 20, 2012.
3. Sign and date this page in the space provided below to show that the changes have been incorporated and file immediately behind the List of Effective Pages.

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Signature of person incorporating changes Date

PROGRAM DEFINITION AND REQUIREMENTS
VOLUME XX - Space Shuttle
Closeout Requirements
BOOK 2
CLOSEOUT REQUIREMENTS

*Baseline Issue (Reference PRCBD Nos. S100101D, dated 3/24/11; S100101H, dated 4/27/11; S100101P, dated 4/17/11; CAR S100101D, dated 3/17/11 and SSP DOC-728)

LIST OF EFFECTIVE PAGES

April 20, 2012

The current status of all pages in this document is as shown below:

Book 2 - Closeout Requirements

Page No.	Change No.	PRCBD No.	Date
i - iv	Baseline	*	May 12, 2011
v	9	DIR000136	February 14, 2012
vi	5	S100105E	August 10, 2011
vii	8	DIR000003R01	December 12, 2011
viii	Baseline	*	May 12, 2011
1-1 - 1-4	Baseline	*	May 12, 2011
2-1 - 2-4	Baseline	*	May 12, 2011
3-1	9	DIR000136	February 14, 2012
3-2	8	DIR000003R01	December 12, 2011
3-3	5	S100105E	August 10, 2011
3-4	Baseline	*	May 12, 2011
4-1 - 4-2	Baseline	*	May 12, 2011

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01-1 - 01-2	Baseline	*	May 12, 2011
02-1 - 02-2	Baseline	*	May 12, 2011
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02-4 - 02-6	Baseline	*	May 12, 2011

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02-9	9	DIR000136R01	February 23, 2012
02-10	Baseline	*	May 12, 2011
02-11 - 02-12	1	S100101F	May 23, 2011
02-13	9	DIR000136	February 14, 2012
02-14	1	S100101F	May 23, 2011
02-14A - 02-14B	9	DIR000136R01	February 23, 2012
02-15 - 02-20	1	S100101F	May 23, 2011
03-1 - 03-2	Baseline	*	May 12, 2011
04-1 - 04-2	Baseline	*	May 12, 2011
04-3	8	DIR000003R01	December 12, 2011
04-4 - 04-6	Baseline	*	May 12, 2011
04-7	2	S100101Q	June 16, 2011
04-8 - 04-10	7	DIR000031	November 8, 2011
04-11	6	S100101U	September 1, 2011
04-12	10	DIR000184	March 20, 2012
04-13 - 04-14	7	DIR000031	November 8, 2011
04-15	2	S100101Q	June 16, 2011
04-16	10	DIR000184	March 20, 2012
04-17	2	S100101Q	June 16, 2011
04-18	10	DIR000184	March 20, 2012
04-19 - 04-20	2	S100101Q	June 16, 2011
04-21	10	DIR000184	March 20, 2012
04-22 - 04-23	2	S100101Q	June 16, 2011
04-24	10	DIR000184	March 20, 2012
04-25	2	S100101Q	June 16, 2011
04-26 - 04-27	8	DIR000003R01	December 12, 2011
04-28	2	S100101Q	June 16, 2011
04-29 - 04-30	7	DIR000031	November 8, 2011
04-31 - 04-34	2	S100101Q	June 16, 2011
04-35 - 04-39	7	DIR000031	November 8, 2011
04-40	10	DIR000184	March 20, 2012
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08-9	12	DIR000177	April 12, 2012
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08-12 - 08-14	12	DIR000177	April 12, 2012
08-15 - 08-17	9	DIR000145	February 9, 2012
08-18	11	DIR000189	March 29, 2012
08-18A - 08-18B	9	DIR000145	February 9, 2012
08-19 - 08-20	12	DIR000177	April 12, 2012
08-21 - 08-24	8	DIR000003R01	December 12, 2011
08-25	11	DIR000189	March 29, 2012
08-26 - 08-33	8	DIR000003R01	December 12, 2011
08-34 - 08-35	11	DIR000189	March 29, 2012
08-36	8	DIR000003R01	December 12, 2011
08-37 - 08-44	11	DIR000189	March 29, 2012
08-45 - 08-54	12	DIR000177	April 12, 2012
09-1 - 09-2	Baseline	*	May 12, 2011
10-1	4	S100107W	July 18, 2011
10-2	Baseline	*	May 12, 2011
10-3	8	DIR000003R01	December 12, 2011
10-4 - 10-29	4	S100107W	July 18, 2011

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10-31 - 10-32	4	S100107W	July 18, 2011
10-33 - 10-34	10	DIR000164	March 15, 2012
10-35 - 10-52	4	S100107W	July 18, 2011
10-53 - 10-55	10	DIR000164	March 15, 2012
10-56 - 10-82	4	S100107W	July 18, 2011
10-83	5	S100107Y	August 25, 2011
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11-1 - 11-2	Baseline	*	May 12, 2011
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13-1 - 13-2	Baseline	*	May 12, 2011
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15-2	Baseline	*	May 12, 2011
15-3	8	DIR000003R01	December 12, 2011
15-4 - 15-14	2	S100105C	June 9, 2011
16-1 - 16-2	Baseline	*	May 12, 2011
17-1 - 17-2	Baseline	*	May 12, 2011
18-1 - 18-2	Baseline	*	May 12, 2011
19-1	5	S100105E	August 10, 2011
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19-15 - 19-27	10	DIR000154	March 15, 2012
19-28	5	S100105E	August 10, 2011
19-29 - 19-31	10	DIR000154	March 15, 2012
19-32	5	S100105E	August 10, 2011
19-33 - 19-38	10	DIR000154	March 15, 2012

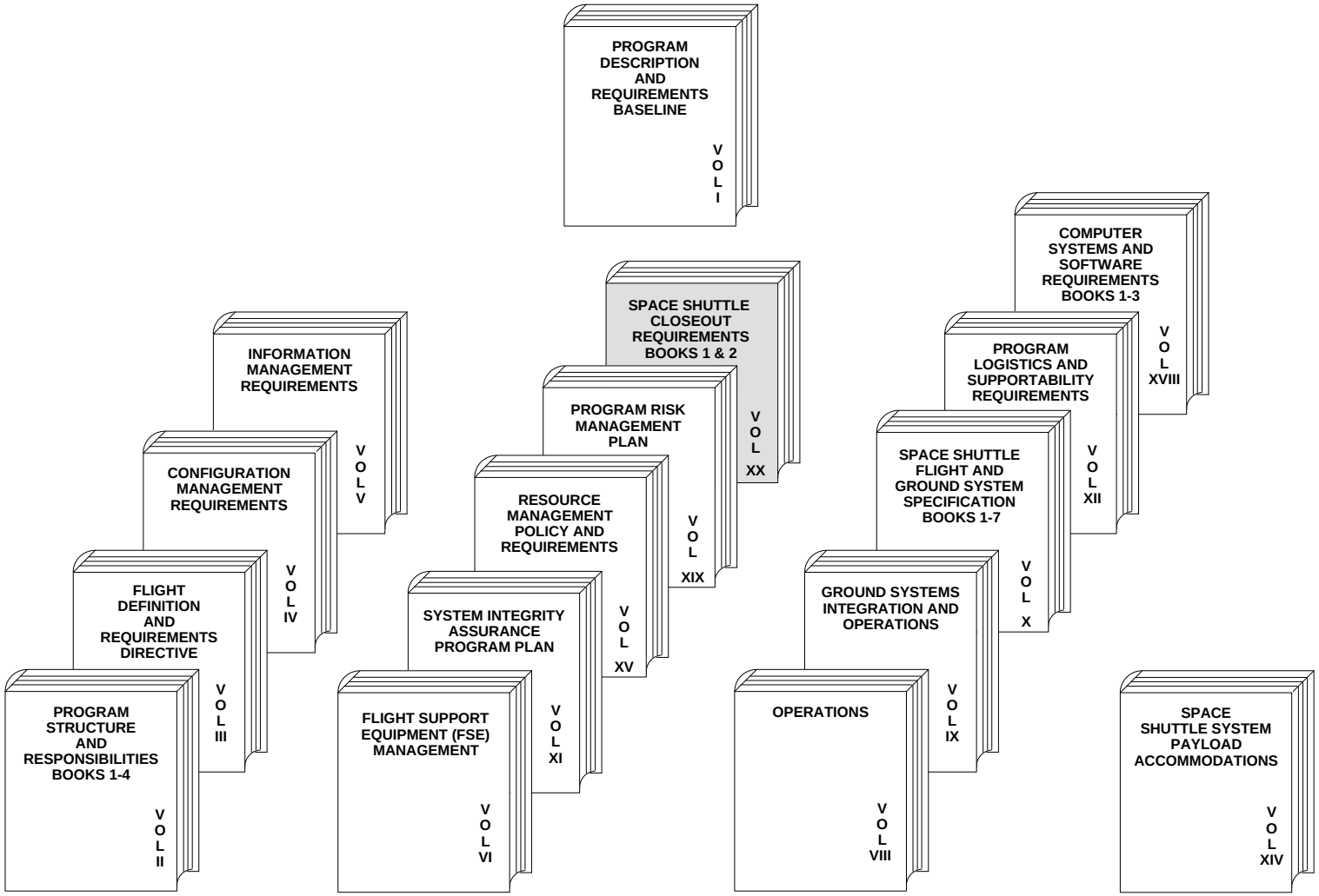
SPACE SHUTTLE

SPACE SHUTTLE CLOSEOUT REQUIREMENTS

BOOK 2

CLOSEOUT REQUIREMENTS

SPACE SHUTTLE
PROGRAM DEFINITION AND REQUIREMENTS - NSTS 07700



NOTE: THE FOLLOWING VOLUME NUMBERS ARE
RESERVED: XVII
RETIRED: II-BKS 1 & 4; VI-BK 2; VII; X-BKS 5 & 7; XIII; XVI

FOREWORD

Efficient management of the Space Shuttle Program (SSP) dictates that effective control of program closeout activities be established. Requirements, directives, procedures, interface agreements, and system capabilities shall be documented, baselined, and subsequently controlled by SSP management.

Space Shuttle Program closeout requirements controlled by the Manager, Space Shuttle Program are documented in, attached to, or referenced from NSTS 07700, Volume XX, Books 1 and 2.

This volume, NSTS 07700, Volume XX - Books 1 and 2 defines the requirements for the closeout of the Space Shuttle Program. Each Appendix contained within this Book 2, identifies those closeout requirements transitioned from the associated NSTS 07700 series operations document. The Office of Primary Responsibility (OPR) for Volume XX, Book 2 is the Space Shuttle Business Management Office (BMO).

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the Space Shuttle program element/project managers to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume IV - Book 1, and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

John P. Shannon
Manager, Space Shuttle Program

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1 CLOSEOUT APPENDIX TRACEABILITY STRUCTURE 1-3

1.0 INTRODUCTION

1.1 PURPOSE

This document establishes the program-level requirements applicable to the closeout activities of the Space Shuttle Program (SSP).

1.2 SCOPE

All Space Shuttle Transition, Retirement and Closeout functions and procedures are documented within NSTS 07700, Volume XX, Books 1 and 2. This document, NSTS 07700, Volume XX - Book 2, is applicable to all elements/projects and support organizations involved in the SSP closeout activities.

1.2.1 Content Definition

The Appendices in this document contain closeout requirements that correspond to the SSP NSTS 07700 volumes. For example, NSTS 07700, Volume IV - Book 1, Configuration Management Requirements, Requirements, requirements applicable to closeout are contained in Appendix 04 (reference Figure 1). A description of each appendix is in Section 3.0, SSP Closeout Definition and Requirements.

Subordinate document closeout requirements will be published as either a “Book X” to the existing subordinate document or will be included as a section/appendix to the applicable Closeout Requirement Appendix.

1.3 CHANGE PROCESSING

All changes to this NSTS 07700, Volume XX - Book 2 will be dispositioned by the Space Shuttle Program Requirements Control Board (SSPRCB).

1.4 EFFECTIVITY

Each appendix to the document will describe the effectivity for the requirements and procedures contained therein.

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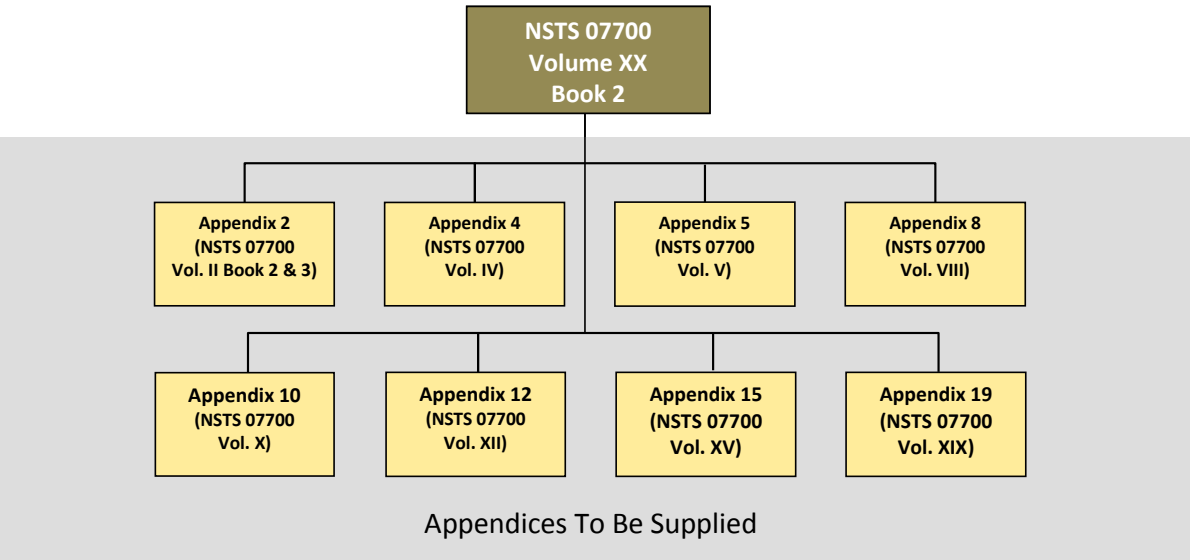
FIGURE 1
CLOSEOUT APPENDIX TRACEABILITY STRUCTURE



The appropriate appendices for NSTS 07700, Volumes I, III, VI, VII, IX, XI, XIII, XIV, XVI, and XVII are not required.

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2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this document to the extent specified herein. "(Current Issue)" is shown in place of a specific date and issue when the document is under governing program control.

Volumes of NSTS 07700 (Current Issue)	Program Definition and Requirements
	Ref. Foreword, Para 1.2.1
NSTS 07700 Volume I (Current Issue)	Program Description and Requirements Baseline
	Ref. Para 3.1.1; Apx. 01, Fig. 1
NSTS 07700 Volume II (Current Issue)	Program Structure and Responsibilities
	Ref. Apx. 04, Fig. 1
NSTS 07700 Volume III (Current Issue)	Flight Definition and Requirements Directive
	Ref. Para. 3.1.3; Apx. 03, Fig. 1
NSTS 07700 Volume IV - Book 1 (Current Issue)	Configuration Management Requirements, Requirements
	Ref. Foreword, Para. 1.2.1; Apx. 04, Fig. 1
NSTS 07700 Volume V (Current Issue)	Information Management Requirements
	Ref. Fig. 1
NSTS 07700 Volume VI (Current Issue)	Flight Support Equipment (FSE) Management
	Ref. Para. 3.1.6; Apx. 06, Fig 1

NSTS 07700 Volume VII (Retired)	Commonality Management
	Ref. Para. 3.1.7; Apx. 07, Fig. 1
NSTS 07700 Volume VIII (Current Issue)	Operations
	Ref. Fig. 1
NSTS 07700 Volume IX (Current Issue)	Ground Systems Integration and Operations
	Ref. Para. 3.1.9; Apx. 09, Fig. 1
NSTS 07700 Volume X (Current Issue)	Flight and Ground System Specification
	Ref. Fig. 1
NSTS 07700 Volume XI (Current Issue)	System Integrity Assurance Program Plan
	Ref. Para. 3.1.11, Fig. 1
NSTS 07700 Volume XII (Current Issue)	Program Logistics and Supportability Requirements
	Ref. Fig. 1
NSTS 07700 Volume XIII (Retired)	NASA Support to VAFB Launch and Landing Site Development and Activation
	Ref. Para. 3.1.13; Apx. 13, Fig. 1
NSTS 07700 Volume XIV (Current Issue)	Space Shuttle System Payload Accommodations
	Ref. Para. 3.1.14; Apx. 14, Fig. 1

NSTS 07700 Volume XV (Current Issue)	Resource Management Policy and Requirements
	Ref. Fig. 1
NSTS 07700 Volume XVI (Retired)	Space Shuttle Program/Space Station Freedom Program Program Management Plan
	Ref. Para. 3.1.16; Apx. 16, Fig. 1
NSTS 07700 Volume XVIII (Current Issue)	Computer Systems and Software Requirements
	Ref. Para. 3.1.18; Apx. 18, Fig. 1
NSTS 07700 Volume XIX (Current Issue)	Program Risk Management Plan
	Ref. Fig. 1
NSTS 07700 Volume XX - Book 1 (Current Issue)	Space Shuttle Closeout Requirements Transition and Retirement Requirements
	Ref. Foreword, Para. 1.2, 3.0, 3.1.1; Apx. 04

2.1 REFERENCE DOCUMENTS

To Be Supplied

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3.0 SSP CLOSEOUT DEFINITION AND REQUIREMENTS

The closeout requirements which constitute the requirements baseline are primarily contained in, or referenced by NSTS 07700, Volume XX - Book 2 and appendices. The remainder of the closeout requirements are contained in, or referenced by NSTS 07700, Volume XX - Book 1. Each appendix is identified and the content of the appendix is defined in the following paragraphs. The Office of Primary Responsibility (OPR) for each of these appendices will be documented in Appendix 04, Configuration Management Requirements.

3.1 CLOSEOUT REQUIREMENTS APPENDICES DEFINITION

3.1.1 Appendix 01 - Program Description and Requirements Baseline

No applicable requirements have been identified in NSTS 07700, Volume I to transition into Appendix 01 for closeout. Applicable requirements from NSTS 07700, Volume I have been incorporated into NSTS 07700, Volume XX - Book 1.

3.1.2 Appendix 02 - Program Closeout Structure and Responsibilities

Appendix 02 contains program direction and agreements and consists of two sections:

a. Section I - Closeout Requirement Program Directives includes Closeout directives that authorize requirements not defined in other closeout program requirements.

b. Section II - Program Interface Agreements is a collector of Closeout Program Interface Agreements among internal organizations or external parties.

3.1.3 Appendix 03 - Flight Definition and Requirements Directive

No applicable requirements have been identified in NSTS 07700, Volume III, Flight Definition and Requirements Directive, to transition into Appendix 03 for closeout.

3.1.4 Appendix 04 - Configuration Management Closeout Requirements

Appendix 04 identifies the Configuration Management (CM) requirements necessary for Closeout activities. It defines the CM requirements, responsibilities, and procedures for closeout. CM includes identification, change control, accounting, and verification functions performed to ensure that the closeout of the Space Shuttle is in conformance with an established baseline and authorized changes and that all changes are properly verified and can be accounted for and reported.

3.1.5 Appendix 05 - Information Management Closeout Requirements

Appendix 05 defines information management requirements and policies applicable to closeout of the SSP. Appendix 05 defines the responsibilities for generating, processing, and safeguarding information, defines information types, provides lists of required information products, and specifies the content and format of various types of documentation.

3.1.6 Appendix 06 - Flight Support Equipment (FSE) Management

No applicable requirements have been identified in NSTS 07700, Volume VI, Flight Support Equipment (FSE) Management, to transition into Appendix 06 for closeout.

3.1.7 Appendix 07 - Commonality Management

No applicable requirements have been identified in NSTS 07700, Volume VII, Commonality Management (Retired per PRCBD S00838A, dated 3/14/88) to transition into Appendix 07 for closeout.

3.1.8 Appendix 08 - Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness

This Appendix 08 defines the fundamental concepts and requirements for Space Shuttle flight operations closeout and the responsibilities for Transition and Retirement (T&R) implementation. Closeout requirements are defined for Program reviews, ferry operations and hurricane preparedness.

3.1.9 Appendix 09 - Ground Systems Integration and Operations

No applicable requirements have been identified in NSTS 07700, Volume IX, Ground Systems Integration and Operations, to transition into Appendix 09 for closeout.

3.1.10 Appendix 10 - Flight and Ground System Specification Closeout Requirements

Appendix 10 contains the technical closeout requirements for the Space Shuttle flight and ground system and forms the basis for control of these requirements. The appendix specifies the Space Shuttle flight and ground systems (KSC operational ground support only) closeout requirements to be used by all NASA and contractor organizations. Appendix 10 identifies SSP design requirements for Element hardware Ground Support Equipment (GSE) and facilities used in support of Space Shuttle closeout. Closeout requirements are also defined for ferry operations.

3.1.11 Appendix 11 - System Integrity Assurance Program Plan

No applicable requirements have been identified in NSTS 07700, Volume XI, System Integrity Assurance Program Plan, to transition into Appendix 11 for closeout.

3.1.12 Appendix 12 - Program Logistics and Supportability Closeout Requirements

Appendix 12 provides requirements to fulfill the logistics requirements through the Closeout period of the program by stating the logistics objectives and establishing the policy and concepts to be observed. The appendix identifies closeout requirements for maintenance, supply support, packaging, handling, storage and transportation, and training.

3.1.13 Appendix 13 - NASA Support to VAFB Launch and Landing Site Development and Activation

No applicable requirements have been identified in NSTS 07700, Volume XIII, NASA Support to VAFB, Launch and Landing Site Development and Activation (Retired per PRCBD S03856H, dated 6/28/88) to transition into Appendix 13 for closeout.

3.1.14 Appendix 14 - Space Shuttle System Payload Accommodations

No applicable requirements have been identified in NSTS 07700, Volume XIV, Space Shuttle System Payload Accommodation, to transition into Appendix 14 for closeout.

3.1.15 Appendix 15 - Resource Management Policy and Closeout Requirements

Appendix 15 contains the closeout requirements which have been established for resource management for the SSP. The purpose of this appendix is to provide policy and implementation procedures to be utilized by all elements of the closeout program involved in resource management.

3.1.16 Appendix 16 - Space Shuttle Program/Space Station Freedom Program Program Management Plan

No applicable requirements have been identified in NSTS 07700, Volume XVI, Space Shuttle Program/Space Station Freedom Program Program Management Plan (Retired per PRCBD S052558E, dated 7/29/94) to transition into Appendix 16 for closeout.

3.1.17 Appendix 17 - Not Applicable

3.1.18 Appendix 18 - Computer Systems and Software Requirements

No applicable requirements have been identified in NSTS 07700, Volume XVIII, Computer Systems and Software Requirements, to transition into Appendix 18 for closeout.

3.1.19 Appendix 19 - Program Risk Management Plan Closeout Requirements

Appendix 19 defines the program processes, requirements and responsibilities for implementing and operating the Space Shuttle Risk Management Plan. The Risk Management Plan provides an integrated view of the program's approach to executing its risk management closeout responsibilities.

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4.0 ACRONYMS AND ABBREVIATIONS

BMO	Business Management Office
CM	Configuration Management
CR	Change Request
FSE	Flight Support Equipment
GSE	Ground Support Equipment
OPR	Office of Primary Responsibility
PRCB	Program Requirements Control Board
PRCBD	Program Requirements Control Board Directive
SSP	Space Shuttle Program
SSCP	Space Shuttle Closeout Program
SSPRCB	Space Shuttle Program Requirements Control Board
T&R	Transition and Retirement
TBS	To Be Supplied

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SPACE SHUTTLE

APPENDIX 01

PROGRAM DESCRIPTION AND REQUIREMENTS

No applicable requirements have been identified in NSTS 07700, Volume I to transition into Appendix 01 for closeout.

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SPACE SHUTTLE

APPENDIX 02

PROGRAM CLOSEOUT STRUCTURE AND RESPONSIBILITIES

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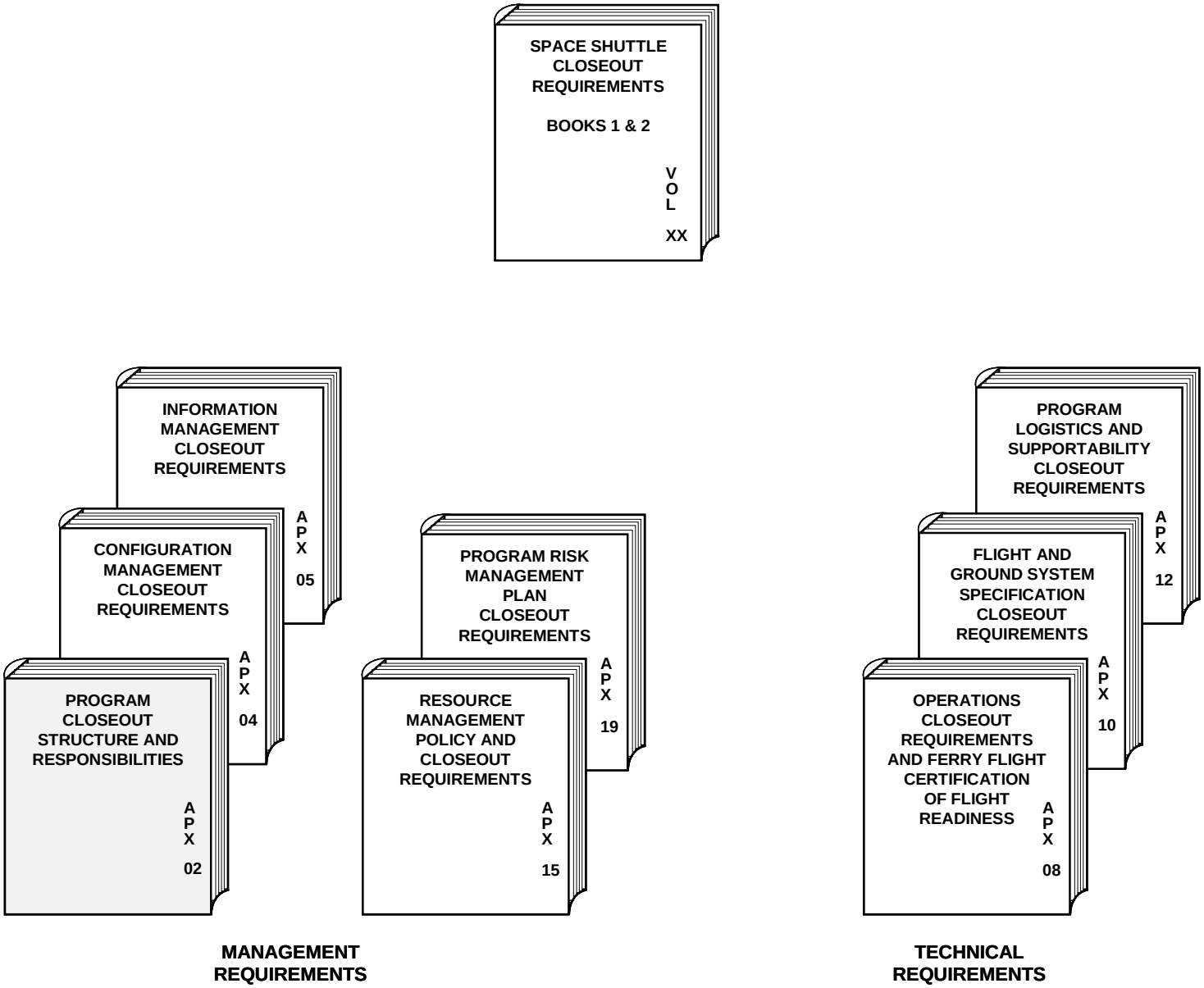
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, and system capabilities shall be documented, baselined, and subsequently controlled by the SSP management.

Appendix 02 is a compilation of Space Shuttle Program Closeout Directives (SSPCDs) and Interface Agreements (SSPCIAs). SSPCDs define specific roles and responsibilities, policy, and requirements for closeout panels, boards and technical areas. SSPCIAs are agreements and/or understandings between the Space Shuttle Program and other NASA Organizations. This Appendix is applicable to all contractor organizations and personnel involved in closeout of the SSP.

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the Space Shuttle program element/project managers to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume XX - Book 2, Appendix 4 and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 INTRODUCTION

1.1 PURPOSE

Appendix 02 is a compilation of Program Directives and Interface Agreements specific to closeout of the Space Shuttle Program (SSP).

1.2 SCOPE

The Space Shuttle Program Closeout Directives (SSPCDs) define and implement the tasks and responsibilities of closeout panels, boards, and technical management areas. The Space Shuttle Program Closeout Interface Agreements (SSPCIAs) document agreements and/or understandings between the SSP and other NASA organizations when appropriate requirements and responsibilities are not otherwise defined in the SSP closeout baseline. Interagency agreements monitored by NASA Headquarters are shown in NMI 1050.4, Listing of NASA Interagency Agreements.

1.3 EFFECTIVITY

Each SSPCD and SSPCIA will describe the effectivity for the requirements and procedures contained therein.

2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this appendix to the extent specified herein. "(Current Issue)" is shown in place of the specific date and issue when the document is under governing program control.

NMI 1050.4	Listing of NASA Interagency Agreements
	Ref. Para. 1.2

3.0 SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVES (SSPCDs)

Program direction for the establishment of a closeout directive will be defined in SSPCD No. 01. Program approved SSP closeout directives will be listed numerically in Table 3.1.

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TABLE 3.1
SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVES - ACTIVE

SSPCD NO.	SUBJECT	DATE ISSUED
01	SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVES (SSPCDs)	05/24/11
02	GUIDELINES FOR SPACE SHUTTLE PROGRAM CLOSEOUT PANEL/WORKING GROUP ACTIVITIES	05/24/11
03	NEW MANAGER AND CONTROL BOARD CHAIR TRAINING	05/24/11
05	SPACE SHUTTLE PROGRAM (SSP) CONFIGURATION MANAGEMENT PANEL (CMP) FOR CLOSEOUT	05/24/11
06	SSP TRANSITION INTEGRATION WORKING GROUP CHARTER	08/16/11

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SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVE	SSP CLOSEOUT DIRECTIVE NO. 01	DATE MAY 24 2011

TO: Distribution

FROM: John P. Shannon
Manager, Space Shuttle Program

SUBJECT: Space Shuttle Program Closeout Directives (SSPCDs)

OFFICE OF PRIMARY RESPONSIBILITY: Space Shuttle Management Integration and Planning Office

I. PURPOSE: This directive establishes the SSPCD as a mechanism for transmitting management direction from the Manager, Space Shuttle Program (SSP) to the program elements involved in the conduct of the SSP.

II. SCOPE: This directive defines the method of formulating, issuing, and controlling SSPCDs, describes their management intent and purpose, and delineates the responsibilities of those concerned. This directive is applicable to all program elements participating in the SSP.

III. POLICY: SSPCDs are utilized to further delineate or amplify SSP responsibilities including the definition of special boards, panels and working groups; AD HOC and broad program activities; and special management direction.

IV. RESPONSIBILITIES: Space Shuttle Management Integration and Planning Office is responsible for the following:

A. Establishing policy and procedures for the preparation, processing, maintenance, distribution, and control of SSPCDs.

B. Establishing and maintaining the SSPCD numbering system.

C. Processing SSPCDs in accordance with this SSPCD.

SSPCD originators are responsible for the following:

A. Maintaining existing SSPCDs.

B. Preparing proposed SSPCDs in accordance with the requirements of this directive, together with attached supporting documentation as appropriate.

C. Obtaining a SSPCD number from Space Shuttle Management Integration and Planning Office.

D. Identifying whether the proposed SSPCD(s) is new or is a revision to an existing directive and whether the proposed directive supersedes an existing SSPCD or other program documentation.

E. Submitting proposed SSPCD and supporting documentation on an SSP Change Request to Space Shuttle Management Integration and Planning Office for processing.

V. PROCEDURES: The following procedures will be followed in the preparation, processing, issuing, and control of proposed SSPCDs:

A. Preparation - Adherence to the format of this SSPCD is encouraged. The originator of the proposed SSPCD shall enter a directive number for the new directive, or the revision letter for revised directive as assigned by Space Shuttle Management Integration. The date will be entered by Space Shuttle Management Integration and Planning Office subsequent to approval and signature by the Manager, Space Shuttle Program.

In creating a new program directive, the originator shall recommend an Office of Primary Responsibility and attach supporting documentation, as appropriate, to the proposed SSPCD for informational purposes as the directive is processed through the review and approval cycle. The directive package should also include an identification of any special distribution and/or mandatory evaluations deemed appropriate by the originator.

B. Submittal for Formal Processing - The originator of the proposed SSPCD shall prepare an SSP Change Request and submit the directive package, including attached supporting documentation, to Space Shuttle Management Integration and Planning Office for formal processing.

C. The Change Request with the attached proposed directive package, including supporting documentation will be processed in accordance with NSTS 07700, Volume XX - Book 2, Appendix 04. The proposed directive will be dispositioned by the Manager, Space Shuttle Program on a Space Shuttle PRCBD.

D. Approved Directives - Approved SSPCDs will be signed by the Manager, Space Shuttle Program and returned to Space Shuttle Management Integration and Planning Office for distribution. Space Shuttle Management Integration and Planning Office will then:

1. Assign and insert an issue date on the directive.

2. Update the SSP files to reflect approval of the directive.

3. Update NSTS 07700, Volume XX - Book 2 with the new directive.

E. Revisions to Program Directives - The SSPCD control number will be modified for each revision by sequencing to the next alpha; i.e., SSPCD 1A, 1B, 1C, etc. When a program directive revision is approved, the revised directive will supersede the previous directive.

F. Cancelled Directives - When an existing SSPCD is to be cancelled, a directive revision will be prepared to indicate the directive is cancelled, state the reason for cancellation, and process in the same manner as the original directive.

SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVE	SSP CLOSEOUT DIRECTIVE NO. 02	DATE MAY 24 2011

TO: Distribution

FROM: John P. Shannon
Manager, Space Shuttle Program

SUBJECT: Guidelines for Space Shuttle Program Closeout Panel/Working Group Activities

OFFICE OF PRIMARY RESPONSIBILITY: Space Shuttle Management Integration and Planning Office

I. PURPOSE: The purpose of this directive is to provide guidelines for the conduct of SSP closeout panel and working group activities. These guidelines will ensure that activities are reasonably consistent throughout the program and are compatible with established policies and procedures.

II. SCOPE: This directive defines policy to be followed in the establishment of SSP closeout panels and working groups, describes procedures to be followed in conducting activities associated with these panels and working groups, and delineates the responsibilities of those involved.

III. POLICY: The management tasks, products, and responsibilities which are assigned to the Space Shuttle program elements/projects will be delineated in NSTS 07700, Volume XX - Book 2, Appendix 02, Program Closeout Structure and Responsibilities. In accomplishing assigned tasks and responsibilities, the program elements and projects may establish panels, subpanels, or working groups to provide the required skills and knowledge and inter-organizational liaison to resolve issues and develop recommendations for management decisions in specific areas of delegated responsibilities. A panel is identified as a group of people who have been appointed by the appropriate authority to investigate, report, or act in specified areas of responsibility. A subpanel is identified as a group of people forming a subdivision of a primary panel from which it derives its responsibility and is usually charged with a specific or limited function within the overall scope of responsibility of the sponsoring panel. A working group is identified as a group of people appointed by appropriate authority to investigate, report, or act on a special topic or special problem, and is usually of limited scope and/or short duration. A panel, subpanel, or working group is established by the issuance of an SSPC Directive, signed by the Manager, Space Shuttle Program. The directive delineates the purpose, responsibilities, procedures, and membership of the panel, subpanel, or working group. Panels, subpanels, and working groups for the

project are established by project procedures under the direction of the respective project(s) managers.

IV. RESPONSIBILITIES: Each proposed panel/working group shall be developed, established and operated under the sponsorship of the appropriate office within the Space Shuttle Program Office. That office will be responsible for developing the purpose and scope of the responsibilities of the proposed panel/working group, identifying the proposed panel/working group, identifying the proposed membership (including the chair), preparing and processing a program directive, following the procedures defined in SSPCD No. 01. Where appropriate, the program directive should define the period of time when the panel/working group will operate and identify the means by which it will be disbanded when its objectives have been accomplished. The directive also will define how panel/working group activities will be controlled by the sponsoring office.

The chair of the panel/working group will be responsible for the operation of the panel/working group. This responsibility includes the following:

A. Establishing frequency and mode of operation for the panel/working group meetings.

B. Conducting meetings.

C. Assigning actions and monitoring action activity.

D. Resolving issues.

E. Referring disputes to the sponsoring office.

F. Preparing and disseminating minutes of meetings.

Each member of the panel/working group will be responsible for the following:

A. Attending meetings and/or arranging for attendance of appropriate personnel of their organizational element where specific agenda items dictate.

B. Participating in panel/working group activities.

C. Accepting action items and assuring that actions are accomplished and results are reported to the panel/working group.

V. PROCEDURES: The procedures listed below should be followed to the extent practical in the establishment and operation of SSP closeout panels and working groups. In some cases, procedures listed are required by other documentation currently in effect on the program. This documentation also is identified below.

A. Establishing Panels/Working Groups - The Space Shuttle Program Office sponsoring a panel/working group will:

1. Establish the requirement for the panel/working group.
2. Develop the scope, responsibilities and membership makeup of the panel/working group.
3. Coordinate with organizations, representatives of which will be requested to serve as members of the panel/working group.
4. Designate a panel/working group chair.
5. Prepare a proposed SSPC directive for signature by the Manager, Space Shuttle Program in accordance with SSPC Directive No. 01.
6. Conduct the functional review of the proposed directive as required by SSPC Directive No. 01.
7. Transmit the proposed directive to the SSP Management Integration and Planning Office for formal processing leading to approval or disapproval by the Manager, Space Shuttle Program.

B. Approved Panels/Working Groups - The chair will establish the location(s) of meetings and the mode of operation of the meetings.

C. Calling Meetings - The panel/working group chair will schedule meetings on a periodic or as-needed basis. The meeting announcement shall be transmitted in time to be received by all anticipated participants at least five working days prior to the planned meeting date. The transmittal should contain the proposed agenda for the meeting, the meeting location and starting time, and the names and telephone numbers of the individual to whom queries regarding the meeting should be directed. If the meeting is to be teleconferenced, identification of the locations of the conference rooms should be identified.

D. Conduct of Meetings - It is essential that the conduct of meetings, including teleconferences, be documented and reported. This may be accomplished by audio or video recordings, and/or minutes or other written record. If a meeting is recorded there shall be: 1) an announcement at the beginning of the meeting that the meeting is being recorded; and 2) a notice posted stating that the meeting is being recorded. Each panel/working group chair will identify a recorder/secretary who will be responsible for recording significant discussions, action assignments, decisions, and issue resolutions and preparing meeting minutes for signature by the panel/working group chair. Action items and their assignees will be clearly identified

in the meeting minutes. Reports of significant accomplishments will be included in panel/working group minutes.

E. Preparation and Dissemination of Minutes - Minutes of meetings will be prepared and will record significant discussions, action assignments, decisions, and issue resolutions. Distribution of meeting minutes will be by letter or memorandum. The distribution letter will be prepared for signature by the manager of the Office of Primary Responsibility (OPR). For SSP closeout panel, subpanel and working group minutes, the OPR is the office within the Space Shuttle Program Office which is the sponsor of the panel, subpanel or working group. Contractor personnel will receive minutes of meetings they have attended.

F. Tracking Action Items - Each panel/working group chair will develop a means of tracking and following up the actions assigned to assure that actions are resolved.

G. Resolution of Disputes - Should disputes occur within a panel/working group organization that cannot be resolved by the panel/working group chair, the chair should refer these disputes to the management of the sponsoring organization for resolution within established program channels.

SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVE	SSP CLOSEOUT DIRECTIVE NO. 03	DATE MAY 24 2011

TO: Distribution

FROM: John P. Shannon
Manager, Space Shuttle Program

SUBJECT: New Manager and Control Board Chair Training

OFFICE OF PRIMARY RESPONSIBILITY: Space Shuttle Management Integration and Planning Office

I. PURPOSE: This directive establishes the minimum training requirements for new Program and Program Element/Project Managers and new SSP program or project-level control board chairs (and alternates).

II. SCOPE: This directive applies to the NASA Space Shuttle positions and managers of the offices addressed in NSTS 07700, Volume XX with exceptions as noted below in Section V of this SSPCD. This directive also applies to the chairs (and alternates) of SSP control boards addressed in NSTS 07700, Volume XX - Book 2, Appendix 04 with exceptions as noted below in Section V of this SSPCD. This directive applies to all the applicable new managers and control board chairs (and alternates) after the approval date of this SSPCD. This SSPCD will be effective at the Conclusion of the Operation Phase of the Program (COPP).

III. POLICY: SSP organizational responsibilities and formal change control board authorities are complex and often interrelated. Program and Program Element/Project management requires a knowledge of baselined program requirements and their interrelations. It is important that each manager and control board chair (and alternate) understand and adhere to the baselined requirements and delegated authority including limitations to that authority.

IV. PROCEDURE: New Program and Program Element/Project managers must sign the attached training statement and forward it to the Manager, Space Shuttle Program, within one month of assuming formal management responsibilities. Prior to assuming formal control board chair responsibilities, the new chair (or alternate) must sign the attached training statement and forward it to the Manager, Space Shuttle Program.

V. RESPONSIBILITIES: The new manager or control board chair (or alternate) is responsible for reading the program baseline documentation indicated in subsequent paragraphs and sending the attached training statement to the Space Shuttle

Management Integration and Planning Office. This office is responsible for conducting periodic audits to ensure that all new managers and board chairs have satisfied the requirements of this SSPCD.

A. New managers shall review and understand the following program documentation with particular emphasis on sections that pertain to their organization.

Document Number	Title
NSTS 07700, Volume XX - Book 1	Space Shuttle Closeout Requirements, Book 1, Transition and Retirement
NSTS 07700, Volume XX - Book 2, Appendix 02	Program Closeout Structure and Responsibilities, Shuttle Program Directives (e.g., management area responsibilities, panel/working group charters) and, Space Shuttle Program Interface Agreements (e.g., miscellaneous intercenter, interagency formal agreements)
NSTS 07700, Volume XX - Book 2, Appendix 04	Configuration Management Closeout Requirements (e.g., control board authorities and responsibilities, change control procedures)
NSTS 07700, Volume XX - Book 2, Appendix 05	Information Management Closeout Requirements (e.g., computer security, internet policy; document management requirements)
NSTS 07700, Volume XX - Book 2, Appendix 08	Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness
NSTS 07700, Volume XX - Book 2, Appendix 15	Resource Management Policy and Closeout Requirements (e.g., POP support, cost planning)
NSTS 5300.4(1D-2), Book 2 (TBS)	Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program (Safety Management)

New managers shall also review NSTS 07700, Volume XX - Book 2, Appendix 04, Section D, Table D.1, Shuttle Baseline Program Closeout Requirements Index to become familiar with any baseline documentation for which their office is the Office of Primary Responsibility (OPR).

B. Each new board chair (or alternate) shall read NSTS 07700, Volume XX - Book 2, Appendix 04 with emphasis on the following sections.

Section C CM Change Processing Procedures

Section D Shuttle Baseline Program Closeout Requirements Index

SSP Training Statement

Project or Program Element New Manager ❑

I have read and understand the program documentation specified in this SSPCD.

Organization Project or Program Element: _____

Manager's Signature: _____ Date: _____

Manager's Printed Name: _____

Control Board New Chair or Alternate ❑

I have read the applicable sections of NSTS 07700, Volume XX - Book 2, Appendix 04, Configuration Management Closeout Requirements and understand the change disposition authority and responsibilities, including any limits to delegated authority.

Control Board: _____

Chair Signature: _____ Date: _____

Chair's Printed Name: _____

SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVE	SSP CLOSEOUT DIRECTIVE NO. 05	DATE MAY 24 2011

TO: Distribution

FROM: John P. Shannon
Manager, Space Shuttle Program

SUBJECT: Space Shuttle Program (SSP) Configuration Management Panel (CMP) for Closeout

OFFICE OF PRIMARY RESPONSIBILITY: Space Shuttle Management Integration and Planning Office

I. PURPOSE: This directive establishes a CMP as a mechanism for reviewing, assessing, advising and guiding the proper integration of configuration management activities across the program for closeout.

II. SCOPE: The functions of the SSP CMP for closeout include the development of configuration management requirements and procedures, monitoring the implementation of these requirements and procedures by all program participants, and providing appropriate guidance, coordination and direction as necessary to program participants to assure activities support integrated configuration management. This directive is applicable to all NASA organizations and contractors participating in the Space Shuttle Program closeout activities.

III. POLICY: The configuration management approach utilized by the SSP shall ensure that integrated configuration management requirements, procedures, and controls are established for the SSP and implemented in all program and project/element level organizations. The SSP CMP for closeout shall recognize significant configuration management problems and activities across the program associated with defining and establishing program element configuration baselines; defining, developing, and coordinating procedures for changing and/or controlling these baselines; accounting and tracking of changes to the baselines, and verifying the proper incorporation of baseline requirements into lower level documentation and into program hardware/software. The SSP CMP shall assure that adequate panel work has been accomplished across all configuration management disciplines before solutions to problems are dispositioned by the Manager, Space Shuttle Management Integration and Planning Office.

IV. RESPONSIBILITIES: The Manager, Space Shuttle Management Integration and Planning, is responsible for implementing this directive as it relates to activities within the SSP and is delegated the responsibility as the panel chair to establish sub-panels as required. The panel chair will be responsible for coordinating all activities of the panels, which include the following:

A. Assessment of configuration control, accounting, and reporting requirements to ensure complete and closed-loop baseline configuration definition and status.

B. Coordination and resolution of configuration management issues and actions.

V. PROCEDURES: Regular meetings shall be held to assure that adequate attention is provided to across-the-board problems. Action items will be assigned as appropriate following analysis and group discussion, with recommendations to the panel chair for decision. Open issues shall be resolved between meetings by the appropriate participants and closed issues shall be documented. SSP baseline documentation will be updated as appropriate to incorporate issue resolution. Meeting dates, locations, agendas, minutes, and action items will be documented and approved by the chair. Teleconferences will be utilized in the conduct of panel meetings to the maximum practical degree.

VI. MEMBERSHIP: This panel shall be composed of representatives from the following organizations:

Space Shuttle Management Integration and Planning (Chair)
TBD

NASA Headquarters participation is invited in all panel meetings and activities. Attendance by personnel other than the regular panel members may be requested to support the resolution of specific problems.

SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVE	SSP CLOSEOUT DIRECTIVE NO. 06	DATE AUG 16 2011

TO: Distribution

FROM: John P. Shannon
Manager, Space Shuttle Program

SUBJECT: SSP Transition Integration Working Group Charter

OFFICE OF PRIMARY RESPONSIBILITY: SSP Transition and Retirement Office

I. PURPOSE: This charter establishes the Space Shuttle Program Transition Integration Working Group (SSP TIWG) and defines the scope, authority, responsibilities, procedures and membership. The SSP TIWG provides a forum to facilitate the implementation of effective transition and retirement management policies, standards, and processes across all SSP organizations and operating locations.

II. SCOPE AND AUTHORITY: The SSP TIWG is responsible for implementing consistent Transition and Retirement (T&R) processes as defined in the SSP Transition and Retirement Requirements, NSTS 07700, Volume XX. The SSP TIWG is authorized to perform facilitation of the programmatic and technical T&R management activities associated with SSP operations.

Authority is delegated from the SSP Transition Manager to disposition all items within the scope of this charter. The SSP Transition Integration Manager, SSP Transition and Retirement Office (SSP TRO), or its designated representative, is the chairperson of the SSP TIWG and shall nominate a representative to be the alternate chairperson as needed. Any changes to this authority shall be accomplished with a SSP directive revision.

III. RESPONSIBILITIES:

A. SSP TIWG Chairperson

1. The SSP TIWG chairperson is responsible for:

a. Establishing and managing the activities of the SSP TIWG in accordance with the functions set forth in this charter.

b. Scheduling meetings, establishing the agenda, and assigning actions.

c. Coordinating with other organizations, programs, and boards as necessary to resolve issues.

d. Creating ad-hoc splinter groups or subteams, as required; to perform technical activities required to accomplish this charter.

e. Reviewing SSP organization T&R presentations and Change Requests, prior to the SSP Program Requirements Control Board (PRCB) meetings, for technical accuracy, adequacy, acceptability, and compliance with SSP T&R management policy and proposing appropriate actions for resolution when required.

f. Communicating SSP TIWG concerns, recommendations, and issues to program, element, and project managers.

B. SSP TIWG Members

1. The SSP TIWG members are responsible for:

a. Establishing requirements and processes, as needed, for deployment of SSP T&R management policies within their organization.

b. Reviewing and assessing the adequacy of SSP T&R documentation prepared by their organization.

c. Providing recommendations for establishing T&R assessment and management approaches for the SSP.

d. Maintaining cognizance of program operations goals and their impact on program T&R goals, and vice versa.

e. Providing evaluations of proposed T&R management policies or practices that are representative of organizational positions.

f. Communicate development and status of their organization's significant projects. Includes any challenges, lessons learned, and best practices.

IV. PROCEDURE:

A. Meeting Frequency

1. The SSP TIWG is typically conducted on a bi-weekly basis; however, meetings may be cancelled, rescheduled, or added at the discretion of the SSP TIWG chairperson.

B. Operations

1. The SSP TIWG operates in the following manner:

a. Meetings are held periodically at the discretion of the SSP TIWG chairperson. The meeting dates and agendas shall be established and distributed by the SSP TIWG chairperson as applicable.

b. SSP TIWG schedules, agendas, presentations and meeting notes shall be maintained within the SSPWEB environment.

c. Action items assigned by the chairperson shall be tracked and published on the SSPWEB environment. The chairperson shall determine when action items are closed.

d. The SSP TIWG shall use consensus as the means of making decisions. In the event that consensus cannot be reached, the chairperson shall make a decision based upon the facts presented and the majority opinion. Dissenting opinions shall be documented in the meeting notes, and appeals can be made to the SSP Transition Manager, if required.

C. Functions

1. The SSP TIWG performs the following functions:

a. Develops policies, processes, and tools to support the practice of effective T&R analysis, planning, tracking, and control in SSP operations.

b. Provides a forum for the discussion of SSP and institutional T&R issues and proposed resolution of T&R issues.

c. Reviews T&R SSP Change Request and Status Review presentations, prior to the SSP PRCB meetings, for technical accuracy, adequacy, acceptability, and compliance with SSP T&R management.

V. MEMBERSHIP: It is expected that the standing members of the SSP TIWG, or their designated alternates, shall attend the meetings. Additional subject matter experts may attend as ad-hoc members when topics in their areas of expertise are discussed. Attendance may be in person or via teleconference.

A. Standing Members

1. Chairperson: SSP Transition Integration Manager, SSP TRO

2. Alternate Chairperson: Representative, SSP TRO

3. SSP TRO Configuration Management Lead

4. MSFC SSP T&R Center Lead
5. KSC SSP T&R Center Lead
6. SSC SSP T&R Center Lead
7. JSC SSP T&R Center Lead
8. Launch Vehicle Processing Directorate (KSC)
9. Orbiter T&R Manager
10. Space Shuttle Main Engine T&R Manager
11. Reusable Solid Rocket Booster T&R Manager
12. External Tank T&R Manager

B. Ad Hoc Members - Cross-Cutting Elements

1. Personal Property
2. Real Property
3. Artifacts
4. Records Management
5. Environmental
6. Information Technology Systems
7. Resources
8. Communications
9. Human Capital
10. Export Control
11. Recordation
12. Procurement

TABLE 3.2
SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVES - CANCELLED

SSPCD NO.	SUBJECT	DATE ISSUED	OPR
04A	SPACE SHUTTLE PROGRAM CLOSEOUT EXPORT CONTROL ADVISORY PANEL (Note: Directive No. 04A cancelled activities implemented under Directive No. 04.)	02/23/12	HA

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SPACE SHUTTLE PROGRAM CLOSEOUT DIRECTIVE	SSP CLOSEOUT DIRECTIVE NO. 04A	DATE FEB 23 2012

TO: Distribution

FROM: */s/ Dorothy S. Rasco*

Dorothy S. Rasco
Manager, Space Shuttle Program

SUBJECT: Space Shuttle Program Closeout Export Control Advisory Panel

OFFICE OF PRIMARY RESPONSIBILITY: Space Shuttle Management Integration and Planning Office

SSP Closeout Directive No. 04 established the SSP Closeout Export Control Advisory Panel (ECAP) for advising the SSP Closeout Export Control Representative on export control policy issues. The closeout export control requirements have been documented in NSTS 07700, Volume XX - Book 2, Appendix 05. SSP Closeout Directive No. 04, therefore, is cancelled.

4.0 SPACE SHUTTLE PROGRAM CLOSEOUT INTERFACE AGREEMENTS (SSPCIAS)

Program approved SSPCIAs will be listed numerically in Table 4.1.

4.1 POLICY

4.1.1 Approval Authority

Interface agreements will be established at a level in each organization no higher than necessary to commit to all requirements called for in the agreement. Within this general policy the following statements are provided for clarification and guidance:

a. SSP participants proposing agreements which may impact their capability to support established SSP baselined closeout requirements for cost, schedule and/or performance should prepare such agreements for approval by the Manager, Space Shuttle Program. In this case, Program participants are defined as those NASA organizations that look to the Manager, Space Shuttle Program for management direction and funding.

b. All SSPCIAs are to be submitted for incorporation in this appendix following final signature by the appropriate approval authority for each party to the agreement. The authority for cancelling an SSPCIA will normally be the same as that required for approval. Revisions or cancellations will be issued as required to maintain the currency of this appendix.

4.2 RESPONSIBILITIES

4.2.1 Space Shuttle Program Office

The Manager, Space Shuttle Management Integration and Planning Office, Space Shuttle Program Office is responsible for establishing, operating and maintaining a distribution and release system for SSPCIAs. This responsibility includes:

a. Establishing procedures for preparation and final processing of SSPCIAs, where necessary.

b. Assigning SSPCIA numbers and distributing approval SSPCIAs.

4.2.2 SSPCIA Originators

SSPCIA originators are responsible for the following:

a. Preparing SSPCIAs as required, coordinating functional reviews, and obtaining approval signatures.

b. Identifying on the CR whether an SSPCIA is new, a revision to an existing SSPCIA, or supersedes an existing agreement or other program documentation.

c. Providing a copy of the complete and signed SSPCIA to the Space Shuttle Management Integration and Planning Office.

4.3 PROCEDURES

4.3.1 Preparation

The following format is recommended for proposed SSPCIAs:

a. Subject

b. Purpose and scope

c. Background

d. Policy, principles or concepts

e. Requirements and responsibilities of each party to the agreement

f. Effective date and approval signatures required

4.3.2 SSP Review and Signoff

The originator of a proposed SSPCIA will coordinate functional reviews of the agreement by all affected organizations, resolve questions or comments raised by the reviewers, incorporate appropriate revisions and obtain the necessary approval signatures. Following final signoff, a copy of the approved SSPCIA will be provided to the Space Shuttle Management Integration and Planning Office for standard program-wide distribution.

4.3.3 Distribution

When all required approval authorities have signed the SSPCIA, and it is provided to the Space Shuttle Program Office, the Space Shuttle Management Integration and Planning Office will process the SSPCIA for reproduction and distribution. In preparation for this, the SSPCIA will be placed on the SSPCIA template which includes a cover sheet, to be signed by the Program Requirements Control Board (PRCB) Secretary, and processed as described above.

4.3.4 Revisions and Cancellations

Revisions to and retirement of existing SSPCIAs will be coordinated by the originator. Revisions will be processed in the same manner as a new SSPCIA. The SSPCIA control number will be modified for each revision; i.e., SSPCIA 1A, 1B, 1C, etc.

When an existing SSPCIA is to be retired, the Space Shuttle Management Integration and Planning Office will note the effective date of retirement, secure the PRCB Secretary's concurrence and the retired SSPCIA will be removed from the listing of SSPCIAs. If the SSPCIA is superseded by a new SSPCIA, the new SSPCIA will so indicate.

TABLE 4.1
SPACE SHUTTLE PROGRAM CLOSEOUT INTERFACE AGREEMENTS (SSPCIAs)

SSPCIA NO.	SUBJECT	SSP OPR	INTERFACE	STATUS	AUTHORITY/ DATE

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(PLACEHOLDER FOR SSPCIAs)

SECTION A

ACRONYMS AND ABBREVIATIONS

CMP	Configuration Management Panel
COPP	Conclusion of the Operation Phase of the Program
CR	Change Request
DOC	Department of Commerce
DOS	Department of State
ECAP	Export Control Advisory Panel
ECR	Export Control Representative
OPR	Office of Primary Responsibility
PRCB	Program Requirement Control Board
PRCBD	Program Requirement Control Board Directive
SSP	Space Shuttle Program
SSPCD	Space Shuttle Program Closeout Directives
SSPCIA	Space Shuttle Program Closeout Interface Agreement
TBD	To Be Determined
TBS	To Be Supplied

SPACE SHUTTLE

APPENDIX 03

FLIGHT DEFINITION AND REQUIREMENTS DOCUMENT

No applicable requirements have been identified in NSTS 07700, Volume III to transition into Appendix 03 for closeout.

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SPACE SHUTTLE

APPENDIX 04

CONFIGURATION MANAGEMENT CLOSEOUT REQUIREMENTS

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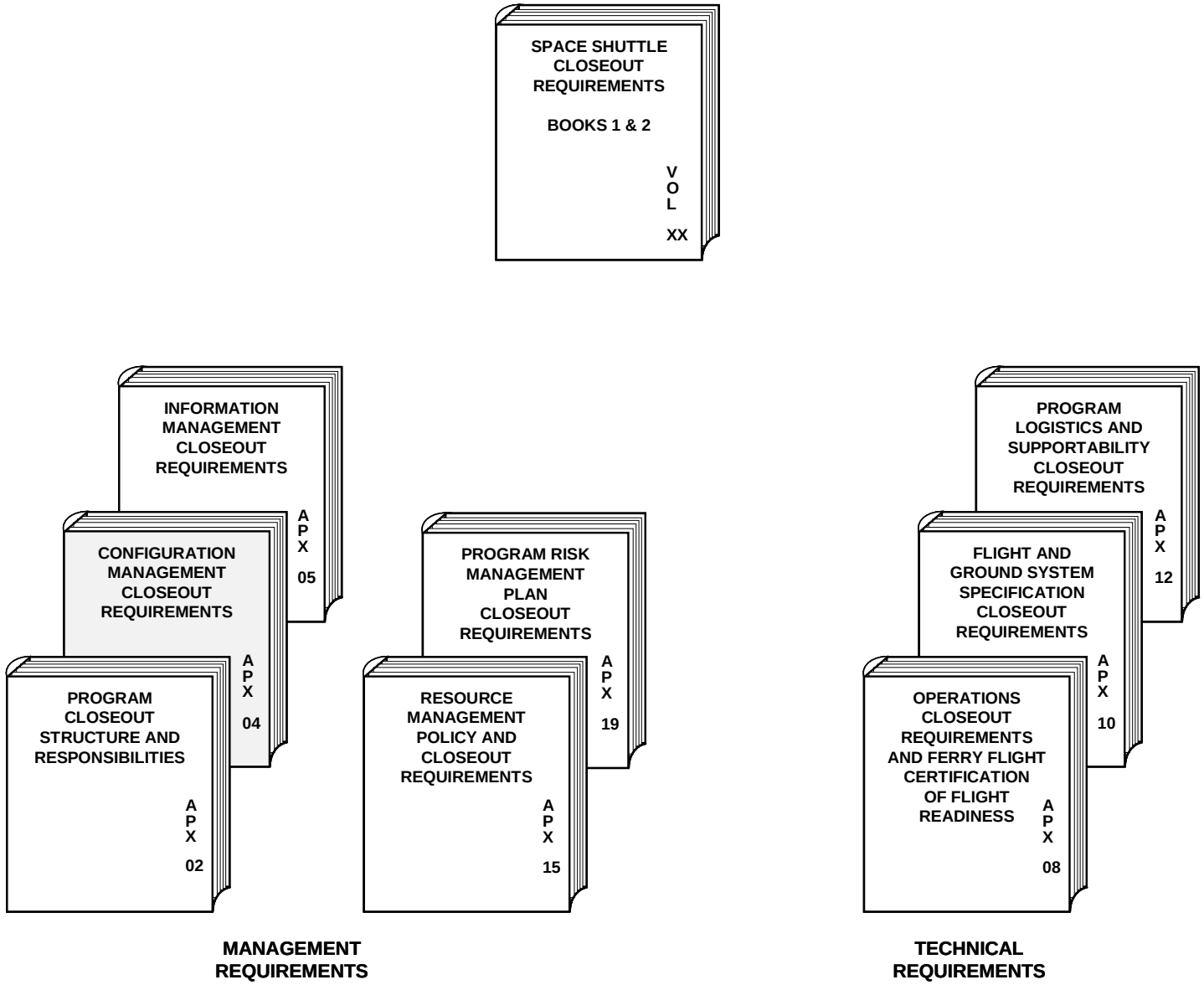
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, and system capabilities shall be documented, baselined, and subsequently controlled by SSP management.

Program Configuration Management (CM) requirements, procedures, etc., controlled by the Manager, Space Shuttle Program, are documented in this appendix. Requirements to be controlled by the NASA support element/project managers are to be identified, documented, and controlled by the element/project.

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the Space Shuttle program element/project managers to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume XX - Book 2, Appendix 04 and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 INTRODUCTION

1.1 PURPOSE

This document defines the requirements, responsibilities, and procedures for all Space Shuttle Program (SSP) closeout elements/projects in the application of Configuration Management (CM) in support of closeout activities.

All program-level CM closeout requirements are contained herein. In the event of conflicting statements regarding CM requirements between this document and any other SSP closeout document, the requirements in this document take precedence. However, if a Space Shuttle Program Closeout Directive (SSPCD) has been subsequently issued by the Manager, Space Shuttle Program, which affects the statement in question, the SSPCD shall take precedence.

1.2 SCOPE

The requirements, responsibilities, and procedures defined herein are applicable to all organizations and personnel involved in Space Shuttle closeout activities. This document also defines those requirements, responsibilities, and procedures applicable to contractor activities necessary to achieving total program objectives.

1.3 EFFECTIVITY

The requirements and procedures contained in NSTS 07700, Volume XX - Book 2, Appendix 04 become effective upon Program Requirements Control Board (PRCB) approval.

2.0 APPLICABLE DOCUMENTS

NSTS 07700 Volume II - Book 2 (Current Issue)	Program Structure and Responsibilities, Space Shuttle Program Directives
	Ref. Para. 4.1.1
NSTS 07700 Volume IV - Book 1 (Current Issue)	Configuration Management Requirements, Requirements
	Ref. Para. 4.2.2.2, 4.2.5, 4.2.7
NSTS 07700 Volume XX - Book 1 (Current Issue)	Space Shuttle Closeout Requirements Transition and Retirement Requirements
	Ref. Foreword, Para. 3.1, 6.1

NSTS 07700 Volume XX - Book 2 Appendix 05	Space Shuttle Closeout Requirements, Closeout Requirements, Appendix 05, Information Management Closeout Requirements Ref. Section C
NSTS 07700 Volume XX - Book 2 Appendix 10 (Current Issue)	Space Shuttle Closeout Requirements, Closeout Requirements, Appendix 10, Flight and Ground System Closeout Requirements Ref. Para. 4.1.2.2.2.1.4
NSTS 5300.4(1D-2) (Current Issue)	Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program Ref. Para. 4.1.2.2.2, 4.1.2.2.2.1.2
NSTS 22206 (Current Issue)	Requirements for Preparation and Approval of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL) Ref. Para. 4.1.2.2.2.1.4
NSTS 22254 (Current Issue)	Methodology for Conduct of Space Shuttle Program Hazard Analyses Ref. Para. 4.1.2.2.2.1.4

3.0 CONFIGURATION IDENTIFICATION

Configuration identification is the ongoing process of uniquely identifying and documenting management requirements and the functional and physical requirements of hardware and software. Complete configuration identification applies to systems from initial selection through design, development, fabrication, test, delivery, and post acceptance modifications. Configuration identification baselines are usually established at key milestones and placed under configuration control. The baseline consists of formally designated and controlled documents and databases. The appropriate Change Control Board (CCB) must formally approve all changes to these baselines.

3.1 CLOSEOUT BASELINE

The SSP closeout baseline contains all requirements which the program deems essential to ensuring safe and efficient Shuttle closeout operations. These requirements may apply to one or more program elements/projects or to the Program Office. The SSP closeout baseline is contained in NSTS 07700, Volume XX - Book 2 and referenced documents which address management and technical requirements, as well as databases containing SSP controlled records. These documents and databases

are listed in Section D. These SSP baselined documents and databases shall be maintained to keep the approved baseline properly identified. The change control authority for the SSP closeout controlled baseline documents is addressed in Section 4.0 and specifically listed for each document and database in Section D.

Additional Orbiter end-state configuration requirements are identified in NSTS 07700, Volume XX - Book 1.

3.1.1 Program Project Freeze Points

Each SSP ferry is the product of an evolving set of ferry-specific flight design and hardware configuration freeze points. Program freeze point baseline control is addressed in Paragraph 4.1.3.

3.2 ORBITER DELIVERY FERRY FLIGHT CONFIGURATION

For ferry flight to its final destination, the Orbiter vehicle must be fully compliant with the approved baseline configuration for that flight. Differences between the baseline and actual configuration shall exist only as a result of program approved deviations, waivers, and exceptions.

The final configuration of each Orbiter will be defined by the combination of the following requirements:

a. Final flight Orbiter vehicle drawings (V070-000001)

b. Final flight mission download MECSLSI (Mission Equipment Cargo Support Launch Site Installation) drawing

c. Final flight mission download CCCD (Crew Compartment Configuration Drawing)

d. ESSRD (End-State Subsystems Requirements Document)

e. Display Site Requirements (DSR)

f. Other Program directives

g. Waivers, deviations and exceptions

Orbiter and mission kits drawings will not be generated or modified to reflect End-State configuration.

3.3 PROGRAM ELEMENT/PROJECT BASELINES

The program elements/projects shall establish and control baselines unique for their respective elements/projects, which are adequate to ensure adherence to and fulfillment of the SSP closeout baseline.

4.0 CONFIGURATION CHANGE CONTROL

It is essential that effective, positive, control be established to preclude any unauthorized changes to the baselines. There must be established approved

procedures to ensure that each proposed change to the baseline is completely described (including impacts); is thoroughly coordinated, reviewed, and evaluated; and is authorized and implemented in an approved manner. Procedures also must ensure that changes to a baseline are not accepted or implemented that have not been processed in this prescribed manner.

Control of the SSP closeout baseline and changes thereto are to be through the PRCB. The SSP closeout baseline consists of the documentation and controlled databases, as listed in Section D. The process for the control of this documentation and data is found in Section 4.1 and Section C.

4.1 CONFIGURATION CONTROL STRUCTURE, AUTHORITY, AND RESPONSIBILITIES

The SSP closeout requirements and configuration baseline is established and controlled by the PRCB. Allocations of this baseline and development and control of program unique configuration requirements baselines required to satisfy the SSP closeout baseline may be assigned to the respective organizations of SSP. Additionally, the PRCB may elect to delegate control of certain portions of its baseline via the establishment of special control boards. Change disposition authority for any board resides solely with the Chair. Board members provide advice, consultation, and recommendations. Changes determined to be outside of a respective board/panel disposition authority will be forwarded to the appropriate board, with a disposition recommendation.

4.1.1 Board Delegation

All SSP change authority is vested in the PRCB. The PRCB has the authority to approve changes to all software/firmware, hardware, operations and documentation/data under the control of SSP. This authority may be delegated by the SSP PRCB to the program and program element/project boards, as documented in this section and Section D. The Chairs of delegated boards shall forward changes being reviewed in their boards to the SSP PRCB, if the change exceeds the board's delegation or for any other reason, at the Chair's discretion. Any delegated board member may reclama a delegated board decision by submitting a Change Proposal (CP) to the PRCB. All Chairs/members may delegate responsibilities. However, the delegated program/program element/project Chair must complete the training and submit the SSP Training Statement to the Program Manager, as specified in NSTS 07700, Volume II - Book 2, Program Structure and Responsibilities, Space Shuttle Program Directives, Space Shuttle Program Directive (SSPD) 144, prior to assuming formal control board Chair responsibilities.

4.1.2 SSP Boards

4.1.2.1 Space Shuttle Program Requirements Control Board

4.1.2.1.1 Authority and Responsibilities

The PRCB shall be the controlling authority for the SSP closeout baseline and changes thereto, unless this control has been delegated.

4.1.2.1.1.1 Items Dispositioned by the PRCB

Specific items which shall be dispositioned by the PRCB include the following:

a. SSP budget allocations.

b. Expenditure of funds which deviate from the Program Planning, Budgeting and Execution (PPBE) baseline budget, requiring Allowance for Program Adjustment (APA), or reprogramming.

c. Changes associated with resolution of major anomalies or incidents, or changes which are deemed significant to the program.

d. Changes to configuration of accepted/delivered hardware/software. After flight hardware/software acceptance, authorization by the program or delegated program element/project will be obtained prior to issuance of work authorization at the using site for hardware/software under configuration control.

e. Engineering or hardware required to incorporate the change will not meet the specified site need date.

f. Ground Support Equipment (GSE)/Facilities changes which impact flight hardware form, fit, or function.

    1. Unit interfaces directly with the flight vehicle either mechanically, electrically, or electronically (e.g., quick disconnects, cables).

    2. Unit contains components which directly control interface parameters with the vehicle (e.g., pneumatic consoles, power supplies).

    3. Equipment where hazardous fluid/gas or induced contamination can adversely affect flight hardware or create hazard to personnel.

    4. Protective covers are, in most cases, not included unless critical to integrated testing.

g. Requests for non-standard work performed at the launch site which results in non-temporary configuration changes to Space Shuttle flight or ground system hardware/software.

4.1.2.1.1.2 Items Which Require PRCB Disposition

Proposed changes which affect the following shall be submitted to the PRCB for disposition.

a. Safety or resources.

b. Increased risk.

c. Other program elements/projects.

4.1.2.1.2 Membership

a. Chair

Manager, Space Shuttle Program

b. Secretary

United Space Alliance

c. Members

Deputy Manager, Space Shuttle Program

Lead, Space Shuttle Transition Office

Lead, Acquisition Strategy Office

Representative, Safety, Reliability and Quality Assurance, JSC

Manager, KSC Transition Office

Manager, MSFC Transition Office

Representative, SSC Transition Office

Representative, SPOC

4.1.2.2 PRCB Delegated Boards

The following boards have been established and delegated baseline and control authority by the SSP PRCB for requirements/documentation, as documented in the following paragraphs.

4.1.2.2.1 (Deleted)

4.1.2.2.1.1 (Deleted)

4.1.2.2.1.2 (Deleted)

4.1.2.2.2 Space Shuttle MR System

The MR system is the process through which technical review and hardware nonconformances disposition is provided. As specified in NSTS 5300.4(1D-2), Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program, Section 1D506 this process assures that government contractors provide materials and supplies to develop dispositions, implement remedial actions, and document resolutions to correct defective or nonconforming items that cannot or will not be returned to drawing/specification.

4.1.2.2.2.1 Material Review Board (MRB)

4.1.2.2.2.1.1 Authority and Responsibilities

The MRB is the operating level board that implements the process described above. The MRB is delegated limited authority by SSP to provide technical review and disposition of hardware nonconformances.

4.1.2.2.2.1.2 MRB Membership

Membership will be specified in NSTS 5300.4(1D-2), Section 1D506.

4.1.2.2.2.1.3 MR Disposition Requirements

All MRB dispositions must state:

a. A restriction using one or more of the following categories:

   1. Unrestricted - Use as is or use as repaired. Unconditional acceptance; remaining nonconformance requires no further action and implementing documentation can be closed.

      (a) Use As Is - Nonconformance requires no further action.

      (b) Use As Repaired - Nonconformance requires no further action.

   2. Restricted Life - Use as is or as repaired. Conditional acceptance of an interim disposition limited to a specified event, period of time, or number of ferry-flight/cycles - remaining nonconformance requires additional post-ferry-flight work, rework or evaluation, and implementing documentation must remain open and restricted.

   3. Restricted Non-flight - Use as is or as repaired. Conditional acceptance of an interim disposition limited to a specified non-flight event, period of time, or number of cycles for temporary workaround or support of ground operations - remaining nonconformance requires additional work, rework or evaluation, and implementing documentation must remain open and restricted.

b. Content of dispositions will include:

   1. Description, part number, and serial number of discrepant hardware.

   2. ESSRD requirement, if applicable.

   3. Rationale for acceptability.

   4. Statement of restriction or deferred work, if applicable.

   5. Statement of impact/no impact on certification and associated rationale.

6. Photographs are mandatory unless the PRCB/MRB determines that photographs of the MR condition cannot be physically obtained or observed. Photographs shall be digital and shall be archived.

c. The component/system can perform its intended function and will not create additional risks to ferry-flight safety or mission success.

d. Supporting rationale for the requirements above.

e. Dispositions invalidating the ferry-flight configuration baseline (as-designed vs. as-built) must be traceable to part number.

4.1.2.2.2.1.4 MR Dispositions Requiring PRCB Review

Categories of MRB dispositions that must be submitted to the PRCB are:

a. Nonconformances affecting hazard analysis/safety of system safing, ferry-flight, or public display.

b. Dispositions invalidating the basis for flight/ ferry-flight certification of the hardware/system.

c. Dispositions that may result in an increase of risk (per NSTS 22254, Methodology for Conduct of Space Shuttle Program Hazard Analyses, Paragraph 4.2 or NSTS 22206, Requirements for Preparation and Approval of Failure Modes and Effects Analysis [FMEA] and Critical Items List [CIL], Paragraph 5.3) with respect to ground processing, ferry flight, or safe public display.

d. Resolution of disagreements or elevation of concerns at the MRB level.

e. Changes to a previously approved PRCB disposition.

f. Any disposition that violates NSTS 07700, Volume XX - Book 2, Appendix 10, Flight and Ground System Closeout Requirements.

NOTE: Approved nonconformances shall not require a configuration waiver.

4.1.2.3 Program Element/Project Boards

Program element/project offices shall have and utilize internal detailed CM procedures that implement the requirements of this appendix. The CM procedures for the element/project boards are documented in their respective CM requirements documents.

4.1.2.3.1 KSC Transition and Retirement (T&R) Change Control Board

KSC T&R CCB is the controlling authority for establishing the KSC T&R projects baseline and for controlling all KSC T&R projects changes that do not affect the SSP closeout baseline or other program elements/projects. All changes affecting the SSP closeout baseline or any program element/project other than the KSC projects shall be

forwarded to the SSP PRCB for disposition. As a minimum, the KSC T&R CCB will control the following requirements:

a. Facility/GSE/Integrated Data Systems (IDS) end-states and maintenance requirements.

b. T&R facility/GSE/IDS safing requirements execution.

c. Future program driven facility/GSE modifications.

d. Facility/GSE/IDS transfers from existing design and Operation and Maintenance (O&M) contractor to new NASA/NASA delegated contractor.

e. New business practices or procedures required to support T&R driven activities.

f. Review and facilitate KSC inputs to higher Program level boards, e.g., Ferry Readiness.

The KSC T&R CCB scope includes: KSC processes to support SSP vehicle end-state requirements (safing, ferry flight, display site, etc.); the implementation of requirements to support SSP ground systems and facility safing and turnover and KSC processes and requirements for ground system/facility modifications.

4.1.3 Program Freeze Point Baseline Control

Program freeze points are established at specific intervals during T&R and ferry processing. Program freeze points are defined as those points in time when the vehicle hardware, launch site flow, and other key aspects of a flight have been defined and baselined. Subsequent to these points, only mandatory changes to the hardware, software, or affected documentation shall be permitted and require SSP PRCB approval. Mandatory changes are those necessary to ensure vehicle safety, T&R and ferry processing, and/or the accomplishment of primary subsequent freeze point schedules.

4.1.3.1 End-State Requirements Review (ESRR) Freeze Point

The ESRR freeze point baselines the safing and ferry specific requirements that are to be accomplished during the T&R processing flow. An ESRR freeze point will occur approximately 60 days prior to Orbiter Processing Facility (OPF) roll-in after the vehicle's final mission. For the ESRR, a Change Request (CR) and associated requirements data package shall be prepared and submitted for program review. The ESRR shall be scheduled as a regular PRCB agenda item. The ESRR and End-State Flow Review (ESFR) may be combined into a single review. Flow requirements changes after the ESRR freeze point must be approved by the PRCB.

4.1.3.2 End-State Flow Review (ESFR) Freeze Point

The ESFR freeze point baselines the ferry and T&R processing flow for the Orbiter from the OPF roll-in to ferry. The ESFR freeze point processing flow will be based on the requirements approved at the ESRR and subsequent approved Program changes. The

ESFR freeze point occurs approximately 30 days prior to OPF roll-in after the vehicle's final mission. A CR and associated requirements data package shall be prepared and submitted for program review. The ESFR freeze point shall be scheduled as a regular PRCB agenda item. The ESRR and ESFR may be combined into a single review.

4.1.3.3 Delta End-State Flow Review (ESFR) Freeze Point

The Delta ESFR will be conducted to rebaseline the revised launch site processing flow based on changes due to in-flight anomalies, in-flight checkout, post-flight inspections, and ferry activities. The Delta ESFR occurs approximately 14 days after OPF roll-in after the vehicle's final mission. A CR and associated requirements data package shall be prepared and submitted for program review. The Delta ESFR shall be scheduled as a regular PRCB agenda item.

4.2 CHANGE PROCESSING

4.2.1 Change Processing Documentation

4.2.1.1 Requests for Changes

All requests for changes to the NASA baselines shall be documented. The change proposals shall be submitted in the manner prescribed by the procedures for the board which has change authority for the subject.

Change proposals to the SSP closeout baseline will be submitted in accordance with the process established by each program board. Exceptions to the specified process for program document changes shall be authorized by the PRCB Secretary.

Each program element/project will have processes established regarding change proposal submittal and processing.

All change proposals must have certain data when submitted:

a. Change title

b. Date

c. Unique identifier

d. Change description

e. Reason for the change

f. Cost

g. Effectivity

h. Identification of the organization initiating the proposal

4.2.1.2 Post-acceptance Hardware Change Documentation

Changes proposed for incorporation into baselined hardware after its acceptance shall include, in addition to the above minimum requirements, specific identification of affected drawings. The list of affected drawings, together with the description of change, shall be sufficiently detailed to permit assessment of impact by the site responsible for change incorporation. A listing of affected engineering materials and process specifications, as well as affected engineering acceptance test specifications, shall also be included.

4.2.2 SSP Change Processing

All proposed changes, deviations, waivers, and exceptions to the baseline must be properly documented, evaluated, coordinated, and dispositioned. Existing deviations, waivers, or exceptions shall be analyzed for impact when changes to existing hardware/software are submitted or when major modifications to flight hardware/software are reviewed.

4.2.2.1 Project Change Processing

Project changes will be documented in accordance with the requirements of Paragraph 4.2.1.1. Project changes will be submitted to, and dispositioned by, the appropriate project CCB. Before approving a proposed project change, the project CCB Chair will assure that no other program element/project and/or no SSP closeout requirement is affected by the proposed change. Project changes impacting the SSP closeout baselines or another program element/project shall be dispositioned by SSP.

4.2.2.2 PRCB Change Processing

CRs are required for PRCB change processing as described in this paragraph.

An SSP CR will be prepared for each proposed change under the PRCB authority. The CR and directive will bear an identification number in accordance with Paragraph 4.2.3.

PRCB change processing procedures are documented in NSTS 07700, Volume IV - Book 1, Appendix C. SSP changes may be proposed to the PRCB by any PRCB member or organizations' designated representative. An SSP CR and accompanying data shall be submitted to the PRCB Secretary before PRCB action is required.

Upon receipt, each CR will be reviewed through the Change Review Group (CRG) for urgency, classification, completeness, clarity, and relationship to other proposed and/or approved SSP changes.

SSP CRs will be made available daily by the PRCB Secretary, with supplementary instructions and background material, as appropriate, for review by all PRCB members.

Prior to formal presentation at the PRCB, the change package shall be evaluated for impact by each affected project or organization represented on the PRCB. Specific PRCB representatives may be requested to submit evaluations to the PRCB Secretary. In addition, any representative may elect to submit an evaluation to the secretary.

Impact assessment shall be provided using the program Change Evaluation (CE) process in accordance with the instructions provided in NSTS 07700, Volume IV - Book 1, Appendix C. The CE for each proposed change shall be provided to the PRCB Secretary by the evaluation due date.

The direction of the PRCB Chair will be provided on an SSP Program Requirements Control Board Directive (PRCBD) which will be prepared by the PRCB Secretary.

4.2.2.2.1 Outside the Board (OSB) Changes

Changes may be processed and dispositioned outside the formal PRCB at the discretion of the PRCB Secretary. The following are guidelines:

a. The change does not affect changes in program costs, schedule, weight or performance, does not constitute the originating authority for hardware or software design change or modifications, but is required to update or correct program documentation consistent with established program baselines or to define the implementation for a change previously approved by the PRCB.

b. The change has been fully pre-coordinated, evaluated by all affected organizations, all impacts have been identified, and there is unanimous recommendation for approval.

c. The change constitutes program direction that the authorizing manager(s) determines should be expeditiously provided to implementing organizations without further evaluation.

For changes conforming to the criteria of Items a, b, or c above, as determined by the PRCB Secretary based on review of the pertinent data and, as applicable, recommendation of the SSP CRG, the PRCB Secretary may prepare a PRCBD for disposition by the PRCB Chair outside the formal PRCB.

All SSP CRs will be made available, in accordance with Section C, for review and evaluation prior to disposition by the PRCB. CRs that conform to the above criteria are determined by the PRCB Secretary to have sufficient pre-coordination to identify all potential impacts may not require evaluation prior to disposition by the PRCB Chair. The PRCBD will indicate if a change is processed outside the formal board.

4.2.2.2.2 Record Change

A change is defined as a “record” change when the following criteria are satisfied:

a. The change is required to update or correct program documentation consistent with established program baselines or to define the design implementation for a previously authorized change.

b. The change does not constitute the originating authority for hardware or software design changes or modifications.

c. The change does not affect program costs, schedule, weight, or performance.

Review of record changes need not conform to the procedures described above, at the discretion of the PRCB Secretary. PRCBDs, including revisions, for record changes may be signed by the PRCB Secretary. Availability of these directives will be the same as all other PRCBDs.

4.2.3 Change Tracking Numbers (CTNs)

Proposed changes normally requiring PRCB disposition shall utilize a uniform system for assigning a CTN, the purpose of which is to package each change with all of its related proposal, evaluation, disposition, and implementation documentation. All data associated with processing the change will be assigned the same number. Once assigned to a change a CTN will remain the same throughout the life of the program. Information from other sources related to a given change must reference this number for packaging purposes.

Specific documentation resulting from a change (i.e., PRCBD, Change Control Board Directive (CCBD), Technical Direction [TD], etc.) shall be assigned an identification number by the responsible organization.

All SSP CRs must be submitted by a member of the dispositioning board.

4.2.4 Change Tracking

All changes shall be tracked from initial submittal through board disposition, direction to and acceptance by the contractor, and implementation verification.

4.2.5 Deviations, Waivers, and Exceptions

Deviations, waivers, and exceptions shall be processed in the same manner as any other change; i.e., deviations/waivers/exceptions shall be processed through the same change control system and dispositioned by the same level of authority that controls the requirement that is addressed by the deviation/waiver/exception. The approvals will be documented on the directive. Requests for deviation/waiver/exception to SSP closeout requirements shall be submitted to the PRCB Secretary on an SSP CR in accordance with NSTS 07700 Volume IV - Book 1, Appendix C.

When a deviation/waiver/exception affects the same requirement which is specified in more than one paragraph/document within SSP requirements, only one deviation/waiver/exception shall be processed, properly identifying all sources against which the deviation/waiver/exception will be applicable. Flight hardware/software deviations/waivers/exceptions that require the approval of the Manager, SSP shall be forwarded to the PRCB Secretary for review by the appropriate SSP organizations.

An SSP change will be designated as a deviation when the change is submitted, before the fact, to request authorization to depart from a particular specification requirement. An SSP change will be designated as a waiver when the change is submitted, after the fact, requesting authorization to use or accept an article or condition that does not meet specified requirements. An SSP will be designated an exception if it is determined that the subject requirement does not apply to the specific situation being addressed.

When an SSP directive is signed approving a deviation/waiver/exception the affected SSP closeout document shall be updated to reference and document the deviation/waiver/exception.

4.2.6 Effectivities

The SSP closeout baseline requirements are developed for the closeout program. Each CR, deviation, waiver, or exception shall specify the effectivity to which the CR applies.

Specific effectivities shall be identified on an SSP CR and shall be referred to within the change direction narrative of the PRCBD.

4.2.7 Configuration Implementation Authorization

All CM actions must be properly authorized prior to implementation. All program direction shall be documented on PRCBDs. These PRCBDs are detailed in NSTS 07700, Volume IV - Book 1, Appendix C. Each program element/project is responsible for implementing these PRCBDs in their elements/projects. Each program element/project shall establish a process to document its internal direction.

5.0 CONFIGURATION ACCOUNTING

Configuration accounting is the element of CM that provides the essential records and reporting of precise configuration data for applicable SSP hardware, requirements and procedures. The primary objectives of configuration accounting are as follows:

a. To maintain and disseminate the current configuration data of each program element/project.

b. To maintain correlation among the configuration data for support elements.

c. To maintain current and accurate records of the status of changes completed and in process.

The configuration accounting system should include the task of maintaining, storing, and correlating configuration documentation of all items under configuration control. This includes activities required to receive inputs from configuration changing sources and to compare, summarize, and produce configuration summaries, differences, and other comparison data as may be of value to various program organizations.

The SSP and each program element/project shall maintain configuration records for current configurations of all configuration controlled hardware, requirements, and procedures. These records shall be dispositioned consistent with the requirements for SSP records management in NSTS 07700, Volume XX, Appendix 05, Information Management Closeout Requirements.

The SSP and each program element/project shall maintain certification records for current configurations of all controlled hardware. These records shall also be dispositioned consistent with the requirements for SSP records management in NSTS 07700, Volume XX, Appendix 05.

5.1 CONFIGURATION STATUS REPORTING

Configuration accounting and verification functions shall maintain or have access to complete and accurate records on the location and configuration status of all contractor furnished equipment and Government Furnished Equipment (GFE). The records shall include such data as nomenclature, manufacturer's identification, required and scheduled delivery dates for modification kits, planned and actual usage of each part number/reference designator, and additional notes as required.

Records shall be monitored by each program element/project on the status of changes being managed by the program element/project. These records shall enable an audit trail to be accomplished, from acceptance of each CR through verification of change implementation. The records shall include a cross-reference to the following, where required:

a. CRs (including deviations and waivers)

b. NASA CCBDs

c. Baseline documentation status

d. ICD status

e. Technical directives

f. Contract Change Authorization (CCA), if applicable

g. Retrofit/Modification kits

Status accounting reports shall be used to support acceptance and delivery of hardware/software as well as reviews and inspections.

The foregoing elements of data, as a minimum, shall be maintained by the configuration accounting system.

6.0 CONFIGURATION VERIFICATION (CV)

CM includes CV, which includes activities associated with assuring that requirements are properly implemented and hardware/software is certified as having been designed and built to the correct configuration. This effort shall be an intrinsic part of the overall management approach on the program.

6.1 CLOSED-LOOP ACCOUNTING VERIFICATION OF CONFIGURATION REQUIREMENTS

To ensure that the configuration requirements of all flight hardware are properly identified and verified, a closed-loop accounting and verification system shall be implemented by the SSP program elements/projects as defined in NSTS 07700, Volume XX - Book 1, Paragraph 4.6.4, Closed Loop Requirements Verification. The configuration requirements closed-loop accounting information shall be available for

program-wide access and review to support major milestones and ferry readiness activities.

All baselined configuration requirements implementation shall be verified by the implementing program element/project, through a review of the accomplishing work document(s), as having been completed, deleted, or deferred prior to the key processing milestone, that is identified as a constraint for completion of the work. This closed-loop verification includes resolution of any nonconformances experienced during implementation of the baselined requirements. The design program element/project is responsible for verifying that the as-built configuration with any non-compliances identified and properly reconciled matches the as-designed configuration as defined herein and in NSTS 07700, Volume XX, Book 2 - Appendix 08, Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness.

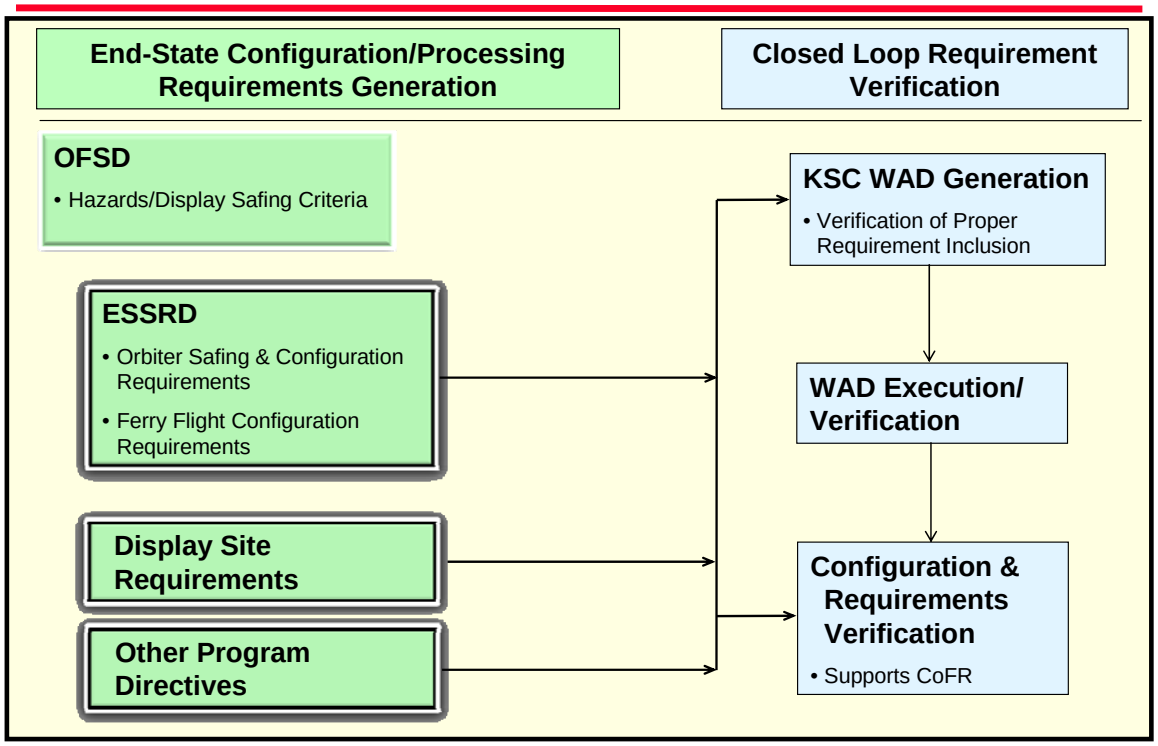
6.2 DETAILS OF VERIFICATION

To ensure that the detailed configuration of all program hardware is properly identified and verified, each program element/project having management responsibility for program hardware shall ensure that a closed-loop accounting and verification system is implemented. The verification system must provide the ability to track the program approved requirements. The verification system must be able to support the Program Ferry Flight review process and Ferry Flight Certification of Flight Readiness (CoFR).

6.2.1 Orbiter Closed Loop Requirements Verification

ESSRD, DSRs, and other program requirements will be verified utilizing a “Closed Loop” KSC Configuration and Requirements Verification System (Cradle) in lieu of existing systems (e.g., Mission Requirements Control System [MRCS], Configuration Verification Accounting System [CVAS], and Operation and Maintenance Requirements and Specifications Document [OMRSD]/Operations and Maintenance Plan [OMP]). This supports the Program Ferry Flight review process and Ferry Flight CoFR.

FIGURE 1
END-STATE REQUIREMENTS PROCESSING



6.3 COMMIT TO FERRY

The final steps in CV for a ferry flight are conducted as part of the commit to ferry review process. The ferry review process is addressed in NSTS 07700, Volume XX - Book 2, Appendix 08, Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness.

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SECTION A

ACRONYMS AND ABBREVIATIONS

APA	Allowance for Program Adjustment
CAR	Change Action Request
CCA	Contract Change Authorization
CCB	Change Control Board
CCBD	Change Control Board Directive
CCCD	Crew Compartment Configuration Drawing
CE	Change Evaluation
CM	Configuration Management
CMO	Configuration Management Office
CMST	Change Management Support Tool
CoFR	Certification of Flight Readiness
CP	Change Proposal
CR	Change Request
CRG	Change Review Group
CTN	Change Tracking Number
CV	Configuration Verification
CVAS	Configuration Verification Accounting System
DSR	Display Site Requirements
ESFR	End-State Flow Review
ESRR	End-State Requirements Review
ESSRD	End-State Susbsystems Requirements Document
GFE	Government Furnished Equipment
GSE	Ground Support Equipment
IDS	Integrated Data Systems
MECSLSI	Mission Equipment Cargo Support Launch Site Installation
MR	Material Review
MRB	Materials Review Board
MRCS	Mission Requirements Control System
O&M	Operation and Maintenance
OMP	Operations and Maintenance Plan

OMRSD	Operation and Maintenance Requirements and Specifications Document
OPF	Orbiter Processing Facility
OPR	Office of Primary Responsibility
OSB	Outside the Board
PPBE	Program Planning, Budgeting and Execution
PRCB	Program Requirements Control Board
PRCBD	Program Requirements Control Board Directive
SSP	Space Shuttle Program
SSPCD	Space Shuttle Program Closeout Directive
SSPD	Space Shuttle Program Directive
T&R	Transition and Retirement
TBS	To Be Supplied
TD	Technical Direction
WAD	Work Authorization Document

SECTION B

DEFINITIONS

B1.0 PURPOSE

The following terms are used in this document or are commonly used in CM materials. The definitions are provided for the purpose of understanding and uniformity.

Alternate Part - A part that is different in part number or dash number from the specified hardware, and meets one of the criteria specified in Paragraph 5.0b of this appendix.

As-Built Configuration - An actual physical configuration of a unit of hardware/software.

As-Delivered Configuration - The as-built configuration that existed at time of delivery.

As-Designed Configuration - A configuration formally approved for implementation by the appropriate authority. This authority may be either at the program element/project or the program level. This configuration may be for an individual piece of hardware or software or it may be for the entire Shuttle Vehicle.

Assembly - Specific arrangement of two or more attached parts.

Associated GSE - Equipment that interfaces directly with flight hardware or equipment (including facilities) that could cause damage to flight hardware if improperly configured or operated.

Baseline Configuration - A specific configuration included in the NASA/design activity/contractor baseline.

Change Control Board (CCB) - The functional body of representatives from selected program organizations, chaired by the CM decision maker, with responsibility to ensure the proper definition, coordination, evaluation, and disposition of all changes to the configuration baseline which the board administers.

Change Request - Formal documentation of a proposed change to an existing baseline.

Change Tracking - A function of the configuration accounting task which tracks each change from initial notification of change submittal through CCB disposition, direction to the design activity/contractor, and incorporation.

Configuration Accounting - The task of maintaining, correlating, reporting, and storing configuration documentation for program hardware/software.

Configuration Baseline - The approved and defined configuration which is used as a reference for program planning purposes and as a point of departure for control of changes.

Configuration Baseline Change - A change to an approved configuration baseline.

Configuration Baseline Documentation - The set of documents that records a baselined configuration.

Configuration Change Control - The task of ensuring that each engineering change, waiver, or deviation is properly defined, coordinated, and evaluated before being formally dispositioned.

Configuration Identification - The task of determining the manner in which each unit of hardware/software is to be described and of placing these descriptions on configuration documentation.

Configuration Management (CM) - The task of integrating and accomplishing in an optimal manner the four subtasks of configuration identification, configuration accounting, configuration change control, and CV.

Configuration Verification - The task of assuring that the program hardware/software is certified as having been designed, built, and tested to the correct configuration baselines.

Deferred Work - Deferral of flight hardware work. A Work Authorization Document (WAD) is written against a specific flow and dispositioned for accomplishment of a specific set of work activity during a subsequent flow.

Design Released Part - A part described and authorized by released engineering.

Deviation - A specific authorization, granted before the fact, to depart from a particular baseline requirement for a limited application.

Effectivity - The time, event, or circumstance for which a change is proposed or authorized.

End-State - After the release from Mission status, the Orbiter will be processed for Ferry Flight and Display, which is referred to as End-State.

Engineering Change - A change to approved engineering.

Engineering Change Proposal - A proposed engineering change to a configuration baseline prepared by the design activity/contractor in such a manner as to provide for complete assessment of the change.

Engineering Order - A document prepared by the design activity/contractor to describe a change(s) to released engineering documentation.

Hardware - Items of identifiable equipment including piece parts, components, assemblies, subsystems, and systems.

Integration - The task of assuring that all of the program elements/projects perform in such a manner so that collectively they will accomplish the program/project objectives in the most efficient manner.

Interface - A region common to two or more elements, systems, projects or programs, characterized by mutual physical, functional, and procedural properties.

Modification - A physical change to delivered hardware/software and spares.

Modification Kit - A packaging of all hardware/software/documentation required to perform a modification or correct a noncompliance to delivered equipment.

Material Review (MR) Part - A unique detail part designed and fabricated to execute an MR repair. It can be a doubler, stiffener, shim, bushing, patch, sleeve, section of tubing or duct, etc., and is normally identified with the MR document number by which it was designed and fabricated.

NASA Baseline - Those requirements and design solutions approved by NASA for inclusion in the SSP closeout and project baseline documentation.

Noncompliance - A condition that exists or will exist when a deliverable item or its related documentation is not in accordance with the NASA baseline at the time of established contractual events.

Nonconformance - A condition of any article or material or service in which one or more characteristics do not conform to requirements. Includes failures, discrepancies, defects, and malfunctions.

Non-standard Work - Any special maintenance, inspections, and/or tests performed at the launch site.

Part Number - A number applied to a part for identification and accounting purposes.

Product Configuration - The complete, detailed description of program hardware/ software.

Program - The consolidation and integration of all efforts required to accomplish a stated objective.

Program Element - A specific effort which, when combined with all other program elements, contributes to the accomplishment of the program objective.

Program Requirements Baseline - Program requirements established and controlled by the Manager, Space Shuttle Program and the Manager, Launch Integration, KSC.

Program Requirements Control Board (PRCB) - SSP Control Board chaired by the Manager, Space Shuttle Program.

Project - A major element of a program, i.e., all functions required to develop and support program elements as vehicle processing, ferry flight, etc.

Project Requirements Baseline - Those project-level requirements established by a project office as a further definition, and within the scope of the system and program requirements.

Released Documentation - Documentation that has been officially transmitted through the ERS and recorded in the engineering release record.

Requirements Traceability - The ability to identify like and related requirements so that traceability of these requirements can be established up and down through the various levels of baseline documentation.

Software - Computer programs required to test, checkout, maintain, or operate program hardware.

Specification - Statement of particulars such as performance, characteristics, requirements, and configuration for a given element of hardware/software.

Subassembly - With respect to some reference assembly, an assembly which is wholly contained within the reference assembly.

Substitute Part - A part, identified by a different part number, which is utilized as a substitute for the part designed for a particular application. Substitute parts may be fabricated by an MR document specifically for the substitute application, or designed and fabricated originally for utilization elsewhere.

System - A composite of all the activities, hardware, and software required to accomplish a set of program objectives, i.e., the Space Shuttle System.

Unit - A part, subassembly, or assembly.

Waivers - A written authorization to accept designated items which, during production or after having been submitted for inspection, are found to depart from specified requirements, but nevertheless are considered suitable for use “as is” or after rework by an approved method.

SECTION C

CM CHANGE PROCESSING PROCEDURES

C1.0 PURPOSE

The purpose of this section is to establish detailed CM change processing procedures for implementation of the SSP closeout requirements. Described herein are the procedures to be used in identifying and establishing baselines and the processing of changes thereto.

C2.0 SCOPE

The CM change processing procedures established by this section are applicable to all organizations and personnel involved in the submittal and processing of changes to the SSP closeout requirements baselines.

C3.0 RESPONSIBILITIES

The PRCB CM activities that support the procedures, as defined in this section, are the responsibility of the SSP Business Management and Integration Office.

C4.0 REVISIONS

Section C is not subject to PRCB change control. Responsibility for control of CM procedure changes is delegated to the PRCB Secretary.

This section will be revised, as required, and changes will be issued as replacement pages or by complete revision of the section, as appropriate. All requested changes will be directed to the PRCB Secretary, via an SSP CR, and dispositioned by a PRCBD signed by the PRCB Secretary. Changes to the Section will be indicated by a vertical line in the outside margin of each paragraph changed.

C5.0 CM RESPONSIBILITIES

The procedures defined herein support SSP procedures defined in NSTS 07700, Volume XX - Book 2, Appendix 04. Project CM procedures will support with the SSP procedures as described herein.

C6.0 SSP CHANGE PROCESSING

All SSP change processing will be performed in the Change Management Support Tool (CMST).

C6.1 PRCB DISPOSITION

All requests for changes which require a PRCB disposition will be transmitted to the PRCB Secretary via an SSP CR. The information required to be included on the CR is as follows:

a. CR Number

b. Page Numbers

c. Initiated By

d. Change title

e. Change Proposals/Requests Indent. Number; change sources related to the CR

f. SSP Documents Affected; baseline documents affected by the CR

g. Description of Change; if change to requirements the current and proposed wording must be included

h. Reason for Change

i. Element(s) Affected by the change, i.e., Orbiter, flight crew equipment, ground operations, etc.

j. Change Impact to schedule, transition, etc.

k. Effectivity, i.e., hardware, event, time period, etc.

l. Safety impacts

m. Milestone

n. Cost Impact by fiscal year

o. Impact Description/Remarks, as necessary describe in detail any element, safety, or cost impacts

p. Recommended Handling, indicate recommended board date or outside-the-board processing

q. Space Shuttle Board Member authorization

NOTE: A limited number of changes may be requested via a Change Action Request (CAR). These changes are typically corrections or clarifications to previously approved PRCBDs, or changes directed by the Manager, Space Shuttle Program. Initiation of all such changes via a CAR is at the discretion of the PRCB Secretary. The information required to be included on the CAR is as follows:

a. Number

b. Page numbers

c. CAR Type, requested action, i.e., reschedule, withdraw, create directive, change OPR or CE due, etc.

d. Title

e. Source Type, i.e., CR, CE, Action Item, or Discussion Item

f. Initiator

g. Requested Action(s), i.e., the Item (CR, Action Item or Discussion Item), its current scheduling, and the proposed scheduling

h. Description, if not scheduling/rescheduling an item, description of action to be taken

i. Supporting Rationale, rationale for requested change

j. Authorization

C6.2 SSP CR CANCELLATION

All SSP changes are formally tracked in the CMST from the time the CTN is assigned until the proposed change is properly withdrawn, cancelled, or dispositioned, and all PRCBD actions closed. When a CTN has been assigned but an SSP CR has not been submitted, the CTN may be cancelled by the PRCB Secretary. If an SSP CR has been submitted, the CR may be withdrawn by submitting a CAR to the PRCB Secretary utilizing CMST. The CAR shall be signed by the PRCB member who signed the submitted CR or by the OPR after obtaining verbal concurrence from the submitting organization.

C6.3 DEVIATIONS AND WAIVERS

C6.3.1 Requesting Deviations and Waivers

A deviation from, or waiver of, an SSP baseline requirement is requested by means of an SSP CR. The following description is provided by the CR initiator as the standard method of requesting deviations/waivers.

The following information shall be provided:

a. Requirement: Statement of the applicable requirement to be deviated from or waived. The requirement shall be identified by paragraph, table, or figure number, as applicable, and by title. If the requirement is lengthy, only the applicable portion need be stated on the CR. If the CR does not identify the specific portion of the requirement that applies, the requirement shall be stated in its entirety in the directive that authorizes the deviation/waiver.

b. Deviation/Waiver: Statement of the condition(s) and/or specific item(s) to be exempted from the applicable requirement(s). The involved hardware/software/ facility shall be specifically identified and, if applicable, subordinate components or units shall be identified by name, part number, and serial number.

c. Rationale: Concise statement of the justification for the deviation/waiver.

d. Element/Project: Identification of the specific SSP element/project affected by the deviation or waiver.

e. Effectivity: Identification of the specific hardware/software/facility and/or period(s) for which the deviation/waiver is to be in effect.

C6.3.2 Incorporating Deviations and Waivers

The deviation/waiver is incorporated in the appropriate NSTS 07700, Volume XX, section or subordinate SSP closeout baseline document in accordance with the following:

a. If the requirement is stated in the NSTS 07700 appendix, the deviation/waiver is incorporated in the appropriate NSTS 07700 appendix.

b. If an NSTS 07700 appendix references a requirement stated in a subordinate SSP closeout baseline document maintained by the SSP, the deviation/waiver is incorporated in the appropriate subordinate document.

c. If an NSTS 07700 appendix references a requirement stated in a subordinate SSP closeout baseline document maintained by an organization other than the SSP, or a document that is not controlled by the program (e.g., NASA Handbook, Military Specification, JSCM 8080, JSC Design and Procedure Standards Manual, etc.), the deviation/waiver is incorporated in the NSTS 07700 section that references the document.

d. If an NSTS 07700 appendix references a requirement in a retired document, the deviation/waiver is incorporated in the NSTS 07700 appendix that references the retired document.

C6.4 PRCB CHANGE FLOW

All SSP changes will be processed in accordance with the guidance provided by the SSP CRG.

C6.4.1 PRCB Scheduling

PRCB scheduling shall be in accordance with the following:

a. Normal scheduling

Daily	-	After receipt by PRCB Secretary, CR processed through the SSP CRG and made available to the community.
9-14 Work Days	-	After CR disposition, CEs are due to the PRCB Secretary.
15-20 Work Days	-	After CR disposition, PRCB is conducted.

b. Expedite scheduling

A CR which requires expedited scheduling to a PRCB will be forwarded to the PRCB Secretary for processing. Upon receipt, the PRCB Secretary will evaluate the CR for expediting and will appropriately schedule the CR to the PRCB. After CR disposition, CEs should be transmitted by the date specified on the CR.

CRs which do not meet the requirements specified in NSTS 07700, Volume XX - Book 2, Appendix 04, will be either rejected or returned to the Initiator to obtain resolution of the deficiency.

C6.4.2 Change Review Group

The SSP CRG is responsible for performing the following functions:

a. Review all SSP CRs to ensure that they are sufficiently clear, technically complete, and ready for evaluation.

b. Assign the OPR.

c. Establish the date for review and decision by the PRCB.

d. Select those offices from which evaluations are requested and specify the date that evaluations are due. The CR evaluations require the following information:

   1. Number
   2. Page numbers
   3. Review Board
   4. Review Type
   5. Requested By
   6. Due Date
   7. Evaluated By
   8. Title
   9. Recommendation, i.e., Concur, Concur with Comments, Concur with Required Changes, Non Concur
   10. Comments; if Recommendation is other than Concur, comments to explain Recommendation
   11. Approved By

e. Determine which CRs are of such a nature that they can be processed as “record” changes or otherwise worked to completion outside of the formal PRCB.

f. Delay by no more than one day the processing of CRs which do not identify cost, schedule, weight, or other pertinent information when it is processed, pending clarification by the submitter.

g. Reject CR if proposed change or supporting information is unclear or incomplete.

C6.4.2.1 Membership

The SSP CRG is conducted by the SSP PRCB Secretary.

C6.4.2.2 Processing CRs

CRs are reviewed throughout the day. CRs which require immediate action will be reviewed and dispositioned immediately by the CRG Chair.

C6.4.2.3 Office of Primary Responsibility

An OPR within the SSP organization will be designated for each CR. The PRCB members represent SSP offices which may be selected as OPRs. SSP elements/projects may be designated as OPR for changes that affect only that element and have no effect on the functional or physical interface with another element. The OPR is responsible for the following:

a. Take action required by the CRG to obtain assistance from the initiator of a CR to make changes or modifications necessary to resolve deficiencies.

b. Assign the appropriate individuals to present the change to the PRCB.

c. Work with presenter(s) and review presentation to assure brevity, completeness, and readiness for decision by the PRCB Chair.

d. Conduct coordination, as required, with the originator, PRCBD writer, change evaluators, and other affected organizations prior to presentation to ensure all alternatives are considered. Prepare presentation summary charts. (Reference Figure C-1 and Paragraph C8.1.)

e. Provide presentation material to the PRCB Secretary for each PRCB agenda.

f. Ensure that the presentation to the PRCB includes cost/schedule estimates. Recommend change disposition to the PRCB.

g. If a change is not ready for presentation to the PRCB on the assigned date, or if a change is scheduled for review by the PRCB and is later recommended by the OPR for processing OSB, the OPR shall prepare a CAR, and submit the CAR to the PRCB Secretary for approval. The PRCB Secretary may request the OPR to present the status of such changes to the PRCB.

C6.4.3 SSP CR Originator Responsibilities

The SSP CR originator will ensure that all applicable portions of the CR are completed. Positive statements shall be made that the change will or will not impact program cost, schedules, etc.

C6.4.4 Distribution

The SSP CR, with back-up information, as furnished to the PRCB Secretary, will be made available by the PRCB Secretary to all PRCB members for evaluation via CMST. Requested evaluations and evaluation due dates will be made available as well. Evaluations are prepared and submitted electronically via CMST.

Urgent and emergency changes will be expedited, as required, in order to satisfy program schedule requirements.

C6.4.5 Change Records

The PRCB Secretary shall maintain, for the life of the program, complete change records for each SSP CR submitted. These records will be available to SSP personnel for reference and will include, as applicable:

a. SSP CR, including backup information

b. CE

c. PRCBD

d. CARs

e. PRCB Presentation

f. PRCB meeting mini minutes

g. Action Closeout Requests and associated data

h. Any other correspondence relating to the change

C6.4.6 CR/Directive Numbering

Each CR initiated in CMST is automatically assigned the next sequential CTN. This number simply increments by one for each new change; there is no imbedded intelligence.

The directive that dispositions the CR is normally assigned the same CTN. However, in special cases such as directive that disposition multiple CRs or ferry specific hardware modification directives, the directive number/version will be assigned by Configuration Management Office (CMO). Directives for which the source is a CAR, the directive number will be the same CTN as the CAR.

C7.0 PRCB AGENDA

The PRCB Secretary shall provide an agenda of changes scheduled to be presented to the PRCB via CMST. PRCB agendas will be electronically published by the PRCB Secretary prior to the formal meeting of the PRCB. The final agenda is electronically published after the “Alfred” which is 1 day before the PRCB meeting.

C8.0 PRESENTATIONS

Presentation material shall be included with the CR as part of the background.

The responsible presenter will prepare change presentations for the PRCB meeting in general conformance with the following instructions.

C8.1 SUMMARY CHART

A summary chart will be prepared for each CR in accordance with Figure C-1. In those cases where the change presenter is a contractor, the OPR is responsible for development and presentation of the summary chart.

C8.2 EFFECTS ON PROGRAM DOCUMENTATION

Include proposed revised wording for affected program documentation. If recommended wording changes are the same as in the CR, use a copy of the CR. If they differ from the CR, provide the new wording annotated to note differences from the CR.

C8.3 RATIONALE FOR DECISION

This is a comprehensive summary of pertinent information, i.e., performance curves, schematics, drawings, etc., build-up of the technical data and trade-offs presented in the preceding charts.

C8.4 COST ASSESSMENT ANALYSIS

It is the OPR’s responsibility to ensure that a cost assessment be performed and presented by the best available source who should use the following guidelines in preparation of the appropriate change cost analysis.

a. Scope the work to be done on hardware/software by task.

b. Break-out costs in terms of schedule, manpower, materials, subcontracts, burden, general and administrative, and fee.

c. Identify the cost by fiscal years and affected projects.

d. Identify all methods used for preparing cost estimates.

e. Identify the data upon which estimates are based.

f. Identify personnel responsible for the estimates.

C9.0 RECORD OF MEETINGS

The PRCB Secretary will document all actions of the PRCB meetings and make an audio recording of the proceedings of all PRCB meetings. An announcement will be made at the beginning of the meeting that the meeting is being recorded. The voice recordings will be maintained consistent with the requirements for SSP records management in NSTS 07700, Volume XX - Book 2, Space Shuttle Closeout Requirements, Appendix 05, Information Management Closeout Requirements.

C10.0 PROGRAM REQUIREMENTS CONTROL BOARD DIRECTIVES

For each change dispositioned by the PRCB Chair, the PRCB Secretary will prepare a PRCBD to document the final disposition taken. The PRCBD will be signed by the PRCB Chair or designee, as authorized in this document. PRCBDs will normally be identified with the same number as that of the SSP CR being dispositioned. An additional suffix R1, R2, R3, etc., may be used to identify revisions. The information required to be included on the PRCBD is as follows:

a. Directive Number

b. Page numbers

c. Board, Board Date or OSB, i.e., dispositioning board

d. Directive Title

e. Change Proposals Dispositioned/Source Requests

f. Reference Items, other change sources affected by the directive

g. SSP Documents Affected, baseline documents affected by the directive

h. OPR, office code of the directive OPR

i. Directive Writer

j. Directive Authorization

k. SSP Baseline Change Direction; disposition of change to include specific program direction

l. Schedule Impact

m. Effectivity, i.e., hardware, event, time period, etc.

n. Cost Impact by fiscal year

o. Directive Actions, include actionee(s), action OPR, action due date, classification, and action Effectivity

C11.0 ACTION ITEMS

C11.1 PRCB DIRECTIVE ACTION ITEMS

Action items assigned during a PRCB meeting will be recorded on PRCBDs. PRCBD actions are direction from the PRCB Chair to the program element/project/ implementation organization to which the action is assigned. Therefore, it shall be the responsibility of the program element/project/implementation organization to which a PRCBD action is assigned to assure that the action is properly closed by the assigned due date. Action items are closed by the actionee organization providing the PRCB Secretary the proper closeout documentation to verify that the directed action has been implemented. PRCBD action items will be electronically recorded and tracked in the PRCBD action item files in CMST.

C11.2 CLOSEOUT DOCUMENTATION

PRCBD Action Closeout Requests are to be submitted by the actionee organization when providing action closeout rationale for PRCBD action items. The PRCBD Action Closeout Request provides action closeout information and may be used independently or attached to supplementary closeout data. The information required to be included on the Action Closeout Request is as follows:

a. Action number

b. Page numbers

c. Source, i.e., directive number

d. Action OPR

e. Actionee

f. Assigning Board

g. Original Action Due

h. Current Action Due

i. Effectivity, action Effectivity

j. Action Description

k. Closure Rationale, include complete description of activities that satisfy the action and reference to substantiating documentation as necessary

l. Closed By

When evidence of closure is submitted, the PRCB Secretary will assure that the submitted documentation satisfies closure of the assigned action. In the event that the submitted documentation does not satisfy closure, the PRCB Secretary will coordinate with the OPR and/or actionee to resolve the open issue.

C11.3 DELEGATED CLOSURE AUTHORITY

Action item closeout approval is the responsibility of the PRCB Secretary except in those cases in which closeout authority has been specifically delegated as described below.

In all cases of delegated closure authority, the closure must be accomplished via direct electronic input into CMST. Substantiating closeout documentation for each action closed will be placed in CMST.

C11.4 REPORTS

Ad hoc action item reports can be generated directly from CMST. It is the responsibility of the actionee to ensure that the action item status, including evidence submitted for closure, agrees with the appropriate records. In the event the actionee determines there is a discrepancy, the actionee will coordinate with the PRCB Secretary to resolve the open issue.

C12.0 CONFIGURATION STATUS AND ACCOUNTING

This section describes the requirements and procedures for the CM status and accounting system, which will provide for monitoring changes processed through the PRCB change system.

C12.1 OBJECTIVES

The objective of this system is to provide SSP management with visibility into the planned and actual status of each change being processed and the actions required. The system will be capable of identifying actions required, delinquencies, change trends, etc., and verify project implementation of PRCB direction, as applicable.

C12.2 DATA ELEMENTS (AS APPLICABLE)

a. CTN number

b. CTN assigned date

c. SSP CR number

d. Change title

e. Change originator

f. Evaluations received

g. PRCBD number

h. PRCBD date

i. PRCB schedule date

j. PRCB actual date

k. Effectivity

l. Remarks

m. SSP documentation effect

n. Affected program element

o. PRCBD action items

p. PRCBD action OPR

q. PRCBD actionee

r. PRCBD action items suspense date

s. PRCBD action item closeout

C12.3 CHANGE TRACKING AND CLOSEOUT

C12.3.1 Purpose and Scope

The change tracking and closeout activity provides the mechanism for recording the assignment of a CTN to proposed SSP changes and recording and tracking the status of the changes. Each proposed SSP change is tracked from the time the CTN is assigned until the last action required for that change is closed. Once a change has been submitted to SSP, it will be tracked in CMST until all required actions are closed. Projects shall establish and operate a change tracking system that records and tracks the status of changes processed within their activity until all actions required for each change are closed.

C12.3.2 General

CTNs are assigned for packaging a total change, including related data, into one common tracking number. Each change in status, as the change progresses through the process to the PRCB for disposition and subsequent implementation of the PRCB direction, is updated in CMST to provide a complete record of the change processing, disposition, and implementation. Various reports are available to provide management visibility of the status of the change processing activity. Each change is tracked until the last action required for that change is closed.

The same CTN assigned to the original change will be used for all revisions to a change package. The revisions will be tracked in the same manner as the original change until all required actions are closed.

Change processing status reports and PRCBD action item status reports can be generated by SSP element/project organizations and SSP management, as required. Paragraph C11.1 provides a more detailed description of the PRCBD action item tracking and closeout activity.

C13.0 SSP CONFIGURATION VERIFICATION

C13.1 SSP BASELINE DOCUMENTATION CHANGE PAGE VERIFICATION

The PRCB Secretary will verify that all change pages to baselined SSP closeout documents, as directed by the PRCBDs, are accurate and are within the scope of the direction.

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FIGURE C-1
PRESENTATION SUMMARY CHART

(Page 1 of 2)

CR NUMBER (1)

TITLE: (2)

PRESENTER: (3)

DESCRIPTION OF CHANGE:

(4)

BACKGROUND:

(5)

FIGURE C-1
PRESENTATION SUMMARY CHART

(Page 2 of 2)

EVALUATIONS: 6

FOR:

FOR/COMMENT:

AGAINST:

NOT AFFECTED:

EFFECTIVITY: 7

8 COST: FY_____ FY_____ FY_____ FY_____ FY_____ FY_____ TOTAL _____

_____

_____

_____

WEIGHT: 9

SCHEDULE: 10

OPEN ISSUES: 11

RECOMMENDATIONS: 12

INSTRUCTIONS FOR PREPARATION OF PRCB PRESENTATION SUMMARY CHART

(Figure C-1)

A. General Instructions - This form is provided as a general purpose information sheet for the PRCB presentation material. The use of this form will provide the PRCB members with a summary of the proposed change and the programmatic impacts in a clear, concise, and consistent manner.

B. Completion Instructions - Complete each block on the form (Figure C-1) as follows.

1. Enter the CR number.
2. Use the title as it appears on the CR.
3. Enter the office code and presenter's name.
4. Briefly describe what SSP closeout requirements need revision, e.g., revise NSTS 07700, Volume XX - Book 2, Appendix 04 to change PRCB membership.
5. Provide a brief summary of significant prior events or actions relevant to the board's understanding of this proposed change.
6. Identify the organizations in the appropriate line per the evaluation from that office using the official organizational title.
7. Indicate specific program effectivity.
8. Adequate presentation and discussion of all program cost estimates is essential. If no cost impact, give rationale for reaching this conclusion.
9. Enter the SSP weight impact to the individual project hardware elements affected.
10. Enter the project elements impacted and the magnitude of the schedule impact.
11. Identify any unresolved issues, provide presenter's recommendations for resolution with rationale for the recommendations. Explain alternate approaches that were considered.
12. Provide an OPR recommended action to disposition the change.

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SECTION D

SHUTTLE BASELINE PROGRAM

CLOSEOUT REQUIREMENTS INDEX

D1.0 PURPOSE

The purpose of this section is to establish the detailed PRCB baseline control authority and delegations for approval of SSP closeout documents as shown in Table D.1.

D2.0 SCOPE

Table D.1 is the authoritative source for the SSP controlled baseline requirements. Table D.1 applies to all documents which establish requirements for the Shuttle Closeout Program. If conflicts exist between NSTS 07700, Volume XX - Book 2, Appendix 04 and other baselined documents, NSTS 07700, Volume XX - Book 2, Appendix 04 will take precedence.

D3.0 RESPONSIBILITY

The SSP Management Integration Office is responsible for the maintenance of Table D.1. The program elements/projects shall identify their processes contained in these documents to the program manager.

D4.0 TABLE D.1 CONTENT

This table contains the “Program Requirement Number”, in alphanumeric order; the “Program Requirement Title/Name”; the “Office of Primary Responsibility” (OPR), and the “Change Control Authority.” The “Change Control Authority” identifies the control board which baselines or controls changes to the requirements and the reference in program documentation which details the delegation of this change control authority.

In some cases, notes are placed in the “Control Board” column when there are exceptions or further details to the CM delegation. These exceptions or further details are detailed in the paragraph noted under the “Authority” column.

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TABLE D.1
SHUTTLE BASELINE PROGRAM CLOSEOUT REQUIREMENTS INDEX

PROGRAM REQUIREMENT NUMBER	PROGRAM REQUIREMENT TITLE/NAME	OPR	CHANGE CONTROL AUTHORITY	
			CONTROL BOARD	AUTHORITY
NSTS 07700, Volume XX - Book 1	Space Shuttle Closeout Requirements, Transition and Retirement	HA	PRCB	
NSTS 07700, Volume XX - Book 2	Space Shuttle Closeout Requirements, Closeout Requirements	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 02	Program Closeout Structure and Responsibilities	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 04	Configuration Management Closeout Requirements	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 05	Information Management Closeout Requirements	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 08	Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 10	Flight and Ground System Specification Closeout Requirements	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 12	Program Logistics and Supportability Closeout Requirements	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 15	Resource Management Policy and Closeout Requirements	HA	PRCB	
NSTS 07700, Volume XX - Book 2, Appendix 19	Program Risk Management Plan Closeout Requirements	HA	PRCB	
NSTS 07700-10-MVP-01, Book 3	Shuttle Master Verification Plan, Volume 1, General Approach and Guidelines Requirements Effective for SSP Closeout	HA	PRCB	
NSTS 60575	Space Shuttle Program Transition and Retirement Environmental Plan	MP11	PRCB	

TABLE D.1
SHUTTLE BASELINE PROGRAM CLOSEOUT REQUIREMENTS INDEX - Concluded

PROGRAM REQUIREMENT NUMBER	PROGRAM REQUIREMENT TITLE/NAME	OPR	CHANGE CONTROL AUTHORITY	
			CONTROL BOARD	AUTHORITY
NSTS 60576	Space Shuttle Program Transition Management Plan	HA	PRCB	
NSTS 60584	Orbiter Fleet Safing Document (OFSD)	HA	PRCB	
NSTS 60585	End-State Subsystems Requirements Document (ESSRD)	HA	PRCB	
SE-S-0073 - Book 1	Specification Fluid Procurement and Use Control Closeout Requirements	HA	PRCB	
SW-E-0002 - Books 3 and 4	Ground Support Equipment General Design Requirements for Closeout Requirements Book 3 - Existing GSE Book 4 - New GSE	HA	PRCB	
	Final Flight Orbiter Vehicle Drawings (V070-00001)	HA	PRCB	
	Final Flight Mission Download Mission Equipment Cargo Support Launch Site Installation Drawings	HA	PRCB	
	Final Flight Crew Compartment Configuration Drawing (CCCD)	HA	PRCB	

SPACE SHUTTLE

APPENDIX 05

INFORMATION MANAGEMENT CLOSEOUT REQUIREMENTS

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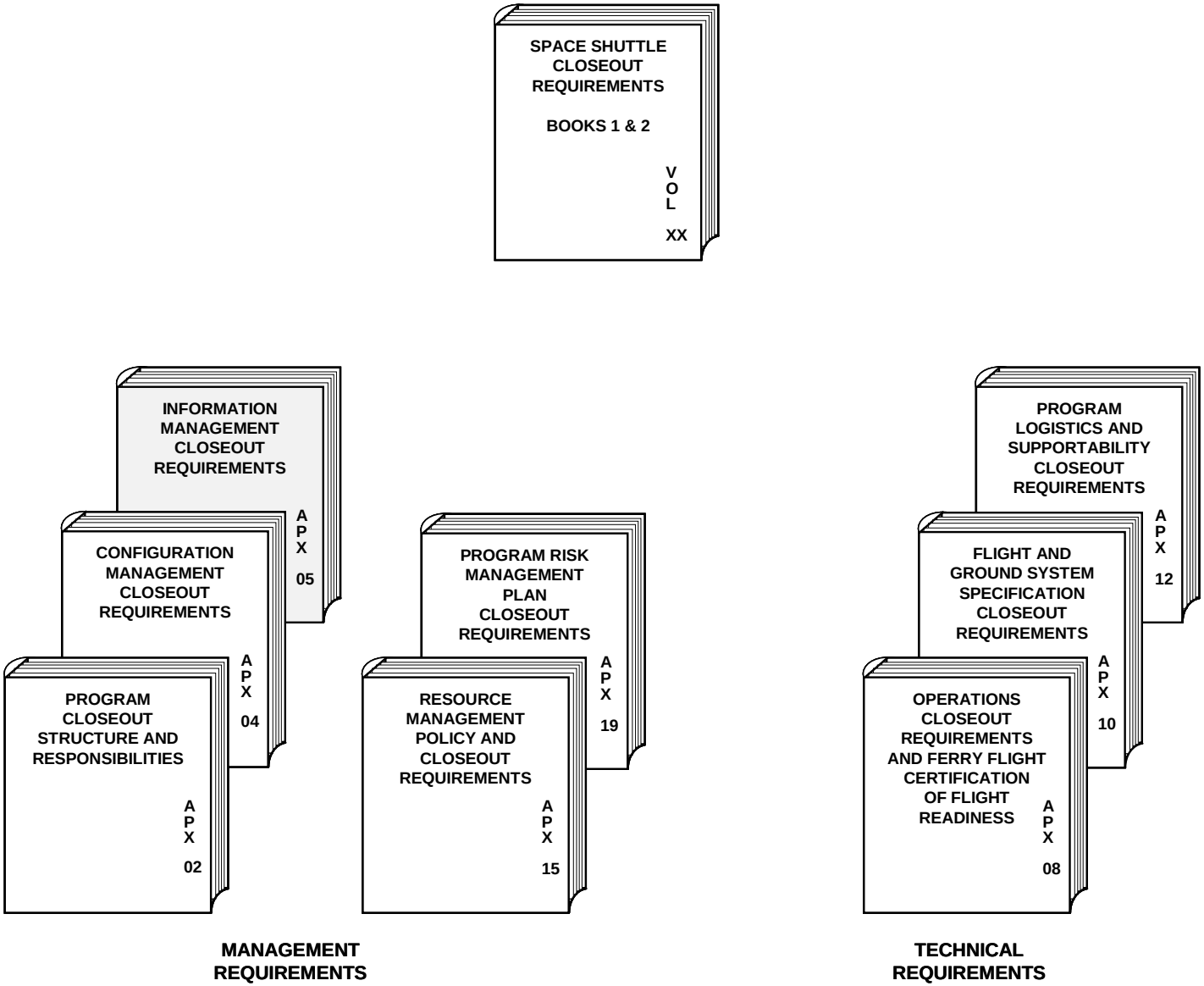
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, and interface agreements shall be documented, baselined, and subsequently controlled by SSP management.

Program information management requirements, directives, procedures, etc., controlled by the Manager, Space Shuttle Program are documented in this appendix. This appendix defines the Space Shuttle closeout information management requirements to be used by all NASA and contractor organizations involved in the SSP.

All elements of the SSP must adhere to these baselined requirements. When it is considered by the Space Shuttle program element/project managers to be in the best interest of the SSP to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume XX - Book 2, Appendix 04 and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 INTRODUCTION

1.1 PURPOSE

This appendix describes the Space Shuttle Program (SSP) Closeout information management requirements and establishes the basic disciplines applicable to the information management activities of the program. It establishes and describes SSP Closeout requirements for information to be provided for program use or exchanged formally between elements.

1.2 SCOPE

The requirements, responsibilities, and procedures defined herein are applicable to all organizations and personnel involved in the SSP Closeout. This appendix also defines those requirements, responsibilities, and procedures applicable to contractor activities necessary to achieving total program information management objectives.

1.3 EFFECTIVITY

The requirements and procedures contained in NSTS 07700, Volume XX - Book 2, Appendix 05 become effective upon Program Requirements Control Board (PRCB) approval.

2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this document to the extent specified herein. "(Current Issue)" is shown in place of a specific date and issue when the document is under Space Shuttle Program Requirements Control Board (PRCB) control.

<u>NASA Publications</u>

NSTS 07700, Volume XX (Current Issue)	Space Shuttle Closeout Requirements Ref. Table B.1 (1MA-1), Table B.4 (1MA-1)
NSTS 07700, Volume XX - Book 2 (Current Issue)	Space Shuttle Closeout Requirements Ref. Para. 4.3

NSTS 07700, Volume XX - Book 2 Appendix 04 (Current Issue)	Configuration Management Closeout Requirements
	Ref. Preface, Table B.4 (1MA-1, 1MT-1), Table B.5 (2EN-2)
NSTS 07700, Volume XX - Book 2 Appendix 10 (Current Issue)	Flight and Ground System Specification Closeout Requirements
	Ref. Table B.4 (1CB-1, 1EN-1, 1MT-1), Table B.5 (2EN-1, 2EN-2, 2EN-3, 2EN-4, 2MA-3, 2MT-1, 2MT-2, 2MT-3, 2MT-4, 2MT-5), Table B.6 (3MT-1, 3MT-2, 3MT-3, 3SR-1, 3SR-2, 3SR-3)
NSTS 07700, Volume XX - Book 2 Appendix 15 (Current Issue)	Resource Management Policy and Closeout Requirements
	Ref. Table B.4 (1MA-2), Table B.5 (2MA-1, 2MA-2)
NSTS 07700-10- MVP-01 - Book 3 (Current Issue)	Shuttle Master Verification Plan, Volume I, General Approach and Guidelines for SSP Closeout
	Ref. Table B.1 (1MT-1), Table B.4 (1MT-1), Table B.5 (2MT-1, 2MT-2, 2MT-3, 2MT-5), Table B.6 (3MT-1, 3MT-2, 3MT-3)
NSTS 5300.4(1D-2) (Retired)	Safety, Reliability, Maintainability Quality Provision for the Space Shuttle Program
	Ref. Table B.6 (3SR-1), Table D.2.7, Table D.2.9

SE-R-0006 (Retired)	General Specification Space Shuttle System Requirements for Materials and Processes Ref. Table B.4 (1EN-1)
NHB 9501.2C	Procedures for Contractor Reporting of Correlated Cost and Performance Data Ref. Table B.5 (2MA-2)
NPG 9501.2C	NASA Contractor Financial Management Reporting Ref. Table B.5 (2MA-2)
NPR 2810.1 August 12, 2004	Security of Information Technology Ref. Para. 3.0
NPD 2810.1C April 7, 2004	NASA Information Security Policy Ref. Para. 3.0
NPD 1440.6	NASA Records Management Ref. Para. 4.4, 6.0
NPR 1441.1	NASA Records Retention Schedules Ref. Para. 4.4, 6.0, 6.2, 6.3, Table D.1

3.0 SPACE SHUTTLE INFORMATION MANAGEMENT POLICIES

The SSP has established the following computer security policy to ensure the protection of sensitive information, the availability of our computer resources, and to assure that NASA computers are not used improperly.

Each program element/project is responsible for adhering to the agency Information Technology (IT) policies and those of their respective centers. Specific agency reference documents for these policies are:

NPD 2810.1C - NASA Information Security Policy

NPR 2810.1 - Security of Information Technology

3.1 COMPUTER SOFTWARE SECURITY POLICY

The following policy applies to the use of imported computer software on SSP computer systems used by NASA employees and on computer systems managed, operated, and used by Space Shuttle contractors on NASA's behalf, including but not limited to Personal Computers (PCs). This policy is established to minimize the vulnerability of computer systems from imported software that could contain code which produces unwanted or harmful effects (i.e., virus).

It is an SSP policy to use software including, but not limited to, freeware, public domain software, shareware, government furnished software, and licensed personal software only after that software has been reasonably determined to be safe and certified for use in its intended environment. The use of unauthorized bulletin board, or illegal copies of software is prohibited. It is also an SSP policy to require registration and/or licensing of software when required by the author or supplier. All software such as freeware, public domain, and shareware will be certified in an off-line certification laboratory. The certification process will include, but not be limited to, processing the software module with a library of virus detecting software tools.

It shall be the responsibility of each Space Shuttle Project to implement a screening process for certifying computer software to be used for the SSP Closeout. Each project is responsible to use their supporting center to obtain this service. When implementing this policy, the center should determine the risks associated with the situation in which software is to be used and with the source of the software. In determining risks, the center should consider things such as: the source of the software, the complexity of the code, the criticality of the application, and the potential for causing harm to other users on a network or through the exchange of files from diskettes to other computer systems.

3.2 INTERNET USAGE POLICY

NASA uses the internet as a fundamental communications tool for executing the agency missions in scientific and engineering excellence. Part of the mission is to make NASA-acquired, releasable information broadly available to the public. In concert with NASA policy, the SSP will employ internet services for the timely distribution of useful information to the SSP, the agency, and the public. It is the responsibility of the SSP Closeout personnel and management to ensure that the SSP is correctly represented when disseminating information using the internet-based mechanisms such as the World Wide Web (WWW). This policy is established to define those responsibilities.

3.2.1 Official Government Use Only Restriction

IT devices (e.g., computers, networks, electronic mail, facsimile machines, and other electronic information transfer devices) have become essential tools for communication, research, operations, and other work across NASA. SSP civil service and contractor employees are encouraged to make full use of these valuable government assets to help accomplish their official duties. Because modern IT is also becoming increasingly important in the personal lives of people everywhere, occasional personal use of the

Program's IT resources is permitted as a way to help maintain a modern, productive, and supportive work environment.

Internet services created and disseminated by the SSP are considered official government computing resources, and therefore are subject to established policies concerning abuse, misuse, or unofficial use by SSP civil service and contractor employees.

This policy establishes the privileges and additional responsibilities for SSP employees. If different policies are established at the centers, SSP employees should adhere to the more restrictive policy. It allows employees to make limited use of government IT resources (including but not limited to: personal computers and related peripheral equipment and software, facsimile machines, internet connectivity and access to internet services, and e-mail) for non-government or personal purposes. Such use must not involve more than minimal additional expense to the government, be performed on the employee's non-work time, not result in loss of employee productivity, not interfere with the mission or operations of SSP , and not violate the Standards of Ethical Conduct for Employees of the Executive Branch (5 C.F.R. Part 2635). Employees are expected to conduct themselves professionally in the workplace and to refrain from using government IT resources for activities that are inappropriate.

3.2.2 Responsibility for Internet Services for SSP

NASA managers are responsible for all information authored by their organizations and disseminated via the internet. This responsibility may be delegated to management in the respective organizations. In practice, this means civil service employees who author information for dissemination on the internet pertinent to their organization shall gain approval from their management prior to dissemination. Similarly, a contractor who authors information in support of an SSP organization shall gain approval of the civil service manager of that SSP organization prior to dissemination.

3.2.3 Dissemination of NASA-authored Information on the Internet

Dissemination of NASA-authored information, using internet services, shall be authorized according to NASA's policies pertaining to release of information to the public. It is the responsibility of SSP management to conform with NASA's policies and procedures pertaining to the dissemination of information.

The approving SSP manager is responsible for the accuracy of internet disseminated information by their organization. The manager shall also be responsible for determining the intended audience of this information.

The Public Affairs Office (PAO) shall be the focal point for release of information intended solely for the general public. The Space Shuttle Transition and Retirement Office shall be involved with dissemination of scientific and technical information, as appropriate. Sensitive information shall be protected according to federal guidelines and NASA policy.

3.2.4 SSP Internet Resource Management

The SSP Chief Information Officer (CIO) shall be responsible for the management and security of official SSP internet services required to support the dissemination of SSP related information. SSP internet services are primarily associated with web servers, home pages, and associated network access controls (e.g., configuration of gateways, filtering, monitoring, etc.).

The structure of WWW home pages and information shall follow guidelines established by NASA's Webmaster's Working Group, their respective center guidelines and SSP. At a minimum, information disseminated through the WWW shall clearly identify the responsible manager and the web curator, who operates the WWW server.

SSP internet server resources shall be protected through ongoing system monitoring by their system administrators. SSP network resources shall be protected through ongoing and aggressive networking monitoring as a normal part of the network-system managers' responsibilities.

4.0 SSP CLOSEOUT BASELINE DOCUMENTATION MANAGEMENT

This section establishes the requirements for managing the SSP Closeout baseline documentation and Information Requirements (IRs).

4.1 MANAGEMENT RESPONSIBILITIES

The Space Shuttle Transition and Retirement Office, is responsible for the overall management of all SSP Closeout controlled baseline documentation. This responsibility consists of overseeing the overall effort required to develop, maintain, and control SSP Closeout baseline documentation in accordance with the requirements contained in this document.

4.2 DOCUMENT MAINTENANCE

The responsibility for maintenance of the SSP Closeout controlled baseline documents is normally assigned to the Space Shuttle Transition and Retirement Office, but may be delegated to other organizations.

Organizations which have been given the responsibility to maintain SSP Closeout controlled documentation must comply with all provisions of this document. These organizations may establish their own techniques and procedures for accomplishing such tasks as long as the basic requirements of the delegation and this document are satisfied, and such techniques and procedures are documented and approved. The organizations' responsibilities include the following:

a. Ensuring that changes approved by the program are incorporated into the document.

b. Ensuring that all changes to the document have been approved through the appropriate configuration management process.

c. Ensuring that the documents are kept up to date.

d. Making the documents available to all program elements for their use.

4.3 INFORMATION REQUIREMENTS

The majority of currently applicable IRs are documented in Section B of this appendix; however, they may be documented in other appendices of the NSTS 07700, Volume XX - Book 2.

4.4 ACCOUNTABILITY

Complete and accurate accounting of information produced by SSP participants shall be maintained. This accounting shall be sufficient to enable information retrieval for current requirements and for program-history reconstruction.

Information producing activities shall ensure that information having program significance is readily retrievable. Information of this nature must be identified, retained, and made accessible per NASA Procedural Requirement (NPR) 1441.1, NASA Records Retention Schedules, and NASA Policy Directive (NPD) 1440.6, NASA Records Management, as a record of program activities and to facilitate future studies or analysis in the same or similar subject areas.

5.0 EXPORT CONTROL POLICY (ECP)

The SSP will comply with all U.S. export control laws and regulations, and with the NASA Export Control Program which may be found on the NASA Headquarters Home Page under External Relations. It is each employee's responsibility to understand any export control requirements related to his or her work, and to observe all U.S. export control laws and regulations.

This policy is intended to provide guidelines to help SSP personnel implement a responsible, security-conscious, and consistent policy for effecting SSP exports, while allowing the SSP to meet the U.S. Government's obligations under NASA's international agreements involving Space Shuttle missions. These guidelines apply to SSP Closeout related activities of NASA as well as its contractors and subcontractors assisting the SSP in meeting its government obligations under international agreements.

This policy does not apply to company-to-company arrangements that fall outside the governmental commitments made in NASA's international agreements. During the course of NASA's human space flight activities, there will be significant potential for U.S. companies to initiate complementary company-to-company undertakings that fall outside these governmental commitments. The U.S. Government, including NASA, encourages and facilitates such business relationships. U.S. companies are responsible for compliance with U.S. export control laws and regulations during the course of these business transactions.

As a reminder, “export” includes:

Any shipment, transfer, or transmission of commodities, technology, or software:

a. Out of the U.S.

b. To a foreign person or a representative of a foreign person (a foreign national, a foreign interest, a foreign government or a foreign company within or outside the U.S.).

NOTE: Legal Permanent Residents (LPRs), or so called “green card” holders, are not considered “foreign persons” for the purpose of these laws/regulations.

U.S. citizens or LPRs are responsible for complying with all U.S. laws including export regulations.

5.1 REGULATORY FRAMEWORK

Exports of SSP technical data, software, and equipment may be subject to controls under U.S. export regulations administered by either the Department of State (International Traffic in Arms Regulations [ITAR], 22 C.F.R. Part 120 et seq.) or the Department of Commerce (Export Administration Regulations [EAR], 15 C.F.R. Part 730 et seq.).

The ITAR imposes export controls on defense articles and related technical data enumerated on the United States Munitions List (USML), 22 C.F.R. Part 121. Launch vehicles and most spacecraft, including the Space Transportation System, are defense articles on the USML. Technical data includes information required for the design, development, production, manufacture, assembly, testing, repair, maintenance, modification, operation, processing or use of defense articles. Technical data also includes software directly related to a defense article.

The ITAR also controls the provision of defense services, which includes the furnishing of assistance (including training) to foreign persons in the design, development, manufacture, production, testing, repair, maintenance, modification, operation or use of defense articles. As a matter of clarification, an International Space Station (ISS) element payload is controlled under the EAR, as described below. Provision of Shuttle data that is in the public domain to a foreign ISS element provider to enable NASA to ensure that the element provider builds its ISS element to be compatible with Shuttle for transport to the ISS (e.g., analytical payload analyses) does not constitute the provision of defense services to the foreign partner. The same analysis would apply to any other Shuttle payload subject to the EAR.

The EAR imposes controls on the export of certain dual-use items (i.e., those with both non-military and military uses) for national security, foreign policy, or other reasons. EAR-controlled items are listed on the Commerce Control List (CCL), 15 C.F.R. Part 774, and fall within 10 technology categories, including electronics, computers, sensors, lasers, propulsion systems, space vehicles, and related equipment. ISS hardware, and ISS technical data that is not detailed design, development,

manufacturing, or production data is subject to control under the EAR. ISS or Space Shuttle payloads and payload technical data may be subject to control under either the EAR or the ITAR, depending on the nature and functional technical characteristics of the payload. Determinations as to whether specific payload data is under the EAR or the ITAR will be coordinated between the SSP Closeout Export Control Representative (ECR) and the appropriate Center Export Administrator (CEA). These determinations will be documented to the appropriate SSP closeout organizations and contractors for implementation.

Under either regulatory framework, information concerning general scientific, mathematical, or engineering principles commonly taught in schools, colleges, or universities do not fall within the definition of technical data. Neither does information in the public domain, nor that made available to the public after being approved for public release by the cognizant U.S. Government agency. Non-technical Shuttle data also does not fall within the definition of technical data. Non-technical Shuttle data includes management and schedule information, programmatic requirements, and information on function or purpose or general, high-level system descriptions. All such data is not subject to export controls under the EAR or ITAR.

An export license under the EAR or ITAR may be required to export technical data in support of Space Shuttle Closeout activities. Alternatively, a regulatory exemption/exception to the requirement for an export license or other regulatory approvals may enable the export without the need to obtain a license. As mentioned above, no license or other approval is necessary for technical data that has been approved for public release by NASA pursuant to 22 C.F.R. 125.4(b)(13).

Another exemption is available for technical data to be exported in furtherance of a NASA contract if the contract provides for the export and the technical data does not disclose the details of design, development, production, or manufacture of any defense article, i.e., 22 C.F.R. 125.4(b)(3). Other relevant ITAR exemptions are for items exported for official U.S. Government use or in furtherance of an international cooperative program, 22 C.F.R. 126.4(a). Use of these exemptions requires the approval of a CEA or his designee.

Failure to comply with export control laws and regulations may result in fines; criminal penalties levied both against NASA and individual employees; loss of exporting privileges and seizure of goods in addition to disciplinary action up to and including dismissal.

5.2 RESPONSIBILITY

The NASA Export Control Program is jointly implemented by the Programs and the Centers. Each has designated an official to oversee export control and has established processes to ensure compliance with all U.S. export control laws and regulations. The SSP Closeout ECR, appointed by the SSP Manager, and the Center Export Administrators work together to assist individuals in determining the steps necessary for export control compliance.

5.2.1 Center Export Administrator

Each Center has a CEA appointed by the Center Director who is responsible for assessing and ensuring compliance of all Center activities with U.S. export control laws and regulations. The CEA is knowledgeable of current EAR and ITAR requirements applicable to NASA programs; ensures the completion and maintenance of necessary licensing documents regarding specific transfers; approves and routes all licensing, commodity jurisdiction, and commodity classification requests for Center projects to NASA Headquarters for processing by the Department of Commerce or the Department of State, as appropriate; is involved in the Center process for approving foreign visitors; and assists program and project personnel in determining the appropriate export controls for publishing and disseminating scientific and technical information.

5.2.2 Center Transportation Officers

Center Transportation Officers shall, in consultation with the CEA, ensure that all exports and transfers of commodities, technologies, and software under Center programs are accompanied by appropriate and accurate export control documentation, including validated licenses, foreign consignee statements, or other authorizing documents and markings, as needed, as well as Shipper's Export Declarations (SEDs) in all appropriate cases.

5.2.3 SSP Manager

The SSP Manager is responsible for ensuring that all exports in support of the SSP are consistent with NASA policy, U.S. laws and regulations, and that all export control matters are considered and resolved. In consultation with the CEAs, the SSP Manager is ultimately responsible for ensuring that SSP Closeout activities include:

a. Appropriate safeguards for commodities, technologies, and software exported or transferred pursuant to international agreements.

b. Provisions of necessary information to the CEAs to permit a sound determination as to the need for export licenses or other documentation in specific activities, and for the completion of such documentation, where necessary.

c. Adequate lead time for the processing of export licenses, where necessary.

The SSP Manager, with the assistance of the CEAs, will follow the process in the NASA Export Control Program to determine an item's eligibility for export or transfer to required destinations and foreign entities under the ITAR. The SSP Manager will establish Program policy for export control within the SSP to ensure consistent implementation and compliance with U.S. export control laws and regulations. In order to fulfill the designated responsibilities, the SSP Manager will appoint an SSP ECR to manage the export control compliance process for the SSP closeout activities.

5.2.4 SSP Closeout Export Control Representatives

The SSP Closeout ECR serves as the primary point of contact on SSP export control issues and is responsible for following the process in the NASA Export Control Program to ensure compliance of all Program activities with U.S. export control laws and regulations. Specifically, the SSP Closeout ECR shall:

a. Serve as the SSP authority on interpretation of the NASA/SSP ECP.

b. Coordinate with appropriate SSP personnel and the appropriate CEA on the export classification of SSP data.

c. Process SSP export authorization requests.

d. Assist in completing and maintaining necessary export documentation/records.

e. As required, coordinate with the NASA Export Administrator, NASA CEAs, Center Export Counsel, and Transportation Officers on export control matters affecting the SSP.

f. Prepare and distribute appropriate information regarding export control regulations for SSP employees.

g. The SSP training program shall be coordinated with the center export control training to assure continuity and flow of applicable information.

5.3 SSP EXPORT CONTROL REVIEW PROCESS

The SSP export control processes documented in this volume apply only to hardware, activities, and data which are directly related to the SSP. Prior to each export, the responsible SSP personnel will review the items/data to be exported and will ensure the export is in compliance with SSP, relevant authority documents, i.e., international agreements, foreign contracts and NASA Agency policies. When questions arise as to whether the export is allowable, the issue will be forwarded to the SSP Closeout ECR for a determination. The SSP Closeout ECR, in consultation with the CEA if necessary, will make a determination as to whether the export is in compliance. Reference Section A for the SSP export control process flow.

The SSP Closeout ECR will document and maintain records on all export decisions made by the SSP. These decisions will be maintained in Section C of this document. This document will be used by SSP personnel to assist them in making future export decisions.

5.3.1 Space Shuttle Data

5.3.1.1 SSP Public Release Policy

The definition of what Shuttle data is releasable to the public is critical to export control compliance since once this data is approved for release it is no longer subject to U.S. export controls. The data documented in this section or designated in Section C is

approved for public release. Shuttle data may only be released to the public if already in the public domain or approved for public release pursuant to this policy or other regulatory mechanisms.

Over the years of the SSP, many types of Space Shuttle data have, in fact, been placed in the public domain by NASA through public release mechanisms or through routine release without restrictions to previous foreign cooperative partners, Space Shuttle users and partner crew members. This data includes Shuttle interface, design and performance specifications (e.g., core Interface Control Documents, Interface Definition Documents, Program Specifications), detailed design requirements and operational requirements (e.g., NSTS 07700, Interface Control Documents, Payload Integration Plans, Mission Integration Plans, Integration Plans, Mission and Flight Design documents, cargo systems manuals, flight and ground procedures, flight software requirements or interface documentation, payloads operations checklists, systems console handbooks, joint integration plans, trajectory profiles, ground control and analysis software), engineering mathematical models (i.e., loads and thermal models) and results of these models when this data was unclassified and did not disclose Space Shuttle production or manufacturing information. Continued public release of these types of data is approved.

Technical data that discloses detailed technical aspects of Shuttle Program upgrades or other new development is not approved for public release under this authority. In such case, this technical data must be specifically reviewed and approved for release into the public domain by the Program Manager.

While this policy approves the release of this data to the public, all other agency and Program requirements still apply for the actual release of new documents or data products to the public.

5.3.1.2 Public Affairs Releases

Finally, it should be noted that the SSP Shuttle data release process laid out in this SSP policy does not apply to PAO or Freedom of Information Act (FOIA) determinations to release any SSP data as part of their public affairs or FOIA mandates.

5.4 EXPORT CONTROL RECORDS

Records shall be maintained for SSP exports of items on the CCL or on the USML for a minimum period of five years beyond the expiration date of the program. It is the responsibility of the organization that initiates and executes the export to ensure that the proper records are maintained. At a minimum, records to be maintained include: documentation of method of release of controlled data with date and circumstances, copy of or citation of specific international agreement or contract authorizing need for the transfer of controlled data, who data was released to, and any marking statements included with the data indicating any controls required. SSP Closeout personnel will comply with the NASA Export Control Program and center and contractor policies and guidelines that establish standards for what data must be maintained for each export. Release of public domain data to a foreign person requires no records be maintained.

However, when data is approved for public release, documentation of that authorization should also be maintained.

6.0 SSP RECORDS MANAGEMENT

The SSP Closeout Office has established this policy in order to ensure the agency's records management policies, as documented in NPD 1440.6, NASA Records Management and NPR 1441.1, NASA Records Retention Schedules, are properly implemented. The purpose of this policy is to effectively and efficiently manage the Program's records, regardless of format or media (including paper, microform, electronic and audiovisual). SSP Closeout management shall implement processes and controls to properly preserve and retire official Program records in accordance with NPR 1441.1.

This policy applies to all official SSP records. NASA manages the records management process through the individual NASA centers. The centers are responsible for implementation of effective records management programs at their centers. The Program works with each center's Records Manager in implementation of the SSP records management processes.

6.1 BACKGROUND

Records are defined in 44 U.S. Code Section 3301 as:

> All books, papers, maps, photographs, machine readable materials, or other documentary materials, regardless of physical form or characteristics, made or received by an Agency of the United States Government under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that Agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the Government or because of the informational value of data in them. Library and museum material made or acquired and preserved solely for reference or exhibition purposes, extra copies of documents preserved only for convenience of reference, and stocks of publications and of processed documents are not included.

6.2 RECORDS OF PROGRAMMATIC AND TECHNICAL VALUE

One primary category of records the agency intends to maintain contains information that may be of programmatic or technical value to later Programs. What information will be of value to a later program is a difficult determination to make. It greatly depends upon the course space flight and technology take in the future. In general, technical design records, analysis methods, technical methods, and processes should be maintained. There is some technical data which is so specific to SSP hardware as not to be of any use to future programs. This would include detailed procedures for processing specific SSP hardware systems, time age cycle data on SSP hardware which will not be reused and many other Shuttle-unique records that are only of value for Shuttle operations.

Each element and project shall determine which of its programmatic and technical records should be maintained for future Programs and for how long they are retained per NPR 1441.1. These records may currently be maintained in many different systems of records, data systems, and/or formal documents. Each element and project shall establish a process to ensure that its technical records are reviewed to determine whether they will be of value to future programs and should be retained past the end of the Shuttle Program. They shall classify each record as either permanent (meaning the records will eventually be transferred to the National Archives and Records Administration) or temporary (with a retention period of between 0 and 30 years).

Records for facilities (e.g., operations and maintenance, drawings, etc.) should be considered facility records, unless the facility was specifically built for Shuttle operations and is planned to be destroyed after its support to the SSP is over.

6.3 SHUTTLE RECORDS RETENTION

NPR 1441.1 details what records are classified as official records. Each record category listed in NPR 1441.1 has a retention assigned which specifies whether the records are permanent or temporary and, if temporary, how long they are to be kept. The NPR is written for all NASA programs and is not specific to Shuttle records. This section is an attempt to add clarification to the specific retention approach for Shuttle records.

For “temporary” records that are to be kept for 10 years or less, consider retaining only such temporary records “in-place” instead of sending them off to storage at the Federal Records Center (FRC). The ability to store records “in-place” must be appraised for each location and may not be an option for all contractors or NASA centers.

Long-term temporary and permanent records that will not be actively used by follow-on programs must be dispositioned in cooperation with the local center Records Manager and according to records retention schedules.

If SSP records will be required by other NASA programs following completion of SSP, the requirement is to provide copies of the records to the program that will need them, then disposition the original records in accordance with the retention schedules. However, in instances where copying of major collections of records would be required, the following exception may be considered:

> Instead of transferring original long-term temporary or permanently valued records to the FRC or to the National Archives, they may be transferred to the program that will require use of those records. As an example, this could include the Reuseable Solid Rocket Booster project records which may be used in support of the Space Launch System (SLS) Program. These records must continue to be identifiable as Space Shuttle records after they are transferred to the other program. A formal written agreement that generally describes the records involved, and that states the requirement to retain Shuttle identity of the records, will be required for transfer of permanent records from the office of origin to a new NASA organization. This

agreement will require concurrence by center and agency records management personnel.

Section D, Table D.1 is provided as a reference for addressing Shuttle data elements at a macro level. It lists groups of records and gives guidance on the proper retention schedule for each group. This table provides an overview of which SSP records will be retained and for how long they will be retained. Retention periods listed in this table can be extended or reduced in accordance with NPR 1441.1 as best determined and approved by the affected element or project. This table can be of help in identifying the retention schedule for records that are not yet listed in Table D.2.

The remaining tables in Section D are a collection of listings that contain all SSP records, including project records, with the specific retention schedule that has been identified for each of these SSP records. This table is a living document which will be updated as retention schedules are identified for specific records. The intent of this table is to clearly document the decisions which have been made by the SSP record owners on what the correct retention schedule is for each record. This list will also be used by other programs to identify records that they wish to have transferred to them.

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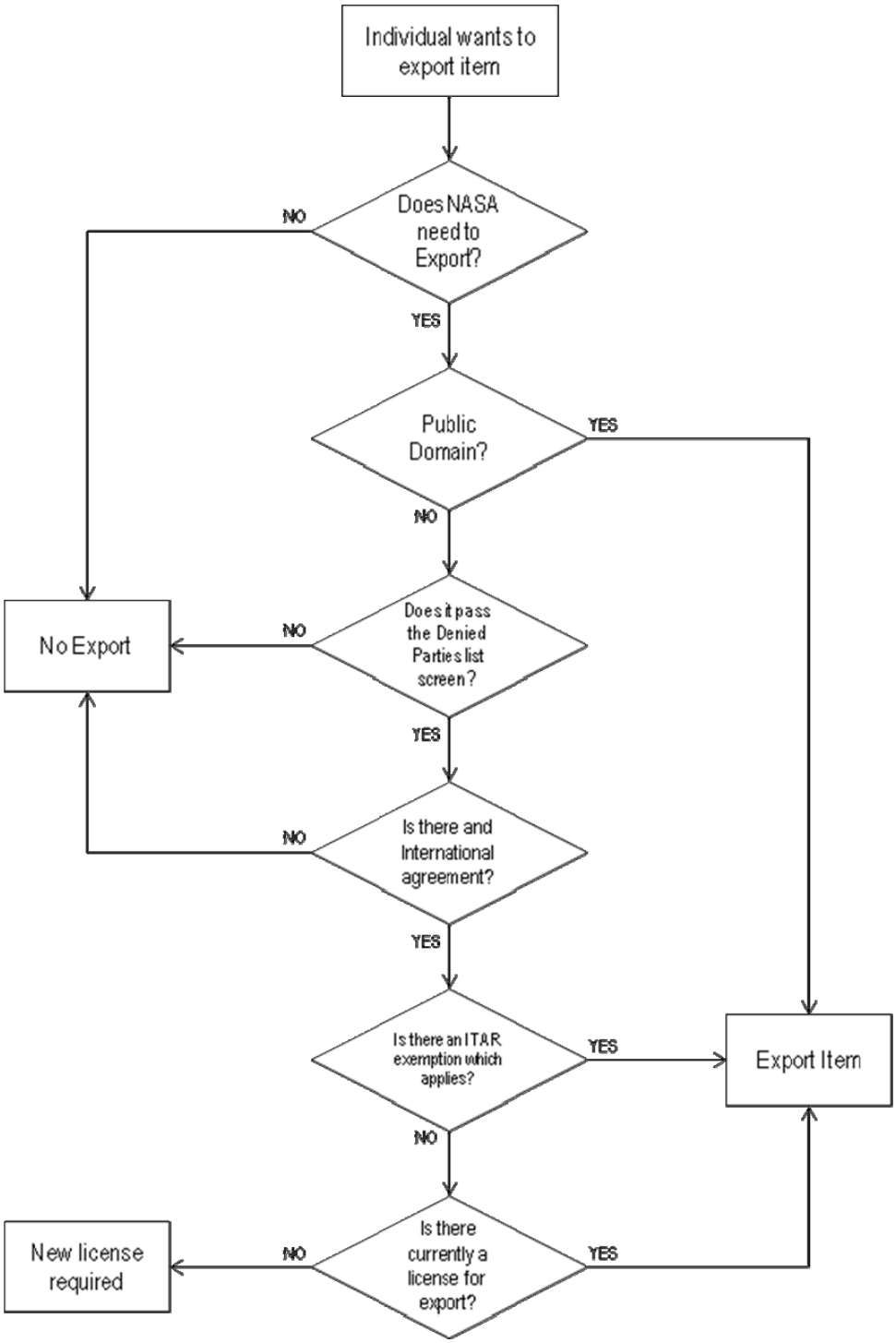
SECTION A

SSP CLOSEOUT EXPORT CONTROL PROCESS

FIGURE A-1
SSP EXPORT CONTROL PROCESS FLOW



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SECTION B

INFORMATION REQUIREMENTS

B1.0 INFORMATION TYPES

For the purpose of establishing consistent classifications for SSP IRs, the following information types and definitions are applicable. They are presented for use by project offices and procuring activities in stating IRs to contractors and other sources developing SSP information.

Type 1 Information: Type 1 information must be submitted for approval to the appropriate NASA office having final authority over the concepts, techniques, and/or requirements stated therein prior to implementation. Deviations from or changes to approved Type 1 information shall also require approval prior to implementation.

Type 2 Information: Type 2 information is provided for coordination, visibility, integration, review, and/or management control. This information does not require formal review and approval. Information which is formally delivered by one element to another for review or integration purposes is also classified as Type 2.

Type 3 Information: The preparation of Type 3 information is required by NASA, but is not delivered or otherwise made available except upon specific request. Type 3 IRs are cited when content, format, or availability standards apply. All other information developed within the normal course of program effort or used to fulfill program requirements, whether specifically cited for submittal or not, shall be made available on request.

NOTE: Type 2 and Type 3 information required by the SSP may be classified higher by the project offices or procuring activities as their needs dictate. (i.e., End Item Specification is listed in Table B.5 as a Type 2 document, 2CB-1, for SSP review, but is procured as a Type 1 document for project office approval).

B2.0 INFORMATION REQUIREMENTS TABLES

Information produced for use by the SSP, or for formal exchange between program elements shall adhere to the requirements cited or referenced in the following tables. Requests for changes, waivers, or deviations to these requirements are to be coordinated with and have the concurrence of the appropriate SSP Office of Primary Responsibility (OPR) prior to processing for PRCB approval.

Tables B.1 thru B.3 contain an index of IRs which are further defined in Tables B.4 thru B.6.

Tables B.4 thru B.6 contain or refer to detailed descriptions of each requirement in each of the three classifications of information: submitted for approval (Type 1), provided for review or integration (Type 2), and furnished only upon specific request (Type 3), respectively.

B2.1 TABLE CONTENT

The columns and entries in Tables B.1 thru B.6 are explained as follows:

IR Number: This column contains a number to identify each IR. The first digit indicates the type of information (i.e., Type 1, 2, or 3). The next two letters designate a functional grouping (see below) to which the contents of the information most closely relate. The digits following the hyphen are assigned sequentially within each grouping.

Functional groups are:

CB - Configuration Baseline

EN - Engineering

MA - Management

MT - Manufacturing/Test

SR - Safety, Reliability, and Quality

Information Title: This column contains a brief descriptive name for the information. A title may be generic when it covers numerous issues of similar information.

SSP OPR: This column identifies the Program Office organization primarily responsible for the establishment and maintenance of an SSP IR. The SSP OPR is point of contact for detailed criteria and decisions regarding validity, substantiation, and interpretation of the requirements as well as changes, deviations, and waivers thereto. Formal center, agency, and project requirements for information from other projects or agencies must be coordinated with and sponsored by an SSP OPR.

Information Description/Schedule: This column provides or references a description of the information requirement, content, format, media, schedules, and other specifics necessary for fulfilling the requirement. Specifications, standards, and other publications providing particulars or instructions regarding production of the information may also be referenced. The applicable issue and date for publications or criteria referenced herein and not contained in this appendix or its sections are cited in Paragraph 2.0. Schedules are specified for the submittal of Type 1 and Type 2 information and for the availability of Type 3 information, as appropriate.

Baseline Origin: This column identifies the SSP baseline document (NSTS 07700) from which the information requirement originates. When the requirement originates from a sub-tier applicable document of an NSTS 07700 volume, that document is also listed.

TABLE B.1
INDEX OF TYPE 1 SSP INFORMATION REQUIREMENTS
INFORMATION SUBMITTED FOR APPROVAL

IR Number	Information Title
	Configuration Baseline (CB)
1CB-1	Interface Control Document (ICD)
	Engineering (EN)
1EN-1	Fracture Control Plan
	Management (MA)
1MA-1	Space Shuttle Program Closeout Requirements (NSTS 07700, Volume XX)
1MA-2	Program Operating Plan (POP)
	Manufacturing Test (MT)
1MT-1	System Master Verification Plan (NSTS 07700-10-MVP-01 - Book 3)

TABLE B.2
INDEX OF TYPE 2 SSP INFORMATION REQUIREMENTS
INFORMATION PROVIDED FOR REVIEW/INTEGRATION

IR Number	Information Title
	Engineering (EN)
2EN-1	Control Materials List
2EN-2	Materials Properties Deviation/Waiver Requests
2EN-3	Material Control Worksheets
2EN-4	Materials Selection List
	Management (MA)
2MA-1	Resource Reporting and Statusing
2MA-2	Contractor Financial Reporting (NASA Form 533 Series)
2MA-3	Materials Control and Verification Program Management Plan
	Manufacturing/Test (MT)
2MT-1	Acceptance Test and Checkout Requirements Document
2MT-2	Verification Implementation Plans
2MT-3	Certification Status Report
2MT-4	Materials Tests Requests
2MT-5	Requirements Verification Completion Approval and Status

TABLE B.3
INDEX OF TYPE 3 SSP INFORMATION REQUIREMENTS
INFORMATION FURNISHED ONLY UPON REQUEST

IR Number	Information Title
	Manufacturing/Test (MT)
3MT-1	Certification Requirements
3MT-2	Certified Hardware List
3MT-3	Subsystem Certification Plans
	Safety, Reliability, and Quality (SR)
3SR-1	Nonconformance Reporting
3SR-2	Contractor Workmanship Standards
3SR-3	List of Critical Processes

TABLE B.4
INFORMATION SUBMITTED FOR APPROVAL

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Configuration Baseline (CB)	
1CB-1	Interface Control Document (ICD)	HA-Trans. Ofc.	The system level ICDs shall provide engineering and dimensional data sufficient to document the interface(s) between two or more program elements. The required ICDs are specified in NSTS 07700, Volume XX - Book 2, Appendix 10, Flight and Ground System Closeout Specification.	Volume XX - Book 2 Apdx. 10
			Engineering (EN)	
1EN-1	Fracture Control Plan	HA-Trans. Ofc.	This plan shall define the objectives, logic procedures, required actions, responsibilities, management controls, and interrelationships with other Space Shuttle Program Definition and Requirements for implementing and maintaining a Fracture Control Program Plan for preventing structural failures due to cracklike flaws on parts designated as critical to vehicle and crew survival. Fracture critical parts identification will be based on the parts function, load, environment, lift analysis, material, and accessibility for inspection during fabrication and vehicle operation. The plan shall be developed in accordance with SE-R-0006, NASA/JSC Requirements for Materials and Process.	Volume XX - Book 2 Apdx. 10
1EN-2	Structural Design Loads Data Book, Orbiter Ferry Loads	HA-Trans. Ofc.	This book defines structural loads design data for the Orbiter vehicle for ferry flight. The criteria are produced in a format which permits use by Orbiter element and is produced and updated as required to support Closeout ferry milestones.	Volume XX - Book 2 Apdx. 10

TABLE B.4
INFORMATION SUBMITTED FOR APPROVAL - Concluded

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Management (MA)	
1MA-1	Space Shuttle Program Definition and Requirements (NSTS 07700, Vol. XX)	HA-BM&I Ofc.	These documents contain program definition information and SSP closeout baseline requirements. All elements of the SSP baseline will be included in, attached to, or referenced from these documents. The requirements stated are applicable to all Space Shuttle participants and certain of these will be passed on to contractors/subcontractors. Change processing requirements are contained in Volume XX - Book 2, Apdx. 04.	
1MA-2	Program Operating Plan (POP)	HA-BM&I Ofc.	Plan preparation instructions shall be provided via "calls" issued by the Manager, Space Shuttle Program, normally on six-month intervals to support budget plans.	Volume XX - Book 2, Apdx. 15
			Manufacturing/Test (MT)	
1MT-1	System Master Verification Plan (NSTS 07700-10-MVP-01 - Book 3)	HA-Trans. Ofc.	This plan consists of multiple volumes. Volume I shall provide the purpose and scope of the overall plan and shall describe the approach to the Shuttle System verification and verification process. It shall establish the guidelines and criteria to be applied throughout the Shuttle System and shall summarize the total test program. The Master Verification Plan is part of the SSP baseline by reference from NSTS 07700, Volume XX - Book 2, Apdx. 10 and shall be maintained in accordance with Volume XX - Book 2, Apdx. 04, Paragraph 4.3. Related verification plans are described in NSTS 07700-10-MVP-01 - Book 3.	Volume XX - Book 2, Apdx. 10

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Engineering (EN)	
2EN-1	Control Materials List	HA-Trans. Ofc.	A detailed materials list shall be provided by each project office for materials approved for use in and around the vehicle during ground operations. The list shall include all nondeliverable items such as cleaning fluids, repair components, protective covers, etc., used during ground operations. The list shall also include quantity or usage limitation and any other limitations as required.	Volume XX - Book 2, Apdx. 10
2EN-2	Materials Properties Deviation/Waiver Requests	HA-Trans. Ofc.	Materials deviations/waivers shall be required in accordance with NSTS 07700, Volume XX - Book 2, Apdx. 04 for all materials that do not meet established acceptance requirements. All materials deviation/waivers shall provide sufficient rationale and justification as to why materials not meeting the requirements are considered acceptable for Space Shuttle usage and do not constitute an unacceptable hazard. The following information shall be provided as a minimum: a. Detail drawing and dash number b. Major assembly drawing and dash number c. Originating department or group d. Shuttle element e. Number of parts required per end item f. Material name, generic (e.g., silicone, elastomer, etc.)	Volume XX - Book 2, Apdx. 10

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
2EN-2 (Concluded)			g. Manufacturer's designation (e.g., EPON 828, etc.) h. Manufacturer (e.g., Shell Chemical; etc.) i. Material specification j. Specification source k. End item effectivity l. Location m. Weight (nonmetallics only) n. Surface area (nonmetallics only) o. Reason for request p. Test data q. Rationale and applicable photographs r. Alternate materials considered s. Additional information Deviation/Waiver submittal schedule shall be as required.	
2EN-3	Material Control Worksheets	HA-Trans. Ofc.	Materials worksheets shall be used in implementing a systematic and continuing materials configuration management program to document, report, and control Shuttle materials usage, status, test, evaluation, substitution, and verification. Requirements, procedures, instructions, and responsibilities for preparing materials worksheets shall be generated by the procuring activity for its related suppliers/contractors.	Volume XX - Book 2, Apdx. 10

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
2EN-3 (Concluded)			Shuttle hardware materials usages will be identified and documented on Standard Materials Worksheets, JSC Form 1392 (or approved equivalent). Provisions will be made for transmittal of the standard materials worksheets to the central data storage and retrieval system maintained by the system contractor.	
2EN-4	Materials Selection List	HA-Trans. Ofc.	To provide a list that identifies materials for selection and use in the design and fabrication of Space Shuttle hardware. Materials shall be selected by considering the operational requirements for the particular application and the design engineering properties of the candidate materials consistent with rated conformance to SSP materials requirements. Material Selection Lists shall be used as a basis for all materials selections in both the as-designed and as-built hardware configurations. Materials selection lists shall contain the following information as a minimum: a. Metallic materials 1. Material code 2. Alloy 3. Heat treatment 4. Generic identification and form 5. Material specification 6. Maximum/minimum operating temperature	Volume XX - Book 2, Apdx. 10

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
2EN-4 (Concluded)			7. Material ratings for: (a) Corrosion (b) Stress corrosion susceptibility (c) Fluid systems compatibility 8. Material thickness b. Nonmetallic materials 1. Material code 2. Material description (function/trade i.d./generic) 3. Material manufacturer 4. Material specification 5. Material ratings for: (a) Flammability (b) Offgassing (odor, carbon monoxide, total organics) (c) Thermal/vacuum stability (VCM and weight loss) (d) Age life (e) Fluid systems compatibility 6. Material thickness Additions of materials to the selection list shall require approval of the NASA procuring activity. Copies of Materials Selection Lists categorized with respect to conformance to the requirements of the reference documents shall be submitted to the SSP.	

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Management (MA)	
2MA-1	Resource Reporting and Statusing	HA-BM&I Ofc.	These reports provide project status against the current year cost phasing plan. They provide cost and manpower status per the Format 6 plans for all major prime contracts. These data are reviewed monthly in detail in the Program Control Monthly Review and in summary form in the Manager's Monthly Review.	Volume XX - Book 2, Apdx. 15
2MA-2	Contractor Financial Reporting	HA-BM&I Ofc.	The forms described below are the basic reporting medium to be used by contractors when reporting resource information to NASA. These forms shall be completed in accordance with the instructions on the reverse side of the forms and additional instructions set forth in NHB 9501.2C. a. NASA Form 533M is a monthly cost report that is due on a negotiated date normally not later than 10 operating days following the close of the contractor's monthly accounting period. A copy of this report is due to the SSP Office not later than the 15th day of each month. b. NASA Form 533Q is a quarterly report for obtaining costs projections that is due on a quarterly frequency date normally not later than the 15th day of the month preceding the first quarter being forecast. A copy of this report is due to the Space Shuttle Program Office not later than the 20th day of the month preceding the first quarter being forecast.	Volume XX - Book 2, Apdx. 15, NPG 9501.2C

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
2MA-3	Materials Control and Verification Program Management Plan	HA-Trans. Ofc.	This plan shall define the objectives, logic, procedures, required actions, responsibilities, management controls, and interrelationships with other Space Shuttle Program Definitions and Requirements for implementing and maintaining a Materials Control and Verification Program for all materials used in Space Shuttle hardware, interfacing GSE, and materials used in fabrication assembly processes. The plan will define materials management responsibilities for the procuring activity (related contractors and NASA inter-center coordination) and will describe the methods to be used in the identification, selection, evaluation, verification, documentation, and reporting of materials usages in Space Shuttle hardware. The plan shall also describe the method of identification of inter-center provided materials used in flight and related GSE hardware, and a system for assuring that these materials meet program requirements. Inter-center hardware is defined as component or subassembly hardware provided by one project to another project for installation. The plan shall include procedures and instructions for a systematic and continuing program to report and control materials used, status, test evaluations, substitutions, and verification. The plan shall be submitted to the SSP during the review cycle and 20 days after project office approval.	Volume XX - Book 2, Apdx. 10

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Manufacturing/Test (MT)	
2MT-1	Acceptance Test and Checkout Requirements Document	HA-Trans. Ofc.	Defines factory acceptance checkout requirements from which the checkout plans and procedures are prepared. Contains detail requirements with pass/fail limits which must be satisfied during factory checkout. Also, provides general requirements regarding retest, constraints, data, quality and safety. Supports element PDR and CDR.	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3
2MT-2	Verification Implementation Plans	HA-Trans. Ofc.	These plans describe the implementation approach to be followed for functional partitioning.	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3
2MT-3	Certification Status Report	HA-Trans. Ofc.	This report identifies and monitors the certification status of configurations identified in element subsystem plans and includes: a. Planned certification test/analysis schedule and status b. Identity of current test/analysis by certification requirement number c. Test hardware documentation status d. Test agency identity e. Approval status Submittal schedule is monthly starting with first scheduled certification test or analysis.	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
2MT-4	Materials Tests Requests	HA-Trans. Ofc.	All individual materials, configurations, and systems requests for testing shall be submitted to the responsible group that has the overall engineering responsibility for materials control and verification. The applicable project office's organization assigned this responsibility shall review, disposition, and track all materials test requests.	Volume XX - Book 2, Apdx. 10
2MT-5	Requirements Verification Completion Approval and Status	HA-Trans. Ofc.	This data base shall include the following verification program information, indexed by the appropriate paragraph in NSTS 07700, Volume XX - Book 2, Apdx. 10, or appendices, for the applicable flight element, combined element, integration hardware, or ground support end item/facility or other item: 1. CEI/SS Specification requirement number (applicable paragraph) 2. Requirement description (short narrative summary) 3. Verification method 4. Identification of implementing plans, through applicable Master Verification Plan volume 5. Identification and location (data repository, program office files, or data bases accessible by SSP personnel) of objective supporting data, (i.e., test procedures with data certified by Quality Assurance, test reports, and/or analysis reports) 6. Tested versus current authorized configuration with justification or explanation of differences	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3

TABLE B.5
INFORMATION PROVIDED FOR REVIEW/INTEGRATION - Concluded

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
2MT-5 (Concluded)			7. Completion of verification approval date 8. Flight element/launch and landing site contractor approval (including printed or typed names and organizations) 9. Government (NASA or U.S. Air Force) approval (including printed or typed names and organizations) Current status to be provided semiannually (as of January 1 and July 1). Additional status reports to be provided to support major program and test readiness reviews. Data must be compatible for PCASS (reference NSTS 07700, Volume XX - Book 2, Apdx. 10).	

TABLE B.6
INFORMATION FURNISHED ONLY UPON REQUEST

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Manufacturing/Test (MT)	
3MT-1	Certification Requirements	HA-Trans. Ofc.	This document shall define the Certification Requirements applicable to each item of subsystem hardware to certify its design. The Certification Requirement shall include the following: a. Part numbers, names, and effectivity b. Test part number, serial number, test request number, and certification requirement number c. Certification method (test, analysis) d. Specimen size and allocation to tests e. Other Part Number (P/N) certified by this test/analysis f. Configuration differences between test part and production part g. Hardware location on flight vehicle (station number) h. Type of test (design proof, mission simulation, etc.) i. Sequence and environments of tests j. Test durations k. Pass/fail criteria and tolerances l. Operational mode of equipment during test (on/off)	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3

TABLE B.6
INFORMATION FURNISHED ONLY UPON REQUEST - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
3MT-2	Certified Hardware List	HA-Trans. Ofc.	The Certified Hardware List is a listing by subsystem and part number of all certification level hardware which has been certified by the contractor and approved by the NASA for flight. It is used at FRR to certify flight readiness. The Certified Hardware List documents the fully certified hardware at any point in the program. It is developed from the subsystem certification index (Subsystem Certification Plan) as certification is completed and approved. It should include the following: a. Item part number b. Item nomenclature c. Item certification requirement numbers d. Subsystem involved e. Certification method f. Certification effectivity g. Certification report reference	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3
3MT-3	Subsystem Certification Plans	HA-Trans. Ofc.	These plans provide for documentation of all subsystem level certification requirements, including method of resolution (analysis, test, etc.), to permit internal coordination and approval prior to implementation. This family of plans identifies all vehicle subsystem and GSE certification requirements. The plans describe the method for satisfaction of each requirement for certification of design and hardware adequacy at progressive milestones (i.e., Approach and Landing Test [ALT], Orbital Flight Test [OFT], First Manned Orbital Flight [FMOF], and other significant events as appropriate).	Volume XX - Book 2, Apdx. 10, MVP-01 - Book 3

TABLE B.6
INFORMATION FURNISHED ONLY UPON REQUEST - Continued

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
3MT-3 (Concluded)			a. The first section of each plan shall list the subsystem and major assembly level certification requirements corresponding to the design and performance specified in the respective subsystem requirements handbook. For each requirement, the certification method will be identified (analysis or test) and a description provided as to the degree each contributes to satisfaction of the requirement. The type of testing to be performed at each level and the type of data to be obtained will be specified along with a brief description of any analysis required. The key events or milestones that are constrained by each requirement will be identified. The document(s) that provide a detailed definition of the implementation plan will also be referenced. b. The second section of each plan shall contain a matrix of all subsystems components or GSE end item certification and identify the certification method for each type of performance and environment requirements. For certification tests, the number of specimens, test type, test rigor, and quality assurance requirements will be summarized. The extent of any analysis or simulation required will also be described, identifying data sources, analytical techniques and the type of results to be provided. Where appropriate, reference will be made to documentation that further details the method of implementation.	

TABLE B.6
INFORMATION FURNISHED ONLY UPON REQUEST - Concluded

IR Number	Information Title	OPR	Information Description/Schedule	Baseline Origin
			Safety, Reliability, and Quality (SR&Q)	
3SR-1	Nonconformance Reporting	NA	NSTS 5300.4(1D-2) provides requirements for nonconformance reporting.	Volume XX - Book 2, Apdx. 10
3SR-2	Contractor Workmanship Standards	NA	Where workmanship standards are necessary, they shall be based upon related process specification requirements (Electrical Assembly, Fabrication Processes, Structures, Reference Information). The standards shall contain appropriate product acceptance/rejection criteria in visual form.	Volume XX - Book 2, Apdx. 10
3SR-3	List of Critical Processes	NA	A List of Critical Processes shall be maintained. As a minimum, the list(s) shall contain the specification/procedure number, title, revision, and identification of documents. All revisions and updates shall be available for review.	Volume XX - Book 2, Apdx. 10

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SECTION C

SHUTTLE DATA IDENTIFICATION FOR EXPORT CONTROL

C1.0 PURPOSE

The purpose of this section is to establish detailed guidance on what data and products must be controlled for reasons of export control. Table C.1 identifies common data and products used in support of the Shuttle Program and documents whether the products have been approved for export or must be reviewed and approved prior to export.

C2.0 SCOPE

The data and product categorization established by this section is applicable to all organizations and personnel involved in exporting data, hardware or software, associated with the SSP.

C3.0 RESPONSIBILITIES

The Space Shuttle Closeout Export Control Representative is responsible for the maintenance of this section.

C4.0 USE OF THIS SECTION

Individuals supporting the SSP may use this section to assist them in determining what data and data products may be exported to NASA International Partners (ISS and other foreign partners) or foreign contractors and what steps must be taken to properly export this data. Data or data products that have no legal restrictions on their export are noted as “uncontrolled”. Uncontrolled data or data products are not covered by the ITAR either because they have been approved for public release or the data is not technical data within the definition of the ITAR. When the data or product is marked as uncontrolled, no further action need be taken to export this data to a NASA partner who has a valid need for the data or product.

Data approved for public release is always uncontrolled. Therefore, it may always be exported. The fact that data is approved for public release by SSP, in this section, does not, in fact, release the data or relieve the data owners from following normal agency processes for the release of data or data products. Therefore, the data marked “uncontrolled”, in this section, may be freely exported but must go through the normal agency public release process prior to any release to the public.

When the data or data product is noted as “requiring approval”, it is still possible to export this data, but further steps must be taken. This will require formal approval by either NASA or contractor export control representatives, proper documentation, and at times, approval by the Department of State. In this case, the organization responsible for export control at the NASA center, program or contractor level should be contacted for assistance.

All data and data products are not listed in this section. When specific data or a product is not listed, it must be handled as “requiring approval” until a determination is made by the proper export control authority.

Classified national defense information is always considered controlled data. Normally this data will not be exported.

TABLE C.1
SHUTTLE DATA IDENTIFICATION

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
1.	Program Requirements. This includes program specifications, standards, System Integration Plans (SIPs), Verification Plans, math models, databooks, Project Management Plans, and any document which contains program direction.	These documents/ databases are contained in, or linked from, the Program Documentation Center.	HA	X	Can be either tech data or non-tech data.		X	
2.	Interface Control Requirements	- System ICDs	HA		X	X		
		- Payload ICDs		X			X	
		- Ground ICDs		X			X	
		- Standard interface drawings		X			X	
3.	Payload Integration Requirements. This includes both generic program requirements to fly payloads on the Shuttle and mission-specific requirements.	These documents are contained in the Payload Integration Library System (PILS). These include: - SIPs - Integration Plans - Program Integration Plans - Mission Integration Plans - All annexes of the above listed documents	HA	X	Can be either tech data or non-tech data.		X	In rare cases, these documents may contain proprietary data furnished by a payload customer. These documents must be controlled in accordance with the launch services agreement.

TABLE C.1
SHUTTLE DATA IDENTIFICATION - Continued

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
4.	Software							
	- Flight software code and techniques	Operational Increments (OIs)	HA		X	X		
	- Flight Software Requirements	Flight Software Requirements Documents	HA	X	X		X	
	- Launch Processing Software	- Launch processing system software	PH		X	X		
		- Checkout and launch control system software	PH		X	X		
5.	SSP Planning Manifest	Flight Assignment Working Group manifest	HA				X	
6.	Payload Safety Requirements	These documents are contained in PILS: - NSTS 13830 - NSTS 16979 SFMFT - NSTS 1700.7B - NSTS 1700.7B, Addendum - NSTS 18798 - NSTS 21111 - JSC 26943	NA	X	X		X	
7.	Shuttle Payload Safety Data	Payload Safety Review Panel safety data package	NA		X	X		

TABLE C.1
SHUTTLE DATA IDENTIFICATION - Continued

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
8.	Cargo Integration Data	- Cargo Integration Review (CIR) data packages	HA	X	X		X	
		- CIR briefing packages		X	X		X	
		- Cargo Compatibility Review briefing packages		X	X		X	
9.	Cargo Analysis	- Structural Analysis Reports	HA	X	X		X	In rare cases, these documents may contain proprietary data furnished by a payload customer. These documents must be controlled in accordance with the launch services agreement.
		- Thermal Analysis Reports		X	X		X	
		- Cargo models		X	X		X	
	Cargo Analysis Processes and Methodologies		HA		X	X		
10.	Operations and Maintenance Requirements and Specifications	NSTS 08171, Operations and Maintenance Requirements and Specifications Document, Files I thru IX, and all requirements change notices for these files.	HA	X	X		X	

TABLE C.1
SHUTTLE DATA IDENTIFICATION - Continued

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
11.	Detailed Design, Development, Manufacturing and Production (DDDM&P) data. Detailed design data is information which would enable precise replication or duplication of the whole item, or a part of the item. Detailed development data is design information related to all stages prior to serial production, such as: design, design research, design analyses, design concepts, assembly and testing of prototypes, pilot production schemes, design data, process of transforming design data into a product, configuration design, integration design, layouts. Production and manufacturing data is that data which would tell, in detail, the processes steps and techniques necessary to build an item. DDDM&P data applies to both flight systems and ground systems.	- Development trade studies	Project Offices		X	X		1. All DDDM&P data is controlled by the ITAR. This data is the most detailed data which would allow someone to manufacture the item. 2. Many SDS drawings are in the public domain, but since some are not, the system itself is treated as ITAR controlled.
		- Detailed projects drawings			X	X		
		- As-built drawings			X	X		
		- Built-to-print drawings			X	X		
		- Project drawing systems, such as, the Shuttle Drawing System (SDS) (see Note 2 to right)			X	X		
		- Detailed ground facilities and GSE drawings			X	X		

TABLE C.1
SHUTTLE DATA IDENTIFICATION - Continued

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
12.	Flight Rules	- Generic - Flight-specific	DA DA	X X	X X		X X	
13.	Flight Plan		DA	X	X		X	
14.	Flight Data File	- Payload deployment and retrieval systems Checklist (C/L) - Extravehicular Activity (EVA) C/L - Rendezvous Procedures - Post insertion C/L - Ascent C/L - Payload power downs - Entry C/L (post rollout proc) - Orbit Ops C/L - Photo/TV C/L	DA	X	X		X	
15.	Crew Training	- Shuttle Crew Training Catalog - Crew training lessons	DA	X	X X	 X	X	
16.	Realtime Mission Data	- Orbiter down link - Shuttle air-to-ground voice - Operational data reduction complex data	DA DA DA	 X	X X X	X X	 X	In rare cases, these products may contain proprietary or privacy act data. In these cases, this data must be controlled in accordance with the applicable agency policy.

TABLE C.1
SHUTTLE DATA IDENTIFICATION - Continued

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
17.	Launch Commit Criteria	NSTS 16007	HA		X	X		
18.	Work Authorization Documents (WADs) - Planned - As Run	- Operations and Maintenance Instructions - Test Preparation Sheet	PH		X	X		
19.	Test Data	- Shuttle Data Center - WAD			X	X		
20.	Problem Reporting and Corrective Action (PRACA)	- Problem Reports - Interim Problem Reports	NA		X	X		
21.	Schedules	- Flow schedules	PH	X	X		X	
		- Orbiter Processing Facility schedules	PH	X	X		X	
		- Range schedules	PH		X	X		
22.	Remote Manipulator System (RMS) Data	- Data which resides in the Jeeves data system.	HA		X	X	This data resides in Canada.	
		- RMS operations data	HA		X	X	For RMS ICDs, see Item No. 2.	
23.	Orbiter Space Vision System (OSVS)	- OSVS data which resides in the Jeeves data system.	HA		X	X	For OSVS ICDs, see Item No. 2.	
		- OSVS operations data	HA		X	X		

TABLE C.1
SHUTTLE DATA IDENTIFICATION - Concluded

ID NO.	Data Element	Data Product	OPR[1]	Data Category		Data Status		Notes
				Public Domain[2]	Tech Data[3]	Requires Approval[4]	Uncontrolled Data[5]	
24.	Flight Crew Equipment Data	CCCD		X	X		X	
25.	SSME, RSRM, SRB and ET Project Data				X	X		All technical data for the Marshall projects must be reviewed and approved prior to export. See Item No. 2 for ICDs.

NOTES: (1) The OPR is the NASA organization which has responsibility for this type of data.

(2) Public domain data is technical data approved for public release (i.e., unlimited distribution) by the cognizant U.S. Government department or agency. This exemption is applicable to information approved by the cognizant U.S. Government department or agency for public release in any form. Reference Paragraph 4.0 of this section for further details.

(3) The ITAR defines technical data as:

(a) Information, other than software, which is required for the design, development, production, manufacture, assembly, operation, repair, testing, maintenance or modification of defense articles. This includes information in the form of blueprints, drawings, photographs, plans, instructions and documentation.

(b) Software as defined in 22 C.F.R. §121.8(f) of this subchapter directly related to defense articles.

(c) This definition does not include information concerning general scientific, mathematical or engineering principles commonly taught in schools, colleges and universities or information in the public. It also does not include basic marketing information on function or purpose or general system descriptions of defense articles.

(4) A data status of “requires approval” is meant to signify a group of data which has not been fully reviewed for export. Some of this data may require export approval prior to export and some may not. Due to the fact that this data has not been reviewed it must be reviewed and approved for export by an appropriate NASA or contractor export official prior to being exported.

(5) When the data or product is marked as uncontrolled in this section, no further action need be taken to export this data to a NASA partner who has a valid need for the data or product.

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SECTION D

SHUTTLE RECORDS RETENTION DATA

TABLE D.1
PROGRAM RECORDS DATA

Program Phases	Information Groups	Record Groups	Retention Schedules
Formulation			
	Authority To Proceed (ATP)	Program Commit Agreement	Permanent. These records will be kept forever. (101)
		Program Plan	Permanent. These records will be kept forever. (101)
Development			
	Developmental Reviews		
	- Major Modifications	PDR records CDR records SRR records Certification Review records	Permanent. These records will be kept forever. (101)
	- Minor Modifications	PDR records CDR records SRR records Certification Review records	Temporary. Destroy or delete 5 years after end of Program. (103)
	Safety	Plans Analysis Reports HW/FSW Certification	Permanent. These records will be kept forever. (101)
	Test Operations and Test Data	Reports	Permanent. These records will be kept forever. (101)
		Test Plans	Permanent. These records will be kept forever. (101)
		Test Data	Temporary. Destroy or delete 30 years after end of Program. (103)

TABLE D.1
PROGRAM RECORDS DATA - Continued

Program Phases	Information Groups	Record Groups	Retention Schedules
	Design Information	Specifications Concepts Models Design Drawings Build to Drawings Parts list	Permanent. These records will be kept forever. (101)
	Requirements	Design Standards ICDs All NSTS Design Requirements Documentation	Permanent. These records will be kept forever. (101)
	Configuration Management Process	CRs	Temporary. Destroy or delete 10 years after end of Program. (103)
		Change Evaluations	Temporary. Destroy or delete after the end of Program. (105)
		Directives	Retention for directives will vary depending upon the CM system they support. (101 or 103)
		Tracking Data	Temporary. Destroy or delete after the end of Program. (105)
Operations			
	Requirements	Standards ICDs All NSTS Requirements Documentation Inter-program MOU/MOA	Permanent. These records will be kept forever. (101)

TABLE D.1
PROGRAM RECORDS DATA - Continued

Program Phases	Information Groups	Record Groups	Retention Schedules
	Design Information	Specifications Concepts Models Design Drawings As-built drawings Parts list	Permanent. These records will be kept forever. (101)
	Test Operations and Test Data	Reports	Permanent. These records will be kept forever. (101)
		Test Plans	Permanent. These records will be kept forever. (101)
		Test Data	Temporary. Destroy or delete 30 years after end of Program. (103)
	Safety	Plans Analysis Reports HW/FSW Certification PRACA	Permanent. These records will be kept forever. (101)
	Mission Design and Planning	Flight Design Trajectory Design	Permanent. These records will be kept forever. (101)
	Flight Hardware Maintenance	Maintenance Records	Temporary. Destroy or delete 5 years after end of Program. (103)
		Logistics Records	Temporary. Destroy or delete 5 years after end of Program. (103)
		Time Age Cycle data	Temporary. Destroy or delete 5 years after end of Program. (103)
		Data Books	Permanent. These records will be kept forever. (101)

TABLE D.1
PROGRAM RECORDS DATA - Continued

Program Phases	Information Groups	Record Groups	Retention Schedules
	Mission Operations	Crew Training plans	Permanent. These records will be kept forever. (101)
		Crew Training Records	Temporary. Destroy or delete 10 years after end of Program. (103)
		Flt Controller Training plans	Permanent. These records will be kept forever. (101)
		Flt Controller Training records	Temporary. Destroy or delete after the end of Program. (105)
		Flt Controller Procedures	Permanent. These records will be kept forever. (101)
		Flights notes	Permanent. These records will be kept forever. (101)
		Flt Rules	Permanent. These records will be kept forever. (101)
		Flt Imagery	Permanent. These records will be kept forever. (101)
		Telemetry	Temporary. Destroy or delete 15 years after end of Program. (103)
		Commands	Permanent. These records will be kept forever. (101)
		Crew Procedures	Permanent. These records will be kept forever. (101)
		Mission Mgmt Team Meeting Data	Permanent. These records will be kept forever. (101)
	Operational Reviews	Program Milestone Reviews/ FRR Meeting Data	Permanent. These records will be kept forever. (101)
		CoFR Files (Program level)	Permanent. These records will be kept forever. (101)
		Project pre-reviews meeting data	Temporary. Destroy or delete 5 years after end of Program. (103)

TABLE D.1
PROGRAM RECORDS DATA - Continued

Program Phases	Information Groups	Record Groups	Retention Schedules
	Vehicle Processing	Vehicle Configuration	Permanent. These records will be kept forever. (101)
		Payload Processing data	Temporary. Destroy or delete 5 years after end of Program. (103)
		OMRSD (NSTS 08171)	Permanent. These records will be kept forever. (101)
		Hardware Processing data	Temporary. Destroy or delete 5 years after end of Program. (103)
		Ground Support Equipment Ops Data (ex. WADS, TPS)	Temporary. Destroy or delete 5 years after end of Program. (103)
	Launch Operations	Launch Processes Data	Temporary. Destroy or delete 15 years after end of Program. (103)
		Launch Commit Criteria (NSTS 16007)	Permanent. These records will be kept forever. (101)
		Ground Support Equipment Data	Temporary. Destroy or delete 5 years after end of Program. (103)
	Configuration Management Process	CRs	Temporary. Destroy or delete 5 years after end of Program. (103)
		Change Evaluations	Temporary. Destroy or delete after the end of Program. (105)
		Directives	Permanent. These records will be kept forever. (101)
		Tracking Data	Temporary. Destroy or delete after the end of Program. (105)

(101) - The records management item number 101 denotes original copies of Historically significant documentation.

(103) - The records management item number 103 denotes Original Operational/Development Records (not of historic value) that have value to the agency for the life of the Program.

(105) - The records management item number 105 denotes all other original operational/development records not essential for on-going operations.

TABLE D.1
PROGRAM RECORDS DATA - Concluded

For more specifics on retention schedules of NASA records see NPR 1441.1

NOTE - Original records should not be archived if they will still be active after the Shuttle program is over.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Materials Usage Agreements Documents (test reports, waivers, MUAs, etc.)	8/104	N/A	JSC	
Launch Site Support Handbook	8/101	Permanent	JSC	
Book Manager Handbook	8/101	Permanent	JSC	
FDF Coordinator Handbook	8/101	Permanent	JSC	
DO3 Branch Operations Handbook	8/101	Permanent	JSC	
Int. Ops Branch, Mission Ops Procedures Cert Guide	8/101	Permanent	JSC	
DO3 Cartographic Support Procedures	8/101	Permanent	JSC	
Controlled Set Maintenance/Training Support	8/101	Permanent	JSC	
Flight Data File Operations Handbook	8/101	Permanent	JSC	
Flight Data File Fabrication Operations Handbook	8/101	Permanent	JSC	
PNOM/Generic	8/101	Permanent	JSC	
Flight Procedures Handbook	8/101	Permanent	JSC	
Flight Planning and Ops Planning Cert Guide	8/101	Permanent	JSC	
FAO Handbook	8/101	Permanent	JSC	
MATS Handbook	8/101	Permanent	JSC	
OCA Handbook	8/101	Permanent	JSC	
Attitude and Pointing Operations Manual	8/101	Permanent	JSC	
Attitude and Pointing Ops Overview	8/101	Permanent	JSC	
Pointing SW Applications Handbook	8/101	Permanent	JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Shuttle Crew Scheduling Constraints	8/101	Permanent	JSC	
As Flown ATLs (all)	8/101	Permanent	JSC	
Generic Constraints Tables	8/101	Permanent	JSC	
Handover Logs (all)	8/101	Permanent	JSC	
POWG Agenda/Minutes (all)	8/101	Permanent	JSC	
FOR Minutes/Actions (all)	8/101	Permanent	JSC	
Console Logs (all)	8/101	Permanent	JSC	
CSCH Core	8/103	5 yrs after EOP	JSC	
DO5 Transfer Handbook	8/101	Permanent	JSC	
COBH	8/103	5 yrs after EOP	JSC	
CIOB Cert Guide	8/101	Permanent	JSC	
CSM Development Guide	8/101	Permanent	JSC	
JSC 24399, Property Control of Experiment Ground Support Equipment (EGSE) at the Lyndon B. Johnson Space Center	8/103	5 yrs after EOP	JSC	
JSC 63761, POCC Annex Mission Integration Workstation Handbook Requirements	8/103	5 yrs after EOP	JSC	
NSTS-21063-POC-CAP, POCC Capabilities Document	8/103	5 yrs after EOP	JSC	
JSC 63744, Payload Operations Control Center (POCC) User's Guide	8/103	5 yrs after EOP	JSC	
JOIP for Shuttle Payload Flights	8/101	Permanent	JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 21000-A05, Payload Operations Control Center Annex MCC/JSC POCC/Remote POCC Interface Requirements	8/103	5 yrs after EOP	JSC	
Cargo Ops Support Group Desk Instructions	8/103	5 yrs after EOP	JSC	
CIOB Desk Instructions	8/103	5 yrs after EOP	JSC	
Command Procedures Annex	8/101	Permanent	JSC	
Generic AOH (Retired Oct 2008)	8/101	Permanent	JSC	
ASCH	8/101	Permanent	JSC	
Flight CSMs, JOIPs, Console HBs	8/101	Permanent	JSC	
DM GAF FDD User Involvement in Formal MCC SLC (WI)	8/101	Permanent	JSC	Retained by STIC Library as JSC Docs. DO5 has not retained.
Trajectory Server User Acceptance Test Plans	8/101	Permanent	JSC	
Trajectory Server User Verification Test Plans	8/101	Permanent	JSC	
Trajectory Server User Acceptance Test Data and Analyses	8/103	5 yrs after EOP	JSC	
Trajectory Server User Verification Test Data and Analyses	8/103	5 yrs after EOP	JSC	
SW Life Cycle Templates (WI)	8/101	Permanent	JSC	
Roles and Resp of Trajectory Related I-Load Owners (WI)	8/101	Permanent	JSC	
DM2 General Office Correspondence	8/105	5 yrs after EOP	JSC	
DM2 Flight Specific Correspondence	8/105	5 yrs after EOP	JSC	
Lead FDO Handbook (WI)	8/101	Permanent	JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
OFD Group Lead Work Instruction	8/101	Permanent	JSC	
Flight Dynamics Operational Plan: OFD (WI)	8/101	Permanent	JSC	
FDO Console Handbook (Volume 3, 3A) (WI)	8/101	Permanent	JSC	
FDO/TRAJ Certification Training Guide (WI)	8/101	Permanent	JSC	
FDO/TRAJ Certification Folders	8/105	5 yrs after EOP	JSC	
Rend and Prox Ops Design Reference for the ISS (WI)	8/101	Permanent	JSC	
RGPO Console Handbook (WI)	8/101	Permanent	JSC	
Rend Flight Procedures Handbook (WI)	8/101	Permanent	JSC	
RGPO Certification Training Guide (WI)	8/101	Permanent	JSC	
RGPO Certification Folders	8/105	TBD	JSC	
FDO Console Handbook, Deorb/Entry/EMCC (WI)	8/101	Permanent	JSC	
FDO Console Handbook Volume V, Ascent (WI)	8/101	Permanent	JSC	
Ascent/Entry FDO/TRAJ Certification Training Guide (WI)	8/101	Permanent	JSC	
Ascent/Entry FDO/TRAJ Certification Folders	8/105	5 yrs after EOP	JSC	
LDO Console Handbook (WI)	8/101	Permanent	JSC	
LDO Training Certification Training Guide (WI)	8/101	Permanent	JSC	
LDO Certification Folders	8/105	5 yrs after EOP	JSC	
Analyst Development Guide (WI)	8/101	Permanent	JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
ARD Support Console Handbook (WI)	8/101	Permanent	JSC	
ARD Support Certification Folders (WI)	8/105	5 yrs after EOP	JSC	
LSO Console Handbook (WI)	8/101	Permanent	JSC	
LSO Certification Training Guide (WI)	8/101	Permanent	JSC	
LSO Certification Folders	8/105	5 yrs after EOP	JSC	
OMS Assist Timer Reduction Process (WI)	8/101	Permanent	JSC	
A/E GPO Console Handbook, Volume 1 (WI)	8/101	Permanent	JSC	
Ascent/Abort Flight Procedures Handbook (WI)	8/101	Permanent	JSC	
Entry Flight Procedures Handbook (WI)	8/101	Permanent	JSC	
Appr, Lndg and Rollout Flight Procedures Handbook (WI)	8/101	Permanent	JSC	
Ascent/Entry GPO Certification Training Guide (WI)	8/101	Permanent	JSC	
Ascent/Entry GPO Certification Folders	8/105	5 yrs after EOP	JSC	
DM FDDD Activity Reports	8/105	5 yrs after EOP	JSC	
DM FDDD Management Plan (WI)	8/101	Permanent	JSC	
DM Document and Data Control (WI)	8/101	Permanent	JSC	
Compiled/Collected Console Logs (per mission)	8/101	Permanent	JSC	
USSPACECOM MOA Records	8/101	Permanent	JSC	
Threat Processes Records	8/101	Permanent	JSC	
DM2 Flight Specific Correspondence	8/101	Permanent	JSC	
DM2 Operations Guidelines (WI)	8/101	Permanent	JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Flight Software Integration Work Instruction (WI)	8/101	Permanent	JSC	
MOD NSE Roles and Resp (WI)	8/101	Permanent	JSC	
Flight Dynamics Command Procedures (WI)	8/101	Permanent	JSC	
DM FDDD Landing Site Table Ops Concept	8/101	Permanent	JSC	
SFOC Budget Packages	8/105	5 yrs after EOP	JSC	
DM2/DM3/DM4 Activity Reports	8/105	5 yrs after EOP	JSC	
SFOC Transmittals	8/105	5 yrs after EOP	JSC	
STF/RFAs	8/105	5 yrs after EOP	JSC	
DM Trench Tagup (post-flight) Records	8/101	Permanent	JSC	
DM FDDD Discrepancy Reporting Process (WI)	8/101	Permanent	JSC	
DM FDDD Discrepancy Report Records	8/101	Permanent	JSC	
SFOC Surveillance Checklists	8/101	Permanent	JSC	
SPOC/SFOC Audit Reports	8/105	5 yrs after EOP	JSC	
SPOC/SPOC ICDs	8/103	5 yrs after EOP	JSC	
USA/FDD Commit-to-Flight Readiness Statements	8/101	Permanent	JSC	
DM FDDD Flight Readiness Process Plan (WI)	8/101	Permanent	JSC	
DM FDDD FRR Records	8/101	Permanent	JSC	
Schedule Tracking and Technical Summary (STATS) Minutes	8/103	5 yrs after EOP	JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Flight Production Template - Includes generic M2P2 template and Increasing Network Knowledge (INK) Book	8/103	5 yrs after EOP	JSC	
The documented reports of “as trained” information that are contained in the TAMS system, Schedule records, etc.	8/103	5 yrs after EOP	JSC	
Flight Rules	8/101	Permanent	JSC	
FRCB Minutes	8/101	Permanent	JSC	
Flight Notes	8/101	Permanent	JSC	
CHITs	8/101	Permanent	JSC	
Anomalies	8/101	Permanent	JSC	
FCOH	8/101	Permanent	JSC	
FTP/JOP Minutes	8/101	Permanent	JSC	
Console Handbooks	8/101	Permanent	JSC	
Cert Guides	8/101	Permanent	JSC	The latest and archive at the end of the program.
MOD FRR packages	8/101	Permanent	JSC	
NBL and SVMF Mock-Up Data	8/101	Permanent	JSC	Drawings, specifications and DR history; Maintenance and build records; TRR data packages.
NBL SRMS	8/101	Permanent	JSC	Drawings, specifications and DR history; Operation and maintenance documentation.
NBL and SVMF Operational Documents	8/101	Permanent	JSC	Most are multi-program - will remove SSP references after STaR - recommend archiving last Shuttle version. All available electronically on DX Master list and TOPSSNET.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
DX CCB Documentation	8/101	Permanent	JSC	Minutes, CRs.
Lesson Plans	3400; 33E1	Permanent	JSC	
Training Workbooks/CBTs and Distance Learning	3400; 33E1	Permanent	JSC	
Pre/Post Flight Report and Lessons Learned	8/101	Permanent	JSC	
SSSH	8/101	Permanent	JSC	
Systems Briefs	8/101	Permanent	JSC	
Shuttle Schedule Tracking and Technical Summary (STATS) Meeting Charter	8/103	5 yrs after EOP	JSC	
Shuttle Flight Manager Desk Instructions	8/103	5 yrs after EOP	JSC	
Shuttle/Station Flight Schedules Desk Instructions	8/103	5 yrs after EOP	JSC	
Flight Management Support Desk Instructions	8/103	5 yrs after EOP	JSC	
Shuttle Flight Manager Training Plan	8/103	5 yrs after EOP	JSC	
Flight Management Support Training Plan	8/103	5 yrs after EOP	JSC	
Shuttle/Station Flight Scheduler Training Plan	8/103	5 yrs after EOP	JSC	
Shuttle/Station M2P2 Engineer Training Plan	8/103	5 yrs after EOP	JSC	
Flight planning data microfiche from STS-1 through STS-65	8/101	Permanent	JSC	Microfiche will need to be converted to electronic format. Do not know what the final electronic size will be. Working with IS for conversion.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Flight specific planning data backups from the Shared S: drive	8/101	Permanent	JSC	
OCA Uplink/Downlinked Data	8/101	Permanent	JSC	Does not contain images, crew mail, or experiment data. Data is archived at the Telescience Support Center (TSC).
Flight specific planning data from the Sharepoint Sites	8/101	Permanent	JSC	Converted to using Sharepoint instead of the S: drive.
Other Pointing Flight Specific Data	8/101	Permanent	JSC	Not part of the FDF.
Flight Documentation (FIDP/Advisory)	8/105	EOP	USA - JSC	Maintain in office until end of program. Hardcopy for signature pages only. All other records are electronic.
Flight Rules Change Request (CR) Inspection Record	8/103	30 yrs	USA - JSC	See Elements 4.8 and 4.10. To FRC at end of ISS Program.
Flight Documentation	8/105	EOP	USA - JSC	Post-Flight Folders for STS-88 and subs are maintained in the office until the end of the Shuttle Program. Post-Flight Folders prior to STS-88 are stored at the Federal Records Center.
Review Announcement and Summary Form	8/105	EOP	USA Texas	The RASF record encompasses the RAIL and MARF records.
Software Release Memo	8/103	15 yrs after EOP	USA Texas	
Project Start-Up	8/105	EOP	USA Texas	
Project Plan	8/105	EOP	USA Texas	The project plan record encompasses the PSR and PEMR records.
CSP MS Project Schedule	8/105	EOP	USA Texas	
Project S/W Work Product PCA	8/103	15 yrs	USA Texas	
Project Activity PCA	8/103	15 yrs	USA Texas	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Flight Operations Software Process Waiver	8/105	EOP	USA Texas	
Common Software Process Change Request	8/105	EOP	USA Texas	
SQA Audit Schedule	8/105	EOP	USA Texas	
SQA Findings Tracking Tool	8/105	EOP	USA Texas	
Quality Assurance Support Service Plan	8/105	EOP	USA Texas	
Audit/Reports Records	8/105	EOP	USA Texas	
Functional Area Measurement Record	8/105	EOP	USA Texas	
Configuration Item Identification	8/105	EOP	USA Texas	
CSP Memorandum of Agreement	8/105	EOP	USA Texas	
Product Engineering Analysis Checklist	8/105	EOP	USA Texas	
CSP Issue Tracker (Lessons Learned Tool)	8/105	EOP	USA Texas	
CSP Deployment Notes	8/105	EOP	USA Texas	
Process Action Team Project Start-up	8/105	EOP	USA Texas	
Process Action Team Plan	8/105	EOP	USA Texas	
Configuration Management Support Service Plan	8/105	EOP	USA Texas	
Flt MCC/POCC P/L Recon Data Summary	8/105	EOP	USA - JSC	
CAF Product Evaluation Form	5/35.A.1	EOP	USA - JSC	
DO5 Technical Training	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed.
Mission Specific Integrated Experiment Hazard Analysis Validation	8/36.5(2)	EOP	USA - JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
MCC Console Log Notes	8/101	Permanent	USA - JSC	Record of activity/data for a particular Flight Control Team position in MCC.
Application Notebook	8/101	Permanent	USA - JSC	
Console Log Notes	8/101	Permanent	USA - JSC	
DO4 Training Records	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed.
D4231 Training	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed.
FORM 482: Crew Procedures Change Request	8/103	5 yrs	USA - JSC	
Proced Val/Data Source Info	8/103	5 yrs	USA - JSC	
Errata Packages	8/103	5 yrs	USA - JSC	
Workflow Crew Procedures Change Request	8/103	5 yrs	USA - JSC	
CPCB Minutes	8/105	EOP	USA - JSC	
Structure Sheets	8/105	EOP	USA - JSC	
CPCB Member Appointment Letters/Memos	8/105	EOP	USA - JSC	
Crew Procedures Management Plan and Annexes	8/101	Permanent	USA - JSC	
Work Order Agreements	8/103	5 yrs	USA - JSC	
SODF Errata Packages	8/103	5 yrs	USA - JSC	
FDF Configuration Binder	8/103	5 yrs	USA - JSC	
D4233 Training	3/33.G.2	EOP	USA - JSC	Destroy 5 years after separation of employee or when no longer needed.
Flown FDF Books	8/101	Permanent	USA - JSC	

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FDF Publications (Basic, Revision, PCN)	8/101	Permanent	USA - JSC	
Version Description Document	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
SSC Ops Lan Storage Space Allocation Manifest	8/103	5 yrs	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
SSC Ops LAN Uplink Guidelines	8/103	5 yrs	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
SSC Project Validation Package Sign-off Sheet	8/105	EOP	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
CM Inspection and Product Baseline	8/103	5 yrs	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
Unique Client Config Requirements Specifications	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
Service Pack Update Verification Checklist: SSC Client A31p: Core: 11, Step: 02, Build 01	8/103	5 yrs	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
OD2 Government Certification Approval Request	8/103	5 yrs	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
SSC CMOS Imager (A21P) Requirements	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
Software Load Inspection Worksheet	8/105	EOP	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA - JSC-64844 - PGSC Late Update/File Uplink Guidelines	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA - JSC-64868 - Ops Service Pack Update Process	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA005956 - SSC Software Management Plan	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
USA005978 - Operations Local Area Network (OpsLAN) Interface Control Document	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA005986 - Station Support Computer Engineers Work Instruction	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA007182 - PGSC Engineer Work Instructions	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA008526 - PGSC Engineer Training Guide	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
USA009202 - SSC OpsLAN MER Console Handbook	8/101	Permanent	USA - JSC	Remark 1 - Sonny Carter Training Facility (SCTF) B920A.
FDD Anomaly Report	8/103	15 yrs	USA Texas	
File Tracking Form	8/103	15 yrs	USA Texas	
Flight Design and Dynamics Software Waiver Request	8/103	15 yrs	USA Texas	
Data 44 FOP Minutes	8/105	EOP	USA Texas	FADS Master Data Store Office.
FOP Attendance Log	8/105	EOP	USA Texas	
Data 43 FDD FRR Data Pack	8/101	Permanent	USA Texas	SDM Paper Files Contains FDD Accountability Flow and FDD Ops Center COFR Compliance Storage Retention/Disposition - transfer to National Archives 7 years after cutoff.
SPOC Transmittal Form (STF)	8/103	15 yrs	USA Texas	Memorandum of Understanding, etc.
Change Requests	8/103	5 yrs	USA Texas	Flight Design Handbook (FDHB) Change Requests (CR) for products.
Mission Operations Flight Data	8/101	Permanent	USA Texas	Mission Flight Data Office.
Handbook Update Request	8/103	5 yrs	USA Texas	Storage Information - NA.
Mishap Investigation Board Files	8/1/2001	Permanent	USA Texas	CARB; Permanent.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Flight Notebooks	8/103	15 yrs	USA Texas	Traj Ops MCC GA notebooks. NAV MCC GA notebooks.
FDD Software Product Worksheet	8/103	5 yrs	USA Texas	
Flight Design Critical Software Certification Data Packs	8/103	15 yrs	USA Texas	
Discipline Software Request	8/103	15 yrs	USA Texas	
Discipline Software Tracking Form	8/103	15 yrs	USA Texas	
Descent RECON Input Processor DCR/DDR Log	8/105	EOP	USA Texas	
DFD FADS Static File Change Form	8/103	EOP	USA Texas	
Product Tracking Form - Descent Internal	8/103	15 yrs	USA Texas	FDD Archive Database.
Data Change Order	8/105	EOP	USA Texas	
Procedures Validation Record and Data Source Info	8/105	EOP	USA - JSC	
Navigation Discipline SR/AR Database	8/103	15 yrs after EOP	USA Texas	
Navigation Discipline Software Application Notebooks	8/101	Permanent	USA Texas	
Common Change Request	8/103	15 yrs	USA Texas	
CMSII SRs	8/101	Permanent	USA Texas	
Flight Controller and Crew Training Records	8/101	Permanent	USA - JSC	TAMS database referenced by NAS9-20000.
Observations Master Binder	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed. Referenced by TOH 13.2.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
SFT&FO SMS Training Load Operational Acceptance Form	3/33.A	See Comments	USA - JSC	Destroy when 5 years old, or when superseded or obsolete, whichever is sooner. Referenced in TOH 5.3.
Quest Revision Log	3/33.E.2	See Comments	USA - JSC	Destroy when 5 years old, or when superseded or obsolete, whichever is sooner. Referenced in TOH 10.1.
Flight Controller Evaluation Tracking Database	3/33.G.2	EOP	USA - JSC	Destroy 5 years after separation of employee or when no longer needed. Referenced by TOH 12.1.
Flight Status Reports/Minutes	3/33.G.2	EOP	USA - JSC	
Certification Support Documents	3/33.G.2	See Comments	USA - JSC	Destroyed 5 years after separation of employee or when no longer needed. Indexing: Alpha and Date.
Console Logs	3/33.G.2	EOP	USA - JSC	Store for 1 year after completion of flight. Reference by TOH 9.2.
Lesson Change Request	3/33.A	EOP	USA - JSC	Destroy when 5 years old, or when superseded or obsolete, whichever is sooner. Referenced in TOH 10.2.
TD&S Training Aids	3/33.E.2	EOP	USA - JSC	TD&S Training: programs, materials, media, and code.
Personal Property Pass	4/8.A	EOP	USA - JSC	Destroy 3 months after expiration or revocation. Referenced by FPP L-01-02.
Instructor Feedback Database	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed. Referenced by TOH 132.
Certification Support Documents	3/33.G.2	See Comments	USA - JSC	Destroyed 5 years after separation of employee or when no longer needed. Indexing: Alpha and Date.

TABLE D.2.1
MISSION OPERATIONS DIRECTORATE SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Operations Note Evaluation Log (FSW Evaluations)	3/33.G.2	See Comments	USA - JSC	TOH 3.4 - Destroy 5 years after separation of employee or when no longer needed.
ECS/EPS Certification Signoff Sheets	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed.
Environ. Control Sys/Elec. Power Sys QA Checklist and Signoff Sheet	8/103	5 yrs	USA - JSC	ECS/EPS Quality Records.
Electrical Power Sys CPG Application Notebook	8/103	30 yrs	USA - JSC	EPS CPG Application Notebook.
Early Cryo Tool Application Notebook	8/103	30 yrs	USA - JSC	Early Cryo Tool Application Notebook.
Flight Controller Training Plans and Certification Records	3/33.G.2	See Comments	USA Texas	Destroy 5 years after separation of employee or when no longer needed.
Power Resource Officer (PRO) Product QA Records	8/105	EOP	USA - JSC	
PRO Certification Records	3/33.G.2	See Comments	USA - JSC	Destroy 5 years after separation of employee or when no longer needed.
NAS9-20000 R&QA Audits, Surveys, and Reports	5/30.A	5 yrs	KSC	
NAS9-20000 Electronic R&QA Audits, Surveys, and Reports - iQuality	5/30.A	5 yrs	KSC	Electronic Data for Supplier Audits retained in iQuality - exception to USA FPP D-01-11 excludes databases from Documentum.
QACANs/SCARs - Coverage from 1991 to 2001	5/28	10 yrs	KSC	
Electronic Corrective Action Record (Suppliers) in iQuality	5/28	5 yrs	KSC	
Open Item Authorization Form	5/28	10 yrs	KSC	Authorizing the shipment of hardware with open items and/or shortages.

TABLE D.2.2
JSC ENGINEERING SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Project Technical Requirements Specification (PTRS)	8/101	Permanent	JSC	
Project Requirements and Verification Doc (PRVD) for IVA Non-Critical GFE	8/101	Permanent	JSC	
Interface Control Documents (ICDs)	8/101	Permanent	JSC	
End Item Specification	8/101	Permanent	JSC	
Software Requirements Specification	8/101	Permanent	JSC	
Engineering Drawings	8/101	Permanent	JSC	
Verification and Validation Document	8/101	Permanent	JSC	
Software Design Document	8/101	Permanent	JSC	
Design Analyses Reports	8/101	Permanent	JSC	
Version Description Document (software and/or firmware; see EA-WI-025 for details)	8/101	Permanent	JSC	
Certification Data Package	8/101	Permanent	JSC	
Acceptance Data Package or JSC Project Parts Tag - JF 911	8/101	Permanent	JSC	
Physical Configuration Audit (FCA/PCA)	8/101	Permanent	JSC	
User's Guide	8/101	Permanent	JSC	
Qualification and Acceptance Procedures	8/101	Permanent	JSC	
JSC Flight Equipment Acceptance	8/101	Permanent	JSC	
EA Pre-FRR briefings, Readiness Polls, etc.	8/105	30 yrs after EOP	JSC	
Program/Project Technical Memos	8/101	Permanent	JSC	

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Shuttle Meeting Agendas	8/105	EOP	USA Texas	Stored in BARS and in PCIN folders.
Shuttle Program CM Records	8/101	Permanent	JSC	Includes PCIN folders, meeting folders located in Bldg 1.
PRCB Directives	8/101	Permanent	JSC	
SSP Change Requests/Directives	8/101	Permanent	USA Texas	Payload ICB CR/D, FRD CRs, and JMICB CRs.
Non-PRCB Directives	8/101	Permanent	JSC	Includes FCE, ICB and SSP directives. PRCB directives are listed separately.
Orbiter Change Files	8/101	Permanent	JSC	All Orbiter directives and associated data.
Shuttle Meeting Minute/CM Files	8/103	15 yrs after EOP	USA Texas	Meetings may include but not limited to, SICB, FOICB, SASCB, OCCB, LOCCB, VAR, VADAR, SIRB.
Shuttle Documentation (PDC and PILS)	8/101	Permanent	USA Texas	Includes SSP baselines; SSP revisions; SSP Program Directives (Volume II - Book 2), SSP Interface Agreements (Volume II - Book 3) and other SSP documentation. PDC and PILS: Payload ICDs; LCC, FRD, all MIPs, CIPs, PIPs, IPs, the SIA, the FTSOD including all documents under all PILS tabs.
Flight Crew Equipment Meetings	8/101	Permanent	USA Texas	Includes Crew Debriefing, GFE-FCE FRR, ORR and OPTWG.
Orbiter Certification Records	8/101	Permanent	USA Texas	Records maintained on CDs and in Certification Database.
PINCH Certification Records	8/103	15 yrs after EOP	USA Texas	Records maintained on CDs and in Certification Database.

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Flight Software Change Paper	8/101	Permanent	USATexas	This record includes all software configuration items and associated supporting documentation processed through the SASCB. Includes Software Change Requests (SCRs), Discrepancy Reports (DRs), I-Load Data Change Requests (DCRs), Data Reconfiguration Data Change Requests (DCRs), Software Authorization Notices (SANs), Requirement Change Notices (RCNs), Flight Change Proposals (FCPs), Requirement Issue Trackings (RITs), SASCB Action Items and Special Topics and Other Discussion Items. This record also includes Software Readiness Review packages for each Shuttle flight.
Audio/Video Meeting Recordings	8/103	15 yrs after EOP	JSC	Recordings located in B1; includes but not limited to MMT and SSP meetings.
OMRS Change Paper Records	8/103	15 yrs after EOP	USA Texas	RCNs, MCNs, DCNs, etc.
Critical Items List and Hazard Report Packages	8/101	Permanent	USA Texas	Official Record in WebPCASS. Includes CILs and Hazard Reports, CRs and directives.
CoFR and FRR Material for SSP	8/101	Permanent	KSC	CoFR and other FRR material (including presentations) for SSP.
Audio Recordings for Milestone Reviews	8/103	15 yrs after EOP	KSC	Includes but not limited to ORR and FRR.
Upgrades Industrial Engineering Safety Program	8/103	15 yrs after EOP	KSC	All boxes have been sent to storage at the end of contract on 9/29/06.

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Payload Mission Kit	8/103	15 yrs after EOP	USA Texas	Official Record in Baseline Accounting and Reporting System (BARS). PDF format of reports burned to CD. Plan to keep operational for 6 months and deliver final archive at that time.
MCCP Report	8/101	Permanent	USA Texas	Official Record in Baseline Accounting and Reporting System (BARS). PDF format of reports burned to CD. FRC and NARA. Plan to keep operational for 6 months and deliver final archive at that time.
CCCD Closed Loop Accounting Report	8/103	15 yrs after EOP	USA Texas	Official Record in Baseline Accounting and Reporting System (BARS). PDF Format of reports burned to CD. Plan to keep operational for 6 months and deliver final archive at that time.
OMRSD	8/101	Permanent	USA Texas	Final version of documents in PDF format. FRC and NARA. Plan to keep operational for 6 months and deliver final archive at that time.
IDMRD	8/101	Permanent	USA Texas	
Critical Math Model Database (CMMDB)	8/101	Permanent	USA Texas	Standard report modified to include all records in PDF format. FRC and NARA. Plan to keep operational for 1 month and deliver final archive at that time.

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Critical Math Model Analysis Tool (CMMAT)	8/101	Permanent	USA Texas	Official Record in Critical Math Model Analysis Tool (CMMAT) Database. Standard report modified to include all records in PDF format. FRC and NARA. Plan to keep operational for 1 month and deliver final archive at that time.
System ICDs/DCMS	8/101	Permanent	USA Texas	Official Record in Document Configuration Management System (DCMS). Final version of documents in PDF format. FRC and NARA. Plan to keep operational for 1 month and deliver final archive at that time.
Shuttle Drawing System (SDS)	8/101	Permanent	USA Texas	KSC drawing crib will archive all electronic files, aperture cards, and paper drawings. Plan to keep operational for 6 months and deliver final archive at that time.
Shuttle Mission Imagery	8/101	Permanent	Bldg 8 freezer vault	
Shuttle Training Photo	8/101	Permanent	Bldg 424 repository	
Shuttle hardware testing	8/101	Permanent	Bldg 424 repository	
Shuttle PAO event photos	8/103	10 yrs after EOP	Bldg 424 repository	
Space Shuttle mission downlink television, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video cassettes recorded by crew during missions (onboards) STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission 16mm film shot by crews during STS-1 to STS-62 (flight film)	8/101	Permanent	JSC	Included in IC Building 8 cold storage vault.

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Space Shuttle mission launch and landing documentation on 16mm film and video, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission crew training documentation on 16mm film and video, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission Flight Control Room documentation on 16mm film and video, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission press briefings - off-air video recordings, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle Program press briefings - off-air video recordings	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video productions: Mission Highlights, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video productions: Flight Day Highlights, STS-39 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video productions: Post Flight Presentations, STS-1 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video productions: Crew Interviews, STS-50 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video productions: Mission Update shows, STS-51 to STS-94	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle mission video productions: Special Events Resource Tapes, STS-42 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Space Shuttle mission video productions: Space Flight Awareness, STS-92 to EOP	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Various other educational or training film and video productions related to the Space Shuttle Program	8/101 and AFS 1394 71D1(a)	Permanent	JSC	Included in IC Multimedia Repository collection.
Video productions: animation, commentator support, and news feature packages compiled for playback over NASA TV during Space Shuttle mission coverage, or for playback during Pre-Flight Mission Press Briefings	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Approach and Landing Test (ALT) motion film and video documentation of test flights, crew training and ROCR activities	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Orbiter design and development: Rockwell motion picture film submittals 1973-1995	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Shuttle systems design and development: motion films documenting various systems tests, both in documentary and engineering film collections 1969-1995	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Shuttle systems design and development: video documenting various tests and development, including some OMDP, since 1982	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Space Shuttle ground processing activities at KSC	8/102	See Comments	JSC	Included in IC Multimedia Repository collection. KSC should have originals. Keep until no longer needed.

TABLE D.2.3
SSP MANAGEMENT INTEGRATION AND PLANNING SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Videos and films documenting activities related to the Challenger accident investigation	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Videos documenting activities related to the Columbia accident investigation	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Videos documenting return to flight engineering tests after the Columbia accident	8/101	Permanent	JSC	Included in IC Multimedia Repository collection.
Video documenting Shuttle systems training classes including MOD ASCAN Orbiter Systems Training	8/107	30 yrs after EOP	JSC	Included in IC Multimedia Repository collection.
Video documenting Shuttle crew Payload Familiarization Briefings, STS-32 to STS-95	8/107	30 yrs after EOP	JSC	Included in IC Multimedia Repository collection.

TABLE D.2.4
SSP BUSINESS OFFICE SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Contracts	5100/ item 1	See Comments	JSC	Copies of all Shuttle Program Office Contracts to include modifications. Keep 6 years and 3 months after final payment.
Contract Award Fee Documentation	5100/ item 1	See Comments	JSC	Awarded fee support documentation and final awarded fee determinations. Keep 6 years and 3 months after final payment.
Contract Data Requirement Document (DRD)	5100/ item 1	See Comments	JSC	Contract DRDs for each contract. Keep 6 years and 3 months after final payment, or as specified in the Project/Element records retention criteria.
Contract Files	5100/ item 1	See Comments	JSC	This includes documentation for: acquisition planning, procurement request and solicitation, solicitation and award and contract administration. Keep 6 years and 3 months after final payment.

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Mission Management Records	8/101	Permanent	JSC	Documentation which includes but not limited to Milestone Review Presentations.
Flight Production Template Book	8/101	Permanent	USA Texas	All versions of the document that are available.
IPT Data	8/101	Permanent	JSC	Presentations and other content currently reside on the IPT website.
USA FO&I Product Development Plans (DRD 1.1.1.1-f)	8/101	Permanent	JSC	Final versions only.
USA FO&I Desk Instructions	8/101	Permanent	USA Texas	Final versions only.
Critical Math Model Analysis Tool (CMMAT)	8/101	Permanent	USA Texas	Duplicates “Critical Math Model Analysis Tool (CMMAT)” in MG Table D.2.3.
Thermal Analysis (DRD 1.2.1.3-b)	8/103	15 yrs after EOP	USA Texas	a. PVTR charts b. Thermal VAR charts c. L-1 M Thermal/ECLSS reports d. L-5 M Thermal/ECLSS reports - Min. Trunnion Temp - Failed Open Vent - Floodlight Assessment - Mated Air Revitalization Analysis e. Thermal Math Model documentation f. Payload Venting Analysis

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Structures Analyses (DRD 1.2.1.3-b)	8/103	15 yrs after EOP	USA Texas	a. VLA PVLR, VADAR, and VAR b. VLA PVLR, VADAR, and VAR minutes (duplicates "Shuttle Meeting Minute/CM Files" in MG Table G.2.3) c. VLA reports (parts 1, 2 and addenda) d. Structural math models and forcing function data e. Middeck P/L stress and acoustic analyses f. Final weight and center of gravity assessment g. Special studies and assessments - Early compatibility analyses - On-orbit assessments - Sensitivity studies - Challenger and Columbia post-accident data - Lessons learned

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Payload Structural Verification	8/103	15 yrs after EOP	JSC/ES	These records are to be archived by JSC/ES Structural Engineering Division: a. Structures Working Group (SWG) payload math model and documentation approval letters b. Payload structural verification documentation (structural verification plans, static and dynamic test plans, static and dynamic test/model correlation reports) [MAY DELETE] c. Post-flight reports d. Computer Software Programs
Cargo Avionics (DRD 1.2.1.5-b)	8/103	15 yrs after EOP	USA Texas	a. Recon S/W charts b. Voltage and Power Analysis c. Power Bus Load diagrams
Cargo Safety (DRD 1.2.1.3-c)	8/103	15 yrs after EOP	USA Texas	a. Adjacent Pin Assessment b. Safety Critical Switch List c. Environmental Assessment Report d. Verification Tracking Log e. CIRAR f. Payload Safety Evaluation Reports g. CIH Safety Assessment Report h. CIH Hazard Reports i. CIH FMEAs

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Cargo Integration Hardware (DRD-1.2.1.5.1-a, -b, -c)	8/103	15 yrs after EOP	USA Texas	a. CIH Standard End Item Specification b. CIH Design Requirements Documents c. CIH Certification Data Packages (duplicates "PINCH Certification Records" in MG Table D.2.3)
Interface Control Documentation (DRD 1.2.2.5-b; 1.2.2.6)	8/103	15 yrs after EOP	USA Texas	a. CORE ICD b. IDD-ISS/MDK/SML c. Payload Unique ICDs NOTE: Duplicates "Shuttle Documentation (PDC and PILS)" in MG Table D.2.3
OMRSD (DRD 1.2.2.7)	8/103	15 yrs after EOP	USA Texas	a. File II Vol 2/4/6 OMRS and RCNs b. OMRSCP Peat NOTE: Duplicates "OMRSD" in MG Table D.2.3 plus the OMRS Change Paper line item
MIP Annex 1 (DRD 1.2.2.4-a)	8/103	15 yrs after EOP	USA Texas	Duplicates "Shuttle Documentation (PDC and PILS)" in MG Table D.2.3 - Covered under PILS.
TGHR (DRD 1.2.2.7-a)	8/103	15 yrs after EOP	USA Texas	Final Time Critical Ground Handling Requirements.

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Reconfiguration Engineering (DRD 1.2.1.5-b)	8/103	15 yrs after EOP	USA Texas	a. Engineering Drawings (duplicates “Shuttle Drawing System [SDS]” in MG Table D.2.3) b. USA PCE CIR Engineering Compatibility Review Plan c. Final PCE CIR Intro, ERB, and CIR board presentations d. CAD ICED files e. USA PCE Configuration Photo matrix f. Post-flight Lessons Learned presentations (Part of IPT presentation - not sure how far back)

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Crew Compartment Configuration	8/103	15 yrs after EOP	JSC	a. Engineering Drawings (CCCDs) located in EDCC b. Orbiter Boeing Technical Memos: - Orbiter Crew Module Middeck Sleeping Bags Restraint Structure Assessment (ref. TM SJCO-01-047 and TM SJCO-02-03) - Extra Soft Stowage Inside the LiOH Container (ref. TM SJCO-03-004) - Maximum Stowage Weights in the External Airlock for Return (ref. TM SJBOD-07-028) c. Orbiter Crew Compartment Stowage Cushion Pro-E Models (located at CMC/LM12 on CMC server) d. Middeck Designers Briefing (located on MO2 products webpage) e. Crew Compartment Avionics Integration Tool (CCAIT) Orbiter Crew Compartment Plug-in Plan DC power analysis tool (runs are documented in the CoFR records on the cds-middeck on “jsc-fs01” network server.
Mission Television Plan (DRD 1.1.7-d)	8/103	15 yrs after EOP	USA Texas	

TABLE D.2.5
SSP FLIGHT OPERATIONS AND INTEGRATION SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
NSTS-21288, Required Data/Guidelines for Payload/Shuttle Electromagnetic Compatibility Analysis	8/101	Permanent	JSC	EME Section 20s are in Appendix C.
NSTS-60533/Rev C - Space Shuttle Flight Operations and Integration Surveillance Plan	8/101	Permanent	USA Texas	NOTE: This document is in PILS.
On Orbit Interface Control Document	8/101	Permanent	JSC	On Orbit ICDs for all flights from STS-1 to final flight-OOR ICDs are located on PILS.
Flight Control and Structures Working Group Documentation	8/103	15 yrs after EOP	JSC	DAP Modes and Constraints Memo for all flights. Pitch charts to present DAP Modes and Constraints Memo to MOD for all flights. Memo and Charts are produced by Draper Labs for EG.
VC JTWG	8/103	15 yrs after EOP	JSC	Data Source Letters for all flights. The Vehicle Configuration JTWG produces at L-9 months and L-4 months a Data Source Letter for all flights. This is a memo signed off by both the SSP and ISS co-chairs of the JTWG. The memo is issued by OM.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Contact List for all observations	8/101	Permanent	KSC	
DRO, SME Console Logs	8/101	Permanent	KSC	
Final Debris Report	8/101	Permanent	KSC	
C-Band Radar Red Files	8/101	Permanent	KSC	
X-Band Radar DVV Files	8/101	Permanent	KSC	
Verification Information System (VIS)	8/101	Permanent	KSC	
USA SE&I Product Development Plans (DRD 1.1.1.1-f)	8/101	Permanent	JSC	
Integrated Hazard Analysis (DRD 1.3.1.1-a)	8/101	Permanent	JSC	
Integrated Hazard Reports (DRD 1.3.1.1-b)	8/101	Permanent	JSC	
Integrated Hazard Reports Verification Tracking Log (DRD 1.3.1.1-c)	8/101	Permanent	JSC	
Critical Math Models Data Maintenance (DRD 1.2.1.7-b)	8/101	Permanent	JSC	
Integrated Math Models	8/101	Permanent	JSC	
Space Shuttle Vehicle Databooks	8/101	Permanent	JSC	
Quick-look and Detailed Post-flight Reconstruction Reports	8/101	Permanent	JSC	
Trajectory Design Data Package (TDDP) and change notices	8/101	Permanent	JSC	
(SE&IO) NASA Imagery Reporting Database Data	8/101	Permanent	MSFC	
Wind Tunnel Test Data	8/103	30 yrs after EOP	JSC	
Technical Panels Documentation	8/103	30 yrs after EOP	JSC	Minutes, Presentations, and Analysis. Includes electronic and hard copy data.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Ascent Debris Source Definition Database Data	8/101	Permanent	JSC	
Specific Non-DRD Products from USA SE&I PDPs	8/101	Permanent	JSC	
FSWE Boeing Backup Flight System (BFS) Level 6 Test Reports	8/105	EOP	USA Texas	The report contains the approved changes that were to be tested, the test procedure, test data, and a statement by the tester on the success of the test.
FSWE Boeing BFS Flight Reconfiguration Build Book	8/105	EOP	USA Texas	Folders and notebooks containing all of the documentation for a given flight reconfiguration build (TRs, RAs, Build Memos, Patchsums, Problem logs, Patch Reports, email correspondence, etc.).
FSWE Boeing Software Problem/Change Report Tracker (SPCRT)	8/105	EOP	USA Texas	BFS and MEDS database that is used to document problems and issues identified during processing.
FSWE Element Coordination Records	8/105	EOP	USA Texas	Miscellaneous FSW records created/utilized throughout software lifecycle (i.e., HW/SW Inventories, Registration Forms, Transmittal Records, etc.)
FSWE Software Readiness Review (SRR) Packages	8/101	Permanent	USA Texas	PASS, BFS, MEDS, MAGRs-3S, Requirements, Integrated Avionics Verification (IAV), SAIL and Data Recon Readiness Review packages for each flight. Archived by the NASA Configuration Management Office (CMO).

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE Configuration Control Board Data Base (CMDB) Records	8/103	5 yrs	USA - JSC	Records pertaining to the configuration control and tracking of PASS software changes and discrepancies.
FSWE Shuttle Program Office at NASA Data Center (SPON) Problem Report	8/103	5 yrs	USA Texas	A record of problems reported to the FSWE IMIC help desk, including problem descriptions and resolutions.
FSWE Boeing BFS/MEDS In-Process Technical Review (IPTR) Records	8/105	EOP	USA Texas	Generated in support of BFS/MEDS software inspections to document the results of the reviews including checklists, attendance records, issues found, etc.
FSWE Boeing Voting System Records	8/105	EOP	USA Texas	Web based application/Oracle Database that is used to document Boeing's internal review results for all software configuration items processed through the SASCB.
FSWE Boeing I-Load Processing Records (IRISS)	8/105	EOP	USA Texas	Web based application/Oracle Database that is used for all I-Load processing.
FSWE Boeing BFS/MEDS Software Development Folders and Related Items	8/105	EOP	USA Texas	Miscellaneous documentation related to software development for BFS and MEDS including developer notes, change logs, review data, issues, etc.
FSWE Boeing BFS OI System Build/ Tool Documentation	8/105	EOP	USA Texas	Miscellaneous forms and checklists for each BFS OI System and BFS tool build.
FSWE Boeing I-Load/MAST MSID Assignment Records	8/105	EOP	USA Texas	Listing of all MSID to HAL name assignments in support of I-Load and vehicle (MAST) variables.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE Boeing Vehicle Data Integration (VDI) Build Records	8/105	EOP	USA Texas	Miscellaneous documentation in support of MAST processing including checklists, forms, etc.
FSWE SAIL Discrepancy Report/ Material Review Record	8/103	5 yrs	USA - JSC	The Discrepancy Report (DR) is used to document failures, discrepancies, and unsatisfactory conditions discovered in a specific SAIL subsystem component (e.g., hardware LRU, equivalent).
FSWE SAIL Anomaly Record/Interim Discrepancy Report	8/103	5 yrs	USA - JSC	The Interim Discrepancy Report (IDR) is used to document failures, discrepancies, or anomalies that have not been isolated to a particular subsystem component (i.e., Line Replaceable Unit [LRU] or equivalent software element)+G102.
FSWE SAIL RIG Configuration List	8/103	5 yrs	USA - JSC	The flight system configuration list provides the part number, serial number, and location of each avionics LRU in SAIL.
FSWE SAIL SQA Nonconformance Records (NCR)	8/36.5.C.1	See Comments	USA Texas	Information pertaining to process and product nonconformances identified during internal quality audits; handle as Permanent; retention under discussion with NARA.
FSWE Software Approval Sheets (SAS)	8/105	EOP	USA Texas	Documentation authorizing FSW changes in support of facility operations.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE Maintenance Release Authorization Sheet (MRAS)	8/105	EOP	USA Texas	An MRAS identifies SAIL test requirements that have been authorized by one or more Software Approval Sheets (SASs), and authorizes the use of associated flight software in the SAIL. An MRAS is also used to close-out one or more SASs when no longer need.
FSWE PASS Software Development Notebooks and Data	8/105	EOP	USA Texas	Documentation related to software development for PASS including developer notes, change logs, review data, issues, test plans, etc.
FSWE SSW Level 7 Verification Process Records	8/105	EOP	USA Texas	Documentation generated by the Level 7 processes. Includes checklists, schedules, test reviews, etc.
FSWE Level 6 Test Case Executions	8/105	EOP	USA Texas	This record contains the SPF related data (FEIDs, JSTEPs, post-processing) as specified in DRD 1.4.3.9-g. The PASS Level 6 Summary Report is delivered under this DRD and can be located on the SPOC Deliverables webpage.
FSWE SANDSTORM (Storage and Submission Tool for Online Requirements Material) Records	8/105	EOP	USA Texas	RA risk factors assessment Engineering assessment, RA Cost for SCR Implementation Worksheets RGE Cost Worksheets.
FSWE PASS RRB Minutes (Requirements Review Board)	8/105	EOP	USA Texas	Meeting minutes documenting the results of the PASS Requirements Review Board.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE FSWAT Inspection Documentation	8/105	EOP	USA Texas	A record of the tool inspection meeting results. This includes Design Inspection Documentation, FSWAT Code Inspection Documentation, FSWAT Inspection Error Logs, FSWAT Requirements Inspection Documentation, Non-OI ADF Gen Request form.
FSWE FSWAT SSCR Documentation	8/103	5 yrs	USA Texas	Software change records for FSW PASS and BFS tools processed through the SSCCB.
FSWE HAL/S DRs and Analysis	8/103	5 yrs	USA Texas	HAL/S compiler Discrepancy Reports and Analysis forms.
FSWE HAL/S Compiler Presentations, Reports, Memos	8/105	EOP	USA Texas	Miscellaneous documentation related to the HAL/S Compiler including test plans, release memos, etc.
FSWE VCS Level 8 Test - Flight Notebooks	8/105	EOP	USA - JSC	Miscellaneous documentation related to VCS Reconfiguration testing for each flight.
FSWE FSWAT SSDRs and Analysis	8/103	5 yrs	USA Texas	This record contains PASS and BFS application tool discrepancy reports and associated analysis.
FSWE HAL Control Board (HCB) Meeting Agenda and Minutes	8/105	EOP	USA Texas	Results and status from the HAL/S compiler control board meetings.
FSWE Mass Memory Compare Documentation	8/105	EOP	USA Texas	Results of the comparisons between actual mass memory dumps and the expected mass memory configuration. These dump comparisons include the T-20 Dump and Compare.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE FSWAT Verification Builds Documentation	8/105	EOP	USA Texas	Documentation that contains verification test results for FSW tools.
FSWE OI and SB System Build Documentation	8/105	EOP	USA Texas	Documentation, including checklists and other information, for each OI and SB build.
FSWE FSWAT Verification Status Reports	8/105	EOP	USA Texas	This provides the current status of the FSW tool verification activities.
FSWE I-Load Checklists	8/105	EOP	USA Texas	Documentation used for I-Load reconfiguration activities, including IDS Build Checklist, Supervisor Checklist, No-Flight IDS Build.
FSWE STAR Notebooks	8/105	EOP	USA Texas	Notebooks used in support of STAR reconfiguration processing.
FSWE Reconfiguration Application Development Data/Documentation	8/105	EOP	USA Texas	Documentation in support of Reconfiguration Application development activities including STS forms, meeting announcements, action item lists, etc.
FSWE Data Recon Requirements Info	8/105	EOP	USA Texas	Supporting data related to payload and vehicle reconfiguration processing. Includes DCR review packets, checklists, notebooks, logs, etc.
FSWE Orbiter Interface Unit (OIU) Data Reconfiguration Procedure Checklist	8/105	EOP	USA Texas	Checklists used during OIU processing.
FSWE User Acceptance Testing (UAT) Summary	8/105	EOP	USA Texas	FSW Data Reconfiguration documentation associated with application tools user acceptance testing for each software release.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE Lab Engineering Change Order (ECO)	8/103	5 yrs	USA Texas	Data associated with approved SAIL changes; defines all documentation required to implement and close change paper.
FSWE SAIL Change Request SCR	8/103	5 yrs	USA Texas	SAIL Change Requests written prior to the use of CMSII SRs.
FSWE SAIL Sketches	8/101	Permanent	USA Texas	Engineering-generated sketches released by SAIL CMO that are attached to TPSs; for example, drawings of a special tool.
FSWE SAIL Laboratory Change Requests	8/103	5 yrs	USA Texas	Service request costing less than $50; SAIL did not generate these after 2006.
FSWE SPOC SAIL Laboratory Configuration Status	8/105	EOP	USA Texas	Configuration status of SAIL Lab drawings.
FSWE SAIL Change Implementation Record (CIR)	8/103	5 yrs	USA Texas	Evaluates and tracks the Engineering Orders (EOs) implementing Orbiter Flight System changes. The CIR is numbered and is annotated to identify the change by EO No., Drawing No., and Mod Kit No., then is tracked to closure.
FSWE SAIL Lab Interface Control Documents (ICDs)	8/101	Permanent	USA Texas	Describes interface points between the various SAIL elements and defines the detailed configuration and requirements on each side of the interface.
FSWE SAIL Technical and Metrics Review	8/105	EOP	USA Texas	Technical Information and Metrics presented to NASA monthly.
FSWE SAIL TPS Approval Authority	8/105	EOP	USA Texas	Test Preparation Sheet (TPS) authorizations.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE SAIL Rig Drawings	8/101	Permanent	USA Texas	SAIL flight system drawings.
FSWE SAIL Drawing Change Notices	8/103	5 yrs	USA Texas	DCNs authorize changes to SAIL flight system drawings.
FSWE SAIL RTC Log Books	8/105	EOP	USA - JSC	Test conductor notes documenting the activities of the various shifts of testing in the lab to include run numbers, test case numbers, start and stop times, results, etc.
FSWE SAIL Preventative Maintenance Instruction (PMI)	8/105	EOP	USA - JSC	Procedure for equipment requiring periodic maintenance.
FSWE SAIL Laboratory Software Change Request (LSCR)	8/103	5 yrs	USA Texas	Requests for laboratory software changes that directly support SAIL testing, specifically all off-line post-processing, utility, and diagnostic software. LSCRs were not used after 2005.
FSWE Expedited SAIL Change Request (ESCR)	8/103	5 yrs	USA Texas	Software change requests that result in impact of one (or less) shift of rig downtime, that require 40 man-hrs (or less) off-line labor, and that must be operational within 2 wks. Last hardcopy was ESCR.
FSWE SAIL Math Model Working Group Meeting Minutes	8/105	EOP	USA Texas	Discussions of required changes to SAIL math models.
FSWE SAIL Test Log Books	8/105	EOP	USA - JSC	Documentation of subsystem test results.
FSWE SAIL Workplan Package	8/105	EOP	USA Texas	SAIL project checklists.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE SAIL Test Design Meeting Minutes	8/105	EOP	USA Texas	Record of discussion points, meeting attendees, action items assigned, and modifications made to Boeing Test Requirements Documents (TRDs) that are used to perform formal integrated avionics systems testing in the SAIL.
FSWE SAIL SAS Project Plan	8/105	EOP	USA - JSC	Formal SAIL software project plan documentation.
FSWE SAIL Software Engineering Support Documents	8/105	EOP	USA - JSC	Estimation worksheets, As-built Documents, SQA Configuration and Audit reports, CM status accounting reports, Measurement data, ICD, SDD PMR and SSR presentations, Action logs, Meeting minutes, CAR and DAR.
FSWE SAIL User Guides	8/103	5 yrs	USA - JSC	Directions and/or information pertaining to SAIL software.
FSWE Shuttle Avionics and Tools Source Code	8/103	15 yrs	USA Texas	FSW Source Code archived in readable-text format:PASS code for STS-134, BFS code for OI-34, MEDS IDP VI 07.01 and MDUF VI 06.00 and latest version of Cat A tools (Host, LAN, and PC tools as of April 2011). Source code is for reference only and is not executable. Files were gathered via simple automated scripts, and as a result, some of the files are machine-readable, but not human-readable, and those files have been included, rather than spending resources to identify and remove them. NASA Engineering has responsibility for the archival of the MAGRS-3S source code.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE SAIL Laboratory Maintenance Onsite Calibration Records	8/105	EOP	USA - JSC	Database used to track SAIL tools and test equipment calibration status.
FSWE Mission/SAIL Test and Site Acceptance Products	8/105	EOP	USA - JSC	Data products collected either through the recording of Shuttle mission telemetry data from T-7 hours thru rollout, or through the recording of SAIL flight system and environment data collected during the course of SAIL testing.
FSWE SAIL Lab Data	8/105	EOP	USA - JSC	Data used by Environmental Math Models.
FSWE Math Model Requirement Documents	8/101	Permanent	USA - JSC	Requirements for environmental Math Models used for simulations performed in the SAIL.
FSWE Requirements Analysts' Notebooks	8/105	EOP	USA Texas	These notebooks are records of work performed by requirements analysts.
FSWE FSWAT Software Development Notebooks	8/105	EOP	USA Texas	Flight Software Application Tools software development notebooks document the progress of the developers for each software.
FSWE JSC Test and Operations and Mission Support Data	8/103	5 yrs	USA Texas	This record contains data used for mission support including Mission Evaluation Room (MER) Data/Notebooks, CHIT Notebooks, MRASS, GMEM notebooks, STSxxx Flight Notebooks and SMS Anomaly Reports (ARs).

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FSWE - Space Shuttle Flight Software Process Overview (FSC 101)	8/103	15 yrs	USA Texas	This record is an overview of the Shuttle Flight Software body of knowledge organized by lifecycle phase. Includes organization philosophy, overview presentations, processes, plans and procedures.
FSWE SAIL Source Code	8/103	15 yrs	USA Texas	This record includes human-readable-text source code for SAIL configuration items (custom software programs). Files are organized by SAIL subsystem. Source code is for reference only and is not executable. Files were gathered via simple automated scripts, and as a result, some of the files are machine-readable, but not human readable, and those files have been included, rather than spending resources to identify and remove them.
OMIN Metadata Report	8/103	10 yrs	USA Texas	Listing of data entries from the OMIN database associated with the SASCB configuration items.
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-1, Critical Items	8/102	Destroy/ Delete when no longer needed	WebPCASS	Applicable to the SE&I provided Portable Onboard Computer.
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-2, Hazard Reports	8/102	Destroy/ Delete when no longer needed	WebPCASS	Applicable to the SE&I provided Portable Onboard Computer.
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-1, Problem Reports	8/101	Permanent	WebPCASS	Applicable to the SE&I provided Portable Onboard Computer.

TABLE D.2.6
SSP SYSTEM ENGINEERING AND INTEGRATION SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-2, Problem Closeout and Explanation Report	8/101	Permanent	WebPCASS	Applicable to the SE&I provided Portable Onboard Computer.
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-2, Nonconformance Reporting	8/101	Permanent	JSC Quality Records Center	Applicable to the SE&I provided Portable Onboard Computer.
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-4, Acceptance Data Package (ADP)	8/103	30 yrs after EOP	JSC Quality Records Center	Applicable to the SE&I provided Portable Onboard Computer.
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-13, Software Deliverable Data Package	8/103	30 yrs after EOP	JSC Software Production Facility	Applies to Primary Avionics Software System Software, Backup Flight System software, Multifunction Electronic Display Subsystem (MEDS) and Miniaturized Airborne GPS Receiver (MAGR).

TABLE D.2.7
ORBITER PROJECT SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Controlled Material Files	8/105	TBD	KSC	Original Provisioning files setting up stock records.
LQS Operational Files	8/103	30 yrs after EOP	KSC	
Inventory Files/Lists	4/3.A	See Comments	KSC	Destroy after 2 years of the date on the list.
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
OJT Manuals	3/33.E.1	Permanent	KSC	Permanent.
Video Production/Miscellaneous Productions	2/24.A.2	See Comments	KSC	USA000221, NSLD Training Requirements, Video Tapes. Destroy when 1 year old or no longer needed.
Hardware Test Procedures	8/103	5 yrs after EOP	KSC	Media: Documentum.
Intermediate and Depot Maintenance Manuals (IDMMs)	8/103	5 yrs after EOP	KSC	IDMMs.
Skills Retention Video Tapes	8/107	30 yrs after EOP	KSC	Retain 5 - 30 years after program termination.
Electronic Databases (ADRS, CM03, MAC-PAC Master Plng, Ass./Capabilities, Plng Backlog, Shuttle Transmittal ILs)	8/105	See Comments	KSC	Destroy/Delete when no longer needed.
Logistics Data Center-Engineering Documents*	8/101	Permanent	KSC	*USA/Boeing/Vendor (i.e., hardware/tooling/STE/GSE drawings, specs, Eos. EDCPs, CM03s). Media-hardcopy, ap cards, CDs microfiche.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Data Management PDRDs (i.e., CM05, CM03, RA09, RA10, RA24, QA10, TM04, TM06, QA19, LS02, PDRLs)	8/103	30 yrs after EOP	KSC	Media type-CDs for CM03s only.
Limited Rights/Proprietary Data (i.e., vendor drawings, specs and QA12)	8/101	Permanent	KSC	Media type-aperture cards.
Hardware Test Procedures (HTPs)	8/103	15 yrs after EOP	KSC	Records to be retained in office until EOC, will then be destroyed 5 to 30 years after program.
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
Tool Drawing Files (Tool Design and Vellums)	8/103	30 yrs after EOP	KSC	Upon completion and release of Tool Drawing, originals go to Logistics Tech Data Center.
Inventory Files/List	4/3.A	See Comments	KSC	Destroy after 2 years of the date on the list.
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
Inventory Files/List	4/3.A	See Comments	KSC	Destroy after 2 years of the date on the list.
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
TPSF TAIR - PRs, DRs and TPSs	8/103	29 yrs after EOP	KSC	PRs/TPS CDs.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
Equipment Controlled Property Files	4/12.B.1	10 yrs	KSC	
Inventory File/List	4/3.A	See Comments	KSC	Inv. Records Material, Records Monthly, Retain Previous Triannual Custodian Acct (Eq.) Inv. Files, Inv. Adjustment Records (Material) Monthly. Destroy after 2 years of the date on the list.
Certified Special Processors (CSPs)	5/30.B	9 yrs after EOP	KSC	Close file at end of survey at the end of that fiscal year. Destroy when 9 years old.
Nondestructive Evaluation (NDE)	8/103	30 yrs after EOP	KSC	Destroy 5 - 30 years after program termination.
Process Qualification	8/103	30 yrs after EOP	KSC	
TAIR Book	8/103	30 yrs after EOP	KSC	
Stamp Audits	8/103	30 yrs after EOP	KSC	Destroy 5 - 30 years after program termination.
Surveillance	8/103	30 yrs after EOP	KSC	
Transaction Register	4130.6.A/ B	See Comments	KSC	Transaction Register (Receiving Records). Destroy when obsolete or after 2 years, whichever is sooner.
Finding Aids - File Maintenance	1442.77. A	See Comments	KSC	File Maintenance. Destroy with related records.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Carrier Rate Tender Files	6110/3	See Comments	KSC	Freight Traffic. Destroy 1 year after rates are superseded or rescinded.
Prepaid Bills of Lading - Outbound	6051/3	See Comments	KSC	Freight Traffic - Filed with Commercial Bill of Lading - These are treated like a GBL for retention purposes.
Prepaid Inbound Bills of Lading	6051.1.A	See Comments	KSC	Freight Traffic. Destroy after 2 years.
Freight Files - Shipping (GBL)	6100/2.A	TBD	KSC	Government Bill of Lading (SF1103), DD1149, and KSC 7-577, after period of account.
Freight Files - Shipping (Household Goods)	6100/2.B	See Comments	KSC	Household Goods - Records covering payment for freight. Destroy 6 years after period of the account.
Lost, Damaged, or Improper Shipment Files	6220.6	See Comments	KSC	OS&D Files. Destroy 6 years after case is closed.
Vehicle Report Files - Non-Accident	6710.11. D.1	TBD	KSC	Non-Accident Files - Reports on Motor Vehicles, after date of report.
KSC Vehicle Use Record	6740.H	See Comments	KSC	Mileage Reports (KSC Form 7-490). Destroy after required transfer of information to other records, unless required for accident investigation (see item 11D(2)) or tax purposes, otherwise destroy when 3 years old whichever is sooner.
Leased Vehicles GSA Form 1152	6/11.M.1	See Comments	KSC	Destroy 4 years after vehicle is returned to GSA.
Freight Files (P&S Vehicle Register)	6100/2.G	See Comments	KSC	Packaging and Shipping KSC Motor Carrier Vehicle Register (KSC 7-349 NS/7-467). Destroy after 1 year.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
Corrective and Preventive Action Records	8/103	15 yrs after EOP	USA Florida	
Purge	8/103	30 yrs after EOP	USA Florida	Historical working records scanned to CD; records maintained in database. Destroy 5 - 30 years after program termination.
Controlled Material Files	4/12.B.2	See Comments	KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials. Destroy after 2 years.
Process Qualification	8/103	30 yrs after EOP	KSC	
Flight Crew Equipment Crew Debriefing	8/101	Permanent	USA Texas	Includes GFE-FCE FRR, ORR and OPTWG meetings.
FCE/EVA Requests for Support (RFS)	8/103	5 yrs	USA Texas	
FCE/EVA MACR/ACR	8/101	Permanent	USA Texas	Part of Data Packs indexed by part numbers.
FCE/EVA Engineering Drawings	8/101	Permanent	USA Texas	
FCE/EVA AOR/ORI	8/103	15 yrs	USA Texas	Assumption of Responsibility/Operations Readiness Inspection.
FCE/EVA Design Verifications	8/103	15 yrs	USA Texas	Memos of New Hardware Designs.
FCE/EVA EMU Hdwr. List	8/103	15 yrs	USA Texas	Flight specific, Index: Alpha/Numeric Storage.
FCE/EVA MUPP-IE	8/103	15 yrs	USA Texas	Index: Alpha/Numeric Location.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
04 Report, STS Mission Equip. Configuration Accounting System	8/103	15 yrs	USA Texas	Index: by flight, Hardcopy: sent to Quality Records when flight is completed.
FCE/EVA Discrep Report/Material Rev Board (DR/MRR)	8/103	30 yrs	USA Texas	Indexed: Alpha/Numeric Storage.
FCE/EVA Task Preparation Sheet (TPS)	8/103	10 yrs	USA Texas	Index: Alpha/Numeric Storage.
FCE/EVA Acceptance Data Pack (ADP)	8/101	Permanent	USA Texas	Hwd chronological history and as builts, part lists Index: Alpha/Numeric.
FCE/EVA Fabrication Action Breakdown (FAB)	8/103	15 yrs	USA Texas	Index: Alpha/Numeric.
FCE/EVA Test Readiness Review (TRR) packages	8/103	15 yrs	USA Texas	Index: Alpha/Numeric.
FCE/EVA 1027's Flight Equipment Acceptance	8/103	15 yrs	USA Texas	Index: Alpha/Numeric.
FCE/EVA EMU Data Tracking Logs	8/103	15 yrs	USA Texas	Data Tracking Logs remain at FCE/EVA during life of hardware then to FRC. Index: Alpha/Numeric.
EVAS Program Status (SQ&MA)	8/105	EOP	USA Texas	EVAS DRDs 2 and 4. Documentation is kept until superseded by next revision.
Lab Reinspection Request	5/31.D	EOP	USA Texas	
Over Due Tags	8/103	EOP	USA Texas	Index: Numeric storage, maintained in QRC until EOC.
ESD Bench Verification Preventive Maintenance Records	8/56.B.1	EOP	USA Texas	Quality Record.
First Article Inspection	8/103	30 yrs	USA Texas	Project Test, Inspection, Engineering and evaluation files.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Priority Calibration Service Request Form (JSC Form 585)	8/103	EOP	USA Texas	Project Test, Engineering and evaluation files.
MSCL Calibration Service Tag (JSC Form 189)	8/103	EOP	USA Texas	Project Test, Engineering and evaluation files.
Cold Storage Daily Logs	8/105	EOP	USA Texas	Project Test, Engineering and evaluation files.
Crew Squawks/Requests Logs	8/103	15 yrs	USA Texas	Project Test, Engineering and evaluation files.
Production Work Order (PWO)	8/103	15 yrs	USA Texas	Project Test, Engineering and evaluation files.
Non Conformance Records (NCRs)	8/103	5 yrs	USA Texas	
Shipping Documents	4/8.C.2	EOP	USA - JSC	Includes 1149, 290, 250, 8112X.
Controlled Material Files	4/12.B.1.	10 yrs	USA Texas	ERN Records, Utilization and Summary Stock Records, Work Authorizing Documents, PC Records, 1018 and financial reports, and NASA Audits for both LSF and Buccaneer locations.
Government Property Losses	4/2.A	EOP	USA Texas	Destroy 10 years after date of action. Survey Reports/Inventory Adjustment Vouchers (IAV) for both LSF and Buccaneer locations.
Inventory File/List	4/3.A	EOP	USA Texas	Cyclic.
Government Property Files	8/103	5 yrs	USA Texas	Records include: Equipment Reference Number Files (ECN), and PC/Alternate appointment forms.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Government Property Reports/Records	4/12.B.1	10 yrs	USA Texas	Records include: ERN Records, Utilization and Summary Stock Records (electronic only), Work Authorizing Documents, PC Records, 1018 and financial supporting documentation, Performance Measures, Quality Records Checklist and NASA.
Inventory Adjustment Vouchers and Letters	4/1	EOP	USA Texas	
CS-LIMS	4/4	EOP	USA Texas	Destroy on discontinuance of installation.
Logistics Management System Database	4/4	EOP	USA Texas	Destroy on discontinuance of installation.
Simulation Interface Device (SID) Anomaly Reports	8/105	EOP	USA Texas	
Flight Equipment Interface Device (FEID) Preventive Maintenance Records	8/56.B.1	EOP	USA Texas	
Simulation Interface Device (SID) Preventive Maintenance Records	8/56.B.1.a	EOP	USA Texas	
Test Preparation Sheets (TPS) and Logs	8/105	EOP	USA Texas	Test Preparation Sheets/Work Authorizations/non-flight for SPF.
General Purpose Computer (GPC) Test Station Preventative Maintenance Records	8/56.B.1.A	EOP	USA Texas	Ref. USA004942. Begins CY2003.
SAIL/JAEL DPS Preventative Maintenance Records	8/56.B.1.A	EOP	USA Texas	Ref. USA007140. Begins CY2003.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Stamp Responsibilities	8/36.5.C. 2b.2	EOP	USA Texas	As per USA009358 (NSTS 5300.4 [1D-2], Change No. 9 dated 6-9-06), FPP-E-03-19, FPP-E-03-25).
Engineering Changes (ECs) and Logs	8/105	EOP	USA Texas	
Flight Equipment Interface Device (FEID) Anomaly Reports	8/105	EOP	USA Texas	
Solder X-ray Photos	8/105	EOP	USA Texas	
Anomaly Reports/Discrepancy Reports (ARs/DRs)	8/105	EOP	USA Texas	
General Purpose Computer (GPC) Data Packs	8/105	EOP	USA Texas	
Quality Surveillance Checklists	8/105	EOP	USA Texas	USA 110-258 Prototype Quality Surveillance Checklist USA 110-259 Repair Quality Surveillance Checklist USA 110-260 New Build Quality Surveillance Checklist.
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-1, Critical Items	8/102	Destroy/ Delete when no longer needed	OPO/GFE JSC/GFE- see comments	WebPCASS (Baselined CIL) JSC Flight Crew Equipment and GFE located at JSC: CIL, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-2, Hazard Reports	8/102	Destroy/ Delete when no longer needed	OPO/GFE JSC/GFE- see comments	HR, WebPCASS (Baselined HR) JSC Flight Crew Equipment and GFE located at JSC: HR, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-1, Safety Analysis Report (SAR)	8/103	30 yrs after EOP	Boeing JSC/GFE- see comments	Data Management, Boeing Huntington Beach - Contact Boeing for access JSC Flight Crew Equipment and GFE located at JSC: SAR, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-2, Accident/Incident Report	8/101	Permanent	KSC IRIS JSC/GFE- see comments	 Incident Reporting Information System (IRIS) owned by NASA Office of Safety and Mission Assurance (OSMA); server in Tempe, AZ. Note: (1) For Retention Period, see NPR 1441.1D, Agency Filing Scheme (AFR) 1710, Item 119 - “Retire to FRC when 5 yrs old. Transfer to NARA when 30 yrs old.” JSC Flight Crew Equipment and GFE located at JSC: Location of Records: NS Safety Test Operation Division

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-3, NASA ALERT System Documentation	8/103	30 yrs after EOP	Florida AGTS JSC/GFE- see comments	Historical working records scanned to CD; records maintained in database. Orbiter records dispositioned in Advanced GIDEP Tracking System (AGTS) https://usa34.usa-spaceops.com/GIDEP/ JSC Flight Crew Equipment and GFE located at JSC: JSC/NASA Advisory/GIDEP Alerts Tracking Reports 1. Hardcopy response forms; Files in 2450/140 2. JSC GIDEP/Advisory Status Tracking System (2008+) http://jarts-sma.jsc.nasa.gov; (Multi-Program)
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-5, Vehicle and GSE Limited Life Item List	8/103	30 yrs after EOP	WebPCASS JSC/GFE- see comments	https://usa1.usa-spaceops.com/hq/warehouse/ssp/index.cfm JSC Flight Crew Equipment and GFE located at JSC: 1. LLiL, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-6, Project Parts List	8/103	30 yrs after EOP	JSC JSC/GFE- see comments	http://nepp.nasa.gov/npsl/ JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 3. EEE GFE Records: S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-7, Limited Life Waiver	8/103	30 yrs after EOP	WebPCASS JSC/GFE- see comments	https://usa1.usa-spaceops.com/hq/warehouse/ssp/index.cfm JSC Flight Crew Equipment and GFE located at JSC: 1. Waivers, FCE CCB Change Requests a. STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document b. JSC 17763, Launch Delay Action Requirements Document Program Requirements Document 2. STIC/JSC 17057, JSC Limited Cycle Time/Age Life Item Requirements 3. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-9, EEE Part Qualification Test Report	8/103	30 yrs after EOP	Orbiter see comments JSC/GFE- see comments	Orbiter information was provided to NASA as part of the TM06 (Qualification Test Report) JSC Flight Crew Equipment and GFE located at JSC: 1. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. Test Report, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 3. EEE GFE Records S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-10, EEE Parts Where Used Status Report	8/103	30 yrs after EOP	Orbiter see comments JSC/GFE- see comments	Orbiter information has been provided to NASA per PDRD FE019 JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. ADP/ABL, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. GCAR deviations, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov 4. EEE GFE Records S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-11, EEE Parts Deviations Request	8/103	30 yrs after EOP	Orbiter see comments JSC/GFE- see comments	Orbiter information has been provided to NASA per PDRD FE031 JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. ADP/ABL, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. GCAR deviations, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4 EEE GFE Records S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-12, Element Contamination Control Plans	8/103	30 yrs after EOP	SELS JSC/GFE- see comments	KVT-PL-0025, Shuttle Facility/Orbiter Contamination Control Plan resides in Spaceops Electronic Library System (SELS) on USA Home Webpage: https://usa1.usa-spaceops.com/ USA FCE: Processing Procedures are in SELS. JSC Flight Crew Equipment and GFE located at JSC: 1. JPR 5322.1G Contamination Control Requirements Manual 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. TPS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-13, Quality Plan	8/103	30 yrs after EOP	SELS JSC/GFE- see comments	USA011117, “SPOC Quality Plan” resides in Spaceops Electronic Library System (SELS) on USA Home Webpage: https://usa1.usa-spaceops.com JSC Flight Crew Equipment and GFE located at JSC: 1. JPD 1280.1 Quality Policy - Replaces JPD 5335.1 2. JPR 1280.2 Quality Manual - Replaces JPD 5335.3

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-14, EEE Part Qualification Test Request	8/103	30 yrs after EOP	Orbiter see comments JSC/GFE- see comments	Orbiter information was provided to NASA as part of the TM06 (Qualification Test Report) and PDRD FE021 JSC Flight Crew Equipment and GFE located at JSC: \\jsc-sma-f01\EEE_Parts
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-17, Shuttle Fluid Spill/Leak Logs	8/103	30 yrs after EOP	USA-KSC SPEARS JSC/GFE- see comments	Stand alone FLUID SPILL/LEAKS LOGS maintained until 1998. After 1998, data available in PRACA/iPRACA. JSC Flight Crew Equipment and GFE located at JSC: Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-18, Standard Repair and Material Processes	8/103	30 yrs after EOP	USA KSC SELS JSC/GFE- see comments	https://usa1.usa-spaceops.com/usago/orgs/Go001/ USA FCE: SRPs are in SELS. JSC Flight Crew Equipment and GFE located at JSC: 1. ADP/ABL, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. FIAR, Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/ 3. GCAR Deviations, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-19, SSP Element Project Risk Reduction Candidates	8/103	30 yrs after EOP	JSC JSC/GFE- see comments	SIRMA JSC Flight Crew Equipment and GFE located at JSC: Information consolidated into NSTS 22973, Management Safety Assessment.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-20, Safety Plan	8/103	30 yrs after EOP	SELS JSC/GFE- see comments	USA008435, Safety and Health Plan resides in Spaceops Electronic Library System (SELS) on USA Home Webpage: https://usa1.usa-spaceops.com/ JSC Flight Crew Equipment and GFE located at JSC: 1. JSC 17481A, Safety Requirements Document for JSC Space Shuttle Flight Equipment
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-1, Problem Reports	8/101	Permanent	WebPCASS	https://usa1.usa-spaceops.com/hq/warehouse/ssp/index.cfm JSC Flight Crew Equipment and GFE PRACA located at JSC/SAIC: http://praca-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-2, Problem Closeout and Explanation Report	8/101	Permanent	WebPCASS JSC/GFE- see comments	https://usa1.usa-spaceops.com/hq/warehouse/ssp/index.cfm JSC Flight Crew Equipment and GFE PRACA located at JSC/SAIC: 1. TPS, Quality Assurance Record Center 2. http://qfed-sma.jsc.nasa.gov/qarc 3. FIARs, Problem Reporting and Corrective Actions (PRACA) http://praca-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2EN-18, Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards	8/103	30 yrs after EOP	JSC/GFE- see comments	Orbiter TBD JSC Flight Crew Equipment and GFE located at JSC: 1. Requirements Document, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-1, EEE Parts Specification	8/103	30 yrs after EOP	JSC	Boeing Spec MF0004.400; MIL-HDBK-1547, MIL Spec - D8545B JPL; http://nepp.nasa.gov/npsl/ JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. PTRS/EIS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. EEE GFE Records - S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-2, Nonconformance Reporting	8/101	Permanent	KSC/JSC WebPCASS SARAH JSC/GFE- see comments	 https://usa1.usa-spaceops.com/hq/warehouse/ssp/index.cfm JSC Flight Crew Equipment and GFE PRACA located at JSC/SAIC 1. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. FIAR, Problem Reporting And Corrective Actions (PRACA) http://praca-sma.jsc.nasa.gov/ 3. NCR/Waiver, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-3, Contractor Workmanship Standards	8/103	30 yrs after EOP	SELS	DOCUMENTUM(EDMSP)/SELS; Operating Procedure (OP) USA009549 defines workmanship standards. USA FCE: Follows NASA Workmanship Standard JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. PTRS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-4, Acceptance Data Package (ADP)	8/103	30 yrs after EOP	USA JSC QARC SARAH JSC/GFE- see comments	https://usa31.usa-spaceops.com:8011/wdk/component/start_spears USA FCE: Original delivered to JSC upon delivery of h/w. Historical data retained in SARAH. JSC Flight Crew Equipment and GFE located at JSC: 1. ADP, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-5, EEE Part Application Analysis Report	8/103	30 yrs after EOP	Orbiter see comments JSC/GFE- see comments	Orbiter information has been provided to NASA per PDRD FE018 JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. Analysis, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. EEE GFE Records S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-7, Limited Life Status Reports	8/103	30 yrs after EOP	IMIC JSC/GFE- see comments	Integrated Management Information Computer (IMIC) database. JSC Flight Crew Equipment and GFE located at JSC: 1. FCE CCB Change Request STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document JSC 17763, Launch Delay Action Requirements Document Program Requirements Document 2. STIC/JSC 17057, JSC Limited Cycle Time/Age Life Item Requirements 3. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. Historical data retained in SARAH

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-8, Pressure Vessel Historical Data	8/103	30 yrs after EOP	USA-KSC JSC/GFE- see comments	DOCUMENTUM(ARP); ARP - Automated Release Processing Notes: Pressure Vessel Historic data includes: (a) Pressure Certification Record released in TDC to be transferred to NASA EDC upon contract closeout. (b) LRU application: List of components of system pressure vessel application (contains next certification dates, system ratings, etc.). (c) Pressure Vessel Application - Period of certification, current certification date, calculations of next certification, thickness of material of vessels, KNPR #s, etc. JSC Flight Crew Equipment and GFE located at JSC: 1. JSC-GSE Pressure Systems Database (PSDB) http://sma.jsc.nasa.gov/PSDB/Pressure .aspx 2. JSC-GFE Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. Pressure data retained in SARAH for Crew Escape Equipment.

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-11, Sampling Plans/Procedures	8/103	30 yrs after EOP	SELS JSC/GFE- see comments	USA011117, SPOC Quality Plan resides in Spaceops Electronic Library System (SELS) on USA Home Webpage: https://usa1.usa-spaceops.com/ JSC Flight Crew Equipment and GFE located at JSC: 1. JPR 5335.6, Sampling and Validation Testing of Raw Materials and Gases 2. Receiving Inspection Test Facility (RITF) 3. Non-Destructive Evaluation Reports http://qfed-sma.jsc.nasa.gov/nde/nde.aspx 4. Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 5. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.7
ORBITER PROJECT SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-12, List of Critical Processes	8/103	30 yrs after EOP	USA-KSC SELS JSC/GFE- see comments	DOCUMENTUM; Critical Processes are identified by Operating Procedure (OP) USA004547. USA FCE: Operating Procedure (OP) USA005592, Requirements for New or Revised FCE/EVA Process Document. JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. PTRS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. EEE GFE Records - S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-13, Software Deliverable Data Package	8/103	30 yrs after EOP	JSC/GFE- see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. SwDP, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. SwDP, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.8
SSP SAFETY AND MISSION ASSURANCE SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
SSP Quality Panel (QP) Agendas, Supporting Meeting Documentation/ Presentations and Recordings or Minutes	8/103	10 yrs after EOP	USA Texas	To be dispositioned to JSC Records Manager at EOP.
SSP Safety and Mission Assurance Panel (SMAP) Agendas, Supporting Meeting Documentation/Presentations and Recordings or Minutes	8/103	10 yrs after EOP	USA Texas	To be dispositioned to JSC Records Manager at EOP.
Integrated Safety Engineering Review Panel (ISERP)	8/103	10 yrs after EOP	PBMA	To be dispositioned to JSC Records Manager at EOP.
JSC Safety Engineering Review Panel (JSERP)	8/103	10 yrs after EOP	PBMA	To be dispositioned to JSC Records Manager at EOP.
Flight Equipment Safety and Reliability Review Panel (FESRRP)	8/103	10 yrs after EOP	JSC/SAIC/Panels Database	These records will be officially transferred to the International Space Station Program (ISSP). To be dispositioned to JSC Records Manager at end of ISSP.
Payload Safety Review Panel (PSRP)	8/103	25 yrs after EOP	DMS	These records, part of a multi-program active PSRP data management system, will be officially transferred to the International Space Station Program (ISSP). To be dispositioned to JSC Records Manager at end of ISSP.
KSC Safety Engineering Review Panel (KSERP)	8/103	10 yrs after EOP	KSC	To be dispositioned to KSC Records Manager at EOP.
MSFC Safety Engineering Review Panel (MSERP)	8/103	10 yrs after EOP	MSFC	To be dispositioned to MSFC Records Manager at EOP.
Risk Management Working Group	8/104	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.

TABLE D.2.8
SSP SAFETY AND MISSION ASSURANCE SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Shuttle Integrated Risk Management Application (SIRMA) Database	8/105	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.
SSP Reliability Analyses	8/103	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.
SSP Probabilistic Risk Assessment (SPRA) Data Sets, Documentation, Models, Special Assessments	8/103	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.
SSP Risk Management Training	8/103	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.
SSP Safety Hotline	8/103	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.
System Safety Review Panel Records	8/103	10 yrs after EOP	SAIC Texas	To be dispositioned to JSC Records Manager at EOP.

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Records for payload bay closure/latch tools	8/103	7 yrs after EOP	JSC-USA	
Records for umbilical bay door closure tools	8/103	7 yrs after EOP	JSC-USA	
Records for TPS repair/inspection tools	8/101	Permanent	JSC	The following hardware documentation will remain in the Crew and Thermal Systems Database (CTSD) for future International Space Station utilization. 2”/3”/5” scrappers, Tile Repair Ablator Dispenser (T-RAD), CIPPA Discard Container (CDC) thermal sensor, ruler gauge, drills, punch tool, and large gap gauge.
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-1, Critical Items	8/102	Destroy/ Delete when no longer needed	XA/GFE JSC/EVA see comments	1. CIL, WebPCASS (Baselined CIL) 2. Transition of EVA Safety Paper from SSP to ISS Program https://sspweb.jsc.nasa.gov/webdata/mss/ssp_cr/archive/2008/096061Z.pdf 3. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. CILs, Dynamic Object Oriented Requirements System (DOORS) - \\huswlf0q\groups\Doors\DOORS.bat i) As required per CR System ii) Deliver CIL to NASA by CD/DVD when contract is over

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-1, Critical Items (Concluded)				b. Centric Project - https://login.utc.com/security/utcforms/HSCentricLogin.fcc?TYPE=33554433&REALMOID=06-2760 f300-b7a6-1003-8870-83b05e5d000f&GUID=&SMAUTHREASON=0&METHOD=GET&SMAGENTNAME=aerospacepower.com&TARGET=SMHTTPS%3a%2f%2fwww%2eaerospacepower%2ecom%2fHamiltonSundstrand%2f i) As required per CR System ii) Deliver CIL to NASA by CD/DVD when contract is over 4. Certification Records, JSC Flight Crew Equipment and GFE located at JSC: a. CIL, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 1SR-2, Hazard Reports	8/102	Destroy/ Delete when no longer needed	XA/GFE JSC/EVA see comments	1. HR, WebPCASS (Baselined HR) 2. Transition of EVA Safety Paper from SSP to ISS Program https://sspweb.jsc.nasa.gov/webdata/mss/ssp_cr/archive/2008/096061Z.pdf 3. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. DOORS - \\huswlf0q\groups\Doors\DOORS.bat b. Centric Project - https://login.utc.com/security/utcforms/HSCentricLogin.fcc?TYPE=33554433&REALMOID=06-2760 f300-b7a6-1003-8870-83b05e5d000f&GUID=&SMAUTHREASON=0&METHOD=GET&SMAGENTNAME=aerospacepower.com&TARGET=SMHTTPS%3a%2f%2fwww%2eaerospacepower%2ecom%2fHamiltonSundstrand%2f 4. JSC Flight Crew Equipment and GFE located at JSC: a. HR, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-1, Safety Analysis Report (SAR)	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. Transition of EVA Safety Paper from SSP to ISS Program https://sspweb.jsc.nasa.gov/webdata/mss/ssp_cr/archive/2008/096061Z.pdf 2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. DOORS - \\huswlf0q\groups\Doors\DOORS.bat b. Centric Project - https://login.utc.com/security/utcforms/HSCentricLogin.fcc?TYPE=33554433&REALMOID=06-2760 f300-b7a6-1003-8870-83b05e5d000f&GUID=&SMAUTHREASON=0&METHOD=GET&SMAGENTNAME=aerospacepower.com&TARGET=SMHTTPS%3a%2f%2fwww%2eaerospacepower%2ecom%2fHamiltonSundstrand%2f 3. JSC Flight Crew Equipment and GFE located at JSC a. SAR, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-2, Accident/Incident Report	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: Location of Records: NS Safety Test Operation Division

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-3, NASA ALERT System Documentation	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. JSC/NASA Advisory/GIDEP Alerts Tracking Reports a. Hardcopy response forms; Files in 2450/140 b. JSC GIDEP/Advisory Status Tracking System (2008+) http://jarts-sma.jsc.nasa.gov; (Multi-Program)
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-5, Vehicle and GSE Limited Life Item List	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. LLiL, Certification Data System (CDS) 2. http://cds-sma.jsc.nasa.gov/ 3. USA SARAH Database - https://usatxwas2e.usa-extra.com/forms/frmservlet?config=sarah_menu 4. One EVA Centric Project - https://login.utc.com/security/utcforms/HSCentricLogin.fcc?TYPE=33554433& REALMOID=06-2760f300-b7a6-1003- 8870-83b05e5d000f&GUID=&SMAUTHREASON=0&METHOD=GET&SMAGENTNAME=aerospacepower.com&TARGET=SMHTTPS%3a%2f%2fwww%2eaerospacepower%2ecom%2fhamiltonsundstrand

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-6, Project Parts List	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. EMU Exclusive a. HSWL Engineering Information System (EIS) Drawing System 2. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 3. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. EEE GFE Records a. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-7, Limited Life Waiver	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. Waivers, FCE CCB Change Requests a. STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document b. JSC 17763, Launch Delay Action Requirements Document Program Requirements Document

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-7, Limited Life Waiver (Concluded)				2. XA CCB Change Requests a. STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document 3. STIC/JSC 17057, JSC Limited Cycle Time/Age Life Item Requirements 4. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-9, EEE Part Qualification Test Report	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. Test Report, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 3. EEE GFE Records a. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-10, EEE Parts Where Used Status Report	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ b. ADP/ABL, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc c. GCAR deviations, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ d. EEE GFE Records S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts 2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. Assessed through Hamilton Sund-strand Contract Officer i) HSWL Engineering Information System (EIS)

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-11, EEE Parts Deviations Request	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. FCE CCB Change Requests a. STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document b. JSC 17763, Launch Delay Action Requirements Document Program Requirements Document 2. XA CCB Change Requests a. STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document 3. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 4. Quality Assurance Record Center 5. http://qfed-sma.jsc.nasa.gov/qarc 6. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 7. EEE GFE Records a. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-12, Element Contamination Control Plans	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. JPR 5322.1G, Contamination Control Requirements Manual 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. TPS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-13, Quality Plan	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. JPD 1280.1, Quality Policy - Replaces JPD 5335.1 b. JPR 1280.2, Quality Manual - Replaces JPD 5335.3 c. Process Based Surveillance Reports http://jsc-sma-misweb.jsc.nasa.gov/?TypeID=117 http://qrex-sma.jsc.nasa.gov d. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc e. PTRS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. One EVA Quality Plan - (DRD) 1EVA-43-001 Contract # NNJ04HA01C b. ESOC Quality Plan - ESOC-43-001 Contract # NNJ10TB01C

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-14, EEE Part Qualification Test Request	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. EEE GFE Records a. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-17, Shuttle Fluid Spill/Leak Logs	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-18, Standard Repair and Material Processes	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. ADP/ABL, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc b. FIAR, Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/ c. GCAR, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-18, Standard Repair and Material Processes (Concluded)				2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. Assess through Contracts Officer i) One EVA Quality Plan - (DRD) 1EVA-43-001 Contract # NNJ04HA01C. ii) ESOC Quality Plan - ESOC-43-001 Contract # NNJ10TB01C. iii) HSWL Engineering Information System (EIS) iv) Process Asset Library (PAL)
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-20, Safety Plan	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. NSTS 07700, Vol. XIV (Appendix 7) System Description and Design Data - Extravehicular Activities b. NSTS 5300.4(1D-2) SRMQ Provisions for the Space Shuttle Program 2. EMU Exclusive a. One EVA System Safety Plan - DRD 37

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-1, Problem Reports	8/101	Permanent	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-2, Problem Closeout and Explanation Report	8/101	Permanent	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc b. FIARs, Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/ 2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. Request for Corrective Actions (RCAs) i) One EVA Program Office 1) Centric Project - https://login.utc.com/security/utcforms/HSCentricLogin.fcc?TYPE=33554433&REALMOID=06-2760f300-b7 a6-1003-8870-83b05e5d000f&GUID=&SMAUTHREASON=0&METHOD=GET

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-2, Problem Closeout and Explanation Report (Concluded)				&SMAGENTNAME=aerospacepower.com&TARGET=SMHTTPS%3a%2f%2fwww%2eaerospacepower%2ecom%2fHamiltonSundstrand%2f 2) One EVA Dash Board Database https://oneeva.jsc.nana.gov b. Assess through Contracts Officer i) HSWL Engineering Information System (EIS) ii) Process Asset Library (PAL)
NSTS 07700, Volume V, Appendix C, Information Requirement 2EN-18, Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. CARD, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-1, EEE Parts Specification	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. PTRS/EIS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. EEE GFE Records a. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-2, Nonconformance Reporting	8/101	Permanent	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 2. FIAR, Problem Reporting and Corrective Action (PRACA) http://praca-sma.jsc.nasa.gov/ 3. NCR/Waiver, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-3, Contractor Workmanship Standards	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ b. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc c. PTRS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. Drawings - HSWL Engineering Information System (EIS) i) Assess through Contracts Officer ii) One EVA Quality Plan - 1EVA-43-001 Contract # NNJ04HA01C iii) ESOC Quality Plan - ESOC-43-001 Contract # NNJ10TB01C - as of Oct 1, 2010
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-4, Acceptance Data Package (ADP)	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. ADP, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-4, Acceptance Data Package (ADP) (Continued)				2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. USA FCE retains ADPs in SARAH Database https://usatxwas2e.usa-extra.com:4443/sso/jsp/login.jsp?site2pstoretoken=v1.4~19506C2D~AAA1DBA658AA44E4D69C31171682EF74BFDED9B562A780A95AAAABCDDB1E4C260B6D23729BAD226B0780D27761EB54898D68730F061F7F494E85D10F89DA6A2FFBF0433124336A68AABBB6D485898FCB7D9DD2540DE741503DA2CBF1C8FBA995950D3E6DFC4ED1252C584536C0859CD22F81D880644A8088C4BEEE6B5BA16107FBF3F7F18A07A42CB3B02E87CBD1BC87CDF6CE98013439A25F190BF90266B75B8DCD7B9F4E94CC07EAB909A30730D6637C1832C82766E9FCD2B08900158ED0DA2FFD4D8785E732940B93100634617593A0B6B26BC8C37710F829C5F18D69FA58&p_error_code=&p_submit_url=https%3A%2F%2Fusatxwas2e.usa-extra.com%3A4443%2Fsso%2Fauth&p_cancel_url=https%3A

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-4, Acceptance Data Package (ADP) (Concluded)				%2F%2FUSATXWAS2e.usa-extra.com&ssousername=) b. USA FCE retains hard copy ADPs in the USA Quality Records Center, 16840 Buccaneer, Houston TX
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-5, EEE Parts Application Analysis Report	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ 2. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 3. Analysis, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ 4. EEE GFE Records a. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-7, Limited Life Status Reports	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. FCE CCB Change Requests i) STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document ii) JSC 17763, Launch Delay Action Requirements Document Program Requirements Document b. XA CCB Change Requests i) STIC/JSC 24937, Limited Life Time Cycle Items Program Requirements Document c. STIC/JSC 17057, JSC Limited Cycle Time/Age Life Item Requirements d. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-7, Limited Life Status Reports (Concluded)				2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive USA FCE retains ADPs in SARAH Database https://usatxwas2e.usa-extra.com:4443/sso/jsp/login.jsp?site2pstoretoken=v1.4~19506C2D~AAA1DBA658AA44E4D69C31171682EF74BFDED9B562A780A95AAAABCDDB1E4C260B6D23729BAD226B0780D27761EB54898D68730F061F7F494E85D10F89DA6A2FFBF0433124336A68AABBB6D485898FCB7D9DD2540DE741503DA2CBF1C8FBA995950D3E6DFC4ED1252C584536C0859CD22F81D880644A8088C4BEEE6B5BA16107FBF3F7F18A07A42CB3B02E87CBD1BC87CDF6CE98013439A25F190BF90266B75B8DCD7B9F4E94CC07EAB909A30730D6637C1832C82766E9FCD2B08900158ED0DA2FFD4D8785E732940B93100634617593A0B6B26BC8C37710F829C5F18D69FA58&p_error_code=&p_submit_url=https%3A%2F%2Fusatxwas2e.usa-extra.com%3A4443%2Fsso%2Fauth&p_cancel_url=https%3A%2F%2FUSATXWAS2e.usa-extra.com&ssousername=)

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-8, Pressure Vessel Historical Data	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. JSC-GSE Pressure Systems Database (PSDB) http://sma.jsc.nasa.gov/PSDB/Pressure. aspx 2. JSC-GFE Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-11, Sampling Plans/Procedures	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. JPR 5335.6, Sampling and Validation Testing of Raw Materials and Gases 2. Receiving Inspection Test Facility (RITF) 3. Non-Destructive Evaluation Reports http://qfed-sma.jsc.nasa.gov/nde/nde.aspx 4. Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc 5. Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-12, List of Critical Processes	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	1. JSC Flight Crew Equipment and GFE located at JSC: a. Drawing BOM, Engineering Drawing Control Center http://edcc.jsc.nasa.gov/ b. TPS, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc c. PTRS, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/ d. EEE GFE Records e. S&MA Electronic Shared folder \\jsc-sma-f01\EEE_Parts 2. One EVA/Extravehicular Space Operation Contract (ESOC) Exclusive a. Drawings - Engineering Information System (EIS) i) Assess through Hamilton Sundstrand Contracts Officer ii) One EVA Quality Plan - 1EVA-43-001 Contract # NNJ04HA01C iii) ESOC Quality Plan - ESOC-43-001 Contract # NNJ10TB01C - new as of Oct. 1, 2010

TABLE D.2.9
EXTRAVEHICULAR ACTIVITY SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-13, Software Deliverable Data Package	8/103	30 yrs after EOP	XA/GFE JSC/EVA see comments	JSC Flight Crew Equipment and GFE located at JSC: 1. EMU Exclusive a. DOORS SW DP b. SwDP, Quality Assurance Record Center http://qfed-sma.jsc.nasa.gov/qarc c. SwDP, Certification Data System (CDS) http://cds-sma.jsc.nasa.gov/

TABLE D.2.10
MSFC - PROPULSION SYSTEMS ENGINEERING AND INTEGRATION SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Configuration Management Files: Program Change Identification Number (PCIN) Files - Project CRs, DARs, DDARs, ECPs, ECRs, FECs, MCRs, MPCPs, NCRs, PCPs, VCRs, etc. Configuration Management Audit Reports, SSME, ET, RSRM, SRB 2000 - 2006 Configuration Accounting and Status Reports MSFC Technology Test Bed Documentation	8/101	Permanent	Shuttle Records Closeout (SRC) Center MSFC Bldg. 4570	
Mod Kit Instructions and Installation Notice Cards	8/101	Permanent	SRC Center MSFC Bldg. 4570	
Shuttle Data Configuration Document - Defines MSFC Data Reduction Center Database lists, measurements, calibrations, engineering units database descriptions	8/101	Permanent	MSFC Shuttle portal	
Shuttle Data Configuration Document - Defines MSFC Data Reduction Center Database lists measurements, calibrations, engineering units database descriptions	8/101	Permanent	555 Discovery Drive	
Center Director Pre-Flight Readiness Review Presentations	8/101	Permanent	SRC Center MSFC Bldg. 4570	

TABLE D.2.10
MSFC - PROPULSION SYSTEMS ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
ET/MPS Flight Evaluation	8/101	Permanent	Shuttle Records Closeout System (SRCS)	
Flight Evaluation Report Executive Summary	8/101	Permanent	SRCS	
MPS Significant Events and Performance 1993 - 1995	8/101	Permanent	4202/B109C	
MPS Flight Evaluation Reports	8/101	Permanent	4202/112	
Chief Engineers Review Board and PSE&I CERB/PRB Presentations/Packages	8/101	Permanent	PSE&I web page	
Space Shuttle Propulsion Office Program Management Council Meetings (PMC) - Agendas, Briefing Material and Minutes	8/101	Permanent	SRCS	
PSE&I Debris Assessment	8/101	Permanent	4202/B109C	
Portable Disc Drive 538670 (Contains Experimental Camera Data STS-117 - STS-114)	8/101	Permanent	4202/B109C	
SSP PLOAD Results 1991 - 1996	8/101	Permanent	4203/4104A	
Flight Configuration Verification Report	8/103	EOP + 1	SRC Center MSFC Bldg. 4570	
LH2 Leak Investigation 1990	8/103	EOP + 1	4202/B111	
Space Shuttle Propulsion Schematics	8/103	Temporary	4202/B107	
Space Shuttle Solid Rocket Booster Systems Manual	8/103	EOP + 2	SRCS	
PSE&I Pre-Flight Readiness Review Presentations	8/103	EOP	SRC Center MSFC Bldg. 4570	

TABLE D.2.10
MSFC - PROPULSION SYSTEMS ENGINEERING AND INTEGRATION SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
MPS Quick Look Notes 2008 - Present	8/103	EOP + 1	SRCS	
PSE&I Risk Management Board Meeting Files and Presentations	8/103	EOP	Shuttle online RMB	
Propulsion Systems Integration Group (PSIG) Meeting Files and Presentations	8/103	EOP + 2	4203/4114	
HOSC MSFC Shuttle Management Log Book (Log of countdown and HOSC Issues) STS-114	8/103	EOP	4202/B109C	
Debris - Reference Material	8/103	EOP	4202/B109C	
Lift-off Debris Reference Data	8/103	EOP + 5	4202/B109C	
Main Propulsion Test Program (MPTA) Pre-Shuttle Reference Material, Engineering Drawings, Test Reports, Documentation and Test Requirements	8/103	EOP + 1	4203/4114	
MSFC Materials and Processing (M&P) Hot Gas Testing Records	8/103	EOP + 5	4554, 4601, 4759, 4707	
MSFC Materials and Processing (M&P) Work Order Request (WOR)	8/103	EOP + 5	4602, 4759, 4707	
Portable Disc Drive (no number) Contains: (1) Shuttle Scans and Clips STS-1 - Present (2) Lift-off Analysis Tools Tecplot, and (3) SCN Purification Facility Files	8/103	EOP + 1	4202/B109C	

TABLE D.2.10
MSFC - PROPULSION SYSTEMS ENGINEERING AND INTEGRATION SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Portable Disc Drive 535409 (contains Impact Test Data)	8/103	EOP + 1	4202/B109C	
Portable Disc Drive 535411 (contains Impact Test Data)	8/103	EOP + 1	SRCS	
Special Studies PLOAD and HazGas 1987 - 1993	8/103	EOP + 1	4203/3424	
SSP PLOAD Reference Documentation 1991 - 1996	8/103	EOP + 2	4203/4104A	
WRH-002 Remote Measurement of LH2 Leak from 17" Disconnect	8/103	EOP + 5	4203/3424	

TABLE D.2.11
MSFC ENGINEERING SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
NASA Imaging Reporting Database (NIRD) and Website	8/101	Permanent	MSFC Repository, Bldg. 4491	Static records to be archived. Live database retained at MSFC until no longer needed.
Shuttle Class I MSFC Released Drawings/Associated Lists	8/101	Permanent	MSFC Repository, Bldg. 4491	Transferred to MSFC Center Records Manager June 2011.
Shuttle Class I MSFC Released Documents	8/101	Permanent	National Archives	Shipped to National Archives and Records Administration December 30, 2010.
Engineering, Test and Evaluation Data: Materials Usage Agreements, Material Process Identification and Usage Lists (MIUL)	8/103	EOP +15	MSFC Bldg. 4612 and MAPTI I and II	Maintained by MSFC Engineering Directorate, Materials and Processes Lab. Will be held in MSFC Engineering until final disposition.
Modular Auxiliary Data System (MADS) Data (Engine and Orbiter)	8/103	EOP + 5	MSFC Bldg. 4663/A109	MSFC Engineering Directorate will maintain data in place and make available through the system currently named AEON portal. Data is backed up, sent to Security Vault.
Natural Environments Critical Math Models and Databases	8/103	EOP + 10	MSFC Bldg. 4663/A260 on the ECS II	Maintained by MSFC Engineering Directorate, Natural Environments Branch (EV44). Will be held in MSFC Engineering until final disposition.
Engineering, Test and Evaluation Data: Propulsion and Structural Strength Test Procedures and Test Preparation Sheets (TPSs), and Special Test Equipment (STE) Design	8/103	EOP + 15	MSFC Test Laboratory	Shuttle test data/documentation for testing performed by the MSFC Engineering Directorate, Test Laboratory. Will be held in MSFC Engineering until final disposition.

TABLE D.2.11
MSFC ENGINEERING SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Engineering, Test and Evaluation Data: Shuttle ET Foam Loss Databases (FOLD)	8/103	EOP + 10	MSFC Bldg. 4601/2206	Historical assessment of Thermal Protection System (TPS) foam losses for all flights pre-Columbia. CAD models were developed of losses and masses derived for subsequent flights.
Engineering, Test and Evaluation Data: Classified Range Safety Documentation, Data to protect the Sensitivity of Range Safety	8/103	EOP + 30	NASA/MSFC Protective Services Vault	1. SRSS Radiation Test Dates TPS SRSS-002 (U) Aug. 17, 1988; NAS10-10900. 2. Space Shuttle Range Safety System Security Analysis (U) June 14, 1984. 3. TEMPEST Test of Integrated Receiver/Decoder (IR/D) and Adapter (U) Feb. 8, 1982; NAS8-334440. 4. Production Specifications - Serial: 8-0058 April15, 1982; Cover memo dates June 28, 1982. 5. Preliminary Security Analysis Report (Revised) Feb. 9, 1981; NAS8-33440/EC33-80. 6. TEMPEST Test plan for Range Safety Integrated Receiver/Decoder April 6, 1981; NAS8-33440.
Miscellaneous technical files	8/102/104	Destroy/Delete when no longer needed	MSFC Engineering Directorate	

TABLE D.2.12
MSFC SAFETY AND MISSION ASSURANCE SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Pre-Flight Assessments Reviews (Action items, action item closures, certification signature sheets.)	8/101	Permanent	S:\workgroups\sts. sts-missions; Hardcopy located MSFC Bldg. 4203/2201	STS 26-45 and 48 are hardcopy; STS-92 Pre-Flight Assessments, and continuing are electronic.
Problem Reporting and Corrective Action (PRACA) System - Problem Reports - NSTS 07700, Volume V, Appendix C, 2PA1 and Problem Closeout and Explanation Reports - NSTS 07700, Volume V, Appendix C, 2PA2	8/101	Permanent	MSFC Repository, Bldg. 4491	
Acute Launch Emergency Reliability Tips (ALERTs) (Notifications and Responses) - NASA ALERT System Documentation - NSTS 07700, Volume V, Appendix C, 2SR3	8/103	EOP + 5	MSFC Bldg. 4666/ Room 234A (Hardcopy), Electronic - SMA Prod Server	To be maintained by MSFC S&MA.
Certificate of Qualifications (COQs) SRB and RSRM	8/103	EOP + 5	MSFC S&MA	To be maintained by MSFC S&MA.
COQs ET	8/103	EOP + 5	MSFC S&MA	To be maintained by MSFC S&MA.
COQs/Verification Complete Reports (VCRs) SSME	8/103	EOP + 5	MSFC S&MA	To be maintained by MSFC S&MA.
Incident/Accident/Mishap Reports Accident/Incident Report - NSTS 07700, Volume V, Appendix C, 2SR2	8/102	Destroy/Delete when no longer needed.	MSFC Bldg. 4203/ Room 2314	Official records reside in Incident Report Information System (IRIS). Headquarters responsible for disposition.

TABLE D.2.12
MSFC SAFETY AND MISSION ASSURANCE SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
MSFC Safety and Engineering Review Panel (MSERP) Review Documents Minutes for MSERP meetings; Action Log and closure of actions from MSERP; technical information, annotated copies of Hazard Reports (HRs), Critical Items Lists (CILs) submitted to MSERP for review) MSERP audio recordings	8/103	EOP + 10	MSFC, Shuttle Records Closeout System	Records captured in electronic format on CDs/DVDs, and provided to SRTT for MSFC Shuttle Records Closeout System.

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Acceptance Data Packages (ADPs)				
ADPs - Selected Items (ET-1, ET-6, ET-8, ET-94, ET-96, ET-127, ET-128, ET-138)	8/101	Permanent	KSC	RA10
Configuration Management Files				
Configuration Management Files	8/101	Permanent	MSFC SRC Center Bldg 4570	Configuration Management Documentation including Change Requests, Change Evaluations, Directives, Presentations to the Board, and Board Minutes. MSFC PSE&I officially archives.
Correspondence - Substantive				
External Tank Project Manager Correspondence	8/101	Permanent	MSFC Bldg 4202 /B120	
Data Location Files-Data Accession Lists				
Information Accessioning List	8/101	Permanent	MSFC Repository Bldg 4491	DR# MA07
Engineering Drawings and Associated Documents				
As Built Hardware Reporting System Reports	8/101	Permanent	MAF	
Contractor Workmanship Standards (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-3)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# SE01 - Engineering Design Drawings and Associated List.
Design Specification Support Equipment	8/101	Permanent	MSFC Repository Bldg 4491	Doc# 809-8000 (Also answers 2SR-5 - Vehicle and GSE Limited Life Items List).

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
EEE Parts Where Used List	8/101	Permanent	MSFC Repository Bldg 4491	Doc# 809-3400 (Also answers 2SR-10 - EEE Parts Where Used Status Report and 3SR-1 - EEE Parts Specification).
EEE Parts Where Used Status Report (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-10)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by Doc# 809-3400 - EEE Parts Where Used List.
Engineering Design Drawings and Associated Lists	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE01 Supplier drawings are incorporated into Prime Engineering Design drawings.
ET Document Specification and Drawing Tree	8/101	Permanent	MSFC Repository Bldg 4491	DR# CM04
External Tank/STE Wiring Lists	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE10
Indentured Parts Lists	8/101	Permanent	MAF	
Special Consideration Items Drawings (SCIDs)	8/101	Permanent	MSFC Repository Bldg 4491	Doc# 80900000500 (Also answers 2SR-5 - Vehicle and GSE Limited Life Item).
Tool Drawings	8/101	Permanent	MAF	
Vehicle and GSE Limited Life Item List (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-5)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by Doc# 80900000500 - Special Considerations Items Document; Doc# 809-8000 - Design Specification Support Equipment; SE42 - Maintenance Requirements and Useful Life Extension Requirements Support Equipment External Tank Long Term Storage.

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Handbooks, Manuals, and Procedures				
External Tank Operations and Maintenance Manuals	8/101	Permanent	MSFC Repository Bldg 4491	
Failure Mode Effects Analysis Procedure	8/101	Permanent	MSFC Repository Bldg 4491	DR# RA05
Super Lightweight Systems Def. Handbook	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE61
Thermal Protection System (TPS) Engineering Design Manual Vol I, II and III	8/101	Permanent	MAF	DR# SE45
Training, O&M Manuals, Delivery Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE08
Weld Acceptance Manual	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE41
Imagery				
Selected System Closeout Photos	8/101	Permanent	MSFC Repository Bldg 4491	DR# MA14
Major Milestone Reviews				
Certificate of Flight Readiness Review (CoFR)	8/101	Permanent	MAF	Level III
Design Certification Review	8/101	Permanent	MAF	
Flight Readiness Review (FRR) Presentations	8/101	Permanent	MAF	
Project Level Presentations	8/101	Permanent	MSFC Bldg 4202	
Post-Flight Evaluation Reports and Data				
Post-Flight Engineering Evaluation Report	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE67

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
External Tank L+30 Day Flight Evaluation Report	8/101	Permanent	MSFC Repository Bldg 4491	
Project Status Reviews and Briefings				
Lockheed Martin ET Project Status (Brown Book)	8/101	Permanent	MAF	
Verification Program Status Report	8/101	Permanent	Project Office	DR# TM09
Safety and Mission Assurance Data				
Accident/Incident/Mishap Report (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-2)	8/101	Permanent	Safety Office/IRIS Database	DR# RA02 Official data contained in IRIS for which HQ is the OPR. MSFC S&MA had duplicate copy.
List of Critical Processes (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-12)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# SE16 - Material and Process Control Plan.
Failure Mode and Effects Analysis (FMEA)	8/101	Permanent	MSFC Repository Bldg 4491	DR# RA04a
Problem Reports (NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-1)	8/101	Permanent	SRCS	DR# SE06 Data contained in PRACA for which MSFC S&MA is the OPR.
Problem Closeout and Explanation Report (NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-2)	8/101	Permanent	SRCS	Data contained in PRACA for which MSFC S&MA is the OPR.
Specifications, Requirements, and Plans				
Acceptance Sampling Plan/Procedures (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-11)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA11 - Acceptance Sampling Plan, in the ET Project Case Files.

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Acceptance Test Requirements	8/101	Permanent	MSFC Repository Bldg 4491	DR# TM04
Element Contamination Control Plan (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-12)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA12 - Element Contamination Control Plan. (Also answers 2SR-17 - Shuttle Fluid Spill/Leak Logs).
Configuration Management Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# CM01 (Also answers 2SR-7 - Limited Life Waiver).
EEE and Mechanical Parts Qualification Test Plan and Report	8/101	Permanent	MSFC Repository Bldg 4491	DR# RA09 (Also answers 2SR-6 - Project Parts List).
EEE Parts Specification (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-1)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by Doc# 809-3400 - EEE Parts Where Used List.
End Item Specification	8/101	Permanent	MSFC Repository Bldg 4491	DR# CM02 (Doc# CPT01M09A) (Also answers 2EN-18).
Engineering Process Specifications (STP)	8/101	Permanent	MAF	
External Tank Verification Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# TM01
Fracture Control Requirements and Implementation Document	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE13
Instrumentation Program and Component List	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE09
Logistics Implementation Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# LS02

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Long Term Storage Requirements	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE42
Maintenance Requirements and Useful Life Extension Requirements Support Equipment - External Tank Long Term Storage	8/101	Permanent	MSFC Repository Bldg 4491	Doc# 809-8002 (Also answers 2SR-5 - Vehicle and GSE Limited Life Item).
Implementation Report Space Shuttle Manned Spacecraft Criteria and Standards (NSTS 07700, Volume V, Appendix C, Information Requirement, 2EN-18)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by Doc# CPT01M09A - End Item Specification. Data contained in Project CEI Specifications which will be archived as Permanent with Project SRP.
Manufacturing Handling Plan (MHP) (Major Moves)	8/101	Permanent	MAF	
Mathematical Models Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE15
Material and Process Control Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE16
New Technology Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# MA13
Nonconformance Reporting (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-2)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA03 - Quality, Reliability and Safety Requirements and Implementation Document. Data contained in PRACA records for which MSFC S&MA is the OPR.
Nondestructive Evaluation (NDE) Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# RA13

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Quality Plan (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-13)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA03 - Quality, Reliability and Safety Requirements and Implementation Document.
Quality, Reliability, and Safety Requirements	8/101	Permanent	MSFC Repository Bldg 4491	DR# RA03 (Also answers 2SR-13 - Quality Plan; 2SR-20 - Safety Plan; 3SR-2 - Nonconformance Reporting).
Receiving Acceptance Plan (RAP)	8/101	Permanent	MAF	
Safety Plan (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-20)	8/101	Permanent	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA03 - Quality, Reliability and Safety Requirements and Implementation Document.
SSP ET Critical 1, 1R, 2 and 2R Problem Report Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# RA06
Thermal Protection System (TPS) Requirements	8/101	Permanent	MAF	DR# SE45
TPS Process Control Plan	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE66
Technical Studies and Reports				
CEI Actual Weight and Balance Report	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE40
Cleaning Processes Report	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE49
Electromagnet Interference Test Report	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE14
ET Production/Operational Study	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE43

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
ET Transportation Accelerometer Data Report	8/101	Permanent	MAF	DR# SE68
Evaluations/Studies/Analysis	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE05
Extended External Tank Storage Study	8/101	Permanent	MAF	
Fractures Mechanic Reports	8/101	Permanent	MAF	DR# SE50
Major Test Flash Reports	8/101	Permanent	MAF	DR# TM02
Mass Studies Property Report	8/101	Permanent	MSFC Repository Bldg 4491	DR# SE02
Technical Data Package	8/101	Permanent	MAF	DR# SE18
Test Reports - Major Tests Only	8/101	Permanent	MAF	DR# TM03
Acceptance Data Packages				
ADPs - Residual from Selected Data Packs (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-4)	8/103	EOP + 5	KSC	DR# RA10 (Also answers 3SR-8 - Pressure Vessel Historical Data).
Suppliers (Vendor) Data Packs	8/103	EOP + 5	MAF	
New Technology Reports				
New Technology Status Report	8/103	EOP + 5	New Tech Office	DR# MA81
Project-Related Contracts and Procurement Files				
ET 5th and 6th Buy Contract	8/103	EOP + 2 yrs	MSFC Bldg 4202	
ET Property Divestment Report	8/103	EOP + 2 yrs	MSFC Bldg 4202	DR# MA95
Information Requirements Document	8/103	EOP + 5 yrs	MSFC Repository Bldg 4491	DPD 660
Notification of Significant Program MGT (Contractor) Decisions	8/103	EOP + 5 yrs	MSFC Bldg 4202	DR# MA93

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Performances Measurement Report	8/103	EOP + 5 yrs	MSFC Repository Bldg 4491	DR# MA12
Reliability and Maintainability Data				
Corrective Action Problem Summary (CAPS)	8/103	EOP	MAF	
Fingerprint Qualification Data	8/103	EOP + 5	MAF	
Industrial Materials and Crib Facilities	8/103	EOP + 5	MSFC Repository Bldg 4491	DR# MA86
Limited Life Waiver (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-7)	8/103	EOP	MSFC Repository Bldg 4491	Data contained in CM files for which MSFC PSE&I is the OPR.
Parts Usage and Qualification Status	8/104	EOP + 5	MSFC Repository Bldg 4491	DR# RA08 (Also answers 2SR-6 - Project Parts List; and 2SR-9 - EEE Part Qualification Test Report).
Pressure Vessel Historical Data (NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-8)	8/103	EOP + 5	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA10 - Acceptance Data Pack and DR# RA25 - Recertification of High Pressure Vessels/Systems for GSE.
Recertification of High Pressure Vessels/Systems for GSE	8/103	EOP + 5	MSFC Repository Bldg 4491	DR# RA25 (Also answers 3SR-8 - Pressure Vessel Historical Data).
Senior Material Review Board (SMRB)/Corrective Action Board (CAB) Data	8/103	EOP + 5	MAF	
SMRB/CAB Presentations/Reference Materials	8/103	EOP + 5	MAF	
Spares Provisioning Documentation	8/103	EOP + 5	MSFC Repository Bldg 4491	DR# LSO3b

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Shuttle Fluid Spill/Leak Logs (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-17)	8/103	EOP + 5	IRIS	Data contained in IRIS for which HQ is the OPR.
TPS Spray Videos	8/103	EOP + 5	MAF	
Safety and Mission Assurance Data				
Critical Items List (CIL) (NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-1)	8/102	Destroy when no longer needed	MSFC Repository Bldg 4491	DR# RA04b - Critical Items List. Official data contained in WebPCASS (Baselined CIL) for which SSP is OPR.
External Tank Hazard Report (NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-2)	8/102	Destroy when no longer needed	MSFC Repository Bldg 4491	DR# RA01b - External Tank Hazard Report. Data contained in WebPCASS for which SSP is OPR.
EEE Part Qualification Test Report (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-9)	8/103	EOP + 5	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA08 - Parts Usage and Qualification Status; DR# RA09 - EEE and Mechanical Parts Qualification Test Plan and Report; and DR#TM06 - Certification of Qualification.
Project Parts List (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-6)	8/103	EOP + 5	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA08 - Parts Usage and Qualification Status and DR# RA09 - EEE and Mechanical Parts Qualification Test Plan and Report.
Safety Analysis Report (SAR) (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-1)	8/103	EOP + 5	MSFC Repository Bldg 4491	This requirement is satisfied by DR# RA01b - External Tank Hazard Analysis report. Data contained in WebPCASS (Baselined CIL) for which SSP is the OPR.

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Schedules				
Project Schedule	8/103	EOP	MSFC Repository Bldg 4491	DR# MA03
Test, Engineering, and Evaluation Files				
Blowing Agent Replacement for SOFI	8/103	EOP + 5	MAF	
Certification of Qualification (COQ)	8/103	EOP + 5	MSFC Repository Bldg 4491	DR# TM06 Also answers 2SR-9, EEE Part Qualification Test Report.
Certification Data	8/103	EOP + 5	MAF	
ET Marine Transportation Documents	8/103	EOP + 5	MAF	
FMEA and Facilities Site Analysis	8/103	EOP + 5	MAF	
Hardware Certification Sheet	8/103	EOP + 5	MSFC Repository Bldg 4491	DR# TM08
RIDS (ICDR, CDR and IPDR) (P)	8/103	EOP	MAF	
Shakedown Videos (2)	8/103	EOP + 5	MAF	
Special Investigations	8/103	EOP	MAF	
Standard Repair and Material Processes (NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-18)	8/103	EOP	KSC	Data contained in the OMRSD for which KSC is the OPR.

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Detailed Engineering Data				
Loads and Dynamics		EOP + 5	SRCS	
Materials and Processes		EOP + 5	SRCS	
PTS Stress		EOP + 5	SRCS	
Aerodynamics		EOP + 5	SRCS	
Configuration Management		EOP + 5	SRCS	
Technical Lab Data		EOP + 5	SRCS	
Loads and Dynamics		EOP + 5	SRCS	
Mass Properties		EOP + 5	SRCS	
Launch Integration		EOP + 5	SRCS	
Tooling/Facilities Reliability		EOP + 5	SRCS	
Stress		EOP + 5	SRCS	
Thermal Analysis		EOP + 5	SRCS	
Aerodynamics		EOP + 5	SRCS	
PTS Materials		EOP + 5	SRCS	
Structures and TPS Design		EOP + 5	SRCS	
Mission Analysis		EOP + 5	SRCS	
Statistics		EOP + 5	SRCS	
Propulsion Analysis		EOP + 5	SRCS	
PTS		EOP + 5	SRCS	
Launch Integration		EOP + 5	SRCS	
Logistics		EOP + 5	SRCS	
P&E Design		EOP + 5	SRCS	

TABLE D.2.13
MSFC - EXTERNAL TANK PROJECT SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Work Breakdown Structure and WBS Dictionary				
Expanded WBS and Dictionary	8/103	EOP + 5	MSFC Repository Bldg 4491	DR# MA02

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Acceptance Data Package				
Acceptance Data Package (ADP) - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-4	8/101	Permanent	SRB/USA - KSC SRB Repository L6-247, Room 151	MSFC is permanently archiving ADPs for selected flights: (STS-1, STS-26, STS-135).
Configuration Management Files				
Configuration Management Files	8/101	Permanent	MSFC SRC Center Bldg. 4570	Configuration Management Documentation including Change Requests, Change Evaluations, Directives, Presentations to the Board and Board Minutes. MSFC PSE&I officially archives.
Correspondence - Substantive				
SRB Project Memos - 1982 thru 2007	8/101	Permanent	MSFC Bldg. 4202, Project Office	
Engineering Drawings and Associated Documents				
McDonald Douglas Specification Drawings and associated lists used for hardware manufacture/fabrication and related finding aids	8/101	Permanent	USA SRB Repository L6-247	
SRB As-Flown-As-Built Data	8/101	Permanent	L6-146	
SRB Engineering Drawings and Associated Documentation	8/101	Permanent	USA SRB Repository L6-247, Room 151	Answers 3SR-3, Contractor Workmanship Standards.
SRB Original Released Engineering Orders	8/101	Permanent	USA SRB Repository L6-247, Room 151	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
SRB Released Engineering Parts Lists	8/101	Permanent	USA SRB Repository L6-247, Room 151	
SRB Vendor Engineering Drawings and Associated Documents	8/101	Permanent	USA SRB Repository L6-247, Room 151	
Handbooks, Manuals, and Procedures				
SRB TVC System Engineering Handbook	8/101	Permanent	USA L6-146	
Imagery				
Photo Caption Sheets	8/101	Permanent	USA ARF Cal Lab L6-247	
Selected SRB Closeout Photos	8/101	Permanent	USA USA SRB Record Retention	
Major Milestone Reviews				
Booster Assembly Acceptance Review ET/SRB Mate	8/101	Permanent	MSFC Bldg. 4202, Basement	
Design Certification Reviews	8/101	Permanent	USA SRB Records Retention	
SRB Flight Readiness Review (FRR) Data	8/101	Permanent	USA SRB Records Retention	
Post-Flight Evaluation Reports and Data				
SRB Flight Evaluation Reports	8/101	Permanent	USA-KSC	
SRB Post-Flight Data	8/101	Permanent	L6-146	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Safety and Mission Assurance Data				
Accident/Incident Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-2	8/101	Permanent	HQ Safety Office/IRIS Database	Official data contained in IRIS for which HQ is the OPR. MSFC S&MA has duplicate copy.
List of Critical Processes - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-12	8/101	Permanent	SRB/USA-KSC SRB Repository L6-247, Room 151	This requirement is satisfied by USA # 10 REQ-0050, Critical Process Definition and Control Document.
Problem Closeout and Explanation Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-2	8/101	Permanent	Shuttle Records Closeout System (SRCS)	Data from PRACA for which S&MA is the OPR.
Problem Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-1	8/101	Permanent	SRCS	Data from PRACA for which MSFC S&MA is the OPR.
Specifications, Requirements, and Plans				
Contractor Workmanship Standards - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-3	8/101	Permanent	SRB/USA - KSC SRB Repository L6-247, Room 151	This requirement is satisfied by DRD 1.4.9-a, SRB Engineering Drawings and Associated Documentation.
EEE Parts Specification - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-1	8/101	Permanent	SRB/USA - KSC SRB Repository L6-247, Room 151	This requirement is satisfied by USA # 10 REQ-0036, Electrical, Electronic and Electromechanical (EEE) Parts Selection and Control Requirements.
Element Contamination Control Plans - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-12	8/101	Permanent	SRB Repository L6-247, Room 151	This requirement is satisfied by USA #SE-019-062-2H, Solid Rocket Booster (SRB) Program Critical Hardware Plan USB 7600 PA.

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards - NSTS 07700, Volume V, Appendix C, Information Requirement, 2EN-18	8/101	Permanent	SRB/USA - KSC SRB Repository L6-247, Room 151	This requirement is satisfied by DRD 10CEI-0001, Contract End Item Specification.
Nonconformance Reporting - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-2	8/101	Permanent	MSFC Repository Bldg. 4491	Data contained in PRACA for which MSFC S&MA is the OPR.
Quality Plan - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-13	8/101	Permanent	SRB Repository L6-247, Room 151	This requirement is satisfied by DRD 1.3.3, Quality Plan.
Safety Plan - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-20	8/101	Permanent	SRB/USA - KSC SRB Repository L6-247, Room 151 SRB/USA HSV	This requirement is satisfied by DRD 1.3-b, Safety and Health Plan.
Sampling Plans/Procedures - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-11	8/101	Permanent	SRB/USA - KSC SRB Repository L6-247, Room 151	This requirement is satisfied by USA # 10 PRC-0380, Material Analysis, Tracking and Control Documentation Procedures for Solid Rocket Booster Materials.
SRB Documentation Specifications, Requirements, and Plans	8/101	Permanent	SRB Repository L6-247, Room 151	
Acceptance Data Package				
Acceptance Data Package (ADP) - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-4	8/103	EOP + 5	SRB/USA - KSC SRB Repository L6-247, Room 151	
SRB Vendor Acceptance Data Packages for SRB	8/103	EOP	USA SRB Records Retention	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Budget and Cost Data, Preliminary Data				
Program Operating Plans (POPs) and Program Plans and Budget Estimates (PPBEs)	8/103	EOP	MSFC Bldg. 4202, Room 516	
Configuration Management Files				
Level IV/V Change Evaluation Board Agendas, Program Change Evaluations	8/105	EOP	USA SRB Records Retention	
Configuration Level IV/V change packages, vendor changes, waivers, CRs, RIDs, and associated change data and assessments	8/103	EOP	L6-146	
Level IV/V SRB Change Files (correspondence, notes, etc.)	8/105	EOP	SRB E&A L6-146, Room 113	
Level IV/V SRB Engineering Changes	8/105	EOP	USA SRB Records Retention	
Correspondence - Non Substantive				
SRB Engineering Correspondence	8/103	EOP	L6-149	
SRB HOSC Support Listing (Huntsville Operations Support Center)	8/103	EOP	L6-146	
Engineering Drawings and Associated Documents				
SRB STA-3 Aft Skirt Instrumentation Drawings	8/103	EOP + 5	USA SRB Records Retention	
Environmental				
SRB Corrosion Control Records	8/103	EOP + 5	USA SRB Records Retention	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Handbooks, Manuals, and Procedures - Lower Level				
SRB Documentation Support Manuals and Procedures	8/103	EOP	USA SRB Records Retention	
Imagery				
Residual SRB Closeout Photos	8/103	EOP	USA SRB Records Retention	
Post-Flight Evaluation Reports				
SRB Post-Flight Assessment Working Files	8/103	EOP	L6-146	
SRB Post-Flight Inspection Report	8/103	EOP + 5	L6-146	
Project-Related Contracts and Procurement Files				
Data Procurement Documents (DPDs)	8/103	EOP + 5	MSFC Transition Project Office Website	
Reliability and Maintainability Data				
EEE Parts Deviations Request - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-11	8/103	EOP + 5	SRB/USA HSV and KSC L6-146	This requirement satisfied in USA Doc: Non-Standard Parts Approval Requests (NSPARs).
Limited Life Waiver - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-7	8/103	EOP + 5	MSFC SRC Center Bldg. 4570	Data contained in CM files for which MSFC PSE&I is the OPR.
Safety and Reliability Reports	8/102	EOP	USA SRB Records Retention	These are part of Level II S&MA document requirements and are covered under 1SR-2 and 2SR-1, therefore these copies are 8/102; destroy EOP.

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Shuttle Fluid Spill/Leak Logs - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-17	8/103	EOP + 5	IRIS	Data contained in IRIS for which HQ is the OPR.
SRB Ground Support Equipment Files	8/103	EOP	USA SRB Records Retention	
SRB Nose Cap Recertification Analysis	8/103	EOP + 5	USA SRB Records Retention	
SRB Part Identification Hardware Tags	8/103	EOP	SRB Data Center	
SRB Process Assurance Assessment Records	8/103	EOP	USA SRB Records Retention	
SRB Process Assurance Audit Records	8/103	EOP	USA SRB Records Retention	
SRB Range Safety Components Files	8/103	EOP	L6-146	
SRB Senior Material Review Board	8/103	EOP + 5	USA SRB Records Retention	
SRB Vendor QE Audits, Surveys and Reports I Quality	8/103	EOP	USA SRB Records Retention	
Safety and Mission Assurance Data				
Certification of Qualification (COQ)	8/103	EOP + 5	MSFC Repository Bldg. 4491	MSFC S&MA is the OPR. See details in that Appendix.
Critical Items - NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-1	8/102	Destroy/Delete when no longer needed	USA KSC	Official data contained in WebPCASS for which SSP is the OPR.
Hazard Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-2	8/102	Destroy/Delete when no longer needed	MSFC	Official data contained in WebPCASS for which SSP is the OPR.

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Project Parts List - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-6	8/103	EOP + 5	SRB Repository L6-247, Room 151	This requirement is satisfied by USA # 10 REQ-0036, Electrical, Electronic and Electromechanical (EEE) Parts Selection and Control Requirements.
Safety Analysis Report (SAR) - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-1	8/103	EOP + 5	USA SRB Records Retention	Data contained in the Certification Database System (CDS) for which SSP is the OPR.
Vehicle and GSE Limited Life Item List - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-5	8/103	EOP + 5	SRB-USA KSC SRB E&A L6-146, Room 113	This requirement is satisfied by USA # QI-VC-09, Limited Life Items List.
Specifications, Requirements, and Plans				
SRB ICDs	8/103	EOP	USA SRB Records Retention	
SRB Operation and Maintenance Instructions (OMIs)	8/102	EOP	USA SRB Records Retention	KSC has record copy.
Test, Engineering, and Evaluation Files				
ABAC/ACO Archived Data	8/103	EOP	L6-247	
ABACS Software Code	8/103	EOP	SRB Repository L6-247, Room 150	
Calibration Data	8/103	EOP	ARF Calibration Lab L6-247	
Calibration Records Temperature Charts	8/103	EOP	ARF Photo Lab L6-248	
DSSR Data Packages (Design Services Service Request)	8/103	EOP	L6-146	Final Product in CM file.

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
EEE Part Qualification Test Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-9	8/103	EOP + 5	SRB/USA KSC	SRB Equivalent Document: No DRD; comes in as a CR.
EEE Parts Data	8/103	EOP + 5	USA SRB Record Retention	
Historical SRB Engineering Documentation	8/103	EOP + 5	SRB Repository L6-247, Room 151	
Past Production Change Request and NCRs	8/103	EOP	USA SRB Records Retention	
Shuttle Connector Analysis	8/103	EOP	USA SRB Records Retention	
Shuttle - SRB Pyrotechnics	8/103	EOP	L6-146	
SRB - 105 RGA Power Configuration Change Engineering Notes	8/103	EOP	SRB E&A L6-146, Room 113	
SRB AFT Skirt As-Built Refurbishment	8/103	EOP	L6-146	
SRB AFT Skirt Assembly Data	8/103	EOP	L6-146	
SRB AFT Skirt Correspondence	8/103	EOP	L6-146	
SRB AFT Skirt History Files	8/103	EOP	L6-146	
SRB AFT Skirt Recertification Analysis	8/103	EOP + 5	L6-146	
SRB Allied-Signal Vendor Analysis	8/103	EOP	SRB Repository L6-247	
SRB Analysis Reports/Data	8/103	EOP + 5	SRB Data Center	
SRB APU and Gearbox Pressure Systems Device	8/103	EOP	USA SRB Records Retention	
SRB APU Isolation Mats	8/103	EOP	USA SRB Records Retention	
SRB Avionics System Description	8/103	EOP	L6-150	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
SRB Build Up and Test Package	8/103	EOP	USA SRB Records Retention	
SRB Build up Packages for Parachutes - 1992 through 2004	8/103	EOP	SRB Records Retention	
SRB Cable X-Ray Film	8/103	EOP	SRB Repository L6-247	
SRB Circuit Analysis	8/103	EOP	SRB Data Center	
SRB Component Utilization Analysis Printouts	8/103	EOP	USA SRB Records Retention	
SRB Controlled Computer Software	8/103	EOP	L6-146	Reel Tapes.
SRB Electrical and Instrumentation Files	8/103	EOP	USA SRB Records Retention	
SRB Electrical Engineering Data	8/103	EOP	L6-147	
SRB Engineering Project Files	8/103	EOP	USA SRB Records Retention	
SRB Exhaust Ducts Data	8/103	EOP	USA SRB Records Retention	
SRB F.E.M. Data	8/103	EOP	USA SRB Records Retention	
SRB Firing Ordnance Testing Lab Data	8/103	EOP	USA SRB Records Retention	
SRB Frustum Recertification Analysis	8/103	EOP + 5	USA SRB Records Retention	
SRB Fuel Isolation Valve	8/103	EOP	USA SRB Records Retention	
SRB Fuel Supply Module - Fuel and Filter	8/103	EOP	USA SRB Records Retention	
SRB Ground Support Systems Design	8/103	EOP	L6-147	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
SRB Hot Fire Data I	8/103	EOP + 5	SRB Data Center	
SRB Hydraulic Accumulator - Piston and MBC and Fill Valve	8/103	EOP	USA SRB Records Retention	
SRB Hydraulic Manifold - Wright Comp. and Pneudraulics	8/103	EOP	USA SRB Records Retention	
SRB Hydraulic Reservior/Pump	8/103	EOP	USA SRB Records Retention	
SRB IEA Engineering Work Authorizations and Documentation	8/103	EOP	USA SRB Records Retention	
SRB Inspection Reports	8/103	EOP + 5	SRB Data Center	
SRB Integrated Hot Gas	8/103	EOP	USA SRB Records Retention	
SRB JMVTA Test Requirements/ Instrumentation	8/103	EOP + 5	SRB Repository L6-247	
SRB Lightning and Electromagnetic Files	8/103	EOP	Iron Mountain	
SRB Line Replacement Unit Data/ GSE and TVC	8/103	EOP	USA SRB Records Retention	
SRB LMSC STA-4 Test Plan	8/103	EOP + 5	SRB Repository L6-247, Room 151	
SRB LMSC STA-4 Test Requirements Document	8/103	EOP + 5	SRB Repository L6-247, Room 151	
SRB Operational Flight Instrumentation (OFI)/DFE Measurement Files	8/103	EOP	USA SRB Records Retention	
SRB Parachute Files	8/103	EOP + 5	L6-146	
SRB Parachute Records/Documents	8/103	EOP + 5	L6-146	
SRB Pathfinder Data	8/103	EOP	USA SRB Records Retention	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
SRB Quality Test Reports	8/103	EOP + 5	USA SRB Records Retention	
SRB Radiographic Film	8/103	EOP	USA SRB Record Retention	
SRB Servoactuator Quality Test Data	8/103	EOP	USA SRB Records Retention	
SRB Signal Margin Data Files	8/103	EOP	USA SRB Records Retention	
SRB SRM Redesign	8/103	EOP	USA SRB Records Retention	Archived in SRM Files.
SRB STA-4 Documentation/Procedures	8/103	EOP	USA SRB Records Retention	
SRB Strain Gage Data	8/103	EOP	USA SRB Records Retention	
SRB Structural Hardware Files	8/103	EOP	L6-146	
SRB System Evaluation Records	8/103	EOP + 5	L6-146	
SRB Technical Engineering Reports	8/103	EOP + 5	L6-146	
SRB Test and Inspection Record (TAIR) of SRB	8/103	EOP	USA SRB Record Retention	
SRB Test and Data Sheets	8/103	EOP + 5	SRB Data Center	
SRB Thermal Protection System Files	8/103	EOP + 5	L6-151	
SRB Thrust Vector Control (TVC) Data	8/103	EOP	USA SRB Records Retention	
SRB TPTA Aft Skirt Instrumentation Drawing and Holddown Hardware	8/102	EOP	USA SRB Records Retention	

TABLE D.2.14
MSFC - REUSEABLE SRB PROJECT - SRB PROJECT FILES SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
SRB TVC Hydrazine Fueling Concept	8/103	EOP + 5	USA SRB Records Retention	
SRB TVC Line Replacement Unit	8/103	EOP	USA SRB Records Retention	
SRB TVC Subsystem ESAs	8/103	EOP	USA SRB Records Retention	
SRB TVC Subsystems Hardware History Documentation	8/103	EOP	USA SRB Records Retention	
SRB TWANG Test Data	8/103	EOP + 5	SRB Repository L6-247	
SRB/TVC Frames	8/103	EOP	USA SRB Records Retention	
Standard Repair and Material Processes - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-18	8/103	EOP	KSC	Data contained in the OMRSD for which KSC is the OPR.
TVC System History Records	8/103	EOP + 5	L6-146	
TVC System Memo/Data Records	8/103	EOP	L6-146	
Vax Control Computer Logs, ASTF Post-Processed Test Data	8/103	EOP	USA SRB Records Retention	

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Acceptance Data Package				
Acceptance Data Package (ADP) - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-4	8/101	Permanent	MSFC Repository Bldg. 4491	MSFC is archiving ADPs for selected Flights: STS-1, STS-26, STS-135.
Configuration Management Files				
Configuration Management Files	8/101	Permanent	MSFC Shuttle Records Closeout (SRC) Center Bldg 4570	Configuration Management Documentation including Change Requests, Change Evaluations, Directives, Presentations to the Board, and Board Minutes. MSFC PSE&I Officially archives.
Deviations and Waivers	8/101	Permanent	MSFC SRC Center Bldg 4570	DRD 2-12; answers 2SR-7 - Limited Life Waiver.
Correspondence - Substantive				
RSRM Project Memo Logs and Memos 1994-2003	8/101	Permanent	MSFC Bldg. 4202 Room 516	
Data Location Files-Data Accession Lists				
Contractor's Information Accessioning List	8/101	Permanent	MSFC Repository Bldg. 4491	
Engineering Drawings and Associated Documents				
Engineering Design Drawings and Associated Lists	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-1
Handbooks, Manuals, and Procedures				
Operations and Maintenance Manuals	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-8; answers 2SR-18 - Standard Repair and Material Processes.

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Procedure for Preparation of FMEA/CIL Document	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-4
Standard Operating Procedures	8/101	Permanent	Shuttle Records Closeout System (SRCS)	
Imagery				
Clearfield Photo Log	8/101	Permanent	SRCS	
KSC Photo Log	8/101	Permanent	SRCS	
Major Milestone Reviews				
Certification of Flight Readiness (CoFR) Pre-Endorsement	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-19
Concept Review	8/101	Permanent	SRCS	
Critical Design Review	8/101	Permanent	SRCS	
Design Certification Reviews	8/101	Permanent	SRCS	
Element Acceptance Review	8/101	Permanent	SRCS	
ET/SRB Mate Review	8/101	Permanent	SRCS	
Flight Readiness Review	8/101	Permanent	SRCS	
Preliminary Design Review	8/101	Permanent	SRCS	
Post-Flight Evaluation Reports and Data				
Flash Reports (flight)	8/101	Permanent	MSFC Repository Bldg. 4491	
Flight Evaluation Team Reports	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-34
Post-Flight/Post-fire Hardware Evaluation Reports	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-23

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Post-Flight/Post-fire Hardware Special Issues	8/101	Permanent	SRCS	DRD 3-25
Project-Status Reviews and Briefings				
SRM Project Review	8/101	Permanent	SRCS	
Safety and Mission Assurance Data				
Accident/Incident Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-2	8/101	Destroy/Delete when no longer needed	HQ Safety Office/IRIS Database	This requirement is satisfied by DRD 4-24, Mishap Reporting and Investigation. Official data contained in IRIS for which HQ is the OPR. S&MA has duplicate copy.
In-Flight Anomaly Report	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-5
List of Critical Processes - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-12	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-25, Critical Process List.
Problem Closeout and Explanation Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-2	8/101	Permanent	SRCS	This requirement is satisfied by DRD 4-5, Problem Reporting and Corrective Action Report. Data from PRACA for which MSFC S&MA is the OPR.
Problem Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-1	8/101	Permanent	SRCS	This requirement is satisfied by DRD 4-5, Problem Reporting and Corrective Action Report. Data from PRACA for which MSFC S&MA is the OPR.
Specifications, Requirements, and Plans				
CEI Specification Supplemental Requirements Documents	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-33

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Configuration Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 2-1
Contractor's Company Specifications	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 2-5; answers 3SR-3 - Contractor Workmanship Standards.
Contractor's Electrostatic Discharge (ESD) Control Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-12
Contractor's Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 1-1
Contractor's Photography Requirements	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 1-13
Contractor's Test Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 5-6
Contractor Workmanship Standards - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-3	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 2-5, Contractor's Company Specifications.
Design Data Book	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-7
Development and Verification Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-15
Documentation, Specification, and Drawing Trees	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 2-4
Element Contamination Control Plans - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-12	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-29, Contractor's Contamination and Bonding Control Plan.
End Item Detail Specifications	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 2-2; answers 2EN-18 - Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards.

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Evaluation Studies and Analyses	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-5
Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards - NSTS 07700, Volume V, Appendix C, Information Requirement, 2EN-18	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 2-2, End Item Detail Specifications.
Fracture Control Requirements and Implementation Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-11
Launch Commit Criteria	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-34
Manufacturing Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-16
Materials Selection and Control Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-13
Operational Logistics Support Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 7-1
Post-fire Engineering Evaluation Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-24
Post-fire Hardware Evaluation System Operating Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-23
Procurement Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 1-15
Quality Plan - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-13	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-2, Quality, Reliability and Safety Plans.
Quality, Reliability, and Safety Plans	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-2; answers 2SR-13 - Quality Plan; 2SR-20 - Safety Plan.

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
RSRM Certification of Flight Readiness (CoFR) Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 1-27; answers 3SR-7 - Limited Life Status Reports.
RSRM Master Verification Matrix	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-32
RSRM Master Verification Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-20
RSRM Performance and Evaluation Plans	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-4
RSRM Transportation Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 7-11
Safety Plan - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-20	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-2, Quality, Reliability and Safety Plans.
Sampling Plans/Procedures - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-11	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by TWR-19846, RSRM Mass Properties Sampling Plan.
Static Test Stand Requirements Document	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 3-18
Trend Analysis Plan	8/101	Permanent	MSFC Repository Bldg. 4491	DRD 4-32
Test Plans	8/101	Permanent	SRCS	
Qualification Plans	8/101	Permanent	SRCS	
Manufacturing Plans	8/101	Permanent	SRCS	
Acceptance Criteria	8/101	Permanent	SRCS	
Program Plans	8/101	Permanent	SRCS	
Safety Assurance Plans	8/101	Permanent	SRCS	
Material and Process Specification List	8/101	Permanent	SRCS	

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Corrosion Control Plan	8/101	Permanent	SRCS	
Design Requirements Document	8/101	Permanent	SRCS	
Functional Flow Diagrams	8/101	Permanent	SRCS	
Certification Plan	8/101	Permanent	SRCS	
Acceptance Data Package				
Acceptance Data Package (ADP) - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-4	8/103	EOP	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-12, Data Acceptance Data Package.
Budget and Cost Data, Preliminary				
Program Operation Plans/Program Plans and Budget Estimates	8/103	EOP	MSFC Bldg. 4202 Room B118	DRD 1-24
Correspondence - Non-Substantive				
Action Items and Closures	8/103	EOP	MSFC Bldg. 4202 Room 516	
Project-Related Contracts and Procurement Files				
Contractor Officers Special Instr. Sheet (COSIS) 1981 thru present	8/103	EOP	MSFC Bldg. 4202 Room 518	
Contractor's Monthly Financial Management Report	8/103	EOP	MSFC Bldg. 4202 Room B118	DRD 1-5
Contractor's Quarterly Financial Management Report	8/103	EOP	MSFC Bldg. 4202 Room B118	DRD 1-6
Contractor's Schedules and Status Reports	8/103	EOP	MSFC Bldg. 4202 Room B118	DRD 1-3
Finance Issues	8/103	EOP	MSFC Bldg. 4202 Room B118	

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Monthly Variance Analysis	8/103	EOP	MSFC Bldg. 4202 Room B118	
Notification of Significant Program Management Decisions	8/103	EOP	MSFC Bldg. 4202 Room B118	DRD 1-28
Performance Measurement	8/103	EOP	MSFC Bldg. 4202 Room 515B	DRD 1-11
Proposals - Reference	8/103	EOP	MSFC Bldg. 4202 Room 515B	
Reference copies of RSRM Form 533s on NAS8-97238, NAS8-38680, NAS8-38100, and NNM048A1F, 2006-2008	8/103	EOP	MSFC Bldg. 4202 Room 515B	
RSRM Materials and Subcontracts data	8/103	EOP	MSFC Bldg. 4202 Room B118	
RSRM MIS QPMR ATK Business Review	8/103	EOP	MSFC Bldg. 4202 Room B118	
RSRM Monthly Manpower Report	8/103	EOP	MSFC Bldg. 4202 Room B118	DRD 1-23
RSRM PPBE Phasing Plan History	8/103	EOP	MSFC Bldg. 4202 Room B118	
Technical Directive Status Report	8/103	EOP	MSFC Bldg. 4202 Room 515B	DRD 1-25
Technical Directives (TDs) 1982 thru present	8/103	EOP	MSFC Bldg. 4202 Room 515B	
Thiokol Contract Issues	8/103	EOP	MSFC Bldg. 4202 Room B118	
Thiokol Manpower	8/103	EOP	MSFC Bldg. 4202 Room B118	

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Project-Status Reviews and Briefings				
Briefing Charts for Level IV Control Board	8/103	EOP	MSFC Bldg. 4202 Room 318	
Miscellaneous presentations to Project Manager and other Shuttle Management on SRM Manufacturing subjects	8/103	EOP	MSFC Bldg. 4202 Room 324	
Reliability and Maintainability Data				
Equipment Parts Tag (Miscellaneous Items)	8/103	EOP	MSFC Repository Bldg. 4491	DRD 4-21
Government-Furnished Equipment Nonconformance	8/103	EOP + 5	MSFC Repository Bldg. 4491	DRD 4-6
Limited Life Status Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-7	8/103	EOP	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 1-27, RSRM Certification of Flight Readiness (CoFR) Plan.
Limited Life Waiver - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-7	8/103	EOP	MSFC Repository Bldg. 4491	Data contained in CM Files for which PSE&I is the OPR.
Maintenance Engineering Analysis Report	8/103	EOP	MSFC Repository Bldg. 4491	DRD 7-10
Nonconformance Reporting - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-2	8/103	EOP	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-5, Problem Reporting and Corrective Action Report.
Optimum Repair Level Analysis (ORLA) Report	8/103	EOP	MSFC Repository Bldg. 4491	DRD 7-9
Packaging, Handling, and Transportation Record (PHTR)	8/103	EOP	MSFC Repository Bldg. 4491	DRD 7-3
Predicted Ballistic Performance	8/103	EOP	MSFC Repository Bldg. 4491	

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Process Failure Modes and Effects Analysis	8/103	EOP	MSFC Repository Bldg. 4491	
Problem Reporting and Corrective Action Report	8/103	EOP	MSFC Repository Bldg. 4491	DRD 4-5; answers 2PA-1 - Problem Reports, 2PA-2 - Problem Closeout and Explanation Report, 3SR-2 - Nonconformance Reporting.
RSRM Bi-Monthly Obsolescence Status	8/103	EOP	MSFC Repository Bldg. 4491	DRD 1-26
Senior MRBs	8/103	EOP + 5	SRCS	
Serial and Lot Traceability Records	8/103	EOP	SRCS	DRD 3-19
Spares Provisioning Documentation	8/103	EOP	SRCS	DRD 7-2
Support Equipment Lists	8/103	EOP	SRCS	
Updated RSRM Propellant Burn rate Predictions	8/103	EOP	SRCS	DRD 3-35
Safety and Mission Assurance Data				
Certificate of Qualification (COQ)	8/103	EOP + 5	MSFC 4202/B106 to be moved to 4666/Rm 250 B	DRD 4-20. MSFC S&MA is the OPR, see details in that Appendix.
Critical Items - NSTS 07700, Volume V, Appendix C Information Requirement, 1SR-1	8/102	Destroy/Delete when no longer needed	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-3, Failure Mode Effects Analyses (FMEA) and Critical Items List (CIL). Official data contained in WebPCASS for which SSP is the OPR.
Hazard Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-2	8/102	Destroy/Delete when no longer needed	MSFC Repository Bldg. 4491	This requirement is satisfied by DRD 4-27, Hazard Analysis Report. Official data contained in WebPCASS for which SSP is the OPR.
Integrated Failure Modes and Effects Analysis	8/103	EOP + 5	SRCS	

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Project Part List - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-6	8/103	EOP + 5	MSFC Repository Bldg. 4491	Element Contamination Control Plans.
Safety Analysis Report (SAR) - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-1	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by TWR-16431, Flight Systems Safety Analysis Report for the Space Shuttle Redesigned Solid Rocket Motor (RSRM).
Specifications, Requirements, and Plans				
Contractor's Contamination and Bonding Control Plan	8/103	EOP	MSFC Repository Bldg. 4491	DRD 4-29; answers 2SR-12 - Element Contamination Control Plans.
Operations and Maintenance Requirements and Specification Document (OMRSD)	8/102	EOP	MSFC Repository Bldg. 4491	DRD 5-4. Data contained in OMRSD for which KSC is the OPR.
Test, Engineering, and Evaluation Files				
Acceptance Test Procedures	8/103	EOP + 5	SRCS	
CD of Foam Impact Test Reports	8/103	EOP	MSFC Bldg. 4202 Room 324	
Contractor's Test Report	8/103	EOP + 5	MSFC Repository Bldg. 4491	DRD 5-3

TABLE D.2.15
MSFC - REUSEABLE SRB PROJECT - RSRM PROJECT FILES SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Mass Properties Status Reports	8/103	EOP + 5	MSFC Repository Bldg. 4491	DRD 3-2
MATCO Standard Materials Worksheet (MSMW)	8/103	EOP	MSFC Repository Bldg. 4491	DRD 3-27
Material Usage Agreement (MUA)	8/103	EOP	MSFC Repository Bldg. 4491	DRD 3-29
Standard Repair and Material Processes - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-18	8/103	EOP	KSC	Data contained in OMRSD for which KSC is the OPR.
Stress Analyses	8/103	EOP + 5	SRCS	
Systems Maintenance Analysis Document	8/103	EOP + 5	SRCS	
Test Activity Report	8/103	EOP + 5	MSFC Repository Bldg. 4491	DRD 5-5
Test Notifications, Flash Report, and Quick-Look Test Reports	8/103	EOP + 5	MSFC Repository Bldg. 4491	DRD 5-2
Test Readiness Reviews	8/103	EOP + 5	SRCS	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Acceptance Data Packages				
Acceptance Data Package (ADP)	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DR #RA-146-4 - Acceptance Data Packages. MSFC will archive permanent.
Configuration Management Files				
Configuration Management Documentation	8/101	Permanent	MSFC SRC Center Bldg. 4570	This requirement is satisfied by Configuration Management Documentation including Changes Requests, Change Evaluations, Directives, Presentations to the Board, and Board Minutes. MSFC PSE&I officially archives.
Correspondence - Substantive				
Project Manager's Selected Correspondence	8/101	Permanent	MSFC Bldg 4202 Room 601 and 607	
Engineering Drawings and Associated Documents				
SSME End of Program Development and Flight Engine/Component Documentation	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME Engineering Drawings, Lists, and Specifications	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 3SR-12 - List of Critical Processes and 2SR-18 - Standard Repair and Material Processes.
SSME Schematics	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME Tooling and Handling Fixtures Drawings and Associated Parts List	8/101	Permanent	MSFC Repository Bldg. 4491	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Handbooks, Manuals, and Procedures				
ATD Maintenance Manuals	8/101	Permanent	MSFC Repository Bldg. 4491	
Flight Handbooks	8/101	Permanent	Shuttle Record Closeout System (SRCS)	
Problem Reporting Procedure	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME Manufacturing and Engineering Data - SSME 101	8/101	Permanent	SRCS	
SSME Intermediate Maintenance Data	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME Orientation Manuals	8/101	Permanent	SRCS	
SSME Performance Book	8/101	Permanent	SRCS	
SSME The First Thirty Years and Beyond	8/101	Permanent	SRCS	
Supplemental Data for the SSME Maintenance Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Work Instructions (ATP)	8/101	Permanent	SRCS	
Imagery				
Major SSME Component Photographs and Videos (i.e., Assembly/Disassembly, Rocketdyne Heritage Pumps)	8/101	Permanent	SRCS	
Major SSME SSC Test Videos	8/101	Permanent	SRCS	
SSME Special Skills Training Presentations/Videos	8/101	Permanent	SRCS	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Major Milestone Reviews				
CoFR	8/101	Permanent	SRCS	
Component Acceptance Reviews/Hardware Readiness Review	8/101	Permanent	SRCS	
Design Certification Review/ Certification Design Reviews/ Preliminary Design Reviews	8/101	Permanent	SRCS	
Engine Acceptance Reviews	8/101	Permanent	SRCS	
Flight Flow Reviews (i.e., misc. launch reports)	8/101	Permanent	SRCS	
Flight Readiness Reviews	8/101	Permanent	SRCS	
Manufacturing/Hardware Availability Review	8/101	Permanent	SRCS	
Minutes, Requirements and Design Reviews (ATP)	8/101	Permanent	MSFC Repository Bldg. 4491	
Package, Requirements and Design Reviews (ATP)	8/101	Permanent	MSFC Repository Bldg. 4491	
Requirements and Design Review (ATP)	8/101	Permanent	MSFC Repository Bldg. 4491	
Post-Flight Evaluation Reports and Data				
Dynamic Data Review	8/101	Permanent	SRCS	
Flight Evaluation Working Group Report	8/101	Permanent	SRCS	
Launch Data Review	8/101	Permanent	SRCS	
Quick Look Data	8/101	Permanent	SRCS	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Safety and Mission Assurance Data				
List of Critical Processes - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-12	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by PWR, Critical Process List.
Problem Closeout and Explanation Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-2	8/101	Permanent	SRCS	Official data contained in PRACA for which MSFC S&MA is the OPR.
Problem Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 2PA-1	8/101	Permanent	SRCS	Official data contained in PRACA for which MSFC S&MA is the OPR.
SSME Failure Mode Effect Analysis	8/101	Permanent	MSFC Repository Bldg. 4491	
Specifications, Requirements, and Plans				
Acceptance Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
CIL Implementation Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Component Stress Analysis, Structural Loads, and Design Criteria	8/101	Permanent	MSFC Repository Bldg. 4491	
Configuration Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Contract End Item (CEI) Specifications	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 2EN-18 - Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards.
Contractor Documentation Plan (ATP)	8/101	Permanent	MSFC Repository Bldg. 4491	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Contractor Workmanship Standards - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-3	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DR #SE-236-2 - Drawings, Lists, Specifications.
Design Verification Specification Status Reports	8/101	Permanent	MSFC Repository Bldg. 4491	
Design Verification Test Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Documentary Photo Requirements	8/101	Permanent	MSFC Repository Bldg. 4491	
EEE Parts Specification - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-1	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# RA-145-10 - SSME EEE Parts Management Plan.
Element Contamination Control Plans - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-12	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by RSS-8613 - PWR, SSME Contamination Control Plan.
Facilities Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Flight Certification Hot Fire Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Fracture Control Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Fracture Mechanics Plan	8/101	Permanent	SRCS	
Full Power Level Abort Certification Plan	8/101	Permanent	SRCS	
Government Furnished Property Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Implementation Report - Space Shuttle Manned Spacecraft Criteria and Standards - NSTS 07700, Volume V, Appendix C, Information Requirement, 2EN-18	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# SE-236-12 - Contract End Item (CEI) Specifications.
Information Technology Security Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Logistics Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Manufacturing Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Material and Process Specification List	8/101	Permanent	MSFC Repository Bldg. 4491	
Material Control Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Operational Activity Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Operational Program Requirements Specification Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Oxygen Compatibility Materials Control Plan	8/101	Permanent	SRCS	
Part and Material Traceability Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Phase I Preliminary Flight Certification Extension Demonstration Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Preliminary Flight Certification Service Life Extension	8/101	Permanent	SRCS	
Program Development Plan	8/101	Permanent	MSFC Repository Bldg. 4491	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Program/Project Data Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Quality Plan - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-13	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# RA-146-U1 - Quality Program Plan.
Quality Program Plan	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 2SR-13 - Quality Plan and 3SR-11 - Sampling Plans/Procedures.
Reliability Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
Reliability Requirements Specification	8/101	Permanent	MSFC Repository Bldg. 4491	
Safety Plan - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-20	8/101	Permanent	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# SA-015-U1 - System Safety Plan.
Sampling Plans/Procedures - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-11	8/101	Permanent	MSFC Repository Bldg. 4491	Per SSME S&MA PWR complies with ANSI-ASQC Z1.4. This requirement is satisfied by DR# RA-146-U1 - Quality Program Plan.
SSME Contamination Control Plan	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 2SR-12 - Element Contamination Control Plans.
SSME Controller Software Documentation	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME EEE Parts Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 3SR-1 - EEE Parts Specification).
SSME Electromagnetic Compatibility Control Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME Government Quality Plan	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 2SR-13 - Quality Plan.

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
SSME Hardware Life Management Plan	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 2SR-5 - Vehicle and GSE Limited Life Items List.
SSME Supply Support Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
SSME Verification Requirements Specifications Status Report	8/101	Permanent	MSFC Repository Bldg. 4491	
Structural Assessment Plan	8/101	Permanent	MSFC Repository Bldg. 4491	
System Safety Plan	8/101	Permanent	MSFC Repository Bldg. 4491	Answers 2SR-20 - Safety Plan.
Acceptance Data Packages				
Acceptance Data Package (ADP) - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-4	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR #RA-146-4 - Acceptance Data Packages. MSFC is archiving ADPs for Selected Engines - 2044, 2045, 2047, 2048, 2050, 2051, 2052, 2054, 2056, 2057, 2058, 2059, 2060, 2061, 2062; for Engine 3001 (MSFC Display); for Engine 2107 (KSC Display) and for Engine 2019 (Smithsonian Museum).
Correspondence - Non-Substantive				
Correspondence - Administrative	8/103	EOP + 5	MSFC Bldg 4202 Room 601 and 607	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
New Technology Reports				
New Technology Annual Report	8/103	EOP + 5	MSFC Repository Bldg. 4491	
Technology Reports	8/103	EOP + 5	MSFC Repository Bldg. 4491	
Project-Related Contracts and Procurement Files Data				
Cost and Schedule Performance Measurement Report	8/103	EOP	MSFC Repository Bldg. 4491	
Monthly Progress Report	8/103	EOP	MSFC Repository Bldg. 4491	
Performance Metrics and Trends	8/103	EOP	MSFC Repository Bldg. 4491	
Risk Management Plan, Analysis, and Tracking Report	8/103	EOP	MSFC Repository Bldg. 4491	
Space Shuttle Main Engine Data Requirements List - Version 978	8/103	EOP	SRCS	
Reliability and Maintainability Data				
EEE Parts Deviations Request - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-11	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# RA-145-4 - EEE Parts Lists and Approval Status.
EEE Parts Lists and Approval Status	8/103	EOP + 5	MSFC Repository Bldg. 4491	Answers 2SR-6 - Project Parts Lists, 2SR-10 - EEE Parts Where Used Status Printout, and 2SR-11 - EEE Parts Deviation Request.
Material Reviews (MRs)	8/103	EOP + 5	SRCS	
Nonconformance Reporting - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-2	8/103	EOP + 5	IRIS	Official data contained in PRACA for which HQ is the OPR.

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Safety and Mission Assurance Data				
Accident/Incident Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-2	8/102	Destroy/Delete when no longer needed	MSFC Repository Bldg. 4491	This requirement is satisfied by Data Requirement SA-015-3 - Mishap Reporting and Investigation. Official data contained in IRIS for which HQ is the OPR. MSFC S&MA has duplicate copies.
Critical Items - NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-1	8/102	Destroy/Delete when no longer needed	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# RA-145-9 - SSME Critical Items List.
EEE Parts Where Used Status - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-10	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# RA-145-4 - EEE Parts Lists and Approval Status.
Hazard Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 1SR-2	8/102	Destroy/Delete when no longer needed	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# SA-015-1 - SSME Flight Hazard Analysis Report.
Project Parts List - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-6	8/103	EOP +5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# RA-145-4 - EEE Parts Lists and Approval Status.
Safety Analysis Report (SAR) - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-1	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# SA-015-1 - SSME Flight Hazard Analysis Report.
Vehicle and GSE Limited Life Item List - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-5	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR# SE-236-32 - SSME Hardware Life Management Plan, and Automated Configuration Tracking System (ACTS) Report.
Schedules				
Logic Network and Key Milestone Charts	8/103	EOP	MSFC Repository Bldg. 4491	

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Specifications, Requirements and Plans				
MSFC-SSME Nozzle Impact Test Plan for Various Debris Projectiles	8/103	EOP + 5	SRCS	
Test, Engineering, and Evaluation Files				
Automated Configuration Tracking System (ACTS) Report: Flight and Test History of Major Components	8/103	EOP + 5	MSFC Repository Bldg. 4491	Answers 2SR-5 - Vehicle and GSE Limited Life Items List.
Block I Engine Weld Assessment	8/103	EOP + 5	SRCS	
Chief Engineers Telecon Briefing	8/103	EOP + 5	SRCS	
Deviation Approval Request (DAR) 2988R1	8/103	EOP + 5	MSFC SRC Center Bldg. 4570	Answers 3SR-7 - Limited Life Waiver.
EEE Parts Where Used Status Report - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-10	8/103	EOP + 5	MSFC Repository Bldg. 4491	This requirement is satisfied by DR #RA-145-4 - EEE Parts Lists and Approval Status.
Limited Life Status Reports - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-7	8/103	EOP + 5	MSFC SRC Center Bldg. 4570	This requirement is satisfied by Deviation Approval Request (DAR) 2988R1 for which MSFC PSE&I is the OPR.
Propellant and Pressurant Forecasts	8/103	EOP + 5	MSFC Repository Bldg. 4491	
Propellant and Pressurant Use Report	8/103	EOP + 5	MSFC Repository Bldg. 4491	
Review Item Discrepancies (RIDs)	8/103	EOP + 5	SRCS	
Software Authorization Notice (SAN)	8/103	EOP + 5	MSFC SRC Center Bldg. 4570	Answers 3SR-13 - Software Deliverable Data Package.

TABLE D.2.16
MSFC - SPACE SHUTTLE MAIN ENGINE PROJECT FILES SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
Software Deliverable Data Package - NSTS 07700, Volume V, Appendix C, Information Requirement, 3SR-13	8/103	EOP + 5	MSFC SRC Center Bldg. 4570	This requirement is satisfied by Software Authorization Notices (SAN). MSFC PSE&I officially archives.
SSME Test Reviews/Reports	8/103	EOP + 5	SRCS	
Standard Repair and Material Processes - NSTS 07700, Volume V, Appendix C, Information Requirement, 2SR-18	8/103	EOP + 5	KSC	Official data contained in the OMRSD for which KSC is the OPR.
Technical Interchange Meetings (TIMs)	8/103	EOP + 5	SRCS	

TABLE D.2.17
MSFC SHUTTLE-ARES TRANSITION OFFICE -
SPACE SHUTTLE TRANSITION AND RETIREMENT FILES SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
Documentation Charter Letters, Charters, Transition Plans, SMRT documents	8/101	Permanent	SATO SharePoint Server	
Configuration and Data Management Records - Change Requests and Directives; Shuttle Requests (SRs)	8/101	Permanent	SATO SharePoint Server	
Weekly Notes to the Shuttle Propulsion Office Manager or Center Director	8/101	Permanent	SATO SharePoint Server	
Meetings Shuttle-Ares Transition Project Monthly Review Monthly Transition Project Status Review Weekly Transition Working Group (inactive) Presentations to Center Management Council Records Transition Working Group	8/101	Permanent	SATO SharePoint Server	
Records Matrices for MSFC Elements: ET, RSRB, SRM, SSME, PSE&I, PP&C, TPO, Engineering Directorate, S&MA	8/101	Permanent	SATO SharePoint Server	

TABLE D.2.17
MSFC SHUTTLE-ARES TRANSITION OFFICE -
SPACE SHUTTLE TRANSITION AND RETIREMENT FILES SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Annual Reports and Status Reports Technical Papers Final SEA Technical documents and associated data* Regulatory Documents Materials, Limited Materials News Releases HCFC 141b Exemption International Trade Bridge (ITB) Annual Task Order Products Risk assessments and disposition of formal risks SEA Meetings SEA Face to Face Meetings Flight Readiness Review Inputs/Actions/Responses Shuttle Replacement Technology Team Meetings (SEA Predecessor) Routine Records and Substantive Correspondence Major Briefing	8/101	Permanent	SATO SharePoint Server	*To be made available at several locations for follow-on programs (Tech docs).

TABLE D.2.17
MSFC SHUTTLE-ARES TRANSITION OFFICE -
SPACE SHUTTLE TRANSITION AND RETIREMENT FILES SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
T&R Environmental Documentation Technical Papers T&R Environmental Support Team (EST) Meetings Major Briefings Environmental - Substantive Correspondence (NASA HQ, Other) Environmental Program Risk Communications Program Management Review Briefings CH2M Hill Co. Annual Task Order Products ITB Annual Task Order Products	8/101	Permanent	SATO SharePoint Server	To be archived on CDs.
COTR Files Closeout Contracts Contract SSFC NNM05AA06F Delegation Letter and Certifications	8/103	EOP + 2	SATO SharePoint Server	
Business Files Budget/PPBE Files, Phasing Plans/Operating Plans and associated documentation	8/103	EOP + 2	SATO SharePoint Server	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS

Title	Schedule	Retention Period	Location	Comments
KSC Shuttle Facility/Key Property Turnover	8/107	5 yrs after EOP	Electronic	To be incorporated into PTE Database.
SMRT Documents (Shuttle Facility Turnover)	8/101	Permanent	Cabinet, Electronic	
KSC Shuttle Facility Turnover Management Decision Briefings	8/107	5 yrs after EOP	Electronic	
Software Audits KDP-P-1818 S&MA Launch Vehicles Processing Software Audit Procedure	8/109	2 yrs after EOP		\\kscres001\f089\SQA liffly hohn-English Database
Shuttle Launch Accessories	8/107	5 yrs after EOP	HQ 3279	NE-M1, M2 has about 14 file cabinets with Shuttle Launch Accessories design, test data which is used to help develop Constellation Launch Accessories.
Physiosimulator - Orbiter Checkout Drawings	8/107	5 yrs after EOP	O&C 4273	
Pictures of Shuttle ground processing hardware during development and prior to delivery	8/107	5 yrs after EOP	O&C room 4281	
Early KCCS/INCS Project Management Documentation	8/107	5 yrs after EOP	O&C room 4281	
Design Reviews	8/107	5 yrs after EOP	Desk	Final original released into EDC (Data Manual). NOTE: Items listed below are generic to our planning, design, implementation process.
Personal System Logs	8/107	5 yrs after EOP	OSB I, 5301	
Correspondence	8/107	5 yrs after EOP	Electronic	
Avionics Brain, Goodie Books	8/107	5 yrs after EOP	OSB I, 5301	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Weekly Notes	8/107	5 yrs after EOP	NE-A Shared Drive	
Avionics Shuttle Hardware Histories	8/107	5 yrs after EOP	Computer Workstations, OSB I, 5301	
KDP-F-1334, Medical Operations Checklist	8/107	5 yrs after EOP	O&C, 2056	
Photographic Acquisition Distribution Document (PADD)	8/107	5 yrs after EOP	CCAFS/Bldg. 1605	Originals held by Photo Services Contractor.
Avionics Certificate of Flight Readiness Back-up Data	8/107	5 yrs after EOP	NE-A Shared Drive	
Fluids and Propulsion Systems CoFR Records	8/108	EOP	Electronic	Original provided to PH Project Office.
Shuttle Data Bank Records	8/108	EOP	File Cabinet OSB I Room 5301H	
Ground Systems System Level, Mission Readiness Reviews (GSS and Integrated)	8/107	5 yrs after EOP	K6-1096, 5303F and 5303H	Contractor maintains original signed copies and electronic.
Reports and Notes on 1992-1994 Hydrogen Leak Detection Effort	8/107	5 yrs after EOP	O&C room 4281	
Pre-launch Data Review	8/107	5 yrs after EOP	Electronic	
OFI Audit Report Responses	8/109	EOP	See Comments	ksc/devl2\phb2
Statement of Assurance	8/109	EOP	See Comments	ksc/devl2\phb2
Surveillance Plan Records (Mission-specific Surveillance Tasks)	8/107	5 yrs after EOP	File Cabinet OSB I Room 5301H	
FAIR Act	8/107	5 yrs after EOP	See Comments	\f161 share drive

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Ground Systems SFOC, SPOC Award Fee Documentation	8/107	5 yrs after EOP	K6-1096, 5303H, and electronic	
Misc Shuttle POP presentation for various ground instrumentation systems	8/107	5 yrs after EOP	O&C room 4281	1990s
Ground Systems SFOC, SPOC Data Requirements Documentation	8/107	5 yrs after EOP	K6-1096, 5303H	Contractor maintains original copies and electronic.
Fluids and Propulsion Systems NE-F4/5/6/7 Certification Training Plan	8/107	5 yrs after EOP	K6-1096, 5101, and electronic	Original maintained by PH Project Office.
Ground Systems SFOC, SPOC Facility Turnover Documentation	8/107	5 yrs after EOP	K6-1096, 5303H	
ET Helium Pressurization Orifice Calibration Project	8/107	5 yrs after EOP	O&C room 4281	
Vehicle Test and checkout data	8/107	5 yrs after EOP		This data is probably kept as official records by LPS.
Ice Detector Camera Testing	8/107	5 yrs after EOP	O&C room 4286	
STS-114 Tanking Test #2 Vent Valve Leakage Test	8/107	5 yrs after EOP	O&C room 4281	
Super Light Weight Tank Test Documentation	8/107	5 yrs after EOP	O&C room 4281	
Configuration Management Records	8/103	TBD		
Drawings	8/103	TBD		
Engineering Operations - Training	8/33	See Comments		Current records are maintained until 3 years after trainee is separated from NASA.
Engineering Operations - Training	8/107	TBD		
Engineering Operations - Work Orders	8/103	TBD		

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Engineering Operations - Databases	8/103	TBD		
Engineering Operations - Databases	8/104	TBD		
Engineering Operations - Databases	8/105	TBD		
Engineering Operations - PRACA	8/103	TBD		
Engineering Operations - Permits	8/25.D.1.a.l	TBD		
Engineering Operations - Installation	8/48 B.4	TBD		
Engineering Operations - Environmental	8/43 D.5	TBD		
Engineering Operations - Environmental	8/48 B.5	TBD		
Facility - Drawings	8/53.D.1	TBD		
Facility - Maintenance	8/56.B.1.b	TBD		
Facility - Maintenance	8/103	TBD		
Facility - Maintenance	8/107	TBD		
Facility - Logs	8/105	TBD		
Facility - Inventory	8/103	TBD		
Flight Hardware - Maintenance	8/107	TBD		
Logistics - Drawings	8/103	TBD		
Mission Operations - Readiness Reviews	8/104	TBD		
Mission Operations - Change Configuration	8/103	TBD		
Mission Operations - Change Configuration	8/104	TBD		

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Mission Operations - Change Configuration	8/105	TBD		
Mission Operations - Reports and logs	8/103	TBD		
Mission Operations - Reports and logs	8/105	TBD		
Mission Operations - Maintenance	8/56.A.1	See Comments		Destroy after 3 years.
Mission Operations - Memos	8/105	TBD		
Mission Operations - Memos	8/107	TBD		
Mission Operations - Data	8/101	Permanent		
Mission Operations - Data	8/103	TBD		
Mission Operations - Data	8/105	TBD		
Mission Operations - Ops and Maintenance	8/103	TBD		
Requirements - QPRD	8/101	Permanent		
Safety - Reports and logs	8/43.A.1	TBD		
Safety - Program and Project	8/36.5C2 b2	TBD		
Safety - Program and Project	8/103	TBD		
Testing Operations and Data - Calibration	8/103	TBD		
Testing Operations and Data - Calibration	8/105	TBD		
Testing Operations and Data - Test data/report	8/103	TBD		
Testing Operations and Data - Test data/report	8/105	TBD		

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Testing Operations and Data - Test data/report	8/107	TBD		
Testing Operations and Data - Test data/report	8/109	TBD		
Testing Operations and Data - Test Procedures	8/102	TBD		
Testing Operations and Data - Test Procedures	8/103	TBD		
Testing Operations and Data - Test Procedures	8/108	TBD		
Quality - Audits	8/103	TBD		
Operations -Test data	8/109	TBD		
Operations Safety Logs	8/103	30 yrs	USA-KSC	
Government/Industry Data Exchange Program (GIDEP)	5/35	EOP	USA-KSC	
Stamp Control	8/36.5.C.2	EOP	USA-KSC	
Quality Planning Requirements Document (QPRD)	8/101	Permanent	USA-KSC	
R&QA Audits, Surveys and Reports	5/30.C	EOP	USA-KSC	
Program and Project Records	8/105	EOP	USA-KSC	
Technical Engineering Operations and Support for the SSP (USA-KSC Only)	8/103	5 yrs	USA-KSC	Hardcopy also kept for PRACA. CAARs are permanent.
LQS Operational Files	5/146	30 yrs	USA-KSC	Hardware Problems.
Certified Special Processors (CSP)	5/30.B	9 yrs	USA-KSC	Close file at end of survey at the end of that fiscal year - Destroy when 9 yrs old.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Nondestructive Evaluation (NDE)	8/103	5 yrs	USA-KSC	
Process Qualification	8/103	30 yrs	USA-KSC	
TAIR Book	8/103	30 yrs	USA-KSC	
Stamp Audits	8/36.5C2 a	10 yrs	USA-KSC	
Corrective and Preventive Action Records	8/103	15 yrs	USA Florida	
Government-Industry Data Exchange Program (GIDEP)	8/103	15 yrs	USA Florida	Historical working records scanned to CD; records maintained in database.
Purge	8/103	30 yrs	USA Florida	Historical working records scanned to CD; Records maintained in database. Termination.
Nonconformance Record	8/103	30 yrs	USA-KSC	
Surveillance	8/103	30 yrs	USA-KSC	
Process Qualification	8/103	30 yrs	USA-KSC	
Provisioned Inventory Items	8/105	EOP	USA-KSC	
Electronic Database - ESD Program	8/105	EOP	USA-KSC	
Tool Drawing Files (Tool Design and Vellums)	8/103	5 yrs	USA-KSC	Upon completion and release of Tool Drawing, originals go to Logistics Tech Data Center.
OJT Manuals	3/33.E.1	Permanent	USA-KSC	
Video Production/Miscellaneous Productions	2/24.A.2	EOP	USA-KSC	USA000221 Video Tapes.
Hardware Test Procedures	8/103	5 yrs	USA-KSC	Media: Documentum.
Intermediate and Depot Maintenance Manuals (IDMMs)	8/103	15 yrs	USA-KSC	IDMMs - Cx may request transfer of some of these manuals for future use.
Skills Retention Video Tapes	3/33	30 yrs	USA-KSC	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Certification Archive Library	8/103	5 yrs	USA Florida	Certifications, hardcopy only, working papers and Vendor submittals.
Safety Manuals + Material Safety Data Sheets	8/103	30 yrs	USA Florida	
Orbiter Electronic Databases (ADRS, CM03, MAC-PAC Master Plng, Ass./Capabilities, Plng Backlog, Shuttle Transmittal ILs)	8/105	EOP	USA-KSC	
Orbiter-Logistics Data Center-Engineering Documents	8/101	Permanent	USA-KSC	Orbiter related USA/Boeing/Vendor, OEM (i.e. hardware/tooling/STE/GSE drawings, specs, EOs, etc.
Orbiter Program Requirements (procurement data requirements documents) PDRDs and PDRLs	8/101	30 yrs	USA-KSC	Orbiter related waivers, failure reports, engineering design change proposals, drawings, acceptance data packages, TT&Es, etc.
Orbiter Limited Rights /Proprietary Data (i.e., OEM and vendor drawings, specs, etc.)	8/101	Permanent	USA-KSC	Media type-aperture cards Orbiter related proprietary/limited rights vendor and OEM documentation.
Orbiter Hardware Test Procedures (HTPs)	8/103	15 yrs	USA-KSC	Records to be retained in office until EOC, will then be destroyed 5 to 30 years after program.
Controlled Material Files	4/12.B.2	EOP	USA-KSC	Documents, ledgers, and similar documentation used to control and account for controlled materials (i.e., USA-KSC Form 4-217).
Finding Aids - File Maintenance	1442.77. A	EOP	USA-KSC	File Maintenance.
Military Export - Outbound	6051/C	EOP	USA-KSC	Freight Traffic - Filed with DD1149.
Prepaid Inbound Bills of Lading	6051.1.A	EOP	USA-KSC	Freight Traffic.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Freight Files - Shipping (GBL)	6100/2.A	EOP	USA-KSC	Government Bill of Lading (SF1113A), In-Bound GBL (After period of account).
Lost, Damaged, or Improper Shipment Files	6220.6	EOP	USA-KSC	OS&D Files.
Vehicle Report Files - Accident	6710.D.2	EOP	USA-KSC	
Vehicle Report Files - Non-Accident	6710.11. D.1	EOP	USA-KSC	
USA-KSC Vehicle Use Record	6740.H	EOP	USA-KSC	Mileage Reports (USA-KSC Form 7-490). Destroy after required transfer of information to other records, unless required for accident investigation (see item 11D(2)) or tax purposes, otherwise destroy when 3 yrs old whichever is sooner.
Leased Vehicles GSA Form 1152	6/11.M.1	EOP	USA-KSC	Destroy 4 years after vehicle is returned to GSA.
Training Videos	3/33.B.1	EOP	USA-KSC	Training Videos - Destroy or reused when no longer needed or when 3 months old.
Training Aids - Rosters	3/33.B.1	EOP	USA-KSC	Standard Rosters - Destroy when no longer needed or when 3 years old, whichever is sooner.
Training Aids - Unique to Agency	3/33.E.1	10 yrs	USA-KSC	Transfer to FRC when superseded, obsolete, or no longer used.
Certification of OJTs	3/33.G.2	See Comments	USA-KSC	Destroy 5 years after separation of employee or when no longer needed.
Training Aids - Course Materials	3/33.E.2	See Comments	USA Florida	Destroy 5 years after separation of employee or when no longer needed.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Photographs/Still Pictures	2/23.C3	15 yrs	USA-KSC	Engineering documents.
Tool Drawing Files	8/103	5 yrs	USA-KSC	Vellums, Original drawings, and tracings used in the manufacture of individual components, with related records or comparable docs maintained as a record of tool design and to facilitate reference to the drawings. Destroy when superseded.
Facility Drawings	8/103	15 yrs	USA-KSC	
OPS SWF Technical Reports	8/103	10 yrs	USA-KSC	These files contain materials utilized in fabrication, printing, production, with changes, modifications, or addenda thereto of engineering and operational manuals. These manuals are used in support of on-going network equipment/systems for technical design and configuration, inspection, maintenance, certifications, flight operational readiness, operational and post-flight evaluation. Retire to FRC after equipment/system becomes inactive.
Camera Ready Technical Reports	8/105	10 yrs	USA-KSC	
Safety and Rel. Reports	8/103	5 yrs	USA-KSC	
Mission Operations (Paper)	8/103	5 yrs	USA-KSC	Operational Log Books, (OTC, STM, DO, TPE).
Mission Operations (Microfiche)	8/103	20 yrs	USA-KSC	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
WAD Process Integration Team Documentation	8/103	5 yrs	USA-KSC	WAD Processing Integration Team: Contains meetings, agendas, minutes, and calendars contained within the AME and E-Boards systems.
Controlled Property Records	4/12.B.2	10 yrs	USA-KSC	
Mission Operations Logs	8/103	30 yrs	USA-KSC	
Original Motion Picture Film including but not limited to all launch and landing items for all Shuttle missions since Challenger. STS-26 through STS-132.	8/101	Permanent	Bldg M6-639 (Ice House)	~10,000 Cubic Feet (~4,000,00 Feet of Film, 17,000 different film items). Formats include 35mm, 70mm and 16mm film. Transfer to FRC in 3 year blocks. Transfer to NARA 7 Years from program termination.
Original Still Historic Images including but not limited to the planning and preparation leading up to STS-1 including pad build up, Orbiter construction, closeout photos and multiple other images relating to Shuttle. This collection contains all the permanent still imagery from STS-1 through STS-132.	8/101	Permanent	Bldg M6-399, Room 2369 and Electronic	~900 Cubic Feet, ~7.0 TB (~3,500,000 images). Formats include 35mm film, 70mm film, 120mm film, .jpg and .tiff. Transfer to FRC in 3 year blocks. Transfer to NARA 7 Years from program termination.
Space Shuttle Baseline Configuration Imagery (BCI) from STS-114 through STS-132	8/103	TBD	Electronic	~1.5 TB (~15,000 images). Formats include .tiff and .jpg.
Original Video Tapes and Digital Videos including but not limited to Shuttle Engineer videos prior to the digital age.	8/101	Permanent	Bldg. M6-399, Rooms 2369, 1359, 1360 and Electronic	~700 Cubic Feet, ~2 TB. Formats include VHS, SVHS, BETA, .avi, .mov, .wmv, .mpg, Umatic, Digibeta.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Original Video Tapes and Digital Videos including but not limited to Shuttle Engineer videos prior to the digital age	8/103	TBD	Bldg. M6-399, Rooms 2369, 1359, 1360 and Electronic	~700 Cubic Feet, ~2 TB. Formats include VHS, SVHS, BETA, .avi, .mov, .wmv, .mpg, Umatic, Digibeta.
STS-6 through STS-132 Shuttle Training Video Records	8/101	Permanent	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-4 through STS-132 Shuttle Processing Records	8/101	Permanent	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle Launch Records	8/101	Permanent	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle Launch Records	8/103	TBD	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle Landing Records	8/101	Permanent	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-31 through STS-134 Shuttle Payload Processing Records	8/101	Permanent	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle Scrub Records	8/103	TBD	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle SCA Records	8/101	Permanent	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle SCA Records	8/103	TBD	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Crew Activity Records	8/103	TBD	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
STS-1 through STS-132 Shuttle Compilation Records	8/103	TBD	KSC TV 1205-F Room 1005	Beta and DVC Pro HD.
Wheel and Tire Processing (WT)	8/105	TBD	TBD	
SCOL - Safety Clears Online Log	8/105	EOP	TBD	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
RRFH - Radiator Retract Flex Hose Tracking and Mapping Data	8/103	30 yrs after EOP	TBD	
Environmental Chemical Usage	8/43.E	TBD	TBD	State retention is 5 years. (hall) Handle as permanent. Retention under discussion with NARA.
Environmental Tank Inspection	8/43.G	TBD	TBD	
Environmental Reutilization Data	8/43.D.5	TBD	TBD	Keep until NARA determines appropriate schedule.
Environmental Aspect List	8/43.H	TBD	TBD	Handle as permanent. Retention under discussion with NARA.
Florida Refrigerant Online Service Tracking (CFC) Data	8/43.E	Permanent	TBD	
KSC STM Weather Log	8/101	Permanent	TBD	Data may be retired upon transition from the Space Shuttle Program.
Stamp Control Program Data	8/36.5	TBD	TBD	
RDTS - Radiator Damage Tracking Data	8/101	Permanent	TBD	
RACIT - RAC Information Tracking Data	8/103	30 yrs	TBD	
Columbia Reconstruction Data	8/101	Permanent	TBD	
Chemical Material Tracking Data	8/43A	Permanent	TBD	Treat as permanent pending NARA. Electronic copy of database to be retired to storage at end of SSP.
Safety Hours Metrics	8/103	TBD	TBD	
Program Management Review Team Material	8/103	TBD	TBD	
File System Data	8/103	TBD	TBD	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Mission Labor Hours	8/103	TBD	TBD	
Work Force Deviations Metrics	8/103	TBD	TBD	
Work Force Health Metrics	8/103	TBD	TBD	
Baker AWA Reports	8/103	5 yrs after EOP	TBD	Reports from this application will be archived at EOP. Access, Excel, PDF, Txt, Word. Database to be retired at end of SSP. Not currently planned for transition to ISC.
Pid Electronic Monitoring Data	8/105	TBD	TBD	Shuttle: Temporary.
Hypergolic Gauge Tracking Data	8/105	TBD	TBD	Shuttle: Temporary.
Optics Support Tracking Data	8/105	TBD	TBD	Shuttle: Temporary.
Ground Support Equipment Minimum-Maximum Data	8/105	TBD	TBD	Shuttle: Temporary.
Motor Circuit Evaluation Source Data (MCE)	8/103	5 yrs after EOP	TBD	
Main Propulsion System Defects	8/103	30 yrs after EOP	TBD	After all Shuttles are physically retired.
Main Propulsion System Data	8/105	EOP	TBD	After all Shuttles are physically retired.
Main Propulsion System Office Access Database	8/105	EOP	TBD	After all Shuttles are physically retired.
M&P Lab Reports and Test Data	8/103	5 yrs after EOP	TBD	Hardcopy of test and data reports to be archived at end of SSP. Database to be retired at end of SSP T&R.
Schedule Data	8/105	TBD	TBD	Primavera.
Malards Data	8/103	5 yrs after EOP	TBD	Database retires at end of SSP.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Vibration Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Application to be retired at end of SSP. Not currently planned for transition to ISC.
Oil Analysis Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Application to be retired at end of SSP. Not currently planned for transition to ISC.
Wave Analysis Data Processing Information	8/103	5 yrs after EOP	TBD	
Thermography Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Application to be retired at end of SSP. Not currently planned for transition to ISC.
Thermal Compatibility Data	8/103	TBD	TBD	
Specification Revision Tracking Data	8/103	5 yrs after EOP	TBD	Database retires at end of SSP.
Rotalign Commander Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Software to be retired at end of SSP. Not currently planned for transition to ISC.
PMEL Oil Online Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Application to be retired at end of SSP. Not currently planned for transition to ISC.
PMEL Logbook	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Application to be retired at end of SSP. Not currently planned for transition to ISC.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
PdMA WinVis Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Database to be retired at end of SSP. Not currently planned for transition to ISC.
Laser_Alignment Reports	8/103	5 yrs after EOP	TBD	Reports to be retired to storage at end of SSP. Application to be retired at end of SSP. Not currently planned for transition to ISC.
Fingerprinting Records	8/103	TBD	TBD	
Emonitor Odyssey Deluxe Reports	8/103	5 yrs after EOP	TBD	Reports from application archived at EOP to media. Application to be retired at end of SSP. Not currently planned for transition to ISC.
Engineering Change Tracking Reports	8/103	5 yrs after EOP	TBD	Hardcopy of test and data reports are to be archived at end of SSP. Database to be retired at end of SSP T&R.
Bearing Failure Analysis	8/103	5 yrs after EOP	TBD	Reports from this application will be archived at EOP. Application to be retired at end of SSP. Not currently planned for transition to ISC.
Baker Explorer Reports	8/103	5 yrs after EOP	TBD	Reports from this application will be archived at EOP, Access, Excel, PDF, Txt, Word. Database to be retired at end of SSP. Not currently planned for transition to ISC.
Thermal Protection System Process Tracking Data	8/105	EOP	TBD	
Software Tracker Information	8/103	5 yrs after EOP	TBD	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Streamlined Reliability Centered Maintenance Logic Data	8/103	5 yrs after EOP	TBD	Only the Metrics reports generated by Scott Traux is designated as an "Official Record." Data to be retired at end of SSP. Not currently planned for transition to ISC.
Mods Upgrades Data	8/103	5 yrs after EOP	TBD	
MEQ Wheel and Tire Tracking Data	8/103	5 yrs after EOP	TBD	
ENG SPIP Data (SQL)	8/103	5 yrs after EOP	TBD	
Requirement Change Notice (RCN) Report	8/103	5 yrs after EOP	TBD	
Registered Tanks Information	TBD	TBD	TBD	
Pressure Vessel Certification	8/103	5 yrs after EOP	TBD	
NASA Shuttle Logistics Depot (NSLD) - Raw Materials Warehouse Data	8/103	5 yrs after EOP	TBD	
WTMS - Windows Tracking and Mapping Data	8/103	30 yrs	TBD	
Wire List Maintenance Data (WILMA)	8/103	5 yrs after EOP	TBD	
WCL - Orbiter Operations Wire Crimping Log	Shuttle - 8/103	5 yrs after EOP	TBD	
WAD Authoring and Validation Data	8/103	5 yrs after EOP	TBD	
Thermal Protection System Scheduling Data	8/105	TBD	TBD	
Test Preparation Sheet Numbering Data - TPSNS	8/105	EOP	TBD	
TCS Blankets Management Data	8/103	5 yrs after EOP	TBD	
STND DOC Data	TBD	TBD	TBD	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Shuttle Processing Electronic Archival and Retrieval Data	8/103	5 yrs after EOP	TBD	
Shuttle Image Management Data	8/103	5 yrs after EOP	TBD	
System Change Request Processing Data	8/103	TBD	TBD	
Shuttle Connector Analysis Network Custom Tracker Data	8/103	5 yrs after EOP	TBD	
RCNWE TRAC Data	8/103	5 yrs after EOP	TBD	
Production Planning Data	TBD	TBD	TBD	PeopleSoft.
Production Management Data	TBD	TBD	TBD	PeopleSoft.
Item Master Data	TBD	TBD	TBD	PeopleSoft.
Inventory Data	TBD	TBD	TBD	PeopleSoft.
Engineering Data	TBD	TBD	TBD	PeopleSoft.
Portal for Recertification Information and Skills Maintenance Data	8/101	Permanent	TBD	
Production Control Tracking Data	8/103	5 yrs after EOP	TBD	
Orbiter Flight Readiness Data	TBD	TBD	TBD	
Ops. Maint. Req. Spec. - RCN Assessment Data	8/103	5 yrs after EOP	TBD	
Ops. Maint. Req. Spec. - Flow Planning Data	8/103	5 yrs after EOP	TBD	
NSLD Training Records Data	TBD	3 yrs after EOP	TBD	
OEM/STE Engineering Release Desk Data	8/103	5 yrs after EOP	TBD	ColdFusion.
Computerized Maintenance Management Data	8/103	5 yrs after EOP	TBD	Maximo.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Logistics Support Request (LSR) Data	8/105	EOP	TBD	Access.
Line Replaceable Unit Data	8/103	5 yrs after EOP	TBD	
Lost and Found Data	8/103	5 yrs after EOP	TBD	
L3 Models and Tools	8/103	5 yrs after EOP	TBD	
Information Technology Service Management Data - Service Portal	TBD	TBD	TBD	
Integrated Problem Reporting and Corrective Action Data	8/103	5 yrs after EOP	TBD	For SSP (Shuttle) we have 69,414 documents (NCs, RPs, and CAs). This does not include non-Shuttle Records.
Intranet-Provided Procedures	8/103	5 yrs after EOP	TBD	
IDS Master Data	8/103	5 yrs after EOP	TBD	
Holding Tank Data	8/105	TBD	TBD	
Hazard Control Data	8/103	5 yrs after EOP	TBD	
USA Ground Systems Supportability Assessment NNJ06VA01C	8/105	TBD	TBD	
GSS - GSS Crimping Data	8/103	5 yrs after EOP	TBD	
GOSARS/TDE - TDE Ground Operations Shop Aid Record Data	TBD	TBD	TBD	
Government Industry Data Exchange Program Data	5/35	3 yrs after EOP	TBD	
Group Capability Model Data	TBD	TBD	TBD	
GB CCBD Data	8/103	5 yrs after EOP	TBD	
First Time Quality Data	8/103	5 yrs after EOP	TBD	
Flight Ops Property Transition Data	TBD	TBD	TBD	
Foreign Object Debris Data	8/105	TBD	TBD	
Fixed Ladder Inspections Data	TBD	TBD	TBD	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
FLA Policy and Procedures	TBD	5 yrs after EOP	TBD	
Temporary Installation Verification Data	8/103	5 yrs after EOP	TBD	
ETDL - External Tank Damage Log	8/103	30 yrs	TBD	
Environmental Safety and Health Tracking Data	TBD	TBD	TBD	
Environmental, Safety and Health Controlled Waste Pickup Data	TBD	TBD	TBD	
eOIRSS - Electronic Open Item Review Signature Data	8/105	TBD	TBD	
Elect CCBD Data (LPS/IDS CCBD)	8/103	5 yrs after EOP	TBD	
Engineering Assessment Tracking Data	8/105	TBD	TBD	
E~Boards Data	8/103	TBD	TBD	
Documentum Data - TX - FL	TBD	TBD	TBD	
Crib Master Data	4/12.B	TBD	TBD	
Carrier Panel Tracking Data	8/103	5 yrs after EOP	TBD	
CPLTS - Cold Plates Tracking Data	8/103	30 yrs	TBD	
Change Management Express Data	8/103	5 yrs after EOP	TBD	
Closed Master TR Data	8/103	5 yrs after EOP	TBD	
CIPS - Windchill Data	8/101	Permanent	TBD	
CIPS - Solumina Data	8/105	TBD	TBD	
CIPS - PeopleSoft Data	TBD	TBD	TBD	
CIPS - MXES Data	TBD	TBD	TBD	
CIPS - Cradle Data	8/105	TBD	TBD	
CIPS - Attentus Data	8/103	TBD	TBD	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
Control Room Enhancements Review Team Tracking Data	8/103	5 yrs after EOP	TBD	
Constraints Automated Tracking Data	8/105	TBD	TBD	
Cartridge Automated Resource Tracking Data	TBD	TBD	TBD	
Automated Support Requirements Data	TBD	TBD	TBD	
Automated Release Processing Data	8/101	Permanent	TBD	
Automated Release Processing Data	8/103 and 1/120e	5 yrs after EOP	TBD	
Action Management Express Data	8/105	TBD	TBD	
Automated Management Document Control Data	8/103	5 yrs after EOP	TBD	
Automated Change Processing Data	8/103	5 yrs after EOP	TBD	
Maintenance Documentation Product Catalog	TBD	3 yrs after EOP	TBD	
Logistics, Planning, and Supportability Tie-In Log	8/103	TBD	TBD	
Logistics Quality Systems Hardware Purge Data	8/103	5 yrs after EOP	TBD	
Hazardous Material Review Records	TBD	TBD	TBD	
Haz Tracker Data	8/43.D.5	TBD	TBD	
Engineering Report Writer M&P Report	8/103	5 yrs after EOP	TBD	M&P report generated by Al Fertig is designated as a “Record.” Required as long as USA M&P is contracted by NASA.
Drawings	8/101	Permanent	TBD	CRADLE
29 LCC Phone Recordings	8/101	Permanent	CD&SC	Recorded calls go back to June 2005.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
480 to 500 unique OIS-D channel recordings	8/103	TBD	CD&SC	
Command channels (111, 132, 212, 213, and 232) for missions 1-4 recordings	8/103	TBD	CD&SC	
Recordings of 190 OIS-D channels for missions 2, 3, and 4 from the Audio 4 Wires	8/103	TBD	CD&SC	
Recordings of 60 analog channels including pool, and crane radios, PAWS, 3 Comm Control phones	8/103	TBD	CD&SC	
Recordings of 6 air to ground channels	8/103	TBD	CD&SC	
Recordings of physical trunked radio channels	8/103	TBD	CD&SC	
Laser Alignment Reports	8/103	3 yrs after EOP	K7-1557	Electronic records are stored on grndres1.
Materials/Equipment Use Permits	8/103	15 yrs after EOP	K6-894	
MCE Source Data	8/103	3 yrs after EOP	K7-1557	
PMEL Data	8/103	3 yrs after EOP	K7-1557	
RCM Analysis	8/103	15 yrs after EOP	K6-1094	
RF Transmitter Permits	8/103	15 yrs after EOP	K6-894	
Test Reports	8/103	15 yrs after EOP	K6-848	
Thermography Reports	8/103	3 yrs after EOP	K7-1557	Electronic records are stored on dbs1.
Vibration Source Data	8/103	3 yrs after EOP	K7-1557	

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-17, Shuttle Fluid Spill/Leak Logs	8/103	5 years after EOP	USA-KSC SPEARS	Stand alone Fluid Spill/Leaks Logs maintained until 1998. Data is available via PRACA/iPRACA search after 1998. Reference: USA MRLS SQ. NO. 827, EOP-5 yr., Dept 0393130.
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-18, Standard Repair and Material Processes	8/103	5 years after EOP	USA-KSC Documentum/ Wave	SRPs library is in documentum. Reference: USA MRLS SEQ. NOS.1225 and 14453, EOP-5 yr., Dept.0393320. NOTE: GSE component Intermediate Depot Maintenance Manuals (IDMMs) considered refurbishments not SRPs. NOTE: As run SRPs in SPEARS as attachments to PRs. Reference: USA MRLS SEQ. NO. 827, EOP-5 yr., Dept 0393130.
NSTS 07700, Volume V, Appendix C, Information Requirement 2SR-20, Safety Plan	8/103	5 years after EOP	USA-KSC	Documentum/SELS, USA FSOP 6100 Volumes I, II, III. Reference: USA MRLS SQ. NO. 14176, EOP-5 yr., Dept 0392330.
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-1, Problem Reports	8/103	5 years after EOP	USA-KSC I-PRACA/ SPEARS	iPRACA/SPEARS contains the electronic data. As run documentation processed thru the Quality Data Center (QDC). Reference: USA MRLS SQ. NO. 827, EOP-5 yr., Dept 0393130.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Continued

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 2PA-2, Problem Closeout and Explanation Report	8/103	5 years after EOP	USA-KSC I-PRACA/ SPEARS	iPRACA/SPEARS contains the electronic data. As run documentation processed thru Quality Data Center (QDC). Reference: USA MRLS SQ. NO. 827, EOP-5 yr., Dept 0393130.
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-2, Nonconformance Reporting	8/103	5 years after EOP	USA-KSC I-PRACA/ SPEARS	iPRACA/SPEARS contains the electronic data. As run documentation processed thru QDC. Reference: USA MRLS SQ. NO. 827, EOP-5 yr., Dept 0393130.
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-3, Contractor Workmanship Standards	8/103	5 years after EOP	USA-KSC Documentum/ SELS	USA009549 OP defines workmanship standards. Documentum (EDMSP)/SELS database is maintained by USA-JSC. Reference: USA MRLS SQ. NO. 14277, EOP-5 yr., Dept. 0393310.
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-8, Pressure Vessel Historical Data	8/103	20 years after EOP	USA-KSC Documentum (ARP) to EDC at closeout. Automated Release Processing (ARP)	Pressure Vessel Data Packs Pressure Vessel Historic data includes: 1) LRU application contains: List of components of system pressure vessel application (contains next certification dates, system ratings, etc.). USA MRLS TBD. 2) Pressure Vessel Application - Period of certification, current certification date, calculations of next certification, thickness of material of vessels, KNPR #s, etc. USA MRLS TBD.

TABLE D.2.18
LAUNCH VEHICLE PROCESSING SSP RECORDS - Concluded

Title	Schedule	Retention Period	Location	Comments
NSTS 07700, Volume V, Appendix C, Information Requirement 3SR-12, List of Critical Processes	8/103	5 years after EOP	USA-KSC Documentum	Critical Processes Identified by OP USA004647. Reference: USA MRLS SQ. NO. 14277, EOP-5 yr., Dept. 0393310.

SECTION E

ACRONYMS AND ABBREVIATIONS

ACTS	Automated Configuration Tracking System
ADP	Acceptance Data Package
AFR	Agency Filing Scheme
AGTS	Advanced GIDEP Tracking System
ALERT	Acute Launch Emergency Reliability Tip
ALT	Approach and Landing Test
AR	Anomaly Report
ATP	Authority to Proceed
BARS	Baseline Accounting and Reporting System
BCI	Baseline Configuration Imagery
BFS	Backup Flight System
C/L	Checklist
CAB	Corrective Action Board
CAPS	Corrective Action Problem Summary
CB	Configuration Baseline
CCAIT	Crew Compartment Avionics Integration Tool
CCCD	Crew Compartment Configuration Drawing
CCL	Commerce Control List
CDC	CIPPA Discard Container
CDR	Critical Design Review
CDS	Certification Data System
	Certification Database System
CEA	Center Export Administrator
CEI	Contract End Item
CIL	Critical Items List
CIO	Chief Information Officer
CIR	Cargo Integration Review
	Change Implementation Record
CMDB	Control Board Database
CMO	Configuration Management Office
CMMAT	Critical Math Model Analysis Tool
CMMDB	Critical Math Model Database
CoFR	Certificate of Flight Readiness
	Certification of Flight Readiness
COQ	Certification of Qualifications
COSIS	Contractor Officers Special Instruction Sheet

CR	Change Request
CSP	Certified Special Processor
CTSD	Crew and Thermal Systems Database
DAR	Deviation Approval Request
DCMS	Document Configuration Management System
DCR	Data Change Request
DDDM&P	Detailed Design, Development, Manufacturing and Production
DOORS	Dynamic Object Oriented Requirements Contract
DPD	Data Procurement Document
DR	Discrepancy Report
DRD	Data Requirement Document
DSSR	Design Services Service Request
EAR	Export Administration Regulations
ECN	Equipment Reference Number
ECO	Engineering Change Order
ECP	Export Control Policy
ECR	Export Control Representative
EEE	Electrical, Electronic and Electromechanical
EIS	Engineering Information System
EN	Engineering Notice
EO	Engineering Order
ESCR	Expedited SAIL Change Request
ESD	Electrostatic Discharge
ESOC	Extravehicular Space Operation Contract
EST	Environmental Support Team
EVA	Extravehicular Activity
FAB	Fabrication Action Breakdown
FCP	Flight Change Proposal
FEID	Flight Equipment Interface Device
FESRRP	Flight Equipment Safety and Reliability Review Panel
FMEA	Failure Mode Effects Analysis
FMOF	First Manned Orbital Flight
FOIA	Freedom of Information Act
FOLD	Foam Loss Database
FRC	Federal Records Center
FRR	Flight Readiness Review

GIDEP	Government-Industry Data Exchange Program
GPC	General Purpose Computer
GSE	Ground Support Equipment
HR	Hazard Report
HOSC	Huntsville Operations Support Center
HTP	Hardware Test Procedure
IAV	Integration Avionics Verification
	Inventory Adjustment Voucher
ICD	Interface Control Document
IDMM	Intermediate and Depot Maintenance Manual
IDR	Interim Discrepancy Report
INK	Increasing Network Knowledge
IPTR	In-Process Technical Review
IR	Information Requirement
IRIS	Incident Reporting Information System
ISERP	Integrated Safety Engineering Review Panel
ISS	International Space Station
ISSP	International Space Station Program
IT	Information Technology
ITAR	International Traffic in Arms Regulations
ITB	International Trade Bridge
JSERP	JSC Safety Engineering Review Panel
KSERP	KSC Safety Engineering Review Panel
LPR	Legal Permanent Resident
LRU	Line Replaceable Unit
LSCR	Laboratory Software Change Request
LSR	Logistics Support Request
M&P	Materials and Processing
MA	Management
MADS	Modular Auxiliary Data System
MAGR	Miniaturized Airborne GPS Receiver
MCE	Motor Circuit Evaluation
MEDS	Multifunction Electronic Display Subsystem
MER	Mission Evaluation Room

MIUL	Material Process Identification and Usage List
MPTA	Main Propulsion Test Program
MR	Material Review
MRAS	Maintenance Release Authorization Sheet
MSERP	MSFC Safety Engineering Review Panel
MT	Manufacturing Test
MUA	Material Usage Agreement
NCR	Nonconformance Record
NDE	Nondestructive Evaluation
NIRD	NASA Imaging Reporting Database
NPD	NASA Policy Directive
NPR	NASA Procedural Requirement
NSLD	NASA Shuttle Logistics Depot
NSPAR	Non-Standard Parts Approval Request
OFI	Operational Flight Instrumentation
OFT	Orbital Flight Test
OI	Operational Increment
OIU	Orbiter Interface Unit
OMI	Operation and Maintenance Instruction
OMRSD	Operations and Maintenance Requirements and Specification Document
OP	Operating Procedure
OPR	Office of Primary Responsibility
ORLA	Optimum Repair Level Analysis
OSMA	Office of Safety and Mission Assurance
OSVS	Orbiter Space Vision System
P/N	Part Number
PADD	Photographic Acquisition Distribution Document
PAL	Process Asset Library
PAO	Public Affairs Officer
PC	Personal Computer
PDR	Preliminary Design Review
PHTR	Packaging, Handling, and Transportation Record
PILS	Payload Integration Library System
PMC	Program Management Council
POP	Program Operating Plan
PPBE	Program Plans and Budget Estimate
PRACA	Problem Reporting and Correction Action

PRCB	Program Requirements Control Board
PRCBD	Program Requirements Control Board Document
PRO	Power Resource Officer
PRVD	Program Requirements and Verification Document
PSDB	Pressure Systems Database
PSIG	Propulsion Systems Integration Group
PSRP	Payload Safety Review Panel
PTRS	Project Technical Requirements Specification
PWO	Production Work Order
QP	Quality Panel
QPRD	Quality Planning Requirements Document
RAP	Receiving Acceptance Plan
RCA	Request for Corrective Action
RCN	Requirement Change Notice
RFS	Requests for Support
RID	Review Item Discrepancy
RIT	Requirement Issue Tracking
RITF	Receiving Inspection Test Facility
RMS	Remote Manipulator System
RRFH	Radiator Retract Flex Hose
RSRM	Redesigned Solid Rocket Motor
S&MA	Safety and Mission Assurance
SAIL	Shuttle Avionics Integration Laboratory
SAN	Software Authorization Notice
SAR	Safety Analysis Report
SAS	Software Approval Sheet
SCID	Special Consideration Items Drawing
SCOL	Safety Clears Online Log
SCR	Software Change Request
SDS	Shuttle Drawing System
SED	Shipper’s Export Declarations
SELS	Spaceops Electronic Library System
SID	Simulation Interface Device
SIP	System Integration Plan
SIRMA	Shuttle Integrated Risk Management Application
SLS	Space Launch System
SMAP	Safety and Mission Assurance Panel
SMRB	Senior Material Review Board

SPCRT	Software Problem/Change Report Tracker
SPON	Shuttle Program Office at NASA
SPRA	SSP Probabilistic Risk Management Application
SR	Safety, Reliability, and Quality
	Shuttle Request
SRB	Solid Rocket Booster
SRCS	Shuttle Records Closeout System
SRR	Software Readiness Review
SSME	Space Shuttle Main Engine
SSP	Space Shuttle Program
STATS	Schedule Tracking and Technical Summary
STE	Special Test Equipment
STF	SPOC Transmittal Form
SWG	Structures Working Group
T-RAD	Tile Repair Ablator Dispenser
TAIR	Test and Inspection Record
TD	Technical Directive
TDDP	Trajectory Design Data Package
TIM	Technical Interchange Meeting
TPS	Task Preparation Sheet
	Test Preparation Sheet
	Thermal Protection System
TRD	Test Requirements Document
TRR	Test Readiness Review
TSC	Telescience Support Center
TVC	Thrust Vector Control
UAT	User Acceptance Testing
U.S.	United States
USML	United States Munitions List
VCR	Verification Complete Report
VDI	Vehicle Data Integration
VIS	Verification Information System
WAD	Work Authorization Document
WOR	Work Order Request
WWW	World Wide Web

SPACE SHUTTLE

APPENDIX 06

FLIGHT SUPPORT EQUIPMENT (FSE) MANAGEMENT

No applicable requirements have been identified in NSTS 07700, Volume VI to transition into Appendix 06 for closeout.

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SPACE SHUTTLE

APPENDIX 07

COMMONALITY MANAGEMENT

No applicable requirements have been identified in NSTS 07700, Volume VII to transition into Appendix 07 for closeout.

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SPACE SHUTTLE

APPENDIX 08

OPERATIONS CLOSEOUT REQUIREMENTS AND FERRY FLIGHT CERTIFICATION OF FLIGHT READINESS

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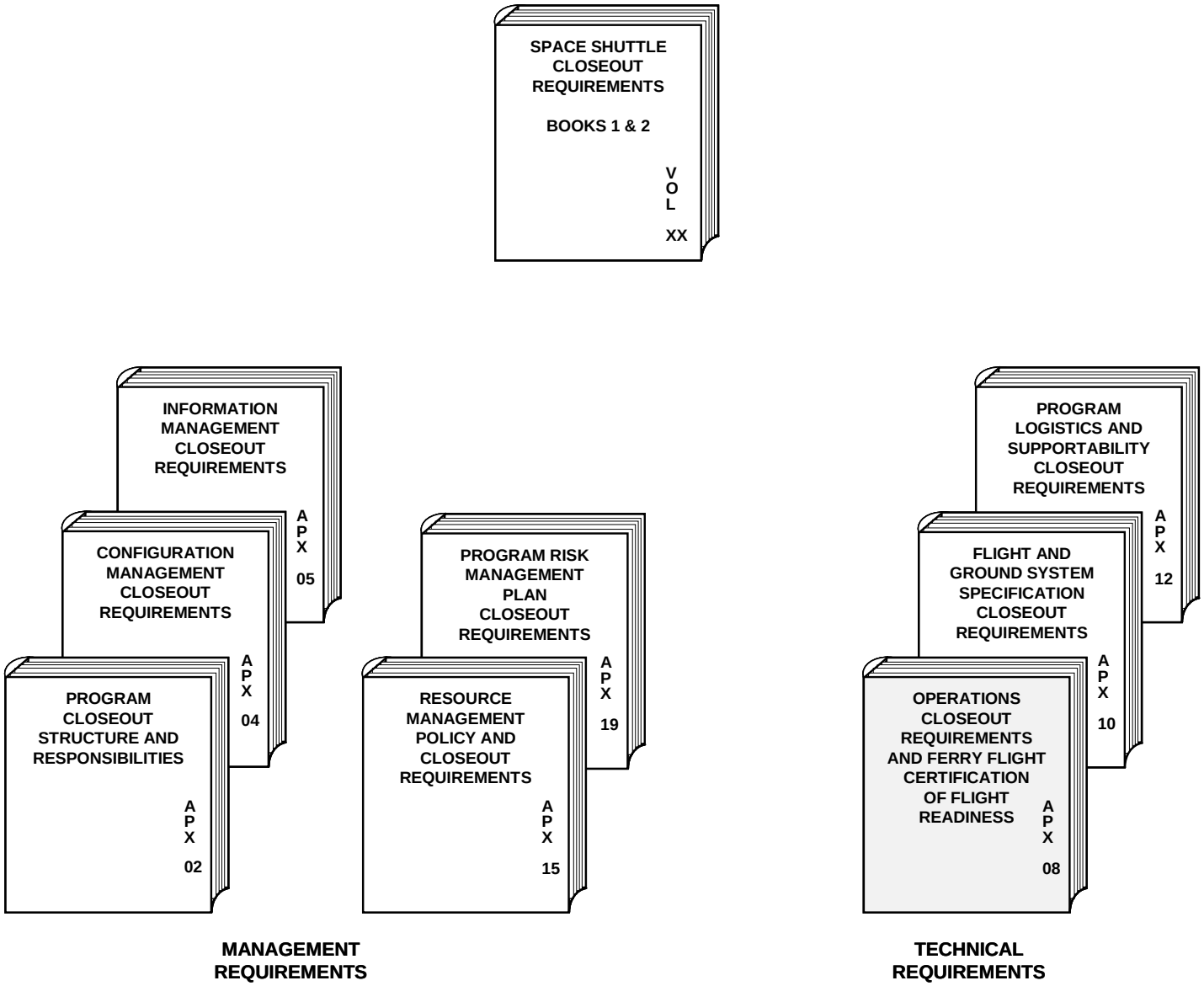
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, interface agreements, and system capabilities shall be documented, baselined, and subsequently controlled by SSP management.

Space Shuttle Program closeout requirements controlled by the Manager, Space Shuttle Program are documented in, attached to, or referenced from NSTS 07700, Volume XX, Books 1 and 2.

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the Space Shuttle program element/project managers to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume IV - Book 1, and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 INTRODUCTION

1.1 PURPOSE

This document defines the requirements, responsibilities, and procedures for all Space Shuttle Program (SSP) closeout elements/projects in the application of Operations Closeout Requirements and the Ferry Flight Certification of Flight Readiness.

All program-level Operations Closeout Requirements and the Ferry Flight Certification of Flight Readiness requirements are contained herein. In the event of conflicting statements regarding requirements between this document and any other SSP closeout document, the requirements in this document take precedence. However, if a Space Shuttle Program Closeout Directive (SSPCD) has been subsequently issued by the Manager, SSP Transition and Retirement (T&R) which affects the statement in question, the SSPCD shall take precedence.

1.2 SCOPE

The requirements, responsibilities, and procedures defined herein are applicable to all organizations and personnel involved in Space Shuttle closeout activities in regard to the conduct of Orbiter ferry operations, the response to contingencies, and the certification of Orbiter ferry flight readiness for Enterprise, Discovery, Endeavour, and Atlantis. This document also defines those requirements, responsibilities, and procedures applicable to contractor activities necessary to achieving program closeout objectives. In order to meet the requirements contained in this document, lower level requirements shall be developed by functional organizations of JSC, KSC, MSFC, and SSP contractors, as required.

2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this appendix to the extent specified herein. “(Current Issue)” is shown in place of the specific date and issue when the document is under governing program control.

NSTS 07700 Volume XX - Book 2 Appendix 10 (Current Issue)	Space Shuttle Closeout Requirements, Appendix 10, Flight and Ground System Specification Closeout Requirements
	Ref. Section B
NSTS 60585 (Current Issue)	End-State Subsystems Requirements Document (ESSRD)
	Ref. Section B

ML0601-9025	Thermal Protection System Standard Maintenance Procedures (reference only)
	Ref. Section B
NPR 8621.1B	NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping
	Ref. Section C
USA001138	Use of Rented or Borrowed Heavy Equipment for Critical Operation
	Ref. Section B
USA005352	SPOC Florida Site Comprehensive Emergency Management Plan
	Ref. Para. 3.2.1.2
USA911000	SRB Emergency Preparedness Plan for Kennedy Space Center and Cape Canaveral Air Force Station
	Ref. Para. 3.2.1.2

3.0 OPERATIONS

3.1 FERRY FLIGHT OPERATIONS

The Manager, SSP Transition and Retirement is responsible for establishing ferry flight requirements and plans and has responsibility for the ferry of the Orbiter. The Manager, SSP Transition and Retirement shall appoint a Ferry Operations Manager to establish requirements, develop plans and coordinate the various elements that will perform the necessary tasks involved in ferrying the Orbiter. The ferry mission shall be conducted within the guidelines and requirements set forth in Section B of this document. The Manager, SSP Transition and Retirement will conduct a Ferry Flight Readiness Milestone Review (FFRMR), or delegate the task to a designated representative.

3.2 CONTINGENCY OPERATIONS

The Manager, SSP Transition and Retirement is responsible for contingency planning and has responsibility for the successful execution of those plans. The JSC, KSC, and MSFC Transition Managers will notify the Manager, SSP Transition and Retirement, as soon as possible whenever a potential contingency situation is imminent or has occurred.

3.2.1 Space Shuttle Hurricane Preparedness

To assure proper protection of flight hardware from the damaging effects of hurricanes, it is necessary to establish management responsibilities and specific guidelines. The KSC SSP Transition Manager shall support the KSC Hurricane Operations Team whenever that team meets to consider hurricane impacts to KSC in order to ensure that Space Shuttle Transition and Retirement related assets are protected from hurricane damage.

3.2.1.1 Hurricane Related Responsibilities

The following are the responsibilities of the KSC SSP Transition Manager.

a. The KSC SSP Transition Manager shall support the KSC Hurricane Operations Team in order to ensure that assets which the Manager, SSP Transition and Retirement is responsible for are taken into account when the KSC is preparing for a hurricane.

b. The KSC SSP Transition Manager will provide a status of the Hurricane Operations Team's decisions to the Manager, SSP Transition and Retirement.

3.2.1.2 Hurricane Related Flight Hardware Securing and Operations

For Orbiters in the Orbiter Processing Facility, the payload bay doors will be closed, the Orbiters will be powered down, the Orbiter will be jacked up off the floor and consideration will be given to retraction of the landing gear if storm surge is expected to provide rising water in those facilities. For flight hardware located in the Hypergolic Maintenance Facility, the Vehicle Assembly Building (VAB), the Rotation Processing and Surge Facility, and the LC-39 Logistics Facility, securing tasks are detailed in USA005352, SPOC Florida Site Comprehensive Emergency Management Plan. For flight hardware located in the Parachute Refurbishment Facility, the Assembly Refurbishment Facility, Hangar AF, and Hangar N, securing tasks are detailed in the USA911000, SRB Emergency Preparedness Plan for Kennedy Space Center and Cape Canaveral Air Force Station.

3.2.2 Space Shuttle Contingency Planning and Operations

Space Shuttle contingencies will be avoided wherever possible by careful planning and attention to safe operations. Each NASA center (including their contractors) supporting the program will ensure their plans are consistent with the NASA Headquarters (HQ) Contingency Action Plan.

For Orbiter end-state processing or during Orbiter ferry operations, the Manager, SSP Transition and Retirement has the overall responsibility for contingency planning and operations. The roles and responsibilities associated with contingency management are defined in Section C.

4.0 FERRY FLIGHT CERTIFICATION OF FLIGHT READINESS

The ferry flight certification of flight readiness process consists of two milestone reviews structured to assess the progress toward readiness for ferry flight to the designated delivery airfields. The requirements for these milestone reviews are defined in the following paragraphs.

4.1 ORBITER END-STATE ROLLOUT/SHUTTLE CARRIER AIRCRAFT (SCA) MATE MILESTONE REVIEW

The Orbiter End-State Rollout/SCA Mate Milestone Review is presented approximately 2-weeks prior to Orbiter mate to the SCA. The review will ensure that the Orbiter is ready for facility rollout and mating to the SCA for ferry flight to the designated delivery airfield.

4.1.1 Responsibilities

Responsibilities are as follows:

a. The Manager, SSP Transition and Retirement, or designated representative is responsible for conducting the Orbiter End-State Rollout/SCA Mate Milestone Review. The determination of the readiness of the Orbiter for rollout and mate is the responsibility of the Manager, SSP Transition and Retirement, or designated representative. Further, this responsibility includes planning, coordinating, and implementing the Ferry Flight Readiness Milestone Review requirements and agenda; tracking, coordinating, statusing, and ensuring closeout of action items.

b. The JSC, KSC and MSFC Transition Managers will develop their applicable briefing content. A summary of the work performed to implement and verify the requirements to place the Orbiter in a configuration for display and ferry flight will be presented. Any significant problem investigations conducted by the transition teams will be presented as special topics during their presentations. In addition, they are responsible for assuring the attendance of personnel who are principals, and provide the data necessary to status the readiness of the Orbiter for rollout.

c. The KSC Transition and Retirement Project Office is responsible for the development and presentation of the vehicle processing status and readiness of the ground systems required for rollout and mating to the SCA. The KSC Transition and Retirement Project Office will also provide a status and report the readiness of the ground systems required for de-mating the Orbiter at the delivery airfield.

d. The Ferry Operations Manager is responsible for providing a presentation of the ferry flight plan, the readiness of the SCA and Pathfinder, and the readiness of the flight crews and other personnel on the ferry flight team.

e. The Recipient Museum Representative will report the status and the readiness of the museum and the delivery airfield to accept the Orbiter.

4.1.2 Board Organization

The Orbiter End-State Rollout/SCA Mate Milestone Review Board will be chaired by the Manager, SSP Transition and Retirement and as such will be solely responsible for the decision of readiness for Orbiter rollout and mate for ferry. The board is responsible for evaluating and advising the Chair on Orbiter rollout and mate readiness and will include as members:

a. JSC Transition Manager

b. JSC Orbiter Transition Manager

c. KSC SSP Transition Manager

d. MSFC Transition Manager

e. KSC Operations Manager

f. T&R Manager, Space Program Operations Contract (SPOC)

g. Ferry Operations Manager

h. Flight Crew Operations Directorate (FCOD) Representative

i. Human Space Flight Support (HSFS) Office Representative

j. SSP T&R Safety and Mission Assurance (S&MA) Representative

4.1.3 Review Requirements

Review requirements are as follows:

a. Presentation Emphasis - The Orbiter End-State Rollout/SCA Mate Milestone Review will ensure the readiness of the Orbiter for rollout and mate to the SCA. A summary of the work performed to implement and verify the requirements to place the Orbiter in the required configuration for display and ferry flight will be presented. Any significant problem investigations conducted during vehicle preparation will be presented as special topics. A summary of vehicle processing status, readiness of the ground systems required for rollout and mate to the SCA, and a status of the ground systems required for de-mating the Orbiter at the delivery airfield will be presented. A summary of the ferry flight plan, the readiness of the SCA and Pathfinder, and the readiness of the flight crews and other personnel on the ferry

flight team will be presented. The status of the readiness of museum to accept the Orbiter will be presented.

b. Schedule - The Orbiter End-State Rollout/SCA Mate Milestone Review will be conducted approximately 2-weeks prior to Orbiter mate to the SCA.

c. Location - The Orbiter End-State Rollout/SCA Mate Milestone Review will be conducted at KSC and teleconferenced to other sites as required.

d. The agenda items and presenting organizations/presenters are listed below:

1. Introduction	Manager, SSP Transition and Retirement
2. Processing Status	KSC Operations Manager KSC SSP Transition Manager T&R Operations, SPOC
3. Orbiter Status	JSC Orbiter Transition Manager JSC Transition Manager MSFC Transition Manager T&R Orbiter Manager, SPOC
4. Ferry Flight Readiness	Ferry Operations Manager
5. Museum Readiness	Recipient Museum Representative
6. S&MA	JSC S&MA Representative
7. Summary, Action Items	Manager, SSP Transition and Retirement
8. Readiness Poll	Manager, SSP Transition and Retirement

e. Readiness Poll - A readiness poll of the board members will be conducted at the conclusion of the Orbiter End-State Rollout/SCA Mate Milestone Review. Responses to the poll will be clear, concise, unambiguous responses concerning readiness for Orbiter rollout and mating to the SCA. The readiness poll will become a part of the formal record of the Orbiter End-State Rollout/SCA Mate Milestone Review and as such will document the certification of readiness for rollout and mate.

4.2 FERRY FLIGHT READINESS MILESTONE REVIEW

The FFRMR will be conducted approximately one day prior to ferry. The review will ensure the readiness of the mated SCA/Orbiter vehicle for ferry. The ferry flight plan will be discussed, airfield, security and public affairs readiness will be reviewed, recipient museum and delivery airfield readiness will be reviewed, and the forecasted ferry route weather will be briefed. At the completion of the review, pending no constraints to ferry are identified, the SCA/Orbiter will be released for ferry.

4.2.1 Responsibilities

Responsibilities are as follows:

a. The Manager, SSP Transition and Retirement, or designated representative is responsible for chairing the FFRMR. The determination of the readiness for ferry is the responsibility of the Manager, SSP Transition and Retirement, or designated representative. Further, this responsibility includes planning, coordinating, and implementing the Ferry Flight Readiness Milestone Review requirements and agenda; tracking, coordinating, statusing, and ensuring closeout of action items.

b. The KSC Transition and Retirement Project Office is responsible for the development and presentation of the mated vehicle processing status and readiness for ferry. The Transition and Retirement Project Office will also provide a status on the ground systems required for de-mating the Orbiter at the delivery airfield.

c. The JSC Transition Manager will develop a briefing with emphasis on any deltas pertaining to Orbiter hardware from the Orbiter End-State/SCA Mate Milestone Review.

d. The Recipient Museum Representative will report the status and the readiness of the museum and the delivery airfield to accept the Orbiter.

e. The SCA Commander will brief the ferry flight plan and aircraft and flight crew readiness.

f. The HSFS Ferry Flight Officer (FFO) will brief en-route support airfield readiness.

g. The 45th Weather Squadron (45th WS) Ferry Weather Officer (FWO) will brief the en-route weather forecast.

4.2.2 Board Organization

The Ferry Readiness Milestone Review Board will be chaired by the Manager, SSP Transition and Retirement, or a designated representative, and as such will be solely responsible for the decision of readiness for ferry. The board is responsible for evaluating and advising the Chair on ferry flight readiness and will include as members:

a. Ferry Operations Manager

b. JSC Orbiter Transition Manager

c. KSC Operations Manager

d. JSC Transition Manager

e. KSC SSP Transition Manager

f. MSFC Transition Manager

g. T&R Manager, SPOC

h. FCOD Representative

i. HSFS Office Representative

j. SSP T&R S&MA Representative

Attendance at the FFRMR will be limited to personnel who are principals in providing and evaluating the data necessary to assess the readiness of the SCA/Orbiter for ferry.

4.2.3 Review Requirements

Review requirements are as follows:

a. Presentation Emphasis - The FFRMR will ensure the readiness of the mated SCA/Orbiter vehicle for ferry. A summary of vehicle processing status and a discussion of any issues that arose during the Orbiter to SCA mate will be presented. A status of the ground systems required for de-mating the Orbiter at the delivery airfield will be presented. The ferry flight plan will be discussed. Airfield, security and public affairs readiness will be reviewed. Recipient museum and delivery airfield readiness will be reviewed, and the forecasted ferry route weather will be briefed.

b. Schedule - The FFRMR will be conducted the day prior to the planned ferry initiation.

c. Location - The FFRMR will be conducted at the ferry mission origination location and teleconed to other sites as required.

d. The agenda items and presenting organizations/presenters are listed below:

1. Introduction	Manager, SSP Transition and Retirement
2. Processing Status	KSC Operations Manager KSC SSP Transition Manager T&R Operations, SPOC
3. Orbiter Status	JSC Orbiter Transition Manager JSC Transition Manager T&R Orbiter Manager, SPOC
4. En-Route Airfield Readiness	HSFS Ferry Flight Officer
5. Museum Readiness	Recipient Museum Representative
6. Flight Operations	SCA Commander
7. Public Affairs	NASA Public Affairs Office (PAO)
8. Security	KSC Protective Services Representative
9. Weather	45th Weather Squadron Ferry Weather Officer

10.	S&MA	JSC S&MA Representative
11.	Summary, Action Items	Manager, SSP Transition and Retirement
12.	Readiness Poll	Manager, SSP Transition and Retirement

e. Readiness Poll - A readiness poll of the board members will be conducted at the conclusion of the FFRMR. Responses to the poll will be clear, concise, unambiguous responses concerning readiness for ferry of the Orbiter to the delivery airfield. The readiness poll will become a part of the formal record of the FFRMR and as such will document the final certification of readiness for ferry.

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SECTION A

ACRONYMS AND ABBREVIATIONS

AA	Associate Administrator
AA/HEO	Associate Administrator/Human Exploration and Operations
AA/SO	Associate Administrator/Space Operations
AAF	Army Air Field
AFB	Air Force Base
AOD	Aircraft Operations Division
CCAFS	Cape Canaveral Air Force Station
CD	Center Director
CG	Center of Gravity
CHMO	Chief Health and Medical Officer
DOD	Department of Defense
EFD	Ellington Field
ESSRD	End-State Subsystem Requirements Document
FAA	Federal Aviation Administration
FCOD	Flight Crew Operations Directorate
FFO	Ferry Flight Officer
FFRMR	Ferry Flight Readiness Milestone Review
ft	feet
FWO	Ferry Weather Officer
GO	Ground Operations
GSE	Ground Support Equipment
HEOMD	Human Exploration and Operations Mission Directorate
HF	High Frequency
HQ	Headquarters
HSFS	Human Space Flight Support Office
Hz	hertz
IRT	Interim Response Team
JRB	Joint Reserve Base

kts	knots
kVa	Kilovoltampere(s)
L&L	Launch and Landing
lb	pounds
MDD	Mate/Demate Device
MI	Mishap Investigator
MIB	Mishap Investigation Board
MRT	Mishap Response Team
MSL	Mean Sea Level
NAS	Naval Air Station
nm	nautical miles
NTSB	National Transportation Safety Board
PAFB	Patrick Air Force Base
PAO	Public Affairs Office
	Public Affairs Officer
POC	Point of Contact
PRACA	Problem Reporting and Corrective Action
PRD	Program Requirements Document
psi	pounds per square inch
RWO	Range Weather Operations
S&MA	Safety and Mission Assurance
SAAM	Special Assignment Airlift Mission
SCA	Shuttle Carrier Aircraft
SPOC	Space Program Operations Contract
SSP	Space Shuttle Program
SSPCD	Space Shuttle Program Closeout Directive
T&R	Transition and Retirement
TACON	Tactical Control
TPS	Thermal Protection System
UHF	Ultrahigh Frequency
USA	United Space Alliance

VAB	Vehicle Assembly Building
VIP	Very Important Person
45th WS	45th Weather Squadron

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SECTION B

FERRY OPERATIONS MANAGEMENT

B1.0 PURPOSE

The purpose of this document is to define the generic roles, responsibilities, requirements and the plan of operation for Orbiter ferry operations to the display sites. The roles, responsibilities, requirements and plan defined in this document assume that the Orbiter is delivered to the designated airfield for the display site in the most expeditious manner. There is the potential that additional flight legs will be added if there is a desire to add en-route stopovers for Orbiter display. In this event, the roles, responsibilities, requirements and plan defined here will be modified accordingly.

B2.0 SCOPE

This document is applicable to SCA/Orbiter ferry missions to the Orbiter display sites. The ferry mission is defined as the period from the completion of the SCA/Orbiter mate for ferry to the parking of the SCA/Orbiter at the designated airfield for the display site.

B3.0 POLICY

SCA/Orbiter ferry operations require coordination of several elements/projects and outside agencies. Thorough planning and preparation are essential to the safety of the operation. All ferry operations will be planned and conducted consistent with the requirements, environmental constraints, and aircraft performance and operating limitations documented in this section.

B4.0 PROGRAM ELEMENT ROLES AND RESPONSIBILITIES

B4.1 MANAGER, SSP TRANSITION AND RETIREMENT

The Manager, SSP Transition and Retirement is responsible for establishing ferry flight requirements and plans and has responsibility for the ferry of the Orbiter. The Manager, SSP Transition and Retirement shall appoint a Ferry Operations Manager to coordinate the various elements that will perform the necessary tasks involved in ferrying the Orbiter. The ferry mission shall be conducted within the guidelines and requirements set forth in this section. The Manager, SSP Transition and Retirement will conduct an FFRMR, or delegate the task to the Ferry Operations Manager.

B4.2 FERRY OPERATIONS MANAGER

The Ferry Operations Manager is responsible to the Manager, SSP Transition and Retirement and will be responsible for the coordination and integration of the various elements and requirements required for the execution of a ferry mission. The Ferry Operations Manager is the authority for any deviations from these requirements and will obtain any necessary waivers from the Manager, SSP Transition and Retirement. The Ferry Operations Manager will:

a. Integrate the requirements of the various elements/projects to produce a Ferry Plan.

b. Coordinate the Ferry Plan preparation.

c. Coordinate the FFRMR which will be presented to the Manager, SSP Transition and Retirement or designated representative.

d. Accompany the ferry mission in the Pathfinder aircraft and, if designated by the Manager, SSP Transition and Retirement conduct the in-flight ferry operation.

e. Integrate realtime activities for the ferry operation; resolve differences between the various elements; and bring to the attention of the Manager, SSP Transition and Retirement those problems which cannot be resolved.

f. Ensure that all organizations participating in the ferry mission are aware of the progress of the mission and any changes that take place.

B4.3 SCA COMMANDER

The SCA Commander is responsible for operation of the SCA in accordance with this section. Any deviation from these requirements must be approved by the Ferry Operations Manager. The SCA Commander will operate the aircraft in accordance with this appendix, appropriate aircraft operating manuals, and NASA and Federal Air Regulations, and remains the final authority for SCA flight operations.

B4.4 KSC OPERATIONS MANAGER

The KSC Operations Manager is responsible for any necessary Orbiter ground operations during the Orbiter ferry to a display site. The KSC Operations Manager will operate in accordance with this section and applicable requirements for Orbiter operations to be performed during en-route stopovers. Any required deviations from the requirements of these documents will be coordinated through the Ferry Operations Manager to obtain waivers from the Manager, SSP Transition and Retirement. In the event of a failure on the Orbiter, the KSC Operations Manager will coordinate with the Ferry Operations Manager to obtain required support. In addition, the KSC Operations Manager is responsible for coordination of the efforts of the KSC members of the ferry team.

B4.5 HSFS FERRY FLIGHT OFFICER

The HSFS FFO will be responsible for the coordination of the efforts of Department of Defense (DOD) elements including the support provided at en-route DOD bases, management of DOD Pathfinder crews if a DOD aircraft is used, and DOD weather forecasters.

B4.6 45TH WEATHER SQUADRON FWO

The 45th WS FWO is responsible for realtime weather forecasts and en-route weather information. The FWO will brief en-route weather during the FFRMR, brief the SCA Commander, Pathfinder pilot, and Ferry Operations Manager prior to each flight leg, and provide realtime updates during the flight phase. The 45th WS Range Weather Operations (RWO) at the Cape Canaveral Air Force Station (CCAFS) will maintain

overall forecast responsibility and will coordinate 24-hour meteorological watch responsibilities for the Orbiter from the beginning of the ferry mission through landing at the display site. The FWO aboard the Pathfinder will be the primary coordination point for weather information and updated forecasts during each leg of the flight. The FWO will coordinate, as necessary, with home office personnel to provide the updates and forecasts. The FWO will be the contact for the Ferry Operations Manager and SCA Commander for any weather data.

B4.7 KSC CHIEF OF CENTER SECURITY

The KSC Chief of Center Security, or his designee, is responsible for coordinating SCA/Orbiter security requirements with federal or local law enforcement at all ferry stopover airfields. The KSC Chief of Center Security, or his designee, acts as an advisor for the security support provided at DOD airfields.

B4.8 KSC SAFETY REPRESENTATIVE

The KSC Safety Organization is responsible for the requirements necessary to ensure the safety of the SCA/Orbiter and the ferry personnel. The implementation of these requirements may be performed by a member of the KSC safety community or delegated to a qualified Orbiter technician (NASA or contractor in either case); and will be referred to as the KSC Safety Representative in this document. During a ferry mission, it is the responsibility of the KSC Safety Representative to assess operations at each en-route stop with respect to safety. It is also the responsibility of the KSC Safety Representative to advise the Ferry Operations Manager and the KSC Operations Manager on issues regarding the safety of the SCA/Orbiter and the ferry personnel.

B4.9 NASA PUBLIC AFFAIRS OFFICER (PAO)

The NASA PAO aboard the Pathfinder is responsible for all public affairs activities during the course of the ferry flight and for handling questions from the public or the media. The PAO will handle questions from the media and arrange interviews with ferry pilots and managers as appropriate. The PAO will also coordinate directly with military and civilian PAOs at en-route refueling stops.

B4.10 KSC TRANSITION AND RETIREMENT PROJECT OFFICE

The KSC Transition and Retirement Project Office is responsible for preparation of the Orbiter for ferry, mating and de-mating, and Orbiter ground support. The KSC Transition and Retirement Project Office has prime responsibility for the Orbiter operations until the SCA leaves the Mate/Demate Device (MDD), during en-route stopovers, and after it lands at the display site. The KSC Transition and Retirement Project Office will identify all support and is responsible for ferry ground operations planning which will include the following items:

a. The Orbiter maintenance operations at en-route stops.

b. The security plan at en-route stops.

c. The safety plan at en-route stops.

d. The PAO plan at en-route stops.

B4.11 JSC SSP TRANSITION AND RETIREMENT OFFICE

The JSC SSP Transition and Retirement Office is responsible for ensuring that the ferry flight requirements are defined and approved, that Orbiter/SCA interface issues are identified and resolved, that systems waivers are processed, that Orbiter constraints and requirements are specified, and that Orbiter/SCA ferry mass properties are defined. The office is also responsible for administrative support to the Ferry Readiness Milestone Review and configuration management in preparation for the ferry flight.

B4.12 JSC FLIGHT CREW OPERATIONS DIRECTORATE

The JSC FCOD is responsible for the maintenance and flight readiness of the SCA. FCOD will identify all support requirements for the SCA at en-route airfields and work with the KSC Operations Manager and DOD FFO to ensure the requirements are understood. During the ferry operation, FCOD will provide a coordination post at JSC that will follow the progress of the flight, coordinate support, and serve as a source of ferry flight information. FCOD is responsible for ferry mission planning which will include the following items:

a. The flight plan with performance for each leg to be flown.

b. The SCA support plans at en-route stops.

c. The status of the SCA, team members, support equipment, and problem areas.

d. A review of the flight guidelines and constraints required for safe conduct of the flight.

B5.0 FERRY READINESS PROCESS, MISSION DESCRIPTION, AND PLAN OF OPERATION

B5.1 ORBITER FERRY FLIGHT PREPARATION PROCESS

The requirements for determining the readiness to ferry an Orbiter to its display site are documented in NSTS 07700, Volume XX - Book 2, Appendix 08. Two milestone reviews shall be conducted to ensure readiness for flight. These reviews are discussed in the following paragraphs.

B5.1.1 Orbiter End-State Rollout/SCA Mate Milestone Review

The Orbiter End-State Rollout/SCA Mate Milestone Review is conducted approximately 2-weeks prior to Orbiter mate to the SCA. The review is conducted by the Manager, SSP Transition and Retirement or a delegated representative. The review will ensure that the Orbiter is ready for facility rollout and mating to the SCA for ferry flight to the designated delivery airfield. A summary of the work performed to implement and verify the requirements to place the Orbiter in a configuration for display and ferry flight will be presented. Any independent investigations conducted by the transition teams will be

presented as special topics during their presentation. The review will address the readiness of the ground systems required for rollout and mating to the SCA as well as a status on the ground systems required for de-mating the Orbiter at the delivery airfield. At this review, there will be a presentation of the ferry flight plan that will include a status on the readiness of support airfields, the readiness of the SCA and Pathfinder, and the readiness of the flight crews and other personnel on the ferry flight team. Finally, there will be a report on the readiness of the museum to accept the Orbiter.

B5.1.2 Ferry Flight Readiness Milestone Review

Approximately one day prior to ferry, an FFRMR will be conducted by the Manager, SSP Transition and Retirement or, a designated representative, to review the ferry mission plan and the readiness of the Orbiter for ferry. The FFRMR will ensure that the ferry support hardware/equipment, documentation and personnel are ready to support the ferry operation. As such, the topics reviewed in the Orbiter End-State/Rollout Milestone Review that pertain to ferry operations will once again be presented with an emphasis on deltas since the review. The post-mate status and readiness of the Orbiter/SCA and the status of the Pathfinder aircraft will be presented. The readiness of ferry support personnel, which includes SCA and Pathfinder flight crews, SCA maintenance personnel, the KSC ferry support team, Department of Defense Manned Spaceflight (DDMS) support personnel and 45th WS personnel, is determined. The readiness of and coordination with the DOD support bases is reviewed as well as the readiness of the display site. The expected route weather will be briefed by the 45th WS FWO and the SCA Commander will recommend whether the weather is suitable to meet the appropriate constraints. At the completion of the FFRMR, the Orbiter/SCA will be released to ferry.

B5.2 ORBITER FERRY CONFIGURATION

The configuration of the Orbiter for ferry operations is defined by NSTS 60585, End-State Subsystems Requirements Document (ESSRD) and other Program approved directives. The limits of the total weight and Center of Gravity (CG) of the Orbiter for ferry operations are defined in NSTS 07700, Volume XX - Book 2, Space Shuttle Closeout Requirements, Appendix 10, Flight and Ground System Specification Closeout Requirements, and the ESSRD.

B5.3 FERRY OPERATIONS PREFLIGHT TIMELINE

A display ferry mission will consist of one or two flight legs depending on the final destination of the flight. The following is a nominal timeline leading to Orbiter/SCA departure for a typical ferry mission flight leg (“T - ” is the time to SCA/Orbiter departure):

T - 2:45 hours	Pathfinder crew at aircraft (preflight and load)
T - 2:00 hours	Weather briefing/flight planning
T - 1:00 hour	Pathfinder passenger baggage loaded

T - 45 minutes	Passengers board the Pathfinder SCA crew at stations
T - 30 minutes	Pathfinder engine start
T - 20 minutes	SCA engine start
T - 10 minutes	Pathfinder depart
T - 0	SCA/Orbiter depart

B5.4 EN-ROUTE FERRY SUPPORT SITES

Figure B-1 and Table B.1 show the sites that have been approved as ferry support sites. The majority of the sites are DOD airfields and the base personnel at these sites have been trained by the HSFS and have plans in place to support ferry operations. These sites are adequate to conduct the delivery of the Orbiters to the selected display sites. If non-DOD airfields are utilized, KSC Ground Operations personnel ensure that airfield personnel have plans in place to support ferry operations.

It will also be required that weather alternate sites for each of the primary landing sites are prepared to accept an SCA/Orbiter landing. Emergency divert sites will be selected by the SCA Commander and readiness of those sites to accept an SCA/Orbiter landing is not required.

FIGURE B-1
SPACE SHUTTLE APPROVED EN-ROUTE FERRY SUPPORT SITES

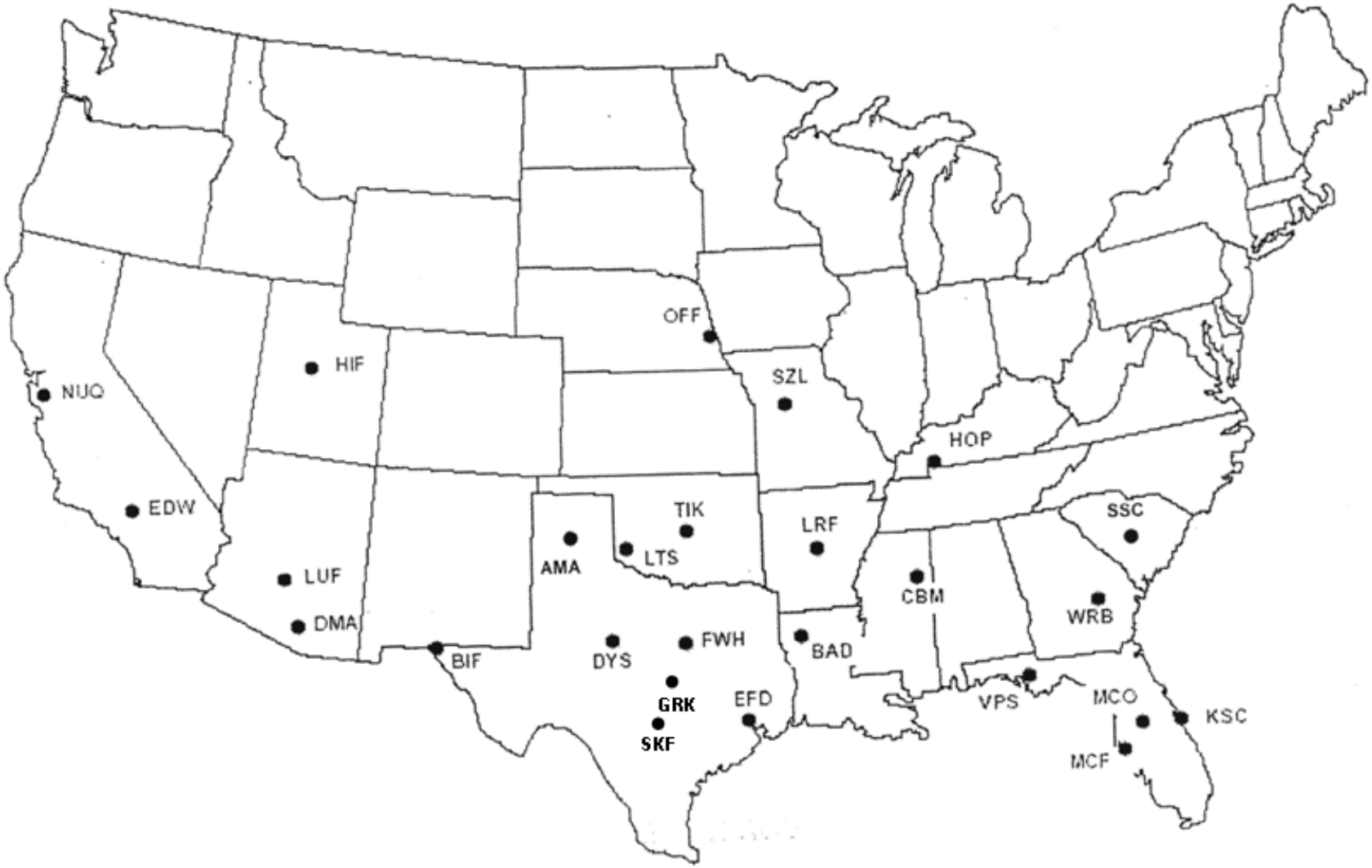


TABLE B.1
SPACE SHUTTLE APPROVED EN-ROUTE FERRY SUPPORT SITES

AIRFIELD	SITE ID	RUNWAY	LENGTH/ WIDTH (FT)	ELEVATION (FT)
ALTUS AFB, OK	LTS	17-35	13,440 x 300	1474
AMARILLO INT'L, TX	AMA	04-22	13,502 x 200	3607
BARKSDALE AFB, LA	BAD	15-33	11,756 x 300	166
BIGGS AAF, TX	BIF	03-21	13,572 x 300	3950
CAMPBELL AAF, KY	HOP	04-22	11,800 x 200	572
CAPE CANAVERAL AFS, FL	XMR	13-31	10,000 x 300	10
COLUMBUS AFB, MS	CBM	13C-31C	12,000 x 300	219
DAV-MON AFB, AZ	DMA	12-30	13,645 x 200	2705
DYESS AFB, TX	DYS	16-34	13,500 x 300	1789
EGLIN AFB, FL	VPS	12-30	12,000 x 300	85
		01-19	10,000 x 300	85
ELLINGTON FLD, TX	EFD	17R-35L	9,000 x 150	34
HILL AFB, UT	HIF	14-32	13,500 x 200	4789
LACKLAND AFB, TX	SKF	15-33	11,500 x 300	691
LITTLE ROCK AFB, AR	LRF	07-25	12,000 x 200	311
LUKE AFB, AZ	LUF	03L-21R	10,000 x 150	1090
		03R-21L	9,909 x 150	1090
MACDILL AFB, FL	MCF	04-22	11,420 x 250	14
MOFFETT FLD, CA	NUQ	32R-14L	9,200 x 200	34
		32L-14R	8,125 x 200	34
NAS/JRB FT WORTH, TX	FWH	17-35	12,000 x 300	650
OFFUTT AFB, NE	OFF	12-30	11,700 x 300	1048
ORLANDO INT'L, FL	MCO	18R-36L	12,004 x 300	96
		18L-36R	12,004 x 200	96
PATRICK AFB, FL	COF	02-20	9,023 X 200	7
ROBERT GRAY AAF, TX	GRK	15-33	10,000 x 200	1015
ROBINS AFB, GA	WRB	15-33	12,000 x 300	295
SHAW AFB, SC	SSC	04L-22R	10,016 x 150	238
TINKER AFB, OK	TIK	17-35	11,100 x 200	1291
WHITEMAN AFB, MO	SZL	01-19	12,400 x 200	869

B5.5 COMMUNICATIONS AND COORDINATION

There will be coordination posts or Points of Contact (POCs) at JSC, KSC and the Patrick Air Force Base (PAFB) to ensure that required resources are available during the ferry operation. It is the responsibility of the Ferry Operations Manager, the KSC Operations Manager, the SCA Commander, and the DOD FFO to maintain a list of contact numbers for personnel essential to their functions in ferry operations.

B5.5.1 Johnson Space Center

The central coordination point for ferry operations at JSC will be at Ellington Field (EFD)/Aircraft Operations from two hours before SCA take-off until release by the SCA Commander. This office will be staffed by the JSC Aircraft Operations Division (AOD) Duty Officer.

B5.5.2 Kennedy Space Center

The coordination POC for the KSC Operations Manager will be personnel from the KSC Transition and Retirement Project Office.

B5.5.3 In-Flight Communications

During flight, the SCA and the Pathfinder aircraft will communicate on Ultrahigh Frequency (UHF) radio. The Pathfinder aircraft will communicate with the coordination posts via (1) AIRINC services or (2) High Frequency (HF) radio and a telephone hookup.

B5.5.4 45th WS Coordination

The central coordination point for weather during ferry operations will be the 45th WS RWO flight at Cape Canaveral Air Station. The 45th WS FWO aboard the Pathfinder aircraft will coordinate with this office prior to and during the ferry flight, as required.

B5.6 PATHFINDER AIRCRAFT

A Pathfinder aircraft is required to provide weather reconnaissance for the SCA/Orbiter along the route of flight. Additionally, the Pathfinder aircraft will transport the ferry flight team that will conduct the mission and support the SCA and Orbiter and during en-route stops. The Pathfinder aircraft will be an appropriate sized NASA or DOD aircraft.

If the Pathfinder aircraft is not available before the SCA take-off, the ferry mission will be delayed until a backup can be used or the Manager, Ferry Operations, concurs the mission can proceed. Factors that would be considered prior to proceeding without a Pathfinder aircraft include the weather conditions en-route and the readiness of the airfield to receive the SCA/Orbiter. If the Pathfinder aircraft must abort the mission after the SCA is airborne, the SCA may continue the mission at the discretion of the SCA Commander.

B5.7 PREFLIGHT BRIEFINGS

Preflight briefings will be held approximately 2:00 hours before each flight leg of the ferry flight. These briefings will include weather forecast and observation, route selection, and airfield coordination requirements. If a flight leg is delayed, a follow-up briefing will take place to provide up-to-date information on the route or selected alternates. The preflight briefings will include the Ferry Operations Manager, the SCA and Pathfinder aircraft commanders, the FWO, the FFO, and the KSC Operations Manager; others may attend as required. The Ferry Operations Manager is responsible for final approval of weather acceptability, planned en-route stopover points, and preflight activities leading to ferry flight initiation.

B5.7.1 Weather Briefing

Each preflight briefing will include a briefing of the weather. The FWO representative will brief the local weather, the en-route weather, and weather for the next prime and alternate en-route stops, including forecast weather if an overnight stop is required.

B5.7.2 Route Selection

The flight route and airfield selection will be reviewed during the Orbiter End-State/ Rollout Milestone Review and as well as during the FFRMR. Final flight route and airfield selection will be confirmed at the preflight briefing. If a route change is required due to weather, it is highly desirable that alternate landing sites be chosen from the approved list in Paragraph B5.4 of this section. Emergency divert sites will also be selected for each flight leg but these sites do not have to be on the approved list of airfields.

B5.7.3 Airfield Coordination

Preflight coordination for necessary support must be accomplished for the prime airfield prior to SCA take-off. Any deviations from acceptable support will be included in the preflight briefing.

B5.8 FERRY MISSION FLIGHT RULES

B5.8.1 Weather and Atmospheric Constraints

B5.8.1.1 Temperature and Pressure Requirements

For the ferry flight of Orbiters following a mission, there were requirements that the Orbiter not be exposed to less than +15° F ambient air temperature during the ferry mission (on the ground or in-flight) and that it be conducted at an ambient pressure of not less than 8 psi (approximately 16,000 feet Mean Sea Level [MSL]). The temperature limit was in regard to the Orbiter heater systems being able to prevent freezing of on-board fluids and the pressure limit was the pressure to which the Orbiter avionics were certified. Since the Orbiters will be inert during ferry to the display sites and they are not being maintained in flight status, these requirements are no longer necessary. Therefore, the SCA/Orbiter flight altitude can be selected based on SCA

performance and atmospheric conditions without regard to the ambient temperature and pressure.

B5.8.1.2 Lighting Requirement

The flight will be conducted in the period from 20 minutes before sunrise until 20 minutes after sunset.

B5.8.1.3 Precipitation Requirement

The SCA will remain clear of visible moisture. This essentially means no clouds or precipitation.

B5.8.1.4 Thunderstorm Requirement

The flight will not be initiated if more than isolated thunderstorms are forecast for the route of flight. Any thunderstorms must be avoided by at least 25 nautical miles (nm).

B5.8.1.5 Turbulence Requirement

The ferry flight will not fly in more than light turbulence.

B5.8.1.6 Crosswind Requirement

The maximum crosswind at landing is 20 knots.

B5.8.1.7 Weather Requirement at En-Route Stop

A planned en-route stop will be made at an airfield only if the predicted weather is satisfactory for either an unplanned servicing delay or an overnight stop. For planning purposes, an en-route stop will not be made at an airfield where more than light rain is forecast during the stopover.

B5.8.2 SCA Constraints

B5.8.2.1 SCA Climb Performance

Minimum climb performance with one engine failed +2% gradient.

B5.8.2.2 Minimum Fuel Reserves of 25,000 Pounds

The SCA will carry a 25,000 pound fuel reserve to enable an approximate 45 minute hold capability.

B5.8.2.3 Minimum Runway Length

Minimum runway length of 1,000 feet more than required for balanced field performance. This is typically about 10,000 ft.

B5.8.2.4 Generic SCA Operations

Aircraft will be operated within the limitations specified in the Boeing 747 SCA Operations Manual to ensure restrictions as outlined in STS 82-0574, Structural Flight Restrictions for Orbiter Operational Flights, Section IV are not violated.

B5.8.2.5 SCA Engine Operations

The SCA JT9D-7J engines will be operated using the lower JT9D-7A limits in order to extend engine life. The JT9D-7J limits may be used in the interest of flight safety.

B5.8.3 Emergency Divert Procedures

The determination of any in-flight condition, i.e., weather, personal illness, aircraft anomaly, etc., which would necessitate the use of an airfield where an SCA/Orbiter landing had not been pre-planned is the responsibility of the SCA Commander. Once that determination is made, the following time critical actions must be initiated:

a. The Pathfinder aircraft and/or SCA flight crew must immediately notify the Federal Aviation Administration (FAA) and airport management officials at the emergency destination, advising of the nature of the emergency, the ground support required for landing, and an estimated duration of the time the SCA/Orbiter is expected to be on the ground.

b. The KSC Security Officer must be notified of the situation and updated on a timely basis.

c. If a nominal landing is expected, the flight crew in radio contact with the emergency destination airfield must notify the airport manager and his/her security officer of the need to meet the Pathfinder aircraft immediately upon landing to coordinate with the KSC Security Officer and the SCA maintenance leader for the necessary security support and attendant safety considerations.

B5.9 ACTIVITIES AT EN-ROUTE STOPS

Actions performed at en-route stops are generally well defined and coordination with en-route airfields will be accomplished before take-off to ensure facilities and services are available as expected. The Pathfinder aircraft will land about 20 minutes ahead of the SCA and begin coordination with airfield personnel for security and refueling. The SCA will taxi immediately to the preplanned parking area and the SCA maintenance team will perform a safety inspection of the SCA. Parking of the SCA at all planned en-route stops will be pre-designated and standard flight-line security will be established. Ground operations personnel will use binoculars to visually observe the Orbiter for loss of Thermal Protection System (TPS) material or in-flight damage. Refueling will begin once the SCA maintenance team determines it is safe to do so.

The morning preflight briefing will verify the route and route weather, and coordination will be performed with the next en-route stop airfield.

B5.10 ARRIVAL AT FINAL DESTINATION

Upon arrival at the display site the SCA will be parked at the area designated for the de-mating of the Orbiter. Once parked, the ferry mission is concluded.

B6.0 SUPPORT ELEMENT REQUIREMENTS

B6.1 JSC AIRCRAFT OPERATIONS DIRECTORATE REQUIREMENTS

B6.1.1 Ferry Flight Planning

It will be the responsibility of the SCA Commander in coordination with the Ferry Operations Manager to develop the ferry flight plan. This plan will include the selection of primary, weather alternate, and emergency landing sites. The selection of primary and weather alternates should be from the list of approved en-route landing sites listed in Paragraph B5.4. If the weather alternate is not on the approved list, the change must be approved by the Ferry Operations Manager. If a route change is required while en-route, either due to weather or an in-flight emergency, the SCA Commander will choose an appropriate landing site, preferably at an approved en-route support site.

B6.1.2 SCA/Orbiter Specifications

A modified Boeing 747-100 aircraft is the carrier vehicle used in ferrying the Orbiter from KSC to the delivery airfield for the recipient museum. The general dimensions and weights of the SCA/Orbiter configuration are shown in Figure B-2.

B6.1.3 SCA Operations

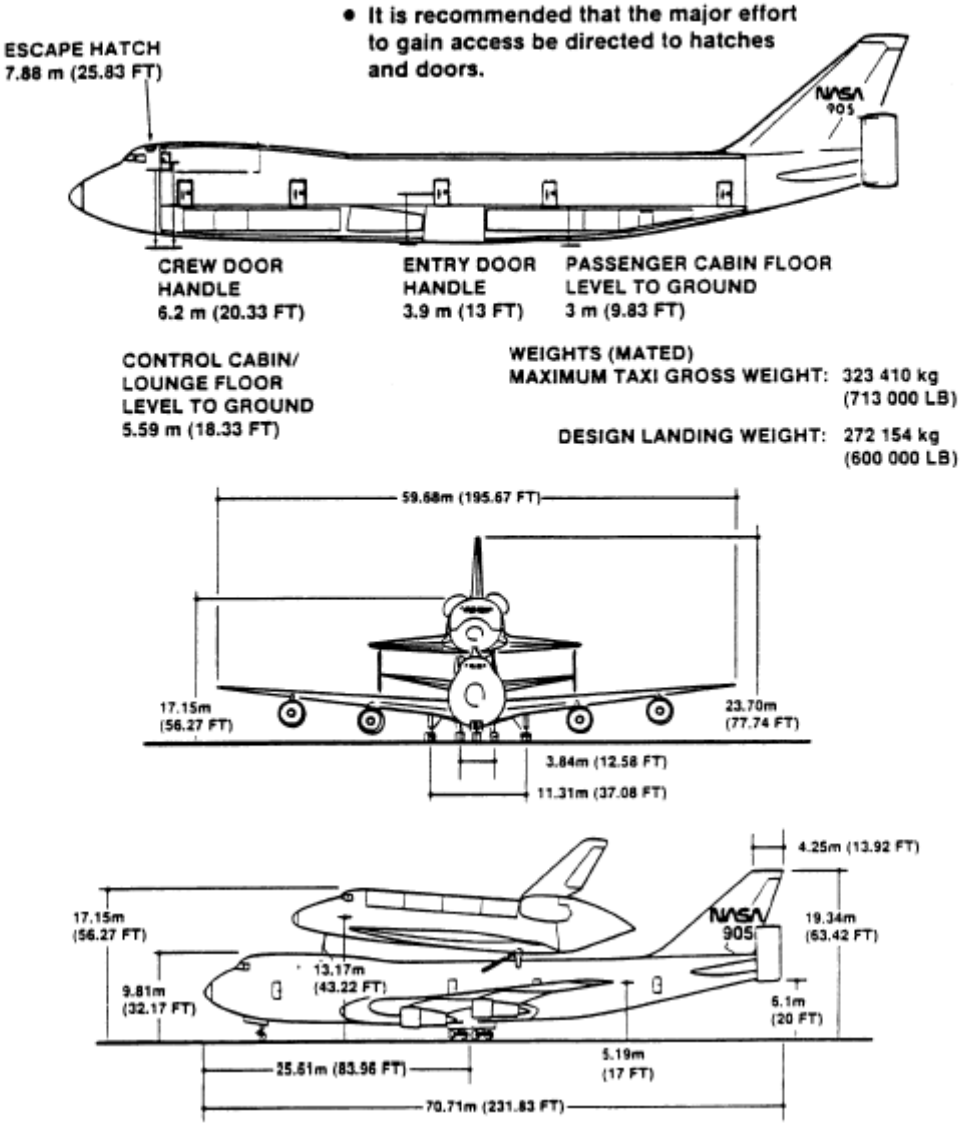
SCA operations requirements for the ferry mission are defined in Section B5.8. The SCA Commander is responsible for operation of the SCA in accordance with ferry mission flight rules defined in Paragraph B5.8 of this section, appropriate aircraft operating manuals, and NASA and FAA regulations. The SCA Commander is the final authority for SCA flight operations.

FIGURE B-2
NASA SPACE SHUTTLE CARRIER AIRCRAFT/ORBITER

NASA SHUTTLE CARRIER AIRCRAFT

Note

- Wheels are retracted.
- It is recommended that the major effort to gain access be directed to hatches and doors.



B6.2 KSC GROUND OPERATIONS REQUIREMENTS

B6.2.1 Orbiter Maintenance Operations

This section defines the requirements for TPS maintenance on the Orbiter during ferry operations.

B6.2.1.1 TPS Inspections

At each en-route landing site during the ferry mission, a special TPS inspection will be performed. This inspection will be performed from ground level and using binoculars to visually inspect the Orbiter. In the event that TPS damage is evident, a TPS representative on the ferry mission will determine if a repair is required to prevent further TPS damage to the Orbiter or eliminate an FOD hazard to the SCA during the remainder of the ferry mission. Approval from the Ferry Operations Manager must be obtained before a repair can be made. Repair will be accomplished in reference to specification ML0601-9025, Thermal Protection System Standard Maintenance Procedures. For TPS damage requiring repair, formal documentation in any Problem Reporting and Corrective Action (PRACA) system is not required.

B6.2.1.2 Use of Rented or Borrowed Heavy Equipment for Critical Operations

TPS repairs will require the use of heavy equipment which will typically be rented or borrowed equipment. When using this equipment, the Ground Operations Team will use the guidelines as outlined in Operating Procedure USA001138, Use of Rented or Borrowed Heavy Equipment for Critical Operations.

B6.2.2 KSC Safety Support Requirements

During a display site ferry mission, it is the responsibility of the KSC Safety Representative to assess operations at each en-route stop with respect to safety. It is also the responsibility of the KSC Safety Representative to advise the Ferry Operations Manager and the KSC Operations Manager on issues regarding the safety of the SCA/Orbiter and the ferry personnel.

For the display site ferry mission, all toxic fluids will have been removed from the Orbiter so the environment will be safe.

B6.2.3 KSC Security Support Requirements

B6.2.3.1 Introduction

When the SCA/Orbiter is on the ground, access control to the mated vehicles shall be provided at the same level as that provided to other transient aircraft on the flight-line being utilized.

The KSC Protective Services Office has primary responsibility for coordinating these security requirements with the airport police at final destinations or en-route stops, to include refueling stops, overnight stop locations, and any location used for an emergency landing of the SCA/Orbiter.

B6.2.3.2 Security Support Concept

The basic security support concept for the SCA/Orbiter during a delivery ferry mission is standard airport flight-line security. Implementation of that security is further detailed in Paragraphs B6.2.3.3 and B6.2.3.4.

B6.2.3.3 Security at Non-DOD Airfields

Since the preferred plan is to utilize only DOD airfields, this would be an off-nominal event.

Immediately upon landing, the KSC Operations Manager and the KSC Protective Services Representative (if on-board) will meet with the airport manager and security officer. For the short route delivery missions where the KSC Protective Services Representative may not be with the Pathfinder, this coordination may be done via teleconference. The security requirements will be explained and NASA key personnel and their roles in the emergency situation will be identified and counterpart POCs at the airfield will be requested.

To the maximum extent possible and consistent with the assets available for the landing operation, the following security/safety factors and procedures will be instituted at the SCA/Orbiter park site:

a. Use of an isolated area which will allow the SCA to taxi to and from without towing.

b. The SCA/Orbiter should be parked in an area with restricted access and made accessible to authorized flight-line employees, vehicles, and NASA operational personnel.

c. Entry into the restricted area will be limited to authorized flight-line employees and NASA operational personnel.

d. Taxiing aircraft and official airfield vehicles must remain outside the restricted area.

e. Security lighting will be provided during hours of darkness.

B6.2.3.3.1 (Deleted)

B6.2.3.3.2 (Deleted)

B6.2.3.4 Security at DOD Bases

When the SCA/Orbiter lands at a DOD base, the HSFS Ferry Flight Officer is responsible for ensuring that the standard flight-line security that is provided for transient aircraft is provided for the SCA/Orbiter in accordance with the requirements defined in Paragraph B6.2.3.3. The DOD Base Commander is responsible for the implementation of the security requirements.

B6.2.3.5 Public Viewing Security (DOD and Non-DOD Airfields)

When the Orbiters are delivered to the display sites, en-route stopovers may be scheduled for public events or public viewing (defined in Sections B6.2.4.1.1 and B6.2.4.1.2). In addition, a refueling stop will likely result in an unplanned response where the public or base personnel wish to view the SCA/Orbiter. In these situations, the following security requirements will be imposed:

a. Any public viewing site will be located no-closer-than 700 feet. The distance is often greater and is dictated by the configuration of the landing site and the location of the SCA/Orbiter parking area.

b. The local airfield management will be responsible for establishing crowd control procedures, parking facilities, comfort facilities, and medical assistance.

If a public event is planned, adequate security must be arranged to ensure the security of the SCA and Orbiter and the safety of the public. At a minimum, the SCA/Orbiter park site security requirements will be the same as those outlined in Section B6.2.3.2. Typically, the public will be allowed no-closer-than the restricted area during a planned public event. Closer access will be considered if a formal request is made. A planned public event to view the Orbiter must be approved by the Manager, SSP Transition and Retirement.

Media/Very Important Person (VIP) viewing will be allowed for all ferry missions. Typically, this viewing will be from no-closer-than the restricted area. Closer access requires approval from the Ferry Operations Manager or the KSC Operations Manager, who are responsible for arranging any escorts required for media/VIP viewing.

B6.2.4 NASA Public Affairs Office Requirements

B6.2.4.1 Introduction and Definitions

This section defines the various types of SCA/Orbiter viewing opportunities that are considered for the public, the media, and VIPs. The prime consideration in the evaluation of all viewing opportunities is the safety of the viewers and the security of the SCA/Orbiter and the ferry team.

B6.2.4.1.1 Public Event

A public event is a planned SCA/Orbiter viewing event of an inert Orbiter where the public is allowed access to view the SCA/Orbiter from a vantage point no-closer-than the 200-foot restricted area. A public event will typically include opportunities for media viewing and interviews as well as VIP events/viewing.

A public event must be approved by the Manager, SSP Transition and Retirement.

B6.2.4.1.2 Public Viewing

A public viewing is typically unplanned and occurs when the general public and/or base personnel arrive at a landing site to view the SCA/Orbiter. In this case, for security and

safety reasons, the public will be allowed no-closer-than 700 feet. The distance is often greater and is dictated by the configuration of the landing site and the location of the SCA/Orbiter parking area.

B6.2.4.1.3 Media/VIP Viewing

In general, media and VIP viewing is allowed no closer than the 200-foot restricted area. However, the degree of access will be dependent upon the situation and will be assessed on a case-by-case basis. The safety of the media and VIPs as well as the security of the SCA/Orbiter will be the prime consideration. All media and VIP access within the 200-foot restricted area or aboard the SCA must be approved by the Ferry Operations Manager or the KSC Operations Manager.

B6.2.4.1.4 Flyovers for Public Viewing

In some circumstances, a flyover of a populated area may be made for public viewing. These flyovers may include the following:

a. Incidental flybys of the populated area near a refueling stop.

b. A planned flyover of a metropolitan area specified before the ferry flight has begun.

The Manager, SSP Transition and Retirement will grant specific approval for any flyover before it is performed. This approval will be granted before take-off on the leg where the flyover will occur. Flyovers will be made at an altitude not less than 1,500 feet above ground level. No interference in local aircraft traffic patterns will be permitted. The Ferry Operations Manager will be the POC for requests for flyovers, and he will obtain approval, as required. The SCA Commander, who is the final authority for SCA flight operations, including flyovers, will ensure adherence to appropriate safety-of-flight regulations.

B6.3 DOD SUPPORT

B6.3.1 HSFS Responsibility

HSFS provides unique DOD support to the ferry mission on a non-interference basis with other high-priority or wartime military operations. DOD bases will be used, when possible, for planned en-route stops in order to ensure adequate security, Ground Support Equipment (GSE), and facilities. The HSFS FFO will coordinate provisions for ferry mission support at DOD bases as identified in the Launch and Landing (L&L) Program Requirements Document (PRD) and this document. This responsibility is extended to realtime requests by the Ferry Operations Manager.

B6.3.2 Airfield Coordination

The HSFS representative is responsible for airfield coordination. Preflight coordination for necessary services (availability and capability), parking zones, and security must be accomplished for the prime and weather alternate airfields prior to take-off. Any deviations from acceptable service will be noted in the preflight briefing.

B6.3.3 Pathfinder Management

When DOD aircraft are used for the Pathfinder mission, the senior HSFS FFO will coordinate airlift requests and messages with United Space Alliance (USA) Logistics. USA Logistics will formally schedule the DOD Pathfinder aircraft through the DOD Special Assignment Airlift Mission (SAAM) process. The senior HSFS FFO will maintain Tactical Control (TACON) of the DOD Pathfinder crew and perform crew management duties.

B6.3.4 Security Requirements

As stated in Paragraph B6.2.3.4, when the SCA/Orbiter lands at a DOD base, the HSFS Ferry Flight Officer is responsible for ensuring that the standard flight-line security that is provided for transient aircraft is provided for the SCA/Orbiter in accordance with the requirements defined in Paragraph B6.2.3.3. The DOD Base Commander is responsible for the implementation of the security requirements.

B6.3.5 45th WS FWO Support Requirement

The 45th WS FWO is responsible for realtime weather forecasts and en-route weather information. The FWO will brief en-route weather during the FFRMR, provide realtime updates during the flight phase, and brief the SCA Commander, Pathfinder pilot, and Ferry Operations Manager at each en-route stop. The 45th WS RWO at the CCAFS will maintain overall forecast responsibility and will coordinate 24-hour meteorological watch responsibilities for the Orbiter throughout the ferry mission. The FWO aboard the Pathfinder will be the primary coordination point for weather information and updated forecasts during each leg of the flight. The FWO will coordinate, as necessary, with the 45th WS RWO flight and en-route airfield weather personnel to provide the updates and forecasts. The FWO will be the contact for the Ferry Operations Manager and SCA Commander for any weather data.

Complete meteorological forecasts, which include take-off, en-route, and landing weather, are required. Specific emphasis will be on conditions relating to the following flight restrictions: flight altitudes in the 15,000 to 24,000 ft range, flight operations in daylight hours only, no flight through visible moisture, no flight through moderate or greater turbulence, no flight within 25 nm of thunderstorms, maximum crosswind for the SCA of 20 kts when mated with the Orbiter and 15 kts unmated, and no precipitation greater than light at en-route stops.

B6.3.6 GSE Requirements

KSC will provide any unique Orbiter GSE required at refueling or stopover bases selected for the mission. Base commanders will provide additional GSE and personnel support as listed below:

a. One aircraft 40 kVa (minimum) 115-volt, 400-Hz power unit (MD-3 or equivalent) at each support aircraft parking area(s).

b. One aircraft fire extinguisher (150-pound flight line Haylon or equivalent) at each aircraft parking area(s).

c. One low pressure air start unit (MA-1 or equivalent) at the SCA and NASA C-9 parking area(s).

d. One passenger loading stair truck at the SCA and NASA C-9 or DOD KC-135 parking area(s).

e. Two portable light carts at SCA parking area if ramp lighting is not adequate.

f. Two support stands (B-5 or equivalent) to be positioned in the SCA parking area and one at the NASA C-9 or DOD KC-135 parking area.

g. One 120 VAC, 60 Hz, 2 amp power unit and one 100-foot extension cable terminated with standard grounded two-prong female receptacles at the SCA parking area.

h. One forklift, 6,000-pound minimum capacity, 8 to 12 feet height capability, and driver to be available, if required.

i. One 70-foot reach, 2-person, 600-pound bucket truck.

B6.3.7 Crash and Rescue Requirements

Three major pieces of fire apparatus, with crews, are to be positioned along the runway (one at each end and one near the middle) for all landings and take-offs of the SCA/Orbiter. All three pieces of fire apparatus should accompany the SCA/Orbiter to the parking site but maintain a distance of 1,250 feet at all times except for emergencies. All three pieces of fire apparatus should be positioned to support SCA engine start prior to positioning for SCA/Orbiter take-off.

B6.3.8 Photographic Requirements

Provide photographic services from existing resources, on call, in case of an emergency at an SCA/Orbiter ferry landing site. Still and motion, black and white, and color photography of anomalies, including Orbiter exterior surface conditions, may be required. Detailed requirements will be requested via work orders at the landing site, are required.

B6.3.9 Food and Lodging Requirements

Provide access to mess facilities, and either provide billeting or assist in finding off-base facilities, for approximately 35 personnel.

B6.3.10 Transportation Requirements

Provide transportation to the ferry team as listed below:

a. Transportation, with driver, to transport Pathfinder and SCA passengers and crew (approximately 35 people) from the aircraft parking sites to Base Operations.

b. If available, arrange for providing a combination of approximately 10-12 sedans and vans for ferry team transportation from the flight line to/from lodging and other services. Government vehicles are preferred. If a sufficient number of government vehicles are not available, the ferry team vehicle requirements will be augmented with commercial rental cars.

B6.3.11 Public Affairs Support

The NASA PAO representative retains full and total responsibility for public affairs activities related to the mission. In all cases, matters involving NASA assets (e.g., the Orbiter and the SCA) remain the sole responsibility of the NASA representative. The DOD PAOs will only address issues regarding DOD support to ferry operations. DOD PAOs will coordinate requests for public viewing as described in Section B6.2.3.5.

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SECTION C

CONTINGENCY MANAGEMENT PLAN

C1.0 INTRODUCTION

C1.1 PURPOSE

The purpose of this document is to serve as an integrated plan to predetermine the response in the event of an SSP contingency. This plan will be implemented in concert with the NASA HQ Agency Contingency Action Plan and the field center contingency action plans. It has been written to augment each of these by providing the anticipated SSP contingency response.

C1.2 SCOPE

This document establishes guidelines and procedures for the SSP to follow in response to an SSP contingency. The SSP roles and responsibilities defined in Section C2.0 of this Section C begin from the time a failure, accident, or incident occurs that has the potential of being declared a contingency until the Mishap Response Team (MRT) has been relieved by a NASA HQ-appointed independent Mishap Investigation Board (MIB), Interim Response Team (IRT), Mishap Investigator (MI), or the investigation is complete.

C1.3 DEFINITION

For the purpose of this plan, an SSP contingency is defined as any SSP-related failure, accident, or incident involving SSP-controlled hardware, support equipment, or facilities that significantly delays or jeopardizes the SSP T&R effort, prevents accomplishment of a major objective, or terminates a ferry flight prematurely.

NPR 8621.1B, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping, defines mishaps and close calls, all of which are defined in Table C.1. The Associate Administrator/Human Exploration and Operations (AA/HEO), or delegated agent, is the final authority in determining if an actual or suspected accident or incident constitutes an SSP contingency. All probable contingency situations will be reported to the AA/HEO, or delegated agent, for a final decision.

C1.4 APPLICABILITY

This plan is optimized for Type A Mishaps occurring during Orbiter end-state processing or during Orbiter ferry operations. For other mishaps or close calls, it is anticipated that the SSP will adopt elements of this response plan appropriate for the severity of the mishap to support the affected Center Director's leadership role and the center's emergency response activities. The plan applies to all SSP organizations and those agencies that support the SSP during a contingency operation. Use of this plan assumes the AA/HEO has declared, or will declare, an SSP contingency.

C1.5 NOTIFICATION

Those witnessing a potentially significant SSP incident will notify the appropriate Transition Manager who in turn will notify the Manager, SSP Transition and Retirement. The Manager, SSP Transition and Retirement will be responsible for notifying the AA/HEO and the Assistant AA/HEO. The Transition Managers at JSC, KSC and MSFC will be responsible for notifying their respective Center Director.

TABLE C.1
CONTINGENCY CRITERIA SUMMARY

Classification Level and Investigation Type	Property damage	Injury	Appointing Official/ Investigating Authority
Type A Mishap	Direct cost of mission failure and property damage is $2M or more or crewed aircraft hull loss has occurred or occurrence of an unexpected crewed aircraft departure from controlled flight	Occupational injury and/or illness that resulted in: a fatality, or a permanent total disability or the hospitalization for inpatient care of 3 or more people within 30 workdays of the mishap	Administrator or Associate Administrator (AA) or Center Director or AA/HEO or Chief Health and Medical Officer (CHMO) Mishap Investigation Board (MIB) - at least 5 members
Type B Mishap	Direct cost of mission failure and property damage of at least $500K but less than $2M	Occupational injury and/or partial disability or hospitalization of 1-2 people within 30 workdays of the mishap	AA/HEO or Center Director or CHMO MIB - at least 3 members
Type C Mishap	Direct cost of mission failure and property damage of at least $50K but less than $500K	Nonfatal occupational injury or illness that caused any workdays away from work, restricted duty, or transfer to another job	Center Director designee or AA/HEO designee or CHMO Interim Response Team (IRT) or Mishap Investigator (MI)
Type D Mishap	Direct cost of mission failure and property damage of at least $1K but less than $50K	Any nonfatal OSHA recordable occupational injury and/or illness that does not meet the definition of a Type C mishap	Center Director designee or AA/HEO designee or CHMO IRT or MI
Close Call	An event in which there is no or minor equipment/property damage (less than $1K), but which possesses a potential to cause a mishap	Minor injury requiring first aid or an occurrence or condition with no injury which possesses the potential to cause a mishap	Center Director designee or AA/HEO designee or CHMO IRT or MI

C2.0 ROLES AND RESPONSIBILITIES

C2.1 MANAGER, SSP TRANSITION AND RETIREMENT

In accordance with the NASA HQ Agency Contingency Action Plan, the Manager, SSP Transition and Retirement is responsible for:

a. Taking appropriate actions to minimize losses, and preserve evidence, should a contingency occur.

b. Notifying the AA/HEO and AAA/HEO of an SSP contingency.

c. Managing the contingency situation and serving as the Chair of the MRT until a formal investigation board is established.

d. Activate IRT.

C2.2 TRANSITION MANAGERS AT JSC, KSC AND MSFC

The Transition Managers at JSC, KSC and MSFC serve as the SSP representatives to their respective Center Director. In a contingency, they are responsible for the following:

a. For Type A mission contingencies, ensure their respective Center Directors are informed of all relevant details concerning the contingency situation and the SSP's response. Coordinate with the Center Directors for all necessary institutional support of SSP requirements in implementing the corrective measures and recovery plan.

b. For other than Type A mission contingencies, serve on their respective center's Emergency Response Teams. Ensure the Manager, SSP Transition and Retirement, is informed of all relevant details concerning the contingency situation and the center's response. Coordinate with the Manager, SSP Transition and Retirement, for all necessary SSP support of center requirements in implementing the response and corrective measures.

c. If the MRT is activated for other than Type A mission contingencies, the Manager, SSP Transition and Retirement, with concurrence of the appropriate Center Director, may elect to delegate MRT Chair duties to the appropriate Transition Manager.

In addition, in the event a failure, accident, or incident occurs involving SSP hardware or facilities, it is the responsibility of the respective Transition Manager at JSC, KSC or MSFC to take the following actions:

a. Assure that all possible action is taken to prevent injury to personnel, and damage or loss of equipment, which includes necessary realtime actions.

b. Assure that the scene is secured against action that could impair investigation.

c. Protect records, logs, data books, and film, etc.

d. Initiate preliminary on-site assessment to determine scope of potential contingency.

e. Support their respective center contingency action plans.

f. Support investigations of SSP contingencies under SSP direction or under the direction of the lead center, a HQ MIB, or any board established by the NASA Administrator or the President of the United States.

g. Participate in MRT activities as a member of the MMT.

h. Ensure adequate security of the mishap site, and flight and ground hardware involved in the mishap.

C3.0 CONTINGENCY RESPONSE TEAMS

The SSP Contingency Response Teams are the MRT and the IRT. The roles of these two teams are discussed in the following sections. Additional teams, working groups, consultants, or specialists will be established to support the MRT, IRT or MIB, as required.

C3.1 MISHAP RESPONSE TEAM

The role of the MRT is to manage the contingency response activities and support of the initial investigation from the time a contingency is declared until a formal MIB is named. Once the MIB is formed, the MRT will continue its work in rendering support to the MIB as requested. The MRT will continue in that role until the investigation is complete, or relieved by a higher authority.

The first meeting of the MRT will be at the MRT teleconference that is convened within 1-day after a contingency has been reported. The Manager, SSP Transition and Retirement assumes the MRT Chair and directs the teleconference.

Membership of the MRT will consist of the MRT Chair, the Deputy Manager, SSP Transition and Retirement, the Transition Managers at JSC, KSC and MSFC, a designated person from the JSC Office of S&MA, and other NASA HQ and Center senior managers as the contingency requires.

Subsequent to the initial MRT teleconference, MRT meetings will occur as required. Initially, the team will meet daily; however, the MRT Chair will be responsible for determining the frequency of the meetings based on the nature of the contingency.

C3.2 INTERIM RESPONSE TEAM

The IRT shall travel to the contingency site to gather first-hand information, take witness statements, and preserve material which could be valuable to the formal investigation board. Once a contingency has been declared, recovery operations shall not begin until the contingency site is released by the IRT. The IRT shall comply with NPR 8621.1B, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping, and the NASA HQ Agency Contingency Action Plan for Space Operations. The IRT Chair shall be an appropriately trained person assigned from

either JSC or KSC as shown in Table C.2. The IRT Chair is responsible for selecting, training, organizing and deploying members of the IRT. The SSP shall provide all necessary personnel and resources to the IRT Chair. Once deployed, all IRT members are considered on detail from their field centers and are responsible only to the IRT Chair. While the IRT Chair will cooperate with the MRT Chair in coordinating all facets of the recovery and initial investigation, this formal division of authority is necessary to avoid any potential compromise of the integrity of the investigation.

TABLE C.2
MISHAP INVESTIGATION ROLES AND RESPONSIBILITIES FOR FINAL FERRY FLIGHTS
(APPLYING NPR 8621.1 ROLES AND RESPONSIBILITIES)

		Orbiter: KSC Ground Ops	**Orbiter:** KSC Ground Ops - Orbiter/SCA Mating	**Orbiter/SCA:** Post Mate, Pre-flight	**Orbiter/SCA:** Flight Ops	**Orbiter/SCA:** Flight Ops - Intermediate Airfield Stop	**Orbiter/SCA:** Flight Ops	**Orbiter/SCA:** Final Destination Airfield (Pre-DeMate)	**Orbiter/SCA:** Final Destination Airfield - DeMate through airfield exit	**Orbiter:** Airfield Exit through On Dock Delivery at Final Destination
Emergency Response		**KSC**	**KSC**	**KSC**	**Local Authorities**	**Local Authorities**	**Local Authorities**	**Local Authorities**	**Local Authorities**	**Local Authorities**
Interim Response Team (IRT)		**KSC**	**KSC**	**KSC**	**JSC AOD**	**JSC AOD**	**JSC AOD**	**KSC** (KSC GO Team)	**KSC** (KSC GO Team)	**KSC** (KSC GO Team)
Initial Mishap Notification Path(s)		**KSC Center Mgt With parallel notification to Program / Project**	**KSC Center Mgt With parallel notification to Program / Project**	**KSC Center Mgt With parallel notification to Program / Project and JSC Center Mgt**	**JSC Center Mgt With parallel notification to Program / Project**	**JSC Center Mgt With parallel notification to Program / Project**	**JSC Center Mgt With parallel notification to Program / Project**	**Direct to Project / Program With parallel notification to KSC and JSC Center Mgt**	**Direct to Project / Program With parallel notification to KSC Center Mgt**	**Direct to Project / Program With parallel notification to KSC Center Mgt**
Who is Convening Official for the Mishap Investigation Authority?		**KSC CD**	**KSC CD**	**JSC CD** (or could be KSC CD)	**JSC CD** (if SCA mishap involves another aircraft could be NTSB)	**JSC CD** (if at DoD airfield, could be DoD mishap with NASA participation or vice versa)	**JSC CD** (if SCA mishap involves another aircraft could be NTSB)	**JSC CD** (if at DoD airfield, could be DoD mishap with NASA participation or vice versa)	**HEOMD AA**	**HEOMD AA**

C4.0 INVESTIGATION GUIDELINES

C4.1 GENERAL

An investigation is conducted to determine the cause of the contingency and to recommend steps to prevent recurrence of such a contingency. If the IRT is activated following the MRT teleconference, all evidence and data collected by the IRT will be turned over to the MIB, once established. The MIB and each working group involved in the investigation will document their findings, determinations, conclusions, recommendations, and the procedural methods used during the investigation. Various guidelines for conducting an investigation are provided in the following paragraphs.

C4.2 SUPPORT FACILITIES

The centers will support any investigation that may be required. Necessary resources to conduct the investigation (administrative, facilities, secretarial support, communications, data access and security systems) will be made available to the MIB. To the extent possible, the centers will use existing facilities, organizations, and procedures for data handling and analysis.

C4.3 SECURITY

Security, as it pertains to this plan, applies not only to classification of data, but also to restricting access to accident-sensitive areas to approved personnel only. Security coordination with contractor security services will be provided.

C4.4 ACCIDENT SITE PRESERVATION

Those resources committed to support the SSP at the time of the contingency will be preserved in their operational state and configuration until released by the Associate Administrator/Space Operations (AA/SO), MIB Chair, or IRT Chair. The contingency site will be altered only as authorized by the AA/SO, MIB Chair, or IRT Chair, except when mandatory to ensure personnel safety. Arrangements will be made to store damaged hardware, equipment, debris, etc., in controlled facilities, if necessary. Duties listed for the AA/SO or IRT Chair in this paragraph will be assumed by the MIB Chair when investigation responsibility has been turned over to the MIB.

C4.5 DATA HANDLING

C4.5.1 General

Data pertinent to a declared contingency shall be collected, inventoried, preserved, protected, and controlled. Impounded data may include physical records, hard copy originals, and/or electronic information systems protected as data backup. All data shall be secured in a locked area or attended by authorized personnel and protected from disturbance. Original hard copy data shall be physically impounded and shall constitute the permanent record for the accident. Copies of data shall be made available for release, with the approval of the MRT, to those involved in the accident investigation. The MIB Chair may specify any special data requirements for use by the investigating

authority. All other mission data may be processed in a normal manner on a noninterference basis with data in support of the investigation.

C4.5.2 Records

All SSP elements and projects will impound applicable/appropriate records and protect NASA records pertinent to the contingency. These may include records of receipt, inspections, modifications, reliability and quality control, assembly and checkout, configuration control, and resolutions of significant technical problems. A custodian within each program element will be designated for the impounded records and will retain the records for use by the MIB.

C4.5.3 Security of Data

To ensure all data is available to the MIB, the distribution of data will be restricted and accorded special handling procedures as specified in this plan. Except for direct support of continued flight operations, and to the extent permitted by law, no data will be released to any person without a need-to-know, as designated by the MRT Chair until such time as the MIB Chair is appointed. To the extent provided by law, access to the processed and reduced data associated with the investigation will be limited to personnel involved with the failure investigation until the data are released by the MIB Chair.

C4.5.4 Public Release

Any public release of information relating to a contingency is the responsibility of the PAO. The Manager, Space Shuttle Program, in consultation with the AA/SO or designated agent, will provide guidance to PAO and other appropriate personnel until a duly appointed MIB assumes investigative responsibilities. Public release of information should emphasize public safety, and then balance the benefits of public understanding of the contingency and visibility into NASA's response to the contingency, against the need to avoid distribution of premature and incomplete information that might interfere with the investigation of the contingency or cause erroneous conclusions about the cause(s) of the contingency as eventually determined in full by the investigation board.

C4.6 REPORTS

The final investigation report will be written in accordance with the guidelines documented in NPR 8621.1B.

The convening authority may require the MIB to prepare intermediate reports. The MIB reports will be submitted to the convening authority and to other organizations as appropriate.

The working groups will report their progress periodically or at prearranged intervals as established by the MIB. Preliminary investigative reports will be reviewed at a time designated by the MIB Chair.

Time-lost reports will be filed for cases in which hospitalization for more than five days or death occurs.

The MIB will assemble lessons learned in the form of a summary of corrective actions.

C4.6.1 Minority Reports

If a member or members of the MIB disagrees with the findings, conclusions, or recommendations of a majority of the MIB, a non-concurrence statement will be appended to the report and become a part of the report.

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SPACE SHUTTLE

APPENDIX 09

GROUND SYSTEMS INTEGRATION AND OPERATIONS

No applicable requirements have been identified in NSTS 07700, Volume IX to transition into Appendix 09 for closeout.

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SPACE SHUTTLE

APPENDIX 10

FLIGHT AND GROUND SYSTEM SPECIFICATION CLOSEOUT REQUIREMENTS

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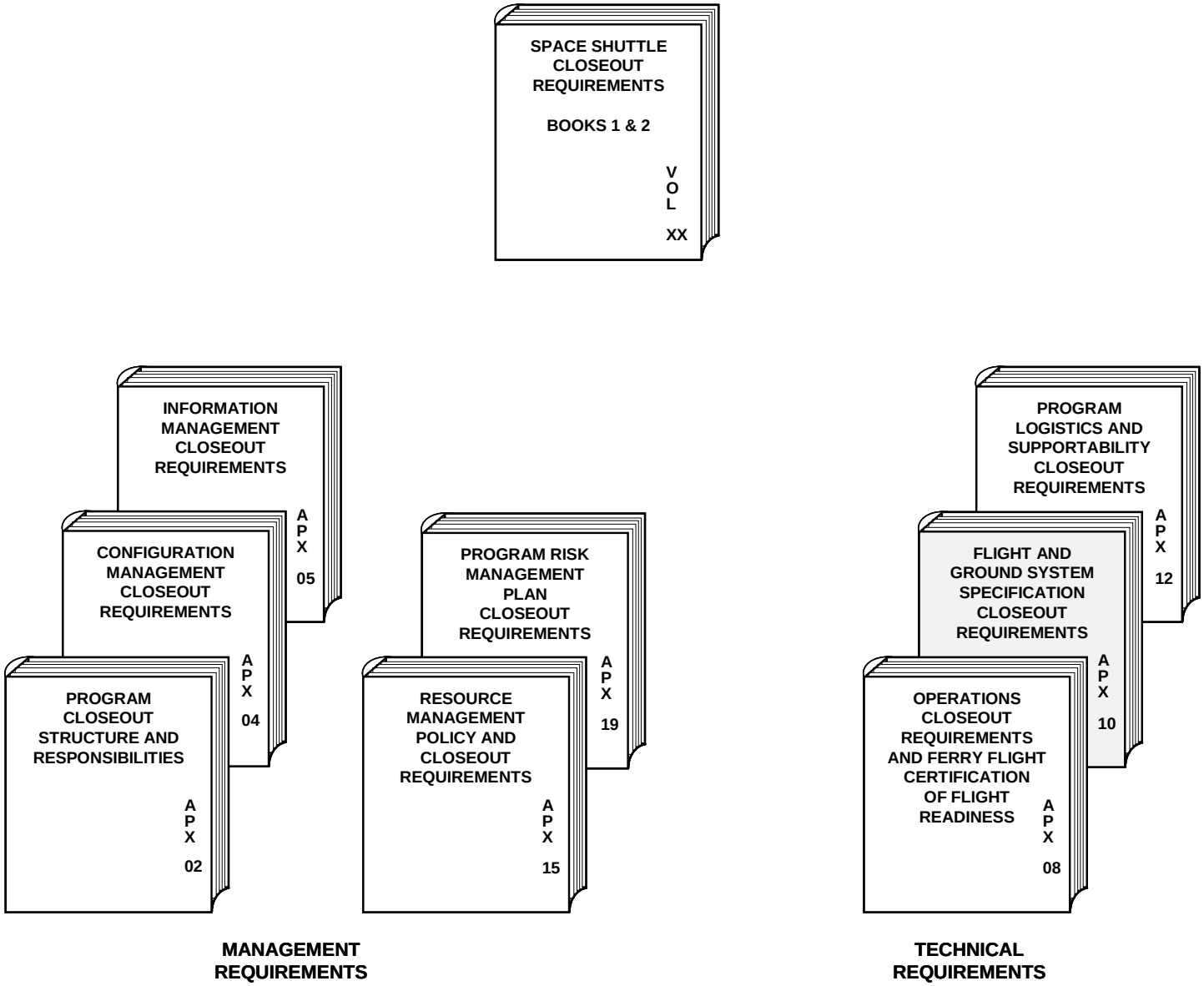
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, interface agreements, and system capabilities shall be documented, baselined, and subsequently controlled by SSP management.

Space Shuttle Program closeout requirements controlled by the Manager, Space Shuttle Program are documented in, attached to, or referenced from NSTS 07700, Volume XX, Books 1 and 2.

This volume, NSTS 07700, Volume XX - Books 1 and 2 defines the requirements for the closeout of the SSP. Each appendix contained within this Book 2, identifies those closeout requirements transitioned from the associated NSTS 07700 series operations document. The Office of Primary Responsibility (OPR) for Volume XX - Book 2 is the Space Shuttle Business Management Office (BMO).

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the Space Shuttle program element/project managers to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume IV - Book 1, and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 INTRODUCTION

1.1 PURPOSE

Appendix 10 defines the Space Shuttle Flight and Ground Systems requirements for Space Shuttle Program (SSP) closeout activities to be used by all NASA and contractor organizations.

1.2 SCOPE

This specification contains the program level technical requirements for SSP closeout.

This specification shall be the source for the expanded definition of project-level requirements for all elements performing SSP closeout activities. In the event of conflicting statements regarding Flight and Ground System Specification requirements between this volume and any other SSP document, the requirement of this document shall take precedence. However, if a Space Shuttle Program Closeout Directive (SSPCD) has been subsequently issued by the Manager, Space Shuttle Program which affects the statement(s) in question, the SSPCD shall take precedence.

1.3 SYSTEM FUNCTIONAL DEFINITION AND END-ITEM IDENTIFICATION

1.3.1 Top Level Shuttle System Functions

With the retirement of the SSP, the Shuttle fleet will be dispositioned as display articles. Once removed from the fleet, the Orbiter vehicles will be prepared for final disposition for use by NASA or another agency. After release from mission status, each Orbiter will be processed for Ferry Flight and Display, which will be referred to as End-State.

The top level Functional Flow Diagram (FFD) shown in Figure 1.3.1, depicts the major operations of SSP closeout. The top level FFD shall be used for developing more detailed functional requirements and lower levels of FFDs. These functional requirements are subsequently translated into performance and design requirements for system elements and their subsystems. The FFDs are also used for generating constraints, quantities of Support Equipment (SE), numbers of operating personnel, etc. The following subparagraphs summarize the scope of activities and events encompassed in each of the top level functions 1.0 through 7.0.

1.3.1.1 Train Personnel (FFD 1.0)

Shall include the analysis and identification of training requirements, definition of training equipment, training programs and procedures, and personnel training as required to support SSP closeout.

1.3.1.2 Provide Support Facilities (FFD 2.0)

Shall include the analysis and preparation of support facilities requirements and modification of facilities as required to support SSP closeout.

1.3.1.3 Perform SE and Facility Maintenance (FFD 3.0)

Shall include SE installation, operation and maintenance, and facility maintenance functions as required for SSP closeout.

1.3.1.4 Transport System Elements to Using Site (FFD 4.0)

Shall include the transport of Shuttle Vehicle elements SE, and supplies required for SSP closeout from acceptance sites to the using site.

1.3.1.5 Configure Orbiters to End-States (FFD 5.0)

Shall include processing of Orbiters and subsystems to their respective end-states.

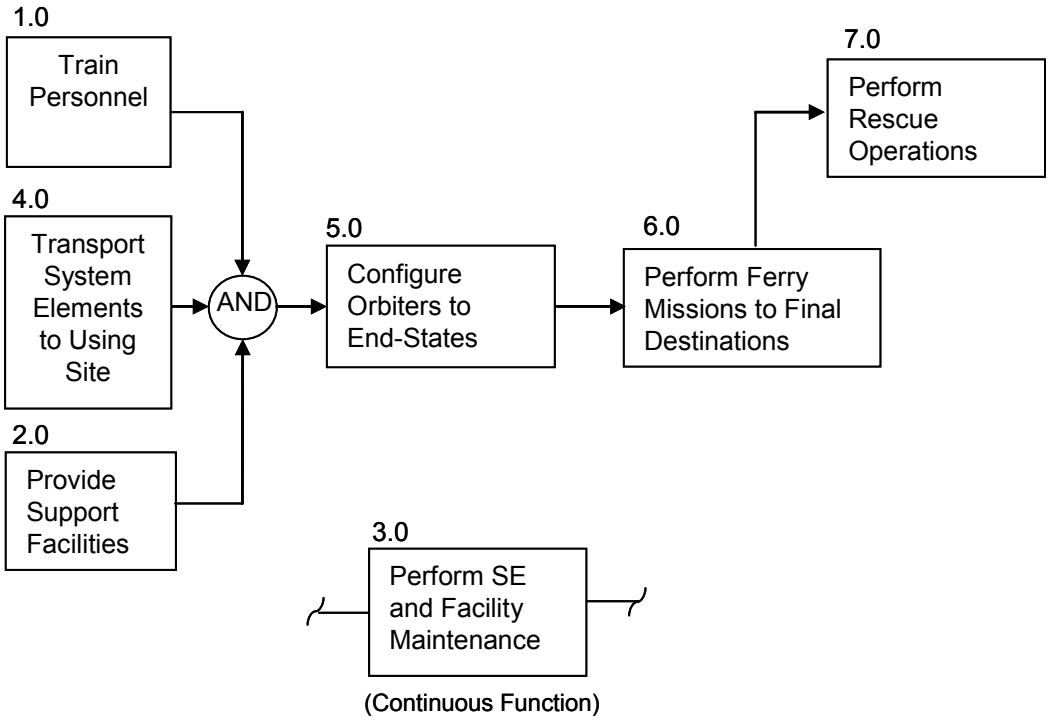
1.3.1.6 Perform Ferry Missions to Final Destinations (FFD 6.0)

This function encompasses the activities associated with transporting Orbiters in their respective end-state configurations from its point of origin, where the Orbiter is mated to the Shuttle Carrier Aircraft (SCA), to its final destination, where the Orbiter is demated from the SCA. It will include the ferry itself and the activities required at intermediate stops in the ferry flight. Abort modes during the ferry will be included.

1.3.1.7 Perform Rescue Operations (FFD 7.0)

Shall include all flight vehicle rescue operations which may occur during ferry missions.

FIGURE 1.3.1
TOP LEVEL FUNCTIONAL FLOW DIAGRAM



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2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this document to the extent specified herein. The listed issue or a later issue of the same document may be used. When a later issue is used, the project shall assure traceability of the design and certification baselines to the listed issue.

SPECIFICATIONS

Military

A-A-59105	Nitric Acid, Technical
	Ref. Para. 3.4.25.1.2
A-A-59107	Toluene, Technical
	Ref. Para. 3.4.25.1.1
ASTM D329	Standard Specification for Acetone
	Ref. Para. 3.4.25.1.1
ASTM D740	Standard Specification for Methyl Ethyl Ketone
	Ref. Para. 3.4.25.1.1
FSOP 6100	United Space Alliance Florida Safety Operating Plan
	Ref. Para. 3.4.25.1.1
KSC-STD-E-0002	Hazardproofing of Electrically Energized Equipment, Standard for
	Ref. Para. 3.4.25.2
MA0110-305	Preparation of Surfaces for Adhesive Bonding
	Ref. Para. 3.4.25.1.2

MA0608-301	Corrosion Control and Finish Requirements - Space Shuttle Orbiter - Airlock Structures Ref. Para. 3.4.25.1.2
MB0110-020	Fluid-Film, Compound, Corrosion Preventive Ref. Para. 3.4.25.1.1
MB0110-021	Compound, Hard Film, Corrosion Inhibiting Ref. Para. 3.4.25.1.1
MB0120-065	Sealant, Fluorocarbon, for Cryogenic Application Ref. Para. 3.4.25.1.1
MB0125-050	Primer, Silicone Ref. Para. 3.4.25.1.1
MB0125-057	Protective Coating, Clear, for Printed Markings Ref. Para. 3.4.25.1.1
MB0140-011	Thickened Grease, Corrosion Preventative Ref. Para. 3.4.25.1.1
MB0210-002	Aluminum Deoxidizer Ref. Para. 3.4.25.1.2
MIL-A-8862 May 18, 1960	Airplane Strength and Rigidity Landplane Landing and Ground Handling Loads Ref. Table 3.2.2.1.5.2(G)

MIL-A-46050	Adhesives, Cyanoacrylate, Rapid Room-Temperature Curing, Solventless
	Ref. Para. 3.4.25.1.1
MIL-C-81302	Cleaning, Compound, Solvent, Trichlorotrifluoroethane
	Ref. Para. 3.4.25.1.1
MIL-E-51454	Ethyl Alcohol (Ethanol)
	Ref. Para. 3.4.25.1.1
MIL-H-5440F January 18, 1972	Hydraulic Systems; Aircraft, Types 1 and 2, Design, Installation, and Data Requirements for
	Ref. Table 3.2.2.1.5.2(E)
MIL-I-6870B February 25, 1965	Inspection Requirements, Nondestructive, for Aircraft Materials and Parts
	Ref. Para. 3.7.1
MIL-I-8835	Indicator, Humidity, Card, Chemically Impregnated
	Ref. Para. 5.2.2
MIL-I-26860B May 17, 1972	Indicator, Humidity, Plug, Color Change
	Ref. Para. 5.2.2
MIL-L-23398	Lubricant, Solid Film, Air-Cured, Corrosion Inhibiting, NATO Code Number S-749
	Ref. Para. 3.4.25.1.1

MIL-P-116	Methods of Preservation
	Ref. Para. 5.2
MIL-S-22473	Sealing, Locking, and Retaining Compounds: Grade N and T (Single Component)
	Ref. Para. 3.4.25.1.1
MIL-S-7742B Amendment 1 March 15, 1973	Screw Threads, Standard Optimum Selected Series, General Specification for
	Ref. Para. 3.6.17.2
MIL-S-7742D July 25, 1991	Screw Threads, Standard, Optimum Selected Series: General Specification for
	Ref. Para. 3.6.17.2
MIL-S-8879A Amendment 1	Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for
	Ref. Para. 3.6.17.2
MIL-S-8879C July 25, 1991	Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for
	Ref. Para. 3.6.17.1, 3.6.17.2, Table 3.6.17
MIL-T-5021 January 24, 1978	Test, Aircraft and Missile Welding Operators Qualification
	Ref. Para. 3.6.2.1
MIL-T-81533	Trichloroethane 1, 1, 1, (Methyl Chloroform) Inhibited, Vapor Degreasing
	Ref. Para. 3.4.25.1.1

MT0501-504	Inspection, Penetrant Requirements for
	Ref. Para. 3.4.25.1.2
O-E-760	Ethyl Alcohol (Ethanol); Denatured Alcohol; Proprietary Solvents and Special Industrial
	Ref. Para. 3.4.25.1.1
RA0109-031	Application of Chemical Films to Aluminum
	Ref. Para. 3.4.25.1.2
RA1103-003	Etching of Machined Metal Surfaces for Penetrant Inspection
	Ref. Para. 3.2.25.1.2
RB0120-078	Silicone Primer for Platinum Catalyzed Sealants and Adhesives
	Ref. Para. 3.4.25.1.1
RB0210-030	Flourocarbon Fluid
	Ref. Para. 3.2.25.1.1
SAE AS8879	Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter
	Ref. Para. 3.6.17.1, Table 3.6.17
TT-I-735	Federal Specification Isopropyl Alcohol - Electronics Control Unit (ECU)
	Ref. Para. 3.4.25.1.1
TT-N-95	Naphtha; Aliphatic
	Ref. Para. 3.4.25.1.1

TT-T-266	Thinner: Dope and Lacquer (Cellulose-Nitrate)
	Ref. Para. 3.4.25.1.1
TT-T-548	Toluene, Technical
	Ref. Para. 3.4.25.1.1

<u>National Aeronautics and Space Administration (NASA)</u>

MSC-SPEC-M-1A June 1967	Identification and Marking
	Ref. Para. 3.6.8
MSFC-SPEC-250 February 26, 1964	Protective Finishes for Space Vehicle Structures and Associated Flight Equipment, General Specification for
	Ref. Para. 3.6.5.1.2, 3.6.5.2.1
MSFC-SPEC-522A November 18, 1977	Design Criteria for Controlling Stress Corrosion Cracking
	Ref. Para. 3.6.5.1.1
MSFC-SPEC-522B July 1, 1987	Design Criteria for Controlling Stress Corrosion Cracking - Electronics Control Unit (ECU) Critical Review (CDR)
	Ref. Para. 3.6.5.1.1
SE-G-0020B October 20, 1993	Leakage Measurement of Helium and Nitrogen Test Gases
	Ref. Para. 3.7.3
SE-R-0006 (Current Issue)	General Specification, Space Shuttle System Requirements for Materials and Processes
	Ref. Para. 3.2.2.1.8, 3.6.2.1, 3.6.5.1.1

SE-S-0073 - Book 1 (Current Issue)	Specification, Fluid Procurement and Use Control - Closeout Requirements
	Ref. Para. 3.6.12.1, 3.6.12.1.1.1.1.1, 3.6.12.1.1.3.1, 3.6.12.1.1.6
SN-C-0005	Contamination Control Requirements
	Ref. Para. 3.6.12.1, 5.2.4
SS-P-0002-150	Computer Program Development Specification
	Ref. Para. 3.4.16.3
SW-E-0002 - Books 3 and 4 (Current Issue)	Ground Support Equipment General Design Requirements for Closeout Requirements - Book 3, Existing GSE - Book 4, New GSE
	Ref. Para. 3.2.2.2.2, 3.6.12.1.1.2.1.2, 3.6.12.1.1.2.3.2, 3.6.13, 3.6.15.2, 3.6.16.2, 3.6.16.3, 3.6.16.5, 3.6.22, 3.6.25.1

STANDARDS

American National

ANSI/ASQCZ1.4-1993	Sampling Procedures and Tables for Inspection by Attributes
	Ref. Para. 3.7.2
ANSI/ASQCZ1.9-1993	Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming
	Ref. Para. 3.7.2

Federal

FED-STD-H28/2B August 20, 1991	Screw-Thread Standards for Federal Services Section 2 Unified Inch Screw Threads-UN and UNR Thread Forms Ref. Para. 3.6.17.1
FED-STD-H28/20A September 21, 1987	Screw-Thread Standards for Federal Services Section 20 Inspection Methods for Acceptability of UN, UNR, UNJ, M, and MJ Screw Threads Ref. Para. 3.6.17.1, 3.6.17.2
FED-STD-123E February 25, 1986	Marking for Shipment (Civil Agencies) Ref. Para. 3.6.8, 5.2.6

Military

MIL-STD-101B December 3, 1970	Color Code for Pipelines and for Compressed Gas Cylinders Ref. Para. 3.6.8
MIL-STD-105D April 29, 1963 Change 1, 11-1-63 Change 2, 3-20-64	Sampling Procedures and Tables for Inspection by Attributes Ref. Para. 3.7.2
MIL-STD-105E May 10, 1989	Sampling Procedures and Tables for Inspection by Attributes Ref. Para. 3.7.2
MIL-STD-129E April 10, 1972	Marking for Shipment and Storage Ref. Para. 3.6.8, 5.2.6

MIL-STD-130	Identification and Marking of U.S. Military Property Ref. Para. 3.6.8
MIL-STD-130D July 30, 1971	Identification and Marking of U.S. Military Property Ref. Para. 3.6.8
MIL-STD-143B November 12, 1969	Standards and Specifications, Order of Precedence for Selection of Ref. Para. 3.6.1
MIL-STD-414 June 11, 1957 Change 1, 5-8-68	Sampling Procedures and Tables for Inspection by Variables for Percent Defective Ref. Para. 3.7.2
MIL-STD-454 December 1, 1971	Standard General Requirements for Electronic Equipment Ref. Para. 3.6.4
MIL-STD-794B March 11, 1969	Parts and Equipment, Procedure for Packaging and Packing of Ref. Para. 5.2
MIL-STD-810 September 23, 1973	Material Standards for Environmental Test Methods Ref. Para. 3.6.4
MIL-STD-1247B December 20, 1968	Markings, Functions and Hazard Designations of Hose, Pipe, and Tube Lines for Aircraft, Missiles and Space Systems Ref. Para. 3.6.8

MIL-STD-1595 July 26, 1977	Qualifications of Aircraft, Missile and Aerospace Fusion Welders Ref. Para. 3.6.2.1
MIL-STD-2073	DOD Material, Procedures for Development and Application of Packaging Requirements Ref. Para. 5.2
MIL-STD-2073-1	Standard Practice for Military Packaging Ref. Para. 5.2

<u>National Aeronautics and Space Administration (NASA)</u>

KSC-STD-C-0001B July 1987	Protective Coating of Carbon Steel, Stainless Steel and Aluminum on Launch Structures and GSE Ref. Para. 3.6.5.2.1
MSFC-STD-506	Material and Process Control Standard Ref. Para. 3.6.2.1, 3.6.5.1.1
NASA-STD-6001	Flammability, Odor, Offgassing, and Compatibility Requirements and Test Procedures for Materials in Environments that Support Combustion Ref. Para. 3.6.2.1
NASA-STD-8739.3	Soldered Electrical Connections Ref. Para. 3.6.15.1.1

OTHER PUBLICATIONS

MIL-HNBK-5B September 1, 1971	Metallic Materials and Elements for Aerospace Vehicle Structures Ref. Para. 3.2.2.1.7
MIL-HNBK-17A January 1971	Plastics for Aerospace Vehicles Ref. Para. 3.2.2.1.7
MIL-HNBK-23A December 30, 1968	Structural Sandwich Composites Ref. Para. 3.2.2.1.7
MIL-HDBK-454	General Guidelines for Electronic Equipment, Guideline No. 4 Ref. Para. 3.6.4

National Aeronautics and Space Administration (NASA)

ICD 2-1A002	Orbiter Processing Facility/Orbiter Maintenance Checkout Facility Interface Control Document Ref. Para. 3.3.1.3.8, 3.4.4.3
ICD 2-1A003	Orbiter/Hypergolic Station Interface Control Document Ref. Para. 3.3.1.3.9, 3.4.11.3
ICD 2-1D004	Orbiter and Carrier Aircraft Mate/Demate Interfaces Interface Control Document Ref. Para. 3.3.1.3.15, 3.4.18.3
ICD 13M15000	Orbiter Vehicle/Main Engine Interface Control Document Ref. Para. 3.3.1.3.4, 3.3.4

ICD 2-17001	Orbiter/Carrier Aircraft Vehicle Interface Control Document
	Ref. Para. 3.3.1.3.5
NSTS 07700, Volume XX - Book 2, Appendix 04	Configuration Management Closeout Requirements
	Ref. Para. 3.6.12.1.1.5, 3.6.18
NSTS 07700, Volume XX - Book 2, Appendix 12	Program Logistics and Supportability Closeout Requirements
	Ref. Para. 3.2.3, 3.2.4
NSTS 07700-10-MVP-01 (Current Issue)	Shuttle Master Verification Plan, Volume I, General Approach and Guidelines
	Ref. Para. 3.4.16.2.5
NSTS 07700-10- MVP-01, Book 3 (Current Issue)	Shuttle Master Verification Plan, Volume I, General Approach and Guidelines, Book 3 - Closeout Requirements
	Ref. Para. 3.6.12.1.1.4, 4.3
JSC 07700-10-MVP-03 (Use of Latest Revision is Authorized)	Orbiter Verification Plan, Volume III (MJ072-0004-3)
	Ref. Para. 4.3.2
JSC 07700-10- MVP-08 (Use of Latest Revision is Authorized)	KSC Launch and Landing Site Return to Flight Reverification Plan, Volume VIII (KSC-STSM-09-Volume IV - Supplement)
	Ref. Para. 4.3.2
NSTS 5300.4(1D-2) (Current Issue)	Safety, Reliability, Maintainability and Quality Provision for the Space Shuttle Program
	Ref. Para. 3.5.1, 3.5.4, 3.6.15.1.1, 3.7

NHB 5300.4(1B)	Quality Program Provisions for Aeronautical and Space System Contractors
	Ref. Para. 3.7
NSTS 08307 - Book 1 (Baseline Pending)	Criteria for Preloaded Bolts Closeout Requirements
	Ref. Para. 3.2.2.1.24
NSTS 08060 (Current Issue)	System Pyrotechnic Specification
	Ref. Para. 5.3
NSTS 08114 (Current Issue)	Requirements for Periodic Certification of Material Handling Equipment and Operating Personnel
	Ref. Para. 3.5.4.2.8
NSTS 08171	Operations and Maintenance Requirements and Specifications Document (OMRSD)
	Ref. Para. 3.2.10
NSTS 08171, File I	Operations and Maintenance Requirements and Specifications Document, Introduction
	Ref. Para. 3.2.10.1
NSTS 08171, File III	Operations and Maintenance Requirements and Specifications Document, Orbiter and SSME
	Ref. Para. 3.2.10.3
NSTS 08171, File VI	Operations and Maintenance Requirements and Specifications Document, KSC Ground System
	Ref. Para. 3.2.10.6

NSTS 60584 (Current Issue)	Orbiter Fleet Safing Document (OFSD)
	Ref. Para. 3.3.1.2.2
NSTS 60585 (Current Issue)	End-State Subsystems Requirements Document (ESSRD)
	Ref. Para. 3.2.10.3, 3.3.1.2.1.7, 3.3.1.2.2, 3.3.1.3.4, 3.3.1.3.8, 3.3.1.3.9, 3.3.4, 3.3.5.1.1, 3.4.4.2.2, 3.4.4.3, 3.4.11.3, 3.4.25.1.1, 3.6.16.6
JSC 08800 February 1974	JSC Supplement to NHB 5300.4(3A) Requirements for Soldered Electrical Connections
	Ref. Para. 3.6.15.1.1
NHB 5300.4(3A) May 1968	Requirements for Soldered Electrical Connections
	Ref. Para. 3.6.15.1.1
NHB 5300.4(3A-1)	Requirements for Soldered Electrical Connections
	Ref. Para. 3.6.15.1.1
NHB 5300.4(3A-2)	Requirements for Soldered Electrical Connections
	Ref. Para. 3.6.15.1.1
NHB 5300.4(3G)	Requirements for Interconnecting Cables, Harnesses, and Wiring
	Ref. Para. 3.6.15.1.2
NHB 5300.4(3H)	Requirements for Crimping and Wire Wrap
	Ref. Para. 3.6.15.1.3

NHB 6000.1(1A) December 1969	Requirements for Packaging, Handling and Transportation for Aeronautical and Space Systems Equipment and Associated Components Ref. Para. 5.2, 5.2.5
NPG 6000.1E	Requirements for Packaging, Handling, and Transportation for Aeronautical and Space Systems Equipment and Associated Components Ref. Para. 5.2, 5.2.5
NPR 8820.2	Facility Project Implementation Guide Ref. Para. 3.2.2.2.1, 6.1.4
STS85-0169	Structural Design Loads Data Book Ref. Para. 3.2.2.1.17.2
TM-4511 1993 Revision	Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development Ref. Para. 3.2.2.1.17.1.6.2
TM-82473 June 1982	Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development, 1982 Revision Ref. Para. 3.6.22
TMX-64757 July 5, 1973	Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development, 1973 Revision Ref. Para. 3.2.2.1.17.1.1, 3.2.2.1.17.1.3, 3.2.2.1.17.1.5.1, 3.2.2.1.17.1.5.2, 3.2.2.1.17.1.6.1

TMX-58153 October 1974 (Formerly JSC 09084)	Coordinate Systems for the Space Shuttle Program
	Ref. Para. 3.6.11
<u>Contractor</u>	
SD72-SH-0172C	RI Material Control Plan
	Ref. Para. 3.6.5.1.1
MD-V70	Master Dimensions Specification
	Ref. Para. 3.3.1.2.1.7

3.0 REQUIREMENTS

3.1 SHUTTLE SYSTEM DEFINITION

3.1.1 Shuttle System Elements

3.1.1.1 Flight Vehicle Elements

The elements of the Shuttle Flight Vehicle for ferry to the final display destinations shall be:

a. Orbiter Vehicle

b. Replica Shuttle Main Engine (RSME)

Characteristics of these elements are defined in Paragraphs 3.3.1 and 3.3.4, respectively. The Shuttle Flight Vehicle shall consist of one Orbiter Vehicle with three RSMEs.

3.1.1.2 Ground Operations Systems

The major elements of the Shuttle Ground Operations System and the characteristics of these elements are defined in Paragraph 3.4.

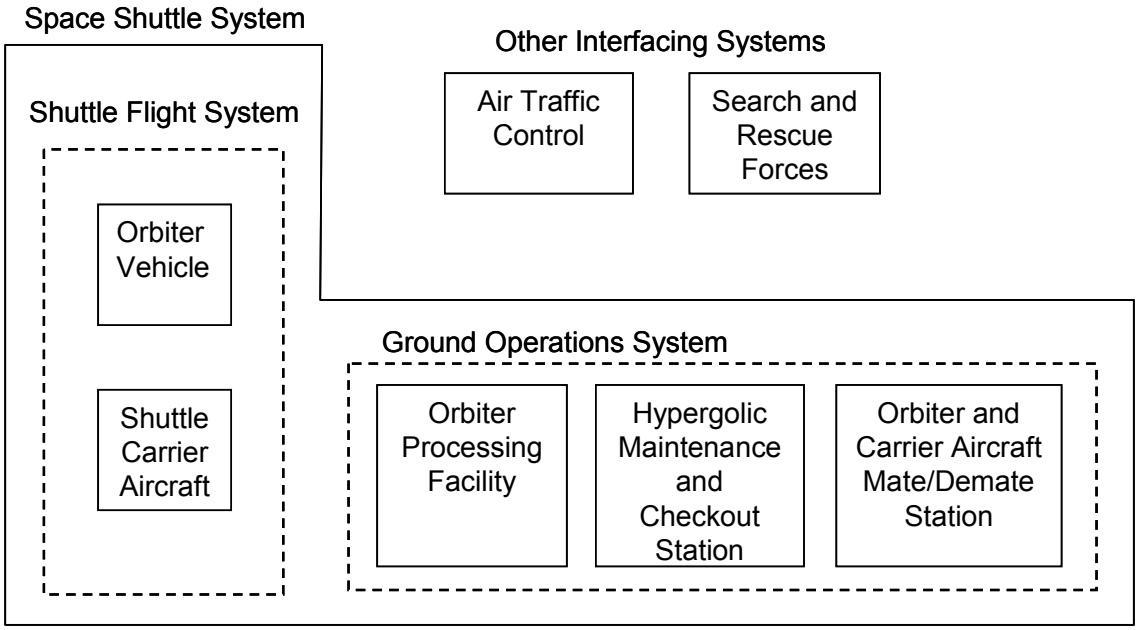
3.1.2 Top Level Schematic Block Diagram for SSP Closeout

The top level schematic block diagram shown in Figure 3.1.2 identifies the Shuttle System elements and other systems with which the Shuttle System interfaces, for closeout of the SSP.

3.1.3 (Reserved)

3.1.4 (Reserved)

FIGURE 3.1.2
SYSTEM SCHEMATIC BLOCK DIAGRAM



3.2 PERFORMANCE AND DESIGN CHARACTERISTICS

3.2.1 Mission Performance

3.2.1.1 (Reserved)

3.2.1.2 (Reserved)

3.2.1.3 (Reserved)

3.2.1.4 (Reserved)

3.2.1.5 (Reserved)

3.2.1.6 Ferry Mission Functions (FFD 6.0)

3.2.1.6.1 Ferry

The program shall provide for the transporting of an Orbiter Vehicle, by use of a SCA, to/from specified sites to/from the launch site, as defined in Paragraph 3.3.5 of this document.

3.2.1.6.2 (Reserved)

3.2.1.7 Transport System Element Functions (FFD 4.0)

3.2.1.7.1 Delivery of System Elements to Using Site

The capability shall be provided to transport Shuttle Vehicle elements and related SE from the site of manufacture to the launch and landing site.

3.2.1.8 (Reserved)

3.2.1.9 (Reserved)

3.2.1.10 Orbiter End-State Processing Functions (FFD 5.0)

The Orbiters shall be processed to their end-states as specified in Paragraph 3.3.1,

3.2.2 Design Characteristics

3.2.2.1 (Reserved)

3.2.2.1.1 (Reserved)

3.2.2.1.2 (Reserved)

3.2.2.1.3 (Reserved)

3.2.2.1.4 (Reserved)

3.2.2.1.5 Structure

The Shuttle Vehicle structure, including pressure vessels and mechanical systems, shall have adequate strength and stiffness, at the design temperature, to withstand limit loads

and pressures without loss of operational capability and to withstand ultimate loads and pressures at design temperature without failure.

3.2.2.1.5.1 Definitions

For the purpose of interpretation of this section, the following definitions will apply:

a. Limit Load - The maximum load expected on the structure during mission operation.

b. Ultimate Factor of Safety - The factor by which the limit load is multiplied to obtain the ultimate load.

c. Ultimate Load - The product of the limit load multiplied by the ultimate factor of safety.

d. Allowable Load - The maximum load which the structure can withstand without rupture or collapse.

e. Maximum Operating Pressure - The maximum pressure applied to the pressure vessel by the pressurizing system with the pressure regulators and relief valves at their upper limit, with the maximum regulator fluid flow rate, and including the effects of system environment such as vehicle acceleration and pressure transients.

f. Proof Pressure - The pressure to which production pressure vessels are subjected to fulfill the acceptance requirements of the customer, in order to give evidence of satisfactory workmanship and material quality. Proof pressure is the product of maximum operating pressure times the proof factor.

g. Margin of Safety - The ratio of allowable load to ultimate load minus one.

h. Safe-life - A design criteria under which failure will not occur because of undetected flaws or damage during the specified service life of the vehicle; also, the period of time for which the integrity of the structure can be ensured in the expected operating environments.

3.2.2.1.5.2 Ultimate Factors of Safety

The ultimate factors of safety given in Table 3.2.2.1.5.2 shall be used for the Shuttle Vehicle structure.

3.2.2.1.6 Ultimate Combined Loads

The mechanical external, thermally induced, and internal pressure loads shall be combined in a rational manner according to the equation given below to determine the design loads. Any other loads induced in the structure, e.g., during manufacturing, shall be combined in a rational manner. In no case shall the ratio of the allowable load to the combined limit loads be less than the factor in Paragraph 3.2.2.1.5.2.

Ultimate loads = $K_1 L_{external} + K_2 L_{thermal} + K_2 L_{pressure}$

Where: K_1 = The appropriate design factor of safety in Table 3.2.2.1.5.2 when the term is additive to the algebraic sum

K_2 = The appropriate design factor of safety in Table 3.2.2.1.5.2 for all pressure vessels when the term is additive to the algebraic sum

K_1, K_2 = 1.0 when the term is subtractive to the algebraic sum

$L_{External}$ = Mechanical externally applied loads, e.g., internal loads, aerodynamic pressures

$L_{Thermal}$ = Thermally induced loads

$L_{Pressure}$ = Maximum relief valve setting (except ET) where additive to algebraic sum

= Maximum regulated pressure (for ET only) where additive to algebraic sum

= 0 to minimum regulated pressure when subtractive to algebraic sum

TABLE 3.2.2.1.5.2
ULTIMATE FACTORS OF SAFETY

Components	Factors of Safety Ultimate
General structure and main propellant tanks	≥1.40 (A) (G) (M)
Pressurized windows	(B)
A. Annealed panes	
Initial F. S.	≥2.0
Final F. S.	≥1.0
B. Tempered panes	
Initial F. S.	≥2.0
Final F. S.	≥2.0
Pressurized manned compartments	≥1.5
Pressure alone	≥1.5
Pressure vessels (other than main propellant tanks)	
Pressurized lines and fittings	
Less than 1.5 in. diameter	≥1.5 (A) (B) (K)
1.5 in. diameter or greater	≥4.0 (E) (F)
	≥1.5

(A) Reference Paragraph 3.2.2.1.6.

(B) Reference Paragraph 3.2.2.1.8.

(C) Factor of safety specified in element Contract End Item (CEI) and as determined by Paragraph 3.2.2.1.8.

(D) (Deleted).

(E) Design of hydraulic systems shall be in accordance with MIL-H-5440F.

(F) Lines and fittings of less than 1.5 in. diameter may be designed to a minimum factor of safety of 1.5, where advantageous to the Shuttle Vehicle, providing the rigor of design analysis and verification testing performed is equivalent to that applied to other critical systems/components. Whenever the exception allowed by this paragraph is utilized by an element, the affected system/components shall be identified along with a brief description of the analysis and testing applied in order to justify adequacy and acceptability of the lower factor of safety. All exceptions must be approved by the Manager, Space Shuttle Program.

TABLE 3.2.2.1.5.2
ULTIMATE FACTORS OF SAFETY - Concluded

(G) The design of the landing gear system shall be in compliance with the following structural loads design criteria:

*

Loading Condition	Loads Definition	Factor of Safety	Material Allowable
Rollout and Ground Handling	Limit	≥1.4	Ultimate

* From MIL-A-8862, Airplane Strength and Rigidity Landplane Landing and Ground Handling Loads, Paragraph 3.1.3

3.2.2.1.7 Allowable Mechanical Properties

Values for allowable mechanical properties of structural materials in their design environment; e.g., subjected to single or combined stresses, shall be taken from MIL-HNBK-5B, Metallic Materials and Elements for Aerospace Vehicle Structures, MIL-HNBK-17A, Plastics for Aerospace Vehicles, MIL-HNBK-23A, Structural Sandwich Composites, or other sources approved by NASA. Where values for mechanical properties of new materials or joints or existing materials or joints in new environments are not available, they shall be determined by analytical or test method approved by NASA. Complete documentation of testing and analyses used to establish material properties and design allowables shall be maintained by the contractor, and the documentation shall be made available to the procuring agency on request. When using MIL-HNBK-5B, material "A" allowable values shall be used in all applications where failure of a single load path would result in loss of vehicle structural integrity. Material "B" allowable values may be used in redundant structure in which the failure of a component would result in a safe redistribution of applied loads to other load-carrying members.

3.2.2.1.8 Fracture Control

In addition to the ultimate factors of safety presented in Paragraph 3.2.2.1.5.2, designs for primary structure, windows, glass components of other subsystems, and tanks shall consider the presence of sharp cracks, crack-like flaws, or other stress concentrations in determining the life of the structure for sustained loads and cyclic loads coupled with environmental effects. Parts determined to be fracture critical shall be controlled in design, fabrication, test, and operation by a formal, NASA-approved fracture control plan as specified in SE-R-0006, General Specification, Space Shuttle System Requirements for Materials and Processes.

3.2.2.1.9 Fatigue

Safe life design shall be adopted for all major load-carrying structures. These structures shall be capable of surviving without failure a total number of mission cycles that is a minimum of four times greater than the total number of mission cycles expected in service (shown by analysis or by test through a rationally derived cyclic loading and temperature spectrum). This does not preclude fail safe structural features.

Orbiter structure may be subjected to a durability analysis in lieu of a fatigue analysis. When using a durability analysis, the total number of mission cycles the structure shall be capable of surviving without failure shall be a minimum of two times the mission cycles expected.

a. Life Based on Operating History With No Failures - The allowable life limit must be statistically justified using the single flight reliability method (see Paragraph 6.1.11) with a demonstrated reliability statement of 0.995 reliability/0.90 confidence for the last mission of the calculated life, and additionally constrained by requiring six similar structures to each have demonstrated life equal to or greater than the allowable life

limit, which may be up to 50% of the demonstrated safe life limit (see Paragraph 6.1.10).

b. High Cycle Fatigue Life Based on Analysis and Test Data - The allowable life limit may be up to 50% of the demonstrated safe life limit (see Paragraph 6.1.11) for high life cycle fatigue if test data from at least nine tests correlated to 0.99 reliability and one-sided 0.95 confidence, in conjunction with expected minimum material properties (a minimum of ten high cycle fatigue tests with a maximum of two run-outs, at temperature and environment of interest) and a life factor of 2 are used to establish the allowable life limit. In addition, periodic inspection must be performed at up to 25% demonstrated safe life limit (see Paragraph 6.1.11) exposure, and/or health monitoring performed.

c. Life Based on Demonstrated Safe Life Limit - The allowable life limit may be up to 50% of the demonstrated safe life limit (see Paragraph 6.1.10), if there are six similar structures each with demonstrated life equal to or greater than the allowable life limit and periodic inspection is performed at up to 25% demonstrated safe life limit exposure, and/or health monitoring performed.

3.2.2.1.10 Creep

The design shall preclude cumulative creep strain leading to rupture, detrimental deformation, or creep buckling of compression members during their service life. Analysis shall be supplemented by test to verify the creep characteristics for the critical combination of loads and temperatures.

3.2.2.1.11 (Reserved)

3.2.2.1.12 (Reserved)

3.2.2.1.13 (Reserved)

3.2.2.1.14 (Reserved)

3.2.2.1.15 (Reserved)

3.2.2.1.16 (Reserved)

3.2.2.1.17 Design Environments

3.2.2.1.17.1 Orbiter Ferry Flight Phase Winds

The carrier aircraft/Orbiter combination shall be capable of ferry operations in the wind environment defined in the following subsections. Vehicle responses to both ground and in-flight steady state winds with discrete and continuous gusts shall be used for design.

3.2.2.1.17.1.1 Steady State Winds

The design steady state wind profile which shall be used for take-off, climb-out, cruise, descent, and landing design studies for the Orbiter ferry mission are specified in this section. The design steady state wind profile for altitudes below the 152.4 m level is given by Equation (2) with $U_{18.3}$ = 17.7 m sec^{-1} and tabularly in Table 3.2.2.1.17.3. The associated design steady state wind profile for altitudes greater than or equal to 1 km is given in Table3.2.2.1.17.1. The design head-wind profile in Table 3.2.2.1.17.1 is associated with a 5% risk of not being able to ferry the Orbiter from KSC to Vandenberg Air Force Base (VAFB) in a 30-day period. To establish the design steady state wind profile for altitudes between the 152.4 m level and the 1 km level, the merging procedure specified below is to be used. The layer between 152.4 and 300 meters shall take on a constant value equal to the steady state wind value at the 152.4 m level of Table 3.2.2.1.17.3 (20.3 m sec^{-1}). Values between the 300 m level value and the 1000 m level value (9 m sec^{-1}) given in Table 3.2.2.1.17.1 shall be obtained by linear interpolation. A more complete description of this procedure is given in Paragraph 5.3.9.3 of TMX-64757, Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development, 1973 Revision.

$$U(h) = U_{18.3}\left(\frac{h}{18.3}\right)^{1.6(U_{18.3})^{-3/4}} \qquad \text{(Eq. 1)}$$

Where U(h) is the peak wind speed at height h in meters above natural grade and $U_{18.3}$ is the peak wind speed at the 18.3 m reference level in m/sec.

$$\overline{U}(h) = U(h)\left[1 + \left(\frac{\left(\frac{18.3}{h}\right)^{(0.282 - 0.435e^{-0.2U_{18.3}})}}{1.98 - 1.887e^{-0.2U_{18.3}}}\right)\right]^{-1} \qquad \text{(Eq. 2)}$$

Where U(h) is given by Equation (1) with U 18.3 = 38.3 m/sec.

These winds shall be applied as headwinds during all phases of flight except for ferry take-off and landing (altitudes <1,000 m). In the landing phase, performance and response analyses shall require the steady state design winds to be applied from the directions contained within the two quadrants perpendicular to and upwind of the runway (cross and headwind components).

The carrier aircraft/Orbiter combination shall be capable of taking-off into steady state headwinds ranging from calm (0.5 m sec^{-1}) up to and including the steady state wind profile envelope (11.7 m sec^{-1} at the 18.3 m level) specified in this section. For directional change of the steady state wind profile during landing due to vertical variation of the steady state wind direction the wind direction profile in Paragraph 5.3.14.2 of TMX-64757 shall be used. The 1% risk values of the angle Δ between the wind vectors at the 10 and 1,000 m levels shall be used. These angles are functions of the steady state wind speed at the 1,000 m level as discussed in Paragraph 5.3.14.2 of

TMX-64757. The use of this wind direction change (spatial) model shall not result in an 18.3 m level tail wind at landing.

3.2.2.1.17.1.2 Gust Environments

During the ferry flight phase the carrier aircraft/Orbiter vehicle shall be capable of withstanding the discrete and spectral (continuous) gust environments given in Paragraph 3.2.2.1.17.1.5. The application of the landing gust environments shall be used in conjunction with the take-off and landing steady state wind profile associated with a speed of 11.7 m/s at the 18.3 m level.

3.2.2.1.17.1.3 Design Steady State Wind Shears

During the ferry mission above the 1 km level, the carrier aircraft/Orbiter vehicle combination shall have the capability of withstanding the steady state wind shears given in Tables 5.3.20 and 5.3.21 of TMX-64757. These wind shears shall be used to construct synthetic wind profiles with the steady state and profile envelope given in Paragraph 3.2.2.1.17.1.1 and the discrete and spectral (continuous) gust environments given in Paragraph 3.2.2.1.17.1.2 to establish design synthetic wind profiles. The procedure which shall be used for construction of the synthetic wind profiles are given in Paragraphs 3.2.2.1.17.1.6.

During the flight or ferry phase from the one km level down to the surface, the Orbiter or carrier aircraft/Orbiter vehicle combination shall have the capability of withstanding the following wind shear environments. Wind shear below the one km level shall be computed by selecting a point (shear computation point) on one of the design steady state envelopes as specified in Paragraph 3.2.2.1.17.1.1 and then linearly interpolating to a zero wind condition at the surface of the earth. The mean wind profile will then be used above the shear computation point and the linear extension below. A sufficient number of shear computation points shall be used up to the 1,000 m level for Orbiter control system design.

3.2.2.1.17.1.4 Ferry Natural Environment Operational Limits

The ferry vehicle capability for natural environment conditions shall be established as operational limits. These conditions include:

a. Tail winds for landing

b. Crosswinds for take-off

c. Temperature and density profiles

d. Weather

    1. Ceiling and visibility

    2. Precipitation and icing

    3. Hydrometeors (i.e., hail, freezing precipitation, etc.)

TABLE 3.2.2.1.17.1
ORBITER DESIGN FERRY MISSION STEADY STATE HEADWIND PROFILE FOR ALTITUDES ABOVE THE ONE KILOMETER LEVEL

Altitude (km)	Wind Speed (m sec-1)
1	9
3	9
4.6	14
6	19
7.6	24
9	29
11	33

TABLE 3.2.2.1.17.2
DESIGN LAUNCH PEAK WIND SPEED PROFILES FOR THE 18.3 METER REFERENCE LEVEL PEAK WIND SPEED FOR THE WINDIEST 1-HOUR EXPOSURE PERIOD

(a) All Azimuths Considered (For a 5% risk of exceeding)

Height		Peak Wind Speed KSC		Peak Wind Speed VAFB	
(m)	(ft)	(m/s)	(k)	(m/s)	(k)
10	33	15.8	30.8	15.8	30.8
18.3	60	17.7	34.4	17.7	34.4
30.5	100	19.5	37.9	19.5	37.9
61.0	200	22.1	43.0	22.1	43.0
91.4	300	23.9	46.4	23.9	46.4
121.9	400	25.2	48.9	25.2	48.9
152.4	500	26.2	51.0	26.2	51.0

(b) Limited Azimuth Considered (For wind from South [180°] at KSC and for 60° arc centered on West and East at VAFB)

Height KSC From Due South				Peak Wind Speed VAFB West		Peak Wind Speed VAFB East	
(m)	(ft)	(m/s)	(k)	(m/s)	(k)	(m/s)	(k)
10	33	10.7	20.7	10.7	20.7	12.6	24.6
18.3	60	12.3	24.0	12.3	24.0	14.4	28.0
30.5	100	14.0	27.2	14.0	27.2	16.0	31.3
61.0	200	16.5	32.1	16.5	32.1	18.7	36.3
91.4	300	18.2	35.4	18.2	35.4	20.4	39.6
121.9	400	19.6	38.0	19.6	38.0	21.7	42.2
152.4	500	20.7	40.1	20.7	40.1	22.8	44.3

NOTE: For KSC wind directions, Θ between 134° and 226° compute the peak wind speed at the 18.3 m level by:

$$U_{18.3} = \frac{12.3 \text{ m/s}}{-\cos \Theta}$$

and then use Equation 1, Paragraph 3.2.2.1.17.1.1 to obtain peak wind versus height. For all other wind directions use Table 4.2.1(a).

TABLE 3.2.2.1.17.3
DESIGN LAUNCH STEADY STATE WIND SPEED PROFILE FOR THE WINDIEST 1-HOUR EXPOSURE PERIOD

(a) All Azimuths Considered (For a 5% risk of exceeding)

Height		Mean Wind Speed KSC		VAFB	
(m)	(ft)	(m/s)	(k)	(m/s)	(k)
10	33	9.8	19.1	11.5	22.3
18.3	60	11.7	22.6	13.5	26.2
30.5	100	13.4	26.0	15.3	29.9
61.0	200	16.1	31.3	18.2	35.4
91.4	300	17.9	34.7	20.1	39.0
121.9	400	19.2	37.3	21.5	41.7
152.4	500	20.3	39.4	22.6	43.9

(b) Limited Azimuth Considered (For wind from South [180°] at KSC and for 60° arc centered on West and East at VAFB)

Height		Mean Wind Speed					
KSC				VAFB			
From Due South				West		East	
(m)	(ft)	(m/s)	(k)	(m/s)	(k)	(m/s)	(k)
10	33	6.5	12.6	7.7	14.9	9.2	17.8
18.3	60	8.0	15.5	9.4	18.2	10.9	21.2
30.5	100	9.4	18.3	11.0	21.3	12.7	24.6
61.0	200	11.7	22.8	13.5	26.3	15.3	29.8
91.4	300	13.3	25.8	15.2	29.6	17.1	33.2
121.9	400	14.5	28.2	16.5	32.1	18.4	35.8
152.4	500	15.5	30.2	17.6	34.3	19.5	38.0

NOTE: For KSC wind directions, Θ, between 134° and 226°, compute the steady state wind profile using the equation in the note to Table 3.2.2.1.17.2 and Equation 2 in Paragraph 3.2.2.1.17.1.1.

3.2.2.1.17.1.5 Design Vehicle Gust Environments

The SCA mated with the Orbiter shall be capable of withstanding the spectral and discrete gust environments specified in this section for ferry flight. The spectral model is designed to present gusts of all wavelengths of import to the vehicle, while discrete gusts covering the critical wavelengths must be individually applied.

3.2.2.1.17.1.5.1 Design Spectral Gust Environments

The SCA mated with the Orbiter shall be capable of withstanding a Dryden spectral gust environment with longitudinal (u), lateral (v), and vertical (w) spectral density functions given by:

$$\text{Longitudinal :} \quad \Phi_u(\Omega) = \sigma^2 \frac{2L}{\pi} \frac{1}{1 + (L\Omega)^2}, \qquad \text{(Eq. 12)}$$

$$\text{Lateral and Vertical :} \quad \Phi_{u,w(\Omega)} = \sigma^2 \frac{L}{\pi} \left\{ \frac{1 + 3\,(L\Omega)^2}{\left[1 + (L\Omega)^2\right]^2} \right\}, \qquad \text{(Eq. 13)}$$

Where $\Phi(\Omega)$ is the gust spectral density function with units of $m^2 sec^{-2} (rad\ m^{-1})^{-1}$ at wave number Ω with units of rad m^{-1}. The quantities σ and L denote the standard deviation and integral scales of turbulence. The spectral density functions are defined, such that integration over the domain $0 \leq \Omega \leq \infty$ yields the square of the standard deviation. To define the design input forcing function for spectral response calculations and the simulation of forcing function time histories along the flight path, the turbulent velocity shall be added vectorially to the steady state wind vector to define the instantaneous wind vector. To determine the design loads and responses from the load and response standard deviations, the input turbulence components shall be treated as being a trivariate Gaussian process with zero mean values and the components shall be uncorrelated. The design loads and responses shall be calculated at the 99.98% level. To generate atmospheric turbulence, apply Equations (12) and (13) in conjunction with Equations (5.51) through (5.54) of TMX-64757.

3.2.2.1.17.1.5.1.1 Design Spectral Gust Parameters (10,000 - 304.8 m)

Below the 10,000 m level and above the 304.8 m level, turbulence can be considered to be isotropic, and the longitudinal component of turbulence is parallel to the flight path. The lateral component lies in the yaw plane and is perpendicular to the longitudinal component. The vertical component is perpendicular to both the lateral and longitudinal components of turbulence. The design values of α and L which shall be used to establish design spectral gust requirements for ferry flight down to the 304.8 m level are given in Table 3.2.2.1.17.4.

3.2.2.1.17.1.5.1.2 Design Spectral Gust Parameters (304.8m to Surface)

Below the 304.8 m level atmosphere turbulence is an isotropic so that the statistical properties of the turbulence vary from component to component, i.e., the standard deviations and integral scales of turbulence vary from component to component. The longitudinal component is defined to be the component of turbulence parallel to the horizontal projection of the flight path. The lateral component lies in the horizontal plane and is perpendicular to the longitudinal component and the vertical component is perpendicular to the other two components. The vertical profiles of the standard deviation and integral scales of turbulence requirements for the descent and landing flight phase below the 304.8 m level are given by:

$$\sigma(h) = \sigma_{18.3}\left(\frac{h}{18.3}\right)^{p}, \qquad \text{(Eq. 16)}$$

$$L(h) = L_{18.3}\left(\frac{h}{18.3}\right)^{q}, \qquad \text{(Eq. 17)}$$

Where h denotes altitude above natural grade, $\sigma_{18.3}$ and $L_{18.3}$ denote the 18.3 m level values of σ and L, and p and q are non-dimensional parameters. The design values of these parameters ($\sigma_{18.3}$ and $L_{18.3}$, p, and q) for each component of turbulence which shall be used to establish design spectral gust requirements for ferry flight below the 304.8 m level are given in Table 3.2.2.1.17.5.

3.2.2.1.17.1.5.2 Discrete Gust

The SCA mated with the Orbiter shall have the capability of withstanding the discrete gust environments as given in Paragraph 5.3.15 of TMX-64757 during ferry flight. The integral scales and standard deviations of turbulence as specified in Paragraphs 3.2.2.1.17.1.5.1.1 and 3.2.2.1.17.1.5.1.2 shall be used to establish design discrete gust environments for ferry flight. Discrete gusts for each component of turbulence shall be applied separately.

TABLE 3.2.2.1.17.4
DRYDEN TURBULENCE SPECTRA PARAMETERS FOR ALTITUDES ABOVE THE 304.8 METER LEVEL

Altitude (m)	σ (m sec^{-1})	L (m)
304.8 - 762	3.11	300
762 - 1,524	4.18	533
1,524 - 3,048	4.08	533
3,048 - 6,096	3.66	533
6,096 - 9,144	3.14	533
9,144 - 10,000	3.14	533

TABLE 3.2.2.1.17.5
DRYDEN TURBULENCE SPECTRA PARAMETERS FOR ALTITUDES BELOW THE 304.8 METER LEVEL

Component	$\sigma_{18.3}$ (m sec^{-1})	p (non-dimensional)	$L_{18.3}$ (m)	q (non-dimensional)
Longitudinal (u)	2.54	0.075	31.5	0.65
Lateral (v)	1.94	0.171	18.4	0.83
Vertical (w)	1.43	0.28	10.0	1.05

3.2.2.1.17.1.6 Synthetic Vector Wind Profile with Gusts

The Space Shuttle shall be capable of withstanding synthetic vector wind profiles with spectral gusts (Paragraph 3.2.2.1.17.1.6.1) or discrete gusts (Paragraph 3.2.2.1.17.1.6.2). The spectral model contains gusts from all scale sizes effecting responses from the Space Shuttle while discrete gusts from wavelengths of 60 m up to a value sufficiently large to encompass all significant responses of the Shuttle would have to be individually applied.

3.2.2.1.17.1.6.1 Synthetic Vector Wind Profile with Spectral Gusts

The synthetic vector wind profile (with 0.85 factor on wind shears) without discrete gust shall be combined with the gust spectrum response calculations. In place of the discrete gust, a spectral representation of gusts shall be used. The loads resulting from

the synthetic wind vector profile can be calculated with a rigid or elastic body trajectory simulation.

During the boost phase the Space Shuttle shall have the capability to withstand the spectral gust environment with the following spectral density function:

$$E(k) = \frac{683.4(4000k)^{1.62}}{1 + 0.0067(4000k)^{4.05}} \qquad \text{(Eq. 5)}$$

The spectrum E(k) is defined so that integration over the domain $0 \leq k \leq \infty$ yields the variance of turbulence. In Equation (5), E(k) is the gust spectral density function with units (m^2sec^{-2}) (cycles m^{-1})$^{-1}$ at wave number k (cycles m^{-1}). The associated design turbulence loads and responses shall be obtained by multiplying the load and response standard deviations by a factor of three. The loads obtained from applications of this turbulence power spectrum shall be added to the rigid vehicle loads resulting from the use of the synthetic wind vector profile (with 0.85 factor on shears) without a discrete gust. This wind shear/spectrum combination will result in a 1% risk condition for the elastic vehicle design studies, when employed with the design steady state wind vector profile. See Paragraph 5.3.8.2 of TMX-64757 for details concerning Equation (5).

3.2.2.1.17.1.6.2 Synthetic Vector Wind Profile with Discrete Gust

Discrete gusts models shall be imposed upon the synthetic vector wind profiles. Two discrete gust models are available. When used with the synthetic vector wind profile the magnitude of the gust is reduced by applying a factor of 0.85 and is applied in the direction that produces the most adverse vehicle response. The gust thickness parameter shall range over wavelengths from 60 m (gust half-width of 30 m) up to a value sufficiently large to encompass the significant periods of response of the Space Shuttle.

The design discrete gust is given by Equations (2.69) through (2.72) of Paragraph 2.3.8.1 of TM-4511, Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development.

An alternate discrete gust model is applicable only for the Orbiter vertical tail. The alternate discrete gust model is derived from Figure 2-42 (which relates the non-dimensional discrete gust magnitude with non-dimensional gust half-width) and Table 2-79B (which presents the mean turbulence standard deviations and length scales as a function of altitude) of TM-4511. The methodology to compute discrete longitudinal gust magnitude (i.e., the horizontal gust in the direction of the steady state wind) as a function of altitude and gust half-width is presented in NASA-MSFC EL-23 (13-97). The alternate discrete longitudinal gust magnitudes versus gust half-width that shall be used are for severe turbulence as given in Table 4 and illustrated in Figure 2 of NASA-MSFC EL-23 (13-97).

3.2.2.1.17.2 Orbiter Structural Loads and Excursions

Structural loads design data are defined in STS85-0169, Structural Design Loads Data Book. These data are the results of flexible body analyses, and consist of limit shear, axial load, bending moment, and torque. Acceleration data, attachment fitting and aerodynamic surface loads are also included. Detailed descriptions of design conditions and resultant structural loads for Orbiter are presented in Volume 2, Book 3, Section 6, Orbiter Ferry Flight Loads.

3.2.2.1.18 (Reserved)

3.2.2.1.19 (Reserved)

3.2.2.1.20 (Reserved)

3.2.2.1.21 (Reserved)

3.2.2.1.22 (Reserved)

3.2.2.1.23 (Reserved)

3.2.2.1.24 Preloaded Bolts

Preloaded bolted joints designed after September 1, 1989, shall be in accordance with NSTS 08307 - Book 1, Criteria for Preloaded Bolts, Closeout Requirements (Baseline Pending). Designs in progress prior to the effective date have the option of using these criteria.

3.2.2.2 Ground System Design

The ETR support facilities for the Space Shuttle shall be capable of structurally withstanding the ground wind environments as given in document KSC-STD-Z-0004, the Design of Structural Steel Building and Framework, Standard for.

3.2.2.2.1 Ground Facilities

New ground facilities shall be designed in accordance with NPR 8820.2, Facility Project Implementation Guide, specific state uniform building codes, government engineering standards and applicable industry and local standards.

Facility cranes, hoists and lifting devices shall be designed in accordance with applicable Occupational Safety and Health Administration (OSHA) standards. In addition, the design of cranes, hoists and lifting devices shall be in accordance with NASA-STD-8719.9, NASA Standard for Lifting Devices and Equipment.

3.2.2.2.2 Ground Support Equipment (GSE)

GSE (See Paragraph 6.1.6) required by the Shuttle Ground Operations Systems shall be designed in accordance with SW-E-0002 - Books 3 and 4, Ground Support Equipment General Design Requirements for Closeout Requirements - Book 3, Existing GSE, Book 4 - New GSE.

3.2.2.2.3 (Reserved)

3.2.2.2.4 (Reserved)

3.2.2.2.5 (Reserved)

3.2.2.2.6 GSE Control and Monitoring

When hazardous operations or safety dictates, servicing equipment and GSE used during test operations shall interface with ground stations to provide for control and status monitoring.

3.2.3 Logistics

Shuttle System logistics requirements are specified in NSTS 07700, Volume XX - Book 2, Appendix 12, Program Logistics and Supportability Closeout Requirements.

3.2.4 Personnel and Training

Shuttle System personnel and training requirements are specified in NSTS 07700, Volume XX - Book 2, Appendix 12.

3.2.5 (Reserved)

3.2.6 (Reserved)

3.2.7 (Reserved)

3.2.8 (Reserved)

3.2.9 (Reserved)

3.2.10 Operations and Maintenance Requirements and Specifications (OMRS)

All preflight, flight and post-flight assembly level maintenance, servicing, inspection, time/age/cycle, performance analysis, trending, and functional validation and checkout requirements for flight elements, payloads, and ground systems are defined in NSTS 08171, Operations and Maintenance Requirements and Specifications Documents (OMRSD). Requirements for design, construction, assembly and installation are defined by released engineering and not within the OMRSD. For closeout activities, the OMRSD will be used for reference only.

3.2.10.1 File I - Introduction OMRSD

This file contains the purpose, scope, and policy of the OMRS. It includes descriptions of the document structures, contents, numbering system format, change procedure, and groundrules for the content and its changes.

3.2.10.2 (Reserved)

3.2.10.3 File III - Orbiter OMRSD

This file contains all ground operation requirements for Orbiter systems including SSME and for Orbiter-to-ground interfaces. Also included are requirements for Orbiter

(non-payload) mission kits and Orbiter experiments. NSTS 60585, End-State Subsystems Requirements Document (ESSRD), will reference the OMRSD to aid in defining subsystem safing requirements.

3.2.10.4 (Reserved)

3.2.10.5 (Reserved)

3.2.10.6 File VI - Ground System OMRSD at KSC

This file contains the requirements to verify and maintain SE/facility ground systems at KSC. For GSE that is to be utilized during closeout, associated GSE maintenance will be performed. OMRSD File 6 will be used as a reference for this maintenance.

3.2.11 (Reserved)

3.2.12 (Reserved)

3.2.13 (Reserved)

3.2.14 (Reserved)

3.2.15 (Reserved)

3.2.16 (Reserved)

3.2.17 (Reserved)

3.2.18 (Reserved)

3.2.19 (Reserved)

3.2.20 (Reserved)

3.2.21 (Reserved)

3.3 SHUTTLE VEHICLE END ITEM PERFORMANCE AND DESIGN CHARACTERISTICS

3.3.1 Orbiter Vehicle Characteristics

3.3.1.1 Orbiter Performance Characteristics

3.3.1.1.1 (Reserved)

3.3.1.1.2 (Reserved)

3.3.1.1.3 (Reserved)

3.3.1.1.4 (Reserved)

3.3.1.1.5 (Reserved)

3.3.1.1.6 (Reserved)

3.3.1.1.7 Payload Bay (PLB)/Payload Access

Physical Access in Orbiter Processing Facility (OPF) Station - The Orbiter Vehicle and ground system facility shall provide access to the PLB through the Orbiter crew compartment and by opening the Payload Bay Door (PLBD).

3.3.1.2 Orbiter Design Characteristics

3.3.1.2.1 Structure and Mechanical Subsystems

3.3.1.2.1.1 (Reserved)

3.3.1.2.1.2 (Reserved)

3.3.1.2.1.3 (Reserved)

3.3.1.2.1.4 (Reserved)

3.3.1.2.1.5 (Reserved)

3.3.1.2.1.6 (Reserved)

3.3.1.2.1.7 Orbiter External Configuration

The Orbiter shall conform to the moldline envelope specified in the Rockwell International document, MD-V70, Master Dimensions Specification. In the event of a conflict between NSTS 60585 and MD-V70, NSTS 60585 shall take precedence.

3.3.1.2.2 Orbiter Closeout Configuration

NSTS 60584, Orbiter Fleet Safing Document (OFSD), defines the requirements for safing the Orbiter fleet for long term storage and/or public display and to flag minor hazards and precautions.

NSTS 60585 defines the end-state processing requirements for each Orbiter subsystem, for compliance with NSTS 60584. After release of Orbiter vehicles from

mission status, the Orbiters shall be processed to their end-states per NSTS 60585 and all other Program-approved display and hardware re-use requirements.

3.3.1.3 Orbiter Interface Characteristics

3.3.1.3.1 (Reserved)

3.3.1.3.2 (Reserved)

3.3.1.3.3 (Reserved)

3.3.1.3.4 Orbiter Vehicle Interface with RSMEs

The Orbiter Vehicle shall interface with the RSMEs as defined in ICD 13M15000, Orbiter Vehicle/Main Engine Interface Control Document. If an interface is not utilized in closeout activities, associated Interface Control Document (ICD) requirements shall not apply. In the event of a conflict between NSTS 60585 and the ICD, NSTS 60585 shall take precedence.

3.3.1.3.5 Orbiter Vehicle Interface with Carrier Aircraft

The Orbiter Vehicle shall interface with the carrier aircraft as defined in ICD 2-17001, Orbiter/Carrier Aircraft Vehicle Interface Control Document. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply.

3.3.1.3.6 (Reserved)

3.3.1.3.7 (Reserved)

3.3.1.3.8 Orbiter Vehicle Interface with OPF

The Orbiter shall interface with the OPF as defined in ICD 2-1A002, Orbiter Processing Facility/Orbiter Maintenance Checkout Facility Interface Control Document. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply. In the event of a conflict between NSTS 60585 and the ICD, NSTS 60585 shall take precedence.

3.3.1.3.9 Orbiter Vehicle Interface with Hypergolic Maintenance Facility (HMF)

The Vehicle System, Orbiter Aft Propulsion System (APS) and Forward Reaction Control System/Subsystem (FRCS), shall interface with the HMF as defined in ICD-2-1A003, Orbiter/Hypergolic Station Interface Control Document. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply. In the event of a conflict between NSTS 60585 and the ICD, NSTS 60585 shall take precedence.

3.3.1.3.10 (Reserved)

3.3.1.3.11 (Reserved)

3.3.1.3.12 (Reserved)

3.3.1.3.13 (Reserved)

3.3.1.3.14 (Reserved)

3.3.1.3.15 Orbiter and Carrier Aircraft Interface with the Mate Demate Device

The Orbiter and Carrier Aircraft shall interface with the mate demate device as defined in ICD 2-1D004, Orbiter and Carrier Aircraft Mate/Demate Interfaces Interface Control Document.

3.3.2 (Reserved)

3.3.3 (Reserved)

3.3.4 RSME Characteristics

The RSMEs shall meet the requirements specified in ICD 13M15000. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply. In the event of a conflict between NSTS 60585 and the ICD, NSTS 60585 shall take precedence.

3.3.4.1 (Reserved)

3.3.4.2 (Reserved)

3.3.4.3 RSME Interface Characteristics

3.3.4.3.1 RSME Interface with Orbiter

See Paragraph 3.3.1.3.4 for interface requirements.

3.3.5 Shuttle Carrier Aircraft

3.3.5.1

An SCA shall be provided. The SCA shall be capable of transporting any Space Shuttle Orbiter to the destinations designated by the SSP to support delivery of the Orbiters to their final display locations.

3.3.5.1.1

The SCA shall be capable of ferrying an Orbiter weighing up to 240,000 pounds with the Center of Gravity (CG) defined in NSTS 60585. This weight includes the ferry kit items.

3.3.5.1.1.1 (Reserved)

3.3.5.1.1.2 (Reserved)

3.3.5.1.1.3 Reference Ferry Mission

The reference mission consists of three ground-air-ground cycles and 6.5 hours of flight time. The Orbiter, in ferry configuration, will weigh up to 220,000 pounds on 90% of the ferry missions and between 220,000 and 240,000 pounds on 10% of the ferry missions.

NOTE: The reference ferry mission does not change the ferry hardware ground-air-ground cycles for hardware certification.

3.3.5.2 (Reserved)

3.3.5.3

The SCA/Orbiter interface requirements are specified in Paragraph 3.3.1.3.5 of this document.

3.3.6 (Reserved)

3.3.7 (Reserved)

3.4 GROUND OPERATIONS COMPLEX PERFORMANCE AND DESIGN CHARACTERISTICS

3.4.1 KSC Landing Site

3.4.1.1 Support Requirements

Capabilities shall be provided for:

a. Reserved

b. Conventional aircraft flight crew and ground crew egress and ingress.

c. Reserved

d. Reserved

e. Conventional aircraft, landing and T-O.

f. Servicing and landing operations for the carrier aircraft.

g. Emergency operations associated with other than normal landing and post-landing operations of conventional aircraft.

h. Visual observation of the landing site for coordinating rescue and safety personnel in support of conventional aircraft.

i. Reserved

j. Reserved

k. Orbiter mate and demate with the carrier aircraft.

3.4.1.2 Design Characteristics

3.4.1.2.1 (Reserved)

3.4.1.2.2 (Reserved)

3.4.1.2.3 (Reserved)

3.4.1.2.4 Towway

A towway, capable of accommodating the Orbiter, shall be provided between the landing area and the Orbiter deservicing area.

3.4.1.3 (Reserved)

3.4.1.4 (Reserved)

3.4.1.5 (Reserved)

3.4.1.6 Meteorological Measurement Requirements

Capabilities and personnel shall be provided for:

a. Surface observations of ceiling, visibility, atmospheric pressure, temperature, dew point, wind direction and speed, and precipitation

b. Reserved

c. Digital satellite coverage and radar coverage

d. Reserved

e. Reserved

f. Capability for determining the threat of lightning

3.4.2 (Reserved)

3.4.3 (Reserved)

3.4.4 Orbiter Processing Facility

3.4.4.1 Performance Characteristics

A capability shall be provided to perform the following functions:

a. Reserved

b. Hypergolics pod removal and installation

c. Reserved

d. Reserved

e. RSME removal and installation

f. Reserved

g. Reserved

h. Installation/removal of ferry kit

i. Personnel ingress/egress into or from Orbiter

j. Reserved

k. Orbiter safing and processing to their respective end-states

3.4.4.2 Design Characteristics

3.4.4.2.1 Control/Monitor Equipment

Ground support control and monitor equipment provided by the Launch Processing System (LPS) shall interface with onboard serial digital control and data management subsystem and supporting GSE. This equipment may be controlled from the Launch Commit Criteria (LCC).

3.4.4.2.2 Environment Protection

The OPF shall be of hangar type construction and shall provide only basic protection from the elements. The air in the OPF facility shall be High Efficiency Particle Air (HEPA) filtered. Environmental Control System (ECS) purge air for the crew compartment and PLB will be provided per NSTS 60585.

3.4.4.2.3 OPF Fire Protection Water

There shall be a water spray system in the OPF to provide fire protection.

3.4.4.3 Interface Characteristics

The OPF shall interface with the Orbiter as defined in ICD-2-1A002. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply. In the event of a conflict between NSTS 60585 and the ICD, NSTS 60585 shall take precedence.

3.4.5 (Reserved)

3.4.6 (Reserved)

3.4.7 (Reserved)

3.4.8 (Reserved)

3.4.9 (Reserved)

3.4.10 (Reserved)

3.4.11 Hypergolic Maintenance and Checkout Station

3.4.11.1 Performance Characteristics

A facility shall be provided to perform the following functions off-line for the vehicle systems designated below:

3.4.11.1.1

Orbiter FRCS, Orbiter APS.

a. Drain, flush, purge and decontaminate

b. Reserved

c. Reserved

d. Storage and handling

3.4.11.1.2 Orbiter Auxiliary Power Unit (APU)

Flush and purge.

3.4.11.2 Design Characteristics

3.4.11.2.1 Facility Location and Layout

The facility shall be located such that hazardous operations will not impact other unrelated site activities and be designed so that operations and maintenance can be performed simultaneously on different modules with no operational impact.

3.4.11.2.2 HMF Fire Water Protection

There shall be a water spray system to provide fire protection in the hypergolic maintenance and checkout station.

3.4.11.3 Interface Characteristics

The HMF shall be compatible with the Orbiter module interfaces as defined in ICD-2-1A003. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply. In the event of a conflict between NSTS 60585 and the ICD, NSTS 60585 shall take precedence.

3.4.12 SSME Maintenance Station

3.4.12.1 Performance Characteristics

A capability shall be provided to perform the following functions for RSMEs:

a. Inspection

b. Repair

c. Storage

3.4.12.2 Design Characteristics

The station shall be located within an environmentally controlled enclosure.

3.4.12.3 Interface Characteristics

Interface provisions shall be compatible with the requirements of Paragraph 3.4.12.1.

3.4.13 (Reserved)

3.4.14 (Reserved)

3.4.15 (Reserved)

3.4.16 LPS Station

3.4.16.1 Performance Characteristics

A LPS shall be provided to perform monitor, control, data processing and display in support of closeout activities of Shuttle Vehicles, and ground systems. The LPS shall have the capability to exchange information with other data systems.

3.4.16.2 Design Characteristics

3.4.16.2.1 General

The LPS shall consist of an integrated network of computers, data links, displays, controls, hardware interface devices, and computer software designed to control and monitor flight systems, payloads, and those GSE and facilities utilized for direct support of vehicle activities.

3.4.16.2.2 Automated or Manual Capability

The LPS shall provide for automatic and manual sequencing and control with operator override capability.

3.4.16.2.3 Exception and Continuous Monitoring

Exception and continuous monitoring capability is required. A capability shall exist to select the specific measurements to be monitored and to revise the limits associated with exception monitoring.

3.4.16.2.4 (Reserved)

3.4.16.2.5 Fault Isolation

The capability to perform fault isolation to an Line Replaceable Unit (LRU) or group of LRUs within the flight or ground systems shall be provided by the combined onboard and ground system (Reference NSTS 07700-10-MVP-01, Shuttle Master Verification Plan, Volume I, General Approach and Guidelines, Paragraph 3.6.2).

3.4.16.2.6 (Reserved)

3.4.16.2.7 Realtime Data Display

The operator engineer shall be provided the capability to access Shuttle and ground systems test data in realtime for display as required to support closeout activities.

3.4.16.2.8 (Reserved)

3.4.16.2.9 Historical Test Data Retrieval and Display

A capability shall be provided to retrieve and display historical test data.

3.4.16.2.10 Interactive Data Analysis

Provision shall be made to access recorded ground turnaround operations data via remote terminals.

3.4.16.2.11 (Reserved)

3.4.16.2.12 (Reserved)

3.4.16.2.13 LPS Software System

The LPS software system shall provide a medium by which the test engineer can effectively and efficiently communicate with the test article through the LPS computer system. Automated checkout programs shall be operable in the operator intervention mode as well as automatic mode.

3.4.16.2.14 Post-Test Data Reduction and Evaluation

The LPS shall have a capability to provide assessment of system anomalies encountered during closeout activities. In addition, the capability for assessment of selected flight data is required to support closeout activities.

3.4.16.3 Interface Characteristics

The LPS shall interface with other Shuttle elements and data systems as defined in NSTS 07700, Volume V, Information Management Requirements, and NSTS 07700, Volume XVIII, ICD 2-0A003 and SS-P-0002-150, Computer Program Development Specification, as required to support closeout activities.

3.4.17 (Reserved)

3.4.18 Orbiter and Carrier Aircraft Mate/Demate Station

3.4.18.1 Performance Characteristics

The capability shall be provided to mate and demate the Space Shuttle Orbiter and the SCA, to support ferry missions.

3.4.18.2 Design Characteristics

3.4.18.2.1 Mate/Demate Device

The mate/demate device, shall provide the capability to perform the physical mating. The demate operation shall be essentially the same, except done in reverse sequence.

3.4.18.3 Interface Characteristics

The Orbiter and carrier aircraft mate/demate station shall interface with the Orbiter and carrier aircraft as defined in ICD-2-1D004. If an interface is not utilized in closeout activities, associated ICD requirements shall not apply.

3.4.19 (Reserved)

3.4.20 (Reserved)

3.4.21 (Reserved)

3.4.22 (Reserved)

3.4.23 (Reserved)

3.4.24 (Reserved)

3.4.25 Limitations for Non-Flight Materials and Equipment

This section identifies specific non-flight materials and equipment approved for use, prohibited from use, or selected materials with use limitations, in and around the Orbiter Vehicles, which includes non-integrated Orbital Maneuvering System/Subsystem (OMS)/Reaction Control System/Subsystem (RCS) and FRCS modules.

The following definition is applicable to this section:

Around - When used in the context of physical proximity to the Orbiter Vehicle, the word “around” is defined as “in contact with the Orbiter exterior surfaces or within approximately three feet of the Orbiter exterior moldline (PLBD closed).” When the PLBD are open, the area inside the envelope of the closed doors and the area within three feet of the inner surfaces of the opened doors are considered “in” the Orbiter.

3.4.25.1 Hazardous Materials and Equipment Approved for Use In and Around the Orbiter

This is a list of materials and equipment that are approved for use in and around the Orbiter. Some of the listed items are approved without limitations and some are approved with specified limitations.

3.4.25.1.1 Flammable and Non-Flammable Liquids

a. Specific Requirements

   1. All hazardous liquids shall be in shatterproof containers equipped with leakproof closures that can be positively secured in the closed position. The containers shall be compatible with the contents.

   2. All containers shall be labeled to identify the contents and specifications applicable to the contents.

3. Hazardous liquids shall be delivered to the Orbiter in the containers specified for use. There shall be no transfer of hazardous liquids from one container to another in or around the Orbiter.

4. All hazardous liquids shall be used in compliance with applicable KSC safety and environmental health requirements.

5. Flammable liquids shall not be used within 10 feet of heat-producing equipment (reference FSOP 6100, United Space Alliance Florida Safety Operating Plan).

6. Electrical connections shall not be made or broken in any Orbiter interior compartment when flammable solvents or gases are being used in the compartment.

7. Flammable liquids shall not be used in Orbiter interior compartments unless air is supplied to the compartment in accordance with the following:

   (a) Configuration Management (CM): Per NSTS 60585

   (b) PLB: Per NSTS 60585

   (c) Aft Compartment: Per NSTS 60585

   (d) Wings: As approved by Safety

   (e) Wheel Wells: As approved by Safety

8. Vacuum cleaning operations in any Orbiter interior compartment may occur simultaneously with use of flammable liquids, vapors, or gases as long as the hand-held wand is grounded and the vacuum system is intrinsically safe or meets National Fire Protection Association (NFPA) Class I, Div. 1 requirements. Unclassified electrical vacuum equipment may also be used in the same area with the use of flammable liquids, vapors or gases, as long as there is a minimum clearance of 3 feet spherical, 10 feet horizontally and at least 18 inches off the floor surface. This clearance is between the electrical source/vacuum wand and the flammable liquid application area. Normal operation may commence when the application area is dry to the touch. All vacuum operations shall halt immediately if a spill occurs.

9. Chlorinated hydrocarbons (such as Freon 12, Freon TF, Trichloroethane, HCFC-22 [Freeze-Mist II], and HFC-134a [1,1,1,2 TFE]) shall not be used in the Orbiter CM three hours prior to and during the period of time when LiOH canisters are installed in the CM.

10. Material supplied by the manufacturer in aerosol containers shall be allowed for use in packaged size.

b. Approved Flammable Solvents

Solvent	Specification	Limitations/Remarks
Acetone	American Society for Testing and Materials (ASTM) D329	Avoid contact with polycarbonates to prevent crazing.
Ethyl Alcohol	MIL-E-51454	
Ethyl Alcohol, Denatured	O-E-760	
Isopropyl Alcohol (IPA)	TT-I-735	
IPA/Deionized (DI) Water 75/25	TT-I-735	
Lacquer Thinner	TT-T-266	For external use only. Avoid contact with polycarbonates to prevent crazing.
Methyl Ethyl Ketone	ASTM D740	
Naphtha, Aliphatic	TT-N-95	
Naphtha/ IPA 50/50	TT-N-95/ TT-I-735	
Polyvinyl Alcohol		Thermal Protection System (TPS) use only.
Toluene	TT-T-548, A-A-59107	

c. Approved Flammable Coatings

Coating	Specification	Limitations/Remarks
Ablative Primer	RB0120-078	
Corrosion Preventive Compounds	MB0110-020 MB0110-021 MB0140-011	
Dapco 8009 Sealant	MB0120-065	Quantities limited to "Flammable Primer" maximums listed in 3.4.25.1.1e
Epoxy Adhesive	Eccobond 57C	Catalyst also permitted.
Lubri-Bond 220 Dry Film Lubricant	MIL-L-23398	Maximum (1) 16-ounce can permitted. Minimize amount used. Shall not be used near ignition sources.
Edge Sealant	3M ScotchCal 3950	
Humiseal Acrylic Coating	1A20, 1B12, 1B31, 2A64 parts A and B MB0125-057	Limited to 1 ounce per operation.
Loctite Primer	MIL-S-22473 Grade N, MIL-S-22473 Grade T	
RelyOn Disinfectant		
Silicone Primer	MB0125-050	
Solder Flux	Kester 1554	Limited to 1 ounce per operation.
Solithane 113 Adhesive and Catalyst		
Superglue	MIL-A-46050	

d. Approved Non-Flammable Solvents

Solvent	Specification	Limitations/Remarks
Freon TF (Trichloro trifluoroethane)	MIL-C-81302	
Vertrel XF	RB0210-030, Type IV	
1,1,1-Trichloroethane	MIL-T-81533	

e. Approved Quantities of Hazardous Liquids

The maximum quantities of hazardous liquids, combined flammable and nonflammable permitted in Orbiter interior compartments and on Orbiter exterior surfaces are listed below:

Location	Total Combined Maximum Quantity	Flammable Solvent	Flammable Primer	Non-Flammable Solvent
		Maximum Quantity per container	Maximum Quantity per container	Maximum Quantity per container
CM (including White Room)	8 fl oz	2 fl oz (1)	4 fl oz	4 fl oz
PLB (Mid-body)	20 fl oz (2)	4 fl oz (2)	4 fl oz	4 fl oz
Aft Compartment	20 fl oz (3)	4 fl oz (3)	4 fl oz	4 fl oz (3)
Wheel Well (each)	4 fl oz	4 fl oz	4 fl oz	4 fl oz
Wing Interior (each)	4 fl oz	4 fl oz	4 fl oz	4 fl oz
Orbiter Exterior	As required to support work			

Section e Table Notes:

1. Four fluid ounces of one of the following solvents may be brought into the CM provided it is in a Ziploc-type bag with enough low-lint wipes to completely absorb all solvent. Approved solvents are: Ethyl Alcohol, Denatured Ethyl Alcohol, Isopropyl Alcohol (IPA), Rely On Disinfectant, and IPA/DI Water 75/25. All other flammable solvents shall be limited to 2 fl oz in the CM. The Orbiter Integrity Clerk shall witness the solvent being poured into the Ziploc-type bag to ensure that the permissible quantity is not exceeded and that the solvent is completely absorbed by low-lint wipes.

2. Up to 20 bottles containing 8 fluid ounces of IPA and/or IPA/water may be taken into the mid-body in the OPF for mid-body cleaning.

3. Stainless steel 32 ounce capacity pressurized rinsers, Sure Shot: Model 2000 or Gillman: Model 70502B, may be used for IPA or Freon 113. Quantity of solvent in each rinser is limited to 16 ounces.

3.4.25.1.2 CORROSIVE MATERIALS

Corrosive materials approved for use in and around the Orbiter consist of etchants, acids and dye penetrant materials.

a. Specific Requirements

1. Corrosive materials shall be kept in shatterproof containers equipped with leak-proof closures that can be positively secured in the closed position. The container shall be compatible with the contents.

2. Non-Destructive Evaluation (NDE) materials may remain in the original containers supplied by the vendor of the materials provided that the quantities do not exceed those specified in Table 3.4.25.1.2.

3. All containers shall be labeled to identify the contents and specifications applicable to the contents.

4. Corrosive materials shall be delivered to the Orbiter in the containers specified for use. There shall be no transfer of corrosive materials from one container to another in or around the Orbiter.

5. Spills of corrosive materials shall be cleaned up immediately in accordance with approved emergency cleanup procedures.

b. Approved Etchants/Strippers and Acids

Material	Specification	Limitations/Remarks
Chromate Conversion Coating	MA0608-301	
Diversey 514 Neutralizer or MB0210-002	MT0501-504	
Etchant	MPP RA1103-003-50	
Nitric Acid, Technical Grade	O-N-350, A-A-59105	
Oxone Monopersulfate	6% Oxone Monopersulfate Mixed with 94% Deionized Water	
Iridite 14-2	RA0109-031	
Pasa Jell 105/107	PRC- Desoto International	
Potable Water Sampling Preservatives	Hydrochloric acid, 34-37% as HCl Nitric Acid, 67-70% as HNO_3	1 ml 1 ml For potable water sampling only. Work Authorization Document (WAD) must be reviewed by safety.
Sulfuric Acid/Sodium Dichromate Paste	MA0110-305	
Tetra Etch	W.L. Gore & Associates Inc.	
Turco Metal Glo 6		
Turco 4909	RA0109-031	
Turco 5361 Sodium Hydroxide Paste Etch or Equivalent	MT0501-504 or Other Aluminum Etching Process	

c. Approved Quantities of Corrosive Materials

The maximum quantities of corrosive materials allowed for use in Orbiter interior compartments and on external surfaces is listed in Table 3.4.25.1.2.

TABLE 3.4.25.1.2
APPROVED QUANTITIES OF CORROSIVE MATERIALS

Location	Maximum Total Quantity	Corrosive Material Maximum Quantity in Container
CM (including White Room)	4 fl oz (1)	4 fl oz
PLB (Mid-body)	8 fl oz	4 fl oz
Aft Compartment	8 fl oz	4 fl oz
Wheel Well (each)	4 fl oz	4 fl oz
Wing Interior (each)	4 fl oz	4 fl oz
All Orbiter Exterior Surfaces	8 fl oz	4 fl oz

NOTE: 1. Oxone Monopersulfate solution quantity allowed is two each one quart containers.

3.4.25.2 Equipment Containing Mercury Approved for Use in and Around the Orbiter

Nomenclature	Part Number	Limitations/Remarks
Shuttle Work Light	K&H Industries: 1550-SB, Series T-8 1350-550, Series 550	1. As-delivered butyl acetate covers shall be replaced with Lexan covers or covered with L-T-100 tape. 2. Shall not be used in areas classified as "Hazardous."
Work Lights	K&H Industries: EP300-013 EP300-026	Permitted for Hazardous Operations. Meets KSC-STD-E-0002 requirements.
Portable UV Light	11EH-F-090UV	1. Approved for dye penetrant inspection. 2. Glass face shall be taped with approved tape to contain all glass fragments in case of breakage.
Safety Light	Daniel Woodhead No. 1036	1. As-delivered butyl acetate covers shall be replaced with Lexan covers or covered with L-T-100 tape. 2. Opening in cover shall be taped with L-T-100 tape.
Flood Lights	TR-90-PLH	1. As-delivered butyl acetate covers shall be replaced with Lexan covers or covered with L-T-100 tape. 2. Neoprene handles/end caps shall be taped with L-T-80 tape.

Where the use of equipment containing mercury cannot be avoided, the following information shall be documented before using the equipment in the spacecraft:

a. A determination of the amount of mercury contained in the equipment.

b. A determination of the protection necessary to prevent the release of mercury.

c. A plan for decontamination in the event mercury released.

Work Light	NCI Lighting WZ55NCI	Permitted in forward crew compartment. Shall not be left on unattended, used in the presence of flammable vapors, or used during RF silence.
Work Lights	Daniel Woodhead Models 1061- PL, 1093-3, 1095-3, 1097-3,1099-3	Lamp housings shall remain sealed while in and around the Orbiter. Shall be removed from the area to exchange light bulbs. Works lights containing broken bulbs shall remain sealed until removed from the area.

3.5 OPERABILITY

3.5.1 Reliability

Shuttle system reliability shall be in accordance with NSTS 5300.4(1D-2), Safety, Reliability, Maintainability and Quality Provision for the Space Shuttle Program, Paragraph 1D301.6 only to the extent necessary to support ferry flight safety, transportation safety and disposition to safe end-state. Deliverable data will be in accordance with the applicable contract Data Requirements Description (DRD)/Data Requirements List (DRL).

3.5.1.1 Flight System Reliability

3.5.1.1.1 Flight Vehicle Subsystem Reliability

3.5.1.1.1.1 Primary Structure, Thermal Protection, Pressure Vessels

The primary structure, Thermal Protection System (TPS), and pressure vessels subsystems shall be designed to preclude failure by use of adequate design safety factors, relief provisions, fracture control, or safe life and/or fail safe characteristics.

3.5.1.1.2 (Reserved)

3.5.1.1.3 (Reserved)

3.5.1.1.4 (Reserved)

3.5.1.1.5 (Reserved)

3.5.1.1.6 Arming/Disarming Explosives

Provisions shall be made to promptly disarm explosive devices when no longer needed.

3.5.1.2 Ground System Reliability

3.5.1.2.1 (Reserved)

3.5.1.2.1.1 GSE Fail Safe

All GSE (except primary structure and pressure vessels) shall be designed to sustain a failure without causing loss of vehicle systems or loss of personnel capability (fail safe - see Paragraph 6.1.1). GSE structure and pressure vessels shall be designed with safety factors as specified in Paragraph 3.2.2.2.2.

3.5.1.2.2 GSE Failure Protection

GSE failures shall not propagate sequentially in associated SE or induce a failure in the flight vehicle.

3.5.1.2.3 GSE Input Verification

GSE used for flight vehicle subsystem operation, test, checkout, or maintenance shall provide for routine verification tests before a flight vehicle connection is made to assure

that each fluid or electrical/electronic input to the vehicle is compatible with the related vehicle subsystems.

3.5.1.2.4 GSE Automatic Switching

Provision shall be made for automatic switching to a safe mode of operation for GSE failure modes which could result in the loss of a critical function (see Paragraph 6.1.3) and where there is not enough time for manual correction of the condition. Caution and warning shall be provided for these time-critical functions.

3.5.2 Maintainability

3.5.2.1 (Reserved)

3.5.2.2 (Reserved)

3.5.2.3 (Reserved)

3.5.2.3.1 Turnaround Support

The ground system shall be capable of a minimum design life in accordance with Paragraph 3.5.3.1.

3.5.3 Shuttle Flight Vehicle and Government Furnished Equipment (GFE) Life

3.5.3.1 Design-Life

Each Space Shuttle element and GSE shall meet the design-life (see Paragraph 6.1.12) required to support SSP closeout activities. Reusable flight elements shall be certified for all natural and induced flight and ground environments which they experience during SSP closeout. This includes handling, storage, transportation, and flight environments. Refurbishment and/or checkout between missions shall be performed to assure the operational requirements are met for the planned mission.

3.5.3.1.1 (Reserved)

3.5.3.1.2 (Reserved)

3.5.3.1.3 (Reserved)

3.5.3.1.4 Carrier Aircraft

The carrier aircraft shall have an operating life of 270 ferry missions.

3.5.4 Safety

Shuttle system safety shall be in accordance with NSTS 5300.4(1D-2), Chapter 2 only to the extent necessary to support ferry flight safety, transportation safety and disposition to safe end-state. Deliverable data will be in accordance with the applicable contract DRL and/or DRD.

3.5.4.1 Flight System Safety

3.5.4.1.1 (Reserved)

3.5.4.1.2 (Reserved)

3.5.4.1.3 (Reserved)

3.5.4.1.4 Materials

Flight vehicle materials shall be selected with characteristics which do not present hazards to personnel or equipment in their intended use or environment.

3.5.4.1.5 Isolation of Hazardous Conditions

Provisions shall be made to physically isolate or separate hazardous, incompatible subsystems, materials, or environments.

3.5.4.1.6 (Reserved)

3.5.4.1.7 (Reserved)

3.5.4.1.8 (Reserved)

3.5.4.1.9 (Reserved)

3.5.4.1.10 (Reserved)

3.5.4.1.11 Pressure Vessel Protection

Pressure vessels shall be protected against overpressurization or underpressurization which could be hazardous to personnel or flight vehicle.

3.5.4.2 Ground System Safety

3.5.4.2.1 Facilities and Non-Flight Equipment

Facilities and non-flight equipment (see Paragraph 6.1.5) shall be designed to preclude or counteract failures and hazards that could jeopardize personnel safety, damage, or degrade the vehicle, facilities, and GSE.

3.5.4.2.2 Flight Vehicle Safing for Ground Operations

Flight vehicle safing performed during closeout shall be provided by GSE.

3.5.4.2.3 Emergency Egress

The ground system shall facilitate emergency egress of flight crews, passengers, and ground crews to a safe area during all ground operations.

3.5.4.2.4 Hazardous Gas Detection and Disposal

The ground system shall provide for safe disposal of hazardous vented or boil-off gases. Detection of hazardous gases shall be required in ground systems' critical areas

and closed compartments where such detection is critical to personnel safety or ground operations.

3.5.4.2.5 (Reserved)

3.5.4.2.6 (Reserved)

3.5.4.2.7 (Reserved)

3.5.4.2.8 Material Handling Equipment and Operating Personnel

Material handling equipment and operating personnel shall be certified in accordance with the requirement of NSTS 08114, Requirements for Periodic Certification of Material Handling Equipment and Operating Personnel.

3.5.4.2.9 Laser Applications

Lasers and/or laser systems shall be properly operated, handled, and maintained such that they do not present a hazard to personnel. Human laser exposure safety levels and guidelines are defined in ANSI/Z136.1-1993, American National Standard for Safe Use of Lasers. Lasers (Class 3B and 4) have the potential to produce damage to human eyes and/or skin if illuminated above specified energy/power density levels for specified periods of time. Lower power (low eye or skin damage risk from limited exposure) Continuous-Wave (CW) lasers operating in the visible frequency spectrum can cause temporary sight impairments such as startle, glare, flash-blindness, and afterimage.

As such, a laser environment hazard assessment is required (considering the operation, handling, and maintenance of lasers in conjunction with the Space Shuttle Vehicle [SSV]) to ensure personnel safety in SSV closeout operations.

Basic control methods available to limit personnel exposure to safe levels include laser distance and/or operational constraints. Distance constraints ensure that operating lasers are kept at a safe distance from areas where personnel could be illuminated such that the maximum permitted laser exposure levels are not exceeded. When distance constraints are not practical or cannot be met, some form of operational constraint must be used. Operational constraints may include preventing the laser beam from radiating in directions that could illuminate personnel (i.e., beam stops, shutters, firm laser mount, etc.), or to turn the laser off or reduce its power level when radiating in those directions.

3.5.5 (Reserved)

3.5.6 Transportability

Each Shuttle System element (or element components), when protected in accordance with the requirements of Paragraph 5.0 shall be capable of being handled and transported from its fabrication site to its final operational position without degradation of reliability. The condition of flight elements after transport shall be acceptable, subject to wear from normal use during transport modes.

3.5.6.1 Handling, Packaging and Transportation Compatibility

Shuttle System elements (or element components) shall be compatible with the handling, packaging, and transportation systems to the extent that:

a. The size and weight of the element or element component does not exceed the limitations of feasible handling, packaging, and transportation systems.

b. No loads are induced in the element during transportation and handling which will produce stresses, internal loads, or deflections in excess of that for which the element has been designed and certified.

c. The element is adequately protected against natural environments during transportation and handling.

3.5.7 Hazardous Materials and Components

Hazardous materials and components (i.e., fuels, oxidizers, pyrotechnic devices) shall be used, handled, and maintained in a manner that will not constitute a hazard to personnel, vehicle, equipment, and/or ferry flight.

3.6 SYSTEM DESIGN AND CONSTRUCTION STANDARDS

3.6.1 Selection of Specifications and Standards

Specifications and standards for use in the design and construction of the Space Shuttle System (SSS) shall be selected in accordance with MIL-STD-143B, Standards and Specifications, Order of Precedence for Selection of, with the exception that NASA Documents, where specified, shall take precedence.

3.6.2 Materials, Parts and Processes

3.6.2.1 Materials and Processes

Materials and processes, except those for new GSE, shall be selected in accordance with SE-R-0006, except (1) MIL-STD-1595, Qualifications of Aircraft, Missile and Aerospace Fusion Welders, may be used in place of MIL-T-5021, Test, Aircraft and Missile Welding Operators Qualification, for welding operator qualification and (2) NASA-STD-6001, Flammability, Odor, Offgassing, and Compatibility Requirements and Test Procedures for Materials in Environments that Support Combustion, may be used in lieu of NHB 8060.1A. GSE covered by SE-R-0006 shall be limited to only that equipment which enters the vehicle or to equipment where GSE hazardous fluid/gas metals compatibility or induced contaminations can adversely affect flight hardware. The design requirements for new GSE are defined in Paragraph 3.6.16 of this document. Materials and processes may be selected in accordance with MSFC-STD-506, Material and Process Control Standard, in lieu of SE-R-0006 for equipment designed after December 1986.

3.6.3 Parts Selection

Electronic, Electrical, Electromechanical (EEE), mechanical and fluid parts for flight and GSE use shall be selected from the applicable NASA or element projects parts lists, when available, unless specific approval to use nonstandard or otherwise non-conforming parts is obtained from the applicable project manager.

3.6.4 Moisture and Fungus Resistance

Materials which are non-nutrient to the fungi defined in MIL-STD-810, Material Standards for Environmental Test Methods, Method 508 should be used in the Orbiter crew compartment and in all flight and ground systems fluid vents, dump systems, and relief systems. When fungus nutrient materials must be used, they should be hermetically sealed or treated to prevent fungus growth for the effective lifetime of the component. Materials not meeting this requirement shall be identified as a limited life component and shall identify any action required such as inspection, maintenance, or replacement periods. Fungus treatment should not adversely affect unit performance or service life. Materials so treated should be protected from moisture or protective agent. Fungus resistant materials are listed in MIL-STD-454, Standard General Requirements for Electronic Equipment, Requirement No. 4, or MIL-HDBK-454, General Guidelines for Electronic Equipment, Guideline No. 4.

3.6.5 Corrosion of Metal Parts

3.6.5.1 Flight System Corrosion

3.6.5.1.1 Stress Corrosion

SE-R-0006 shall be used for design and materials selection for controlling stress corrosion cracking, except MSFC-SPEC-522B, Design Criteria for Controlling Stress Corrosion Cracking, may be used in lieu of MSFC-SPEC-522A, Design Criteria for Controlling Stress Corrosion Cracking - Electronics Control Unit (ECU) Critical Review (CDR). MSFC-STD-3029, Guidelines for the Selection of Metallic Materials for Stress Corrosion Cracking Resistance in Sodium Chloride Environments, may be used in lieu of MSFC-SPEC-522A for new designs effective November 15, 2000. Stress corrosion control on the Orbiter will be per SD72-SH-0172C, RI Material Control Plan, in lieu of MSFC-SPEC-522A. MSFC-STD-506 may be used for design and materials selection for controlling stress corrosion cracking in lieu of SE-R-0006 for equipment designed after December 1986.

3.6.5.1.2 Corrosion Protection

Corrosion resistant metals shall be used wherever possible. The use of dissimilar metals, finishes, and coatings shall comply with the requirements of MSFC-SPEC-250, Protective Finishes for Space Vehicle Structures and Associated Flight Equipment, General Specification for.

3.6.5.2 Ground System Corrosion

3.6.5.2.1 Corrosion Protection

The use of dissimilar metal, finish, and coatings shall comply with the requirements of MSFC-SPEC-250, except KSC may use KSC-STD-C-0001B, Protective Coating of Carbon Steel, Stainless Steel and Aluminum on Launch Structures and GSE, for protective coatings.

3.6.6 (Reserved)

3.6.7 (Reserved)

3.6.8 Identification and Marking

The identification and marking of Shuttle System equipment shall be in accordance with MIL-STD-130D, Identification and Marking of U.S. Military Property, except that the "design activity code", "manufacturer's trademark" and "licensor code identification", need not be combined with the part number when marking parts and assemblies. The identification and marking of GFE furnished by JSC may be in accordance with MIL-STD-130 or MSC-SPEC-M-1A, Identification and Marking. Pipe, hose, and tube lines of flight vehicles only shall be marked in accordance with MIL-STD-1247B, Markings, Functions and Hazard Designations of Hose, Pipe, and Tube Lines for Aircraft, Missiles and Space Systems. The requirement for marking tube lines is not applicable to the helium injection tube; however, the upstream and downstream tube assemblies shall be identified per MIL-STD-1247B. GSE fluid lines and compressed gas cylinders shall be marked in accordance with MIL-STD-101B, Color Code for Pipelines and for Compressed Gas Cylinders. Direct electro-chemical etched markings may be used when other marking is not feasible. Requirements shall conform to the requirements of MIL-STD-129E, Marking for Shipment and Storage, or FED-STD-123E, Marking for Shipment (Civil Agencies).

3.6.9 (Reserved)

3.6.10 (Reserved)

3.6.11 Coordinate System Standards

Coordinate system standards for the Shuttle System are defined in TMX-58153, Coordinate Systems for the Space Shuttle Program.

3.6.12 Contamination Control

3.6.12.1 System Contamination Control

Contamination of the SSS shall be controlled to assure system safety necessary to support ferry flight safety, transportation safety and disposition to safe end-state. When new critical interfaces are required, control shall be implemented by a coordinated program from design concept through procurement, fabrication, assembly, test, storage, delivery, operations, and maintenance of the Shuttle System. This program shall comply with the requirements of SN-C-0005, Contamination Control Requirements,

except for the Orbiter and OPF bays. Selection of system design shall include self-cleaning (filtering) protection compatible with component sensitivity.

For the purposes of contamination control, each Orbiter and OPF bay is defined as a Good Housekeeping Area (GHA). The GHAs shall maintained at a cleanliness level of Generally Clean (GC).

GC - A cleanliness level signifying freedom from manufacturing residue, dirt, oil, grease, processing debris, or other extraneous contamination. The distinction between Visually Clean (VC) and GC is subjective, but a VC area and/or part will have been vacuumed and/or solvent-wiped and/or dried; whereas, a GC area and/or part will be vacuumed and/or soap-and-water washed and/or dried.

GHA - A GHA utilizes conventional techniques in achieving and maintaining cleanliness. Operations that generate contamination are minimized, but where necessary, operations are controlled and the contaminants are removed as soon as practical. A GHA has a surface cleanliness level of GC.

For associated systems that are to remain functional during closeout activities, fluid particulate cleanliness shall be maintained at acceptable levels for fluids used to service flight elements or major test articles by the use of either a qualified interface filter, a qualified final filter, or approved final filter rationale as specified in SE-S-0073 - Book 1, Specification Fluid Procurement and Use Control Closeout Requirements.

Final filters, interface filters, and interface filter/disconnect assemblies shall be qualified as specified in SE-S-0073 - Book 1.

Fluids used in acceptance and qualification of components, and subsequently in assembly of or use in higher level assemblies, subsystems, or systems for verification and operation shall meet the purity cleanliness, and analysis requirements of SE-S-0073 - Book 1. Fluids or fluid components certified or acceptance tested to fluid specifications and or processes prior to SE-S-0073, Revision E, are acceptable for use in the Shuttle fluid systems if those fluids and or processes used are verified by the project elements to be compatible with the requirements of SE-S-0073, Revision E.

Equipment designed specifically for the SSP shall comply with the specified requirements. Selection of off-the-shelf (see Paragraph 6.1.2) equipment for application to the SSP shall comply with the intent of these requirements.

3.6.12.1.1 Filters

3.6.12.1.1.1 Performance Requirements

Filters for flight equipment or GSE final or interface filters shall perform their intended requirements of filtering fluids to restrict downstream fluid contamination levels or to serve as debris screens to protect downstream systems from particles which would degrade systems capability.

3.6.12.1.1.1.1 Maximum Particle Size

3.6.12.1.1.1.1.1

Filters shall remove from the fluid all particulates consistent with acceptable operation of the downstream system if the system is to remain functional during closeout, or be consistent with the requirements of SE-S-0073 - Book 1, as applicable.

3.6.12.1.1.1.2 Contamination Tolerance

3.6.12.1.1.1.2.1

The contamination tolerance of the filters shall be established by the design activity based on the upstream fluid characteristics, filter characteristics, service life requirements, and the flow rate and delta pressure requirements of the system.

3.6.12.1.1.1.3 Design Pressure Differential

The design pressure differential for fluid filters and debris screens shall be determined based on the flow characteristics, filter application in the system design, maximum flow rate, and maximum contamination level.

3.6.12.1.1.1.4 External Leakage Requirements

External leakage requirements shall be determined based on the specific application consistent with the overall system requirements.

3.6.12.1.1.2 Design Requirements

3.6.12.1.1.2.1 Burst Pressure

3.6.12.1.1.2.1.1 (Reserved)

3.6.12.1.1.2.1.2 Ground Application

Burst pressure shall be based on the maximum expected operating pressure and as specified in SW-E-0002 - Books 3 and 4.

3.6.12.1.1.2.2 Collapse Pressure

3.6.12.1.1.2.2.1

Filters shall be designed such that they will not fail structurally or otherwise violate the downstream system internal cleanliness level, when contaminated to the maximum extent predicted for the end of their service lives, and operating at the maximum design pressure differential expected for the system.

3.6.12.1.1.2.3 Proof Pressure

3.6.12.1.1.2.3.1 (Reserved)

3.6.12.1.1.2.3.2 Ground Application

Proof pressure shall be based on the maximum allowable working pressure and as specified in SW-E-0002 - Books 3 and 4.

3.6.12.1.1.2.4 Serviceability

The design of reuseable filters for flight and ground application shall allow visual inspection of both body and element without the aid of special inspection devices.

EXCEPTION: ME286-0068 (WINTEC #6267-520), ME286-0072 (WINTEC #14228-635) and ME286-0078 (WINTEC #14241-595) filters are exempt and the use of micro flow bubble point technique is acceptable for all flights.

3.6.12.1.1.3 Materials

3.6.12.1.1.3.1 Filter Assemblies and Filter Elements

The materials used in the construction of filter assemblies and elements shall be compatible with the material specifications as described in Paragraph 3.6.2.1 and SE-S-0073 - Book 1.

3.6.12.1.1.4 Certification Requirements

All new and recleaned filters shall be certified to comply with their design and performance requirements in accordance with NSTS 07700-10-MVP-01 - Book 3, Shuttle Master Verification Plan, Volume 1 - General Approach and Guidelines - Book 3, Closeout Requirements, without the loss of function or release of particles or contaminants at maximum flow rate and pressure differential as defined for their specific application.

3.6.12.1.1.5 Configuration Control

Configuration control shall be in accordance with NSTS 07700, Volume XX - Book 2, Appendix 04, Configuration Management Closeout Requirements, and shall ensure traceability by part number that installed filters are the same design and construction as the certified units.

3.6.12.1.1.6 Process Requirements

The assembly and cleaning process for new and recleaned filters shall be approved and controlled by the design activity to allow compliance of the certification requirements (Paragraph 3.6.12.1.1.3). All fluid filters and debris screens shall be accompanied by a certification of compliance to cleanliness levels and particle rating in accordance with Shuttle Systems Fluid Servicing Requirements of SE-S-0073 - Book 1 and visual inspection.

3.6.12.2 Operational Contamination Control

Contamination Control during the operational phases of the Space Shuttle is necessary to ensure overall satisfactory performance of the system.

3.6.12.2.1 (Reserved)

3.6.12.2.2 (Reserved)

3.6.12.2.3 (Reserved)

3.6.12.2.4 Operational Capabilities

The SSS shall provide the capability for satisfying the following requirements.

3.6.12.2.4.1 (Reserved)

3.6.12.2.4.2 (Reserved)

3.6.12.2.4.3 (Reserved)

3.6.13 Traceability

Traceability shall be provided by assigning a traceability identification to each system element identified in Paragraph 3.1.1.1 and providing a means of correlating each to its historical records, and conversely, the records must be traceable to each system element. Ground operations systems traceability requirements shall be in accordance with SW-E-0002 - Books 3 and 4.

3.6.13.1 Traceability Classification

Traceability classification is the classification of a raw material, part, assembly, or end item for determining the traceability marking and traceability records required or excluded for the item. Engineering Documentation (e.g., specifications and drawings) shall specify traceability for items in accordance with the following:

a. Serial Traceability (TS) - Hardware assemblies and components down to and including the LRU level, shall be traceable by serial where one or more of the following apply:

    1. The item is contained in the CIL.

    2. The item has a limited useful-life. (See Paragraph 6.1.13.)

    3. The item is to be subjected to acceptance induced environmental test (thermal and/or vibration).

    4. The item requires progressive comparative measurements of performance (i.e., transducer curves).

    5. The item is subject to fracture control.

    6. The item contains traceable subordinate units, assemblies, or parts.

b. Lot Traceability (TL) - This classification requires lot serial numbering on items produced (manufactured, processed, inspected, or tested by the batch, mix, heat, or melt) in given time sequence, without changes in materials (substitutions); changes in tooling or processes (which would affect form, fit or function); or substitution of non-certified personnel for those normally requiring certification; and without change in configuration. The "given time sequence" nominally includes identification of work from the initiation of the production order for specific hardware manufacture, through completion of the last operation on the production order, and therefore includes accumulation of generic data which are related to all items of a particular lot. EEE parts specified in "applicable element project parts list," require lot traceability as a minimum.

c. Member Traceability (TM) - Both serial number and lot number traceability shall be required on items which must be identified in such a manner that they can be handled as members of a lot and also controlled as individual items.

d. Exempt from Traceability (E) - All items not falling into one of the previous classifications shall be classified as exempt.

3.6.13.2 Traceability Identification

Each item identified as traceable (TS, TL, TM) shall have a traceability identifier consisting of the federal supply code for manufacturer's identification number (H-1 handbook) and a serial, lot, or member number. The serial, lot, or member number shall be assigned by the manufacturer.

3.6.14 (Reserved)

3.6.15 Electrical Installations

3.6.15.1 Electrical Connections

3.6.15.1.1 Soldering

Only to the extent necessary to support ferry flight safety, transportation safety and disposition to safe end state, soldering of electrical connections shall be in accordance with NHB 5300.4(3A), Requirements for Soldered Electrical Connectors, as supplemented by JSC 08800, JSC Supplement to NHB 5300.4(3A), Requirements for Soldered Electrical Connections. Soldering of electrical connections for applications designed after January 1, 1988, shall be in accordance with NHB 5300.4(3A-1), Requirements for Soldered Electrical Connections, or NHB 5300.4(3A-2), Requirements for Soldered Electrical Connections, or NASA STD-8739.3, Soldered Electrical Connections. Critical interface electrical connections in off-the-shelf procured hardware shall meet requirements in accordance with NSTS 5300.4(1D-2), NASA-STD-8739.3, or NHB 5300.4(3A-1).

3.6.15.1.2 Interconnections

Interconnecting cables, harnesses, and wiring, designed after January 1, 1988, shall be in accordance with NHB 5300.4(3G), Requirements for Interconnecting Cables,

Harnesses, and Wiring, except for hardware built with equipment or processes which were in existence prior to that date.

3.6.15.1.3 Crimping and Wire Wrap

Crimping and wire wrap requirements for applications designed after January 1, 1988 shall be in accordance with NHB 5300.4(3H), Requirements for Crimping and Wire Wrap, except for hardware built with equipment or processes which were in existence prior to that date.

3.6.15.2 Circuit Boards

GSE circuit boards shall be in accordance with SW-E-0002 - Books 3 and 4.

3.6.15.3 Moisture and Fungus Resistant Treatment

Electrical, electronic and communications equipment shall be treated for moisture and fungus in accordance with requirements specified in Paragraph 3.6.4.

3.6.16 Facility/Non-Flight Equipment Design

3.6.16.1 (Reserved)

3.6.16.2 Ground Support Equipment

Modifications to GSE contracted or designed prior to October 1991 shall comply with SW-E-0002 - Book 3, or SW-E-0002 - Book 4. New GSE or modifications to GSE contracted or designed after October 1991 shall comply with SW-E-0002 - Book 4.

GSE utilized from previous programs shall meet the material and process requirements specified in Paragraph 3.6.2.1 of this document.

3.6.16.3 Commercial Equipment

Commercial equipment (see Paragraph 6.1.8) shall be procured in accordance with SW-E-0002 - Books 3 and 4 and, when required, calibrated and certified periodically.

3.6.16.4 Element Tools

Element tools (see Paragraph 6.1.9), including shop aids, shall be designed and fabricated to good shop practices and periodically inspected and maintained in a safe and reliable condition.

3.6.16.5 Special Test Equipment and Devices (STE/D)

STE/Ds (see Paragraph 6.1.7) shall be designed, fabricated, and certified in accordance with the requirements of SW-E-0002 - Books 3 and 4.

3.6.16.6 Access Platforms and Scaffolding

All facility platforms that will interface directly with a SSV element shall be designed to provide a minimum clearance between the platform and the SSV element as defined in

the SSP closeout ICDs. In the event of a conflict between this requirement and NSTS 60585, NSTS 60585 shall take precedence.

GSE platforms, including carry-on platforms, will be designed in accordance with Paragraph 3.6.16.2. The GSE platforms shall interface with the SSV element as defined in the closeout SSP ICDs. In the event of a conflict between this requirement and NSTS 60585, NSTS 60585 shall take precedence.

Scaffolding (Pre-Installation Checkout [PIC] boards, floats, and associated attach hardware) are only permitted inside and around the SSV if facility platforms or GSE platforms are insufficient to accomplish a required task. Scaffolding will be designed in accordance with OSHA regulations (Standard - 29 Code of Federal Regulations [CFR], 1910 and 1926). The use of scaffolding will be controlled by NSTS 60585.

3.6.17 Screw Threads

3.6.17.1 Designs Initiated After January 1, 1993

Screw threads for airborne fluid system fasteners and for threaded fasteners used on Shuttle system hardware for fatigue and strength sensitive applications shall be of the unified thread form UNJ, Class 3 fit, designed and procured in accordance with MIL-S-8879C, Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for, or SAE AS8879, Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter. Screw thread application categories utilizing the UNJ screw thread form shall be determined using the Thread Application Category Logic as shown in Table 3.6.17. Fastener system designs that would result in safety critical or Category 2 threads should not be used on Shuttle system hardware. Where this requirement is not attainable, fasteners with safety critical or Category 2 thread applications shall be identified by drawing number to avoid interchangeability problems. Fasteners for safety critical or Category 2 applications must meet all the verification requirements stated in MIL-S-8879C or SAE AS8879.

The following exceptions to MIL-S-8879C are allowed:

a. Non-safety critical internal thread forms integral to a manufactured part, e.g., tapped holes in housings, structures, etc., may be inspected by the manufacturer using appropriate inspection system per FED-STD-H28/20A, Screw-Thread Standards for Federal Services Section 20 Inspection Methods for Acceptability of UN, UNR, UNJ, M, and MJ Screw Threads.

b. Specifying thread application category “other” or Category 1 on drawings and procurement documents in the UNJ thread designation is optional. The default set of inspection criteria in MIL-S-8879C or SAE AS8879 may be used when these are determined to be adequate for the intended application. Unless otherwise specified, the thread surface finish shall be in accordance with MIL-S-8879C, Section 3.4.9 or SAE AS8879, Section 3.6.

Screw threads for airborne fluid systems fittings, electrical feed through connectors and threaded fasteners for general nonfatigue applications may be of the unified thread form

UN or UNR, designed and procured in accordance with FED-STD-H28/2B, Screw-Thread Standards for Federal Services Section 2 Unified Inch Screw Threads-UN and UNR Thread Forms. Class 3 fit is preferred, however, Class 2 fit is acceptable when approved by the appropriate element project.

3.6.17.2 Designs Initiated Prior to January 1, 1993

Screw threads for airborne fluid system fittings, electrical feed through connectors, and threaded fasteners used on Shuttle system hardware for fatigue and strength sensitive applications shall be of the unified thread form UNJ, Class 3 fit, designed and procured in accordance with MIL-S-8879A, Screw Threads, Controlled Radius Root with Increased Minor Diameter, General Specification for, Amendment 1.

Reprocurement of screw thread products originally designed and procured per MIL-S-8879A, Amendment 1, may be accomplished by utilizing the “default” verification method from MIL-S-8879C. When reordering manufactured parts that contain tapped holes, the manufacturer may use appropriate inspection system per FED-STD-H28/20A.

Screw threads for airborne fluid system fittings, electrical feed through connectors and threaded fasteners for general nonfatigue applications may be of the unified thread form UN or UNR, designed and procured in accordance with MIL-S-7742B, Screw Threads, Standard Optimum Selected Series, General Specification for, Amendment 1. Class 3 fit is preferred; however, Class 2 fit is acceptable when approved by the appropriate element project.

Reprocurement of screw thread products originally designed and procured per MIL-S-7742B, Amendment 1 may be accomplished by utilizing the “default” verification method from MIL-S-7742D, Screw Threads, Standard Optimum Selected Series, General Specification for. When reordering manufactured parts that contain tapped holes, the manufacturer may use appropriate inspection system per FED-STS- H28/20A.

3.6.17.3 Requirements Applicable to All Designs Regardless of Origination Date

Use of the UN, UNR, or UNJ unified thread form for nonfatigue applications is allowed for fastener material strength levels up to but not including 160 KSI.

The UNJ unified thread form shall be used to the maximum extent practical for fastener material strength levels 160 KSI and above. The UNR unified thread form may be used for fastener material strength levels 160 KSI and above but only when specifically approved by the appropriate element project.

External threads that are rolled after heat treat are preferred and shall be used to the maximum extent practical for both the UNR and UNJ unified thread forms.

Fastener systems and specialty items that utilize modified UN, UNR, and UNJ unified thread forms, e.g., proprietary fastening system, structural panel fastener systems, asymmetric threaded fasteners, locking threaded inserts, etc., shall be subject to the requirements as stated in their vendor specifications regarding the modified screw thread form and verification procedures.

For unique reuse applications, refurbishment specifications may be used for screw thread form reverification. These unique reuse applications and the corresponding vendor/refurbishment specifications shall meet all program requirements (e.g., strength, corrosion, fatigue, etc.) and must be approved by the appropriate element project.

Airborne fluid system fittings with Class 2 fit shall use safety lockwire.

3.6.18 CEI Specification Format

The CEI specifications for the Shuttle System elements shall be prepared in accordance with NSTS 07700, Volume XX - Book 2, Appendix 04.

3.6.19 (Reserved)

3.6.20 (Reserved)

3.6.21 (Reserved)

3.6.22 Seismic Protection

All GSE used in close proximity to SSV elements, or GSE that can otherwise cause damage to SSV elements by virtue of their operation, or failure to operate during a seismic event, shall be designed considering the hazards defined in TM-82473, Terrestrial Environment (Climatic) Criteria Guidelines for Use in Aerospace Vehicle Development, 1982 Revision, Section XVI, and in accordance with SW-E-0002 - Books 3 and 4.

3.6.23 (Reserved)

3.6.24 Structural Bonding

All structural and TPS bonds on all elements of the flight vehicles which, on debonding, could damage surrounding components or result in damage to the Orbiter TPS, shall be treated as critical processes requiring NASA element design project control and approval of bonding materials and processes, and any changes thereto. All bonding materials shall be controlled to assure that the chemical composition, processing, and mechanical properties meet the design requirements and are consistent with those used for bond certification. The process specification shall comply with the requirements and quality assurance provision of MSFC-SPEC-445, Requirements for Adhesive Bonding, Process and Inspection, except in that validation of adhesive is required prior to use only when the shelf or storage life in the controlling material specification is exceeded.

The following requirements apply in addition to those of MSFC-SPEC-445.

3.6.24.1 (Reserved)

3.6.24.2 Personnel Certification

Personnel performing bonding and quality control operations shall be trained and certified for the bonding process. All certifications shall include on-the-job training.

3.6.25 Electrostatic Discharge (ESD) Protection

3.6.25.1 Hardware Design ESD Protection

GSE ESD protection shall be in accordance with SW-E-0002 - Books 3 and 4.

3.6.25.2 (Reserved)

3.6.25.3 Handling Procedures

ESD protective handling procedures shall be developed, documented, and implemented as determined by the design project. These procedures shall apply to all parts, assemblies, and equipments marked ESD sensitive, and shall preclude Electrostatic Discharge Sensitive (ESDS) items from being subjected to ESD in excess of their rated sensitivity levels.

3.6.25.3.1 Equipment Level Procedures

For equipment level handling and installation, including electrical interconnection, the following additional procedures shall apply when required for ground operations safety or to protect ESD sensitive equipment removed from the Orbiter for spares and/or for future Projects and Programs:

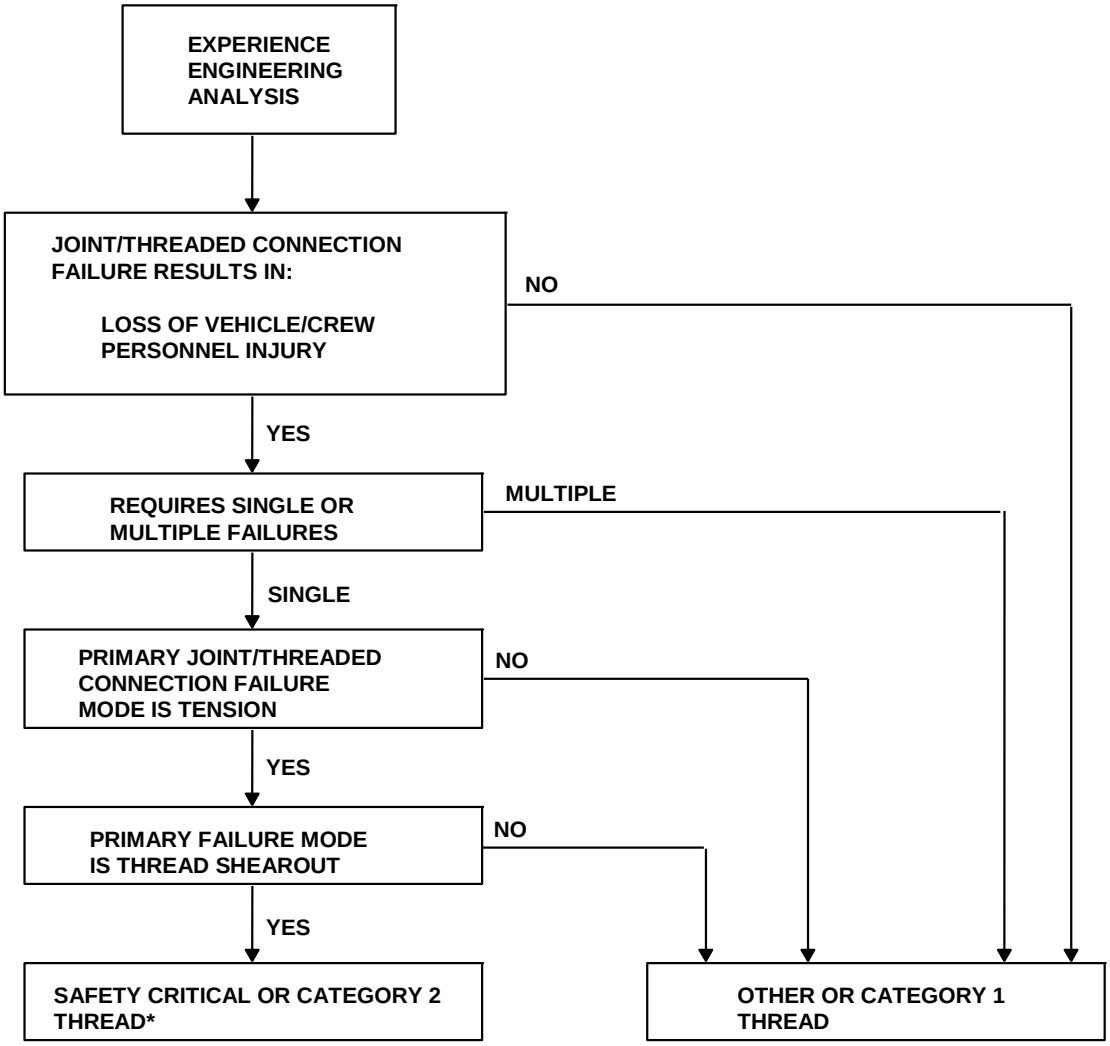
a. Personnel shall use a wrist strap for grounding while making electrical connection to equipment.

b. ESD-protective covering or protective caps on external terminals, interconnecting cables, and connector assemblies shall not be removed except as directed by approved installation or maintenance procedures.

c. As an ESDS item is installed, contact with electrical connections, including connector pins, shall be avoided except as directed by approved installation or maintenance procedures.

d. Where practical, prior to engaging a de-energized connector and cable with a mating receptacle connected to an ESDS item, the cable connector shield (connector outer shell) shall be grounded to its mating connector shield, to discharge any electrostatic potentials. Interconnecting cables terminated on one end to an ESDS item shall be handled as an ESDS item in accordance with this requirement.

TABLE 3.6.17
THREAD APPLICATION CATEGORY LOGIC FOR UNJ THREAD FORM PER MIL-S-8879C OR SAE AS8879



***Thread application category "Safety Critical" or Category 2 as determined by engineering analysis shall be specified on applicable engineering drawings for designs after January 1, 1993.**

3.7 QUALITY ASSURANCE

Shuttle System quality shall be in accordance with NSTS 5300.4(1D-2), Quality Program Provisions for Aeronautical and Space System Contractors, Chapter 5 only to the extent necessary to support ferry flight safety, transportation safety and disposition to safe end state.

EXCEPTION: SSME/RSME quality shall be in accordance with Chapter 5 of either NSTS 5300.4(1D-2) or NHB 5300.4(1B) only to the extent necessary to support ferry flight safety, transportation safety and disposition to safe end-state. Deliverable data will be in accordance with the applicable contract DRD/DRL.

3.7.1 Inspection Requirements

Non-Destructive Inspection (NDI) requirements for materials and parts shall be in accordance with MIL-I-6870B, Inspection Requirements, Nondestructive, for Aircraft Materials and Parts.

3.7.2 Sampling Requirements

Sampling requirements shall be in accordance with ANSI/ASQCZ1.4-1993, Sampling Procedures and Tables for Inspection by Attributes, and ANSI/ASQCZ1.9-1993, Sampling Procedures and Tables for Inspection by Variables for Percent Nonconforming; or with MIL-STD-105D, Sampling Procedures and Tables for Inspection by Attributes or, MIL-STD-105E, Sampling Procedures and Tables for Inspection by Attributes, and MIL-STD-414, Sampling Procedures and Tables for Inspection by Variables for Percent Defective.

3.7.3 Leakage Measurement

The project elements shall specify leakage measurement requirements. SE-G-0020B, Leakage Measurement of Helium and Nitrogen Test Gases, shall be used as a guide for detailed leakage measurement test procedures when He or N_2 are used as test gases.

3.7.4 (Reserved)

4.0 VERIFICATION

4.1 VERIFICATION MATRIX

Responsibility for formal verification of the Shuttle System requirements (see Paragraph 3.0) shall be as specified in Table 4.1.

Paragraphs designated as reserved are not listed in Table 4.1.

4.2 (RESERVED)

4.3 VERIFICATION REQUIREMENTS

The guidelines for verification planning and the implementation of verification requirements, are documented in NSTS 07700-10-MVP-01 - Book 3.

4.3.1 (Reserved)

4.3.2 Element Verification Requirements

Shuttle element verification requirements are documented in Volumes III and VIII of the Shuttle Master Verification Plan.

Volume III - JSC 07700-10-MVP-03, Orbiter Verification Plan, Volume III (MJ072-0004-3)

Volume VI - JSC 07700-10-MVP-06, Main Engine Verification Plan, Volume VI (RSS-8782)

Volume VIII - JSC 07700-10-MVP-08, KSC Launch and Landing Site Return to Flight Reverification Plan, Volume VIII (KSC-STSM-09 Volume IV - Suppl.)

4.3.3 (Reserved)

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TABLE 4.1
VERIFICATION RESPONSIBILITY MATRIX

Section 3.0 Requirement	ORB	SSME	SCA	L&LS	N/A
3.1					X
3.1.1					X
3.1.2					X
3.1.1.1					X
3.1.1.2					X
3.2					X
3.2.1.3					X
3.2.1.6					X
3.2.1.6.1	X		X		
3.2.1.7					X
3.2.1.7.1	X	X	X		
3.2.1.10	X			X	
3.2.2					X
3.2.2.1.5	X	X			
3.2.2.1.5.1					X
3.2.2.1.5.2	X	X			
3.2.2.1.6	X	X			
3.2.2.1.7	X	X			
3.2.2.1.8	X	X			
3.2.2.1.9	X	X			
3.2.2.1.10	X	X			
3.2.2.1.17					X
3.2.2.1.17.1	X	X			
3.2.2.1.17.1.2	X				
3.2.2.1.17.1.3	X				
3.2.2.1.17.1.4	X				
3.2.2.1.17.1.5	X				
3.2.2.1.17.1.5.1	X				
3.2.2.1.17.1.5.1.1	X				
3.2.2.1.17.1.5.1.2	X				
3.2.2.1.17.1.5.2	X				
3.2.2.1.17.1.6	X				
3.2.2.1.17.1.6.1	X				
3.2.2.1.17.1.6.2	X				
3.2.2.1.24	X	X			
3.2.2.2				X	
3.2.2.2.1				X	

TABLE 4.1
VERIFICATION RESPONSIBILITY MATRIX - Continued

Section 3.0 Requirement	ORB	SSME	SCA	L&LS	N/A
3.2.2.2.2	X	X		X	
3.2.2.2.6				X	
3.2.3					X
3.2.4					X
3.2.10					X
3.2.10.1					X
3.2.10.2					X
3.2.10.3					X
3.2.10.4					X
3.2.10.5					X
3.2.10.6					X
3.2.10.11					X
3.3					X
3.3.1					X
3.3.1.1					X
3.3.1.1.7	X			X	
3.3.1.2					X
3.3.1.2.1					X
3.3.1.2.2	X			X	
3.3.1.3					X
3.3.1.3.4	X	X			
3.3.1.3.5	X		X		
3.3.1.3.8	X				
3.3.1.3.9	X				
3.3.1.3.15	X		X		
3.3.4		X			
3.3.4.3					X
3.3.4.3.1		X			
3.3.5					X
3.3.5.1			X		
3.3.5.1.1	X		X		
3.3.5.1.1.3					X
3.3.5.3					X
3.4					X
3.4.1					X
3.4.1.1				X	
3.4.1.2					X

TABLE 4.1
VERIFICATION RESPONSIBILITY MATRIX - Continued

Section 3.0 Requirement	ORB	SSME	SCA	L&LS	N/A
3.4.1.2.4				X	
3.4.1.6				X	
3.4.4					X
3.4.4.1				X	
3.4.4.2					X
3.4.4.2.1				X	
3.4.4.2.2				X	
3.4.4.2.3				X	
3.4.4.3	X			X	
3.4.11					X
3.4.11.1					X
3.4.11.1.1				X	
3.4.11.1.2				X	
3.4.11.2					X
3.4.11.2.1				X	
3.4.11.2.2				X	
3.4.11.3				X	
3.4.12					X
3.4.12.1				X	
3.4.12.2				X	
3.4.12.3				X	
3.4.16					X
3.4.16.1				X	
3.4.16.2				X	
3.4.16.2.1				X	
3.4.16.2.2				X	
3.4.16.2.3				X	
3.4.16.2.4					X
3.4.16.2.5				X	
3.4.16.2.6					X
3.4.16.2.7				X	
3.4.16.2.8				X	
3.4.16.2.9				X	
3.4.16.2.10				X	
3.4.16.2.11					X
3.4.16.2.12					X
3.4.16.2.13				X	
3.4.16.2.14				X	
3.4.16.3				X	

TABLE 4.1
VERIFICATION RESPONSIBILITY MATRIX - Continued

Section 3.0 Requirement	ORB	SSME	SCA	L&LS	N/A
3.4.18					X
3.4.18.1					X
3.4.18.2					X
3.4.18.2.1				X	
3.4.18.3	X		X	X	
3.4.24					X
3.4.24.1					X
3.4.24.1.1				X	
3.4.24.1.2				X	
3.4.24.2				X	
3.5					X
3.5.1.1					X
3.5.1.1.1					X
3.5.1.1.1.1	X	X			
3.5.1.2					X
3.5.1.2.1.1	X	X		X	
3.5.1.2.2	X	X		X	
3.5.1.2.3	X	X		X	
3.5.1.2.4	X	X		X	
3.5.2					X
3.5.2.3.1				X	
3.5.3					X
3.5.4	X	X		X	
3.5.3.1	X	X		X	
3.5.3.1.1					X
3.5.3.1.4			X		
3.5.4.1					X
3.5.4.1.4	X	X			
3.5.4.1.5	X	X			
3.5.1.1.6	X				
3.5.4.1.11	X	X			
3.5.4.2					X
3.5.4.2.1		X		X	
3.5.4.2.2	X	X		X	
3.5.4.2.3	X			X	
3.5.4.2.4				X	
3.5.4.2.8		X		X	

TABLE 4.1
VERIFICATION RESPONSIBILITY MATRIX - Continued

Section 3.0 Requirement	ORB	SSME	SCA	L&LS	N/A
3.5.6	X	X			
3.5.6.1	X	X			
3.5.7	X			X	
3.6					X
3.6.1	X	X		X	
3.6.2					X
3.6.2.1	X	X		X	
3.6.3	X	X		X	
3.6.4	X	X		X	
3.6.5					X
3.6.5.1					X
3.6.5.1.1	X	X			
3.6.5.1.2	X	X			
3.6.5.2					X
3.6.5.2.1				X	
3.6.8	X	X		X	
3.6.11	X				
3.6.12					X
3.6.12.1	X	X		X	
3.6.12.1.1					X
3.6.12.1.1.1	X	X		X	
3.6.12.1.1.1.1					X
3.6.12.1.1.1.1.1	X	X		X	
3.6.12.1.1.1.2					X
3.6.12.1.1.1.2.1	X	X		X	
3.6.12.1.1.1.3	X	X		X	
3.6.12.1.1.1.4	X	X		X	
3.6.12.1.1.2					X
3.6.12.1.1.2.1					X
3.6.12.1.1.2.1.2	X	X		X	
3.6.12.1.1.2.2					X
3.6.12.1.1.2.2.1	X	X		X	
3.6.12.1.1.2.3					X
3.6.12.1.1.2.3.2	X	X		X	
3.6.12.1.1.2.4	X	X		X	
3.6.12.1.1.3					X
3.6.12.1.1.3.1	X	X		X	

TABLE 4.1
VERIFICATION RESPONSIBILITY MATRIX - Concluded

Section 3.0 Requirement	ORB	SSME	SCA	L&LS	N/A
3.6.12.1.1.4	X	X		X	
3.6.12.1.1.5	X	X		X	
3.6.12.1.1.6	X	X		X	
3.6.12.2					X
3.6.12.2.4					X
3.6.12.2.4.3	X			X	
3.6.13	X	X		X	
3.6.13.1	X	X			
3.6.13.2	X	X			
3.6.15					X
3.6.15.1					X
3.6.15.1.1	X	X		X	
3.6.15.1.2	X	X		X	
3.6.15.1.3	X	X		X	
3.6.15.2					X
3.6.15.3	X	X		X	
3.6.16					X
3.6.16.2	X	X	X	X	
3.6.16.3				X	
3.6.16.4				X	
3.6.16.5				X	
3.6.16.6	X	X		X	
3.6.17					X
3.6.17.1	X	X			
3.6.17.2	X	X			
3.6.17.3	X	X			
3.6.18	X	X	X	X	
3.6.22				X	
3.6.24.2	X	X		X	
3.6.25					X
3.6.25.1	X	X	X		
3.6.25.3	X	X	X		
3.6.25.3.1	X	X	X	X	
3.7	X	X		X	
3.7.1	X	X		X	
3.7.2	X	X		X	
3.7.3	X	X		X	

5.0 PREPARATION FOR DELIVERY

5.1 GENERAL

The requirements specified herein shall govern the preparation for shipment and the transport of Shuttle System elements to all contractor and government facilities or test sites.

5.2 PACKAGING, HANDLING AND TRANSPORT

Packaging, handling and transportation for Shuttle System elements shall be in general accordance with NHB 6000.1(1A), Requirements for Packaging, Handling and Transportation for Aeronautical and Space Systems Equipment and Associated Components, NPG 6000.1E, Requirements for Packaging, Handling, and Transportation for Aeronautical and Space Systems Equipment and Associated Components, or as amended by the following subparagraphs. Procedures for packaging and packing of parts and equipment shall be in accordance with MIL-STD-794B, Parts and Equipment, Procedure for Packaging and Packing of, or MIL-STD-2073-1, Standard Practice for Military Packaging. MIL-STD-2073-1 may also be used in lieu of MIL-STD-2073, DOD Material, Procedures for Development and Application of Packaging Requirements, or MIL-P-116, Methods of Preservation.

5.2.1 Reusable Containers

Where analysis indicates desirability of using reusable containers, maximum practical utilization shall be made of standard off-the-shelf, low cost metal or plastic containers.

5.2.2 Monitoring Devices

Humidity indicators shall be utilized for all Method II (desiccant) packs. The indicators shall be MS20003 indicator cards except that MIL-I-26860B, Indicator, Humidity, Plug, Color Change, humidity indicators shall be utilized for all gasketed Method II packs. Use of indicator cards procured to MIL-I-8835, Indicator, Humidity, Card, Chemically Impregnated, and designed to specifications other than MS20003 is allowed. Other instrumentation for monitoring or recording intransit environments (e.g., shock, vibration, temperature, etc.) shall be utilized as required by specific element specifications.

5.2.3 Packaging Data

Packaging data shall be provided in accordance with data submittal requirements of the contract.

5.2.4 Packaging of Precision Clean Items

Items cleaned to precision cleanliness levels shall be protected in accordance with SN-C-0005, to assure maintenance of specified cleanliness levels.

5.2.5 Packaging and Shipment of Hazardous Materials

All hazardous material packaging shall comply, as applicable, with NHB 6000.1(1A) or NPG 6000.1E.

5.2.6 Marking for Shipment

Interior and exterior containers shall be marked and labeled in accordance with MIL-STD-129E, or FED-STD-123E, including precautionary markings necessary to ensure safety of personnel and facilities, and to ensure safe handling, transport, and storage. For hazardous materials, markings shall also comply with the requirements of applicable freight tariffs, requirements of the Department of Transportation, Atomic Energy Commission, and Code of Federal Regulations.

5.3 PACKAGING AND SHIPMENT OF PYROTECHNICS

The packaging and shipment of pyrotechnics shall conform to the provisions of NSTS 08060, System Pyrotechnic Specification.

6.0 NOTES

6.1 DEFINITIONS

6.1.1 Fail Safe

6.1.1.1 Ground Support Equipment

6.1.1.1.1 Loss of Vehicle Systems

Loss of the capability to provide the level of system performance required for normal or emergency operations.

Reference Paragraph 3.5.1.2.1.1

6.1.1.1.2 Loss of Personnel Capability

Loss of personnel function resulting in the inability to perform normal or emergency operations. Also includes loss of capability to prevent injury to the public.

Reference Paragraph 3.5.1.2.1.1

6.1.2 Off-the-Shelf Hardware

Off-the-shelf hardware is production or existing design hardware (black box, component) used in or for NASA, military, and/or commercial programs.

Reference Paragraphs 3.6.12.1, 3.6.15.1.1, 5.2.1

6.1.3 Critical Function

A critical function is defined as a function which, if lost, would cause loss of personnel or the flight vehicle.

Reference Paragraph 3.5.1.2.4

6.1.4 Facilities

Facilities include the land, buildings enclosing usable space, structures having the basic function of a research or operational activity, and other real property improvements as defined in NPR 8820.2.

Reference Paragraph 3.5.4.2.1

6.1.5 Non-Flight Equipment

Non-flight equipment is that equipment used to aid in the processing, maintaining, testing, repairing, etc., of the flight vehicle and all its systems. Non-flight equipment is comprised of GSE, commercial tools, special test equipment, special test devices, and element tools.

Reference Paragraphs 3.5.4.2.1, 3.6.16

6.1.6 Ground Support Equipment

GSE is non-flight equipment with a physical and/or functional interface with the flight hardware that is routinely required for the handling, servicing, inspection, testing, maintenance, alignment, adjustment checkout, repair, and overhaul of flight hardware, and whose design and certification has been in accordance with NSTS 07700, Volume IV.

Reference Paragraphs 3.2.2.2.2, 3.2.2.2.6, 3.5.1.2.1.1, 3.5.1.2.2, 3.5.1.2.3, 3.5.1.2.4, 3.5.3.1, 3.5.4.2.1, 3.5.4.2.2, 3.6.3, 3.6.5.2.1, 3.6.8, 3.6.12.1.1, 3.6.15.2, 3.6.16.6, 3.6.22, 3.6.25.1

6.1.7 Special Test Equipment/Devices

STE/D are similar to GSE but have not had design and certification reviews in accordance with NSTS 07700, Volume IV.

Reference Paragraph 3.6.16.5

6.1.8 Commercial Equipment

Commercial equipment (i.e., tools, components, etc.) is commercially available instruments or devices that may or may not interface with flight hardware and are necessary for its normal processing for flight.

Reference Paragraph 3.6.16.3

6.1.9 Element Tools

Element tools, including shop aids, are uniquely designed devices used to process flight hardware and have no mechanical, electrical, or fluid interaction between the ground equipment and flight systems which could cause risk or damage to the flight hardware or GSE.

Reference Paragraph 3.6.16.4

6.1.10 Demonstrated Safe Life Limit

The maximum operational life, as demonstrated by test, of an applicable configuration without failure or the operational life of the lowest failed part.

Reference Paragraph 3.2.2.1.9

6.1.11 Single Flight Reliability

A statistical method utilizing the Weibull function to establish a lower bound on allowable life consistent with a demonstrated reliability statement (e.g., 0.995 reliability/0.90 confidence) for which the last mission is ensured. The mission life shall account for the probability of an abort occurrence.

$$\text{Reliability} = \frac{\exp\left[-\left(\frac{T}{n}\right)^{\beta}\right]}{\exp\left[-\left(\frac{T-T_m}{n}\right)^{\beta}\right]}$$

and, the estimate of characteristic life,n, is: $n = \left[\sum_{i=1}^{n} T_i^{\beta/r}\right]^{\frac{1}{\beta}}$

where: n = number of suspensions or unfailed units
T_i = operating times
r = $-\ln(\alpha)$
α = 1−confidence level, c

Reference Paragraph 3.2.2.1.9

6.1.12 Design-Life

Design-life is a hardware certification requirement established by specification and expressed in terms of a specific number of flights, operating cycles, or period of time (i.e., hours or calendar time). The design-life of a hardware item/system is demonstrated by test and/or analysis, usually prior to its acceptance and delivery.

Reference Paragraph 3.5.3.1

6.1.13 Useful-Life

Useful-life is the inherent operating capability of a given hardware item/system, expressed as a specific number of flights, operational cycles, or period of time (i.e., hours or calendar time) during which the hardware item/subsystem can be operated while continuing to meet its prescribed performance and/or margin of safety requirements. The useful-life of a hardware item/system is expected to be equal to or greater than its design-life.

Reference Paragraph 3.6.13.1

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SECTION A

ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Materials
ANSI	American National Standards Institute
APS	Aft Propulsion System
APU	Auxiliary Power Unit
ATP	Authority to Proceed
BMO	Business Management Office
CEI	Contract End Item
CFR	Code of Federal Regulations
CG	Center of Gravity
CM	Configuration Management
CR	Change Request
CW	Continuous Wave
DI	Deionized
DRD	Data Requirements Description
DRL	Data Requirements List
E	Exempt from Traceability
ECS	Environmental Control System
EEE	Electronic, Electrical, Electromechanical
ESD	Electrostatic Discharge
ESDS	Electrostatic Discharge Sensitive
ESSRD	End-State Subsystems Requirements Document
FFD	Functional Flow Diagram
FRCS	Forward Reaction Control System/Subsystem
FSOP	Florida Safety Operating Plan
FSS	Fire Suppression System
GC	Generally Clean
GFE	Government Furnished Equipment
GH_2	Gaseous Hydrogen
GHA	Good Housekeeping Area
GMT	Greenwich Mean Time

GN_2	Gaseous Nitrogen
GSE	Ground Support Equipment
H_2	Hydrogen
He	Helium
HEPA	High Efficiency Particle Air
HMF	Hypergol Maintenance Facility
ICD	Interface Control Document
IPA	Isopropyl Alcohol
LCC	Launch Commit Criteria
LPS	Launch Processing System
LRU	Line Replaceable Unit
N_2	Nitrogen
NDE	Non-Destructive Evaluation
NDI	Non-Destructive Inspection
NFPA	National Fire Protection Association
OFSD	Orbiter Fleet Safing Document
OMRS	Operations and Maintenance Requirements and Specification
OMRSD	Operations and Maintenance Requirements and Specification Document
OMS	Orbital Maneuvering System/Subsystem
OPF	Orbiter Processing Facility
OPR	Office of Primary Responsibility
ORB	Orbiter
OSHA	Occupational Safety and Health Administration
PIC	Pre-Installation Checkout
PLB	Payload Bay
PLBD	Payload Bay Doors
PRCB	Program Requirements Control Board
PRCBD	Program Requirements Control Board Directive
RCS	Reaction Control System/Subsystem
RF	Radio Frequency
RSME	Replica Shuttle Main Engine

SCA	Shuttle Carrier Aircraft
SE	Support Equipment
SSP	Space Shuttle Program
SSPCD	Space Shuttle Program Closeout Directive
SSS	Space Shuttle System
SSV	Space Shuttle Vehicle
STE/D	Special Test Equipment/Device
T-O	Takeoff
TFE	Tetrafluoroethylene
TL	Lot Traceability
TM	Member Traceability
TPS	Thermal Protection System
TS	Serial Traceability
VAFB	Vandenberg Air Force Base
VC	Visually Clean
WAD	Work Authorization Document

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SPACE SHUTTLE

APPENDIX 11

SYSTEM INTEGRITY ASSURANCE PROGRAM PLAN

No applicable requirements have been identified in NSTS 07700, Volume XI to transition into Appendix 11 for closeout.

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SPACE SHUTTLE

APPENDIX 12

PROGRAM LOGISTICS AND SUPPORTABILITY CLOSEOUT REQUIREMENTS

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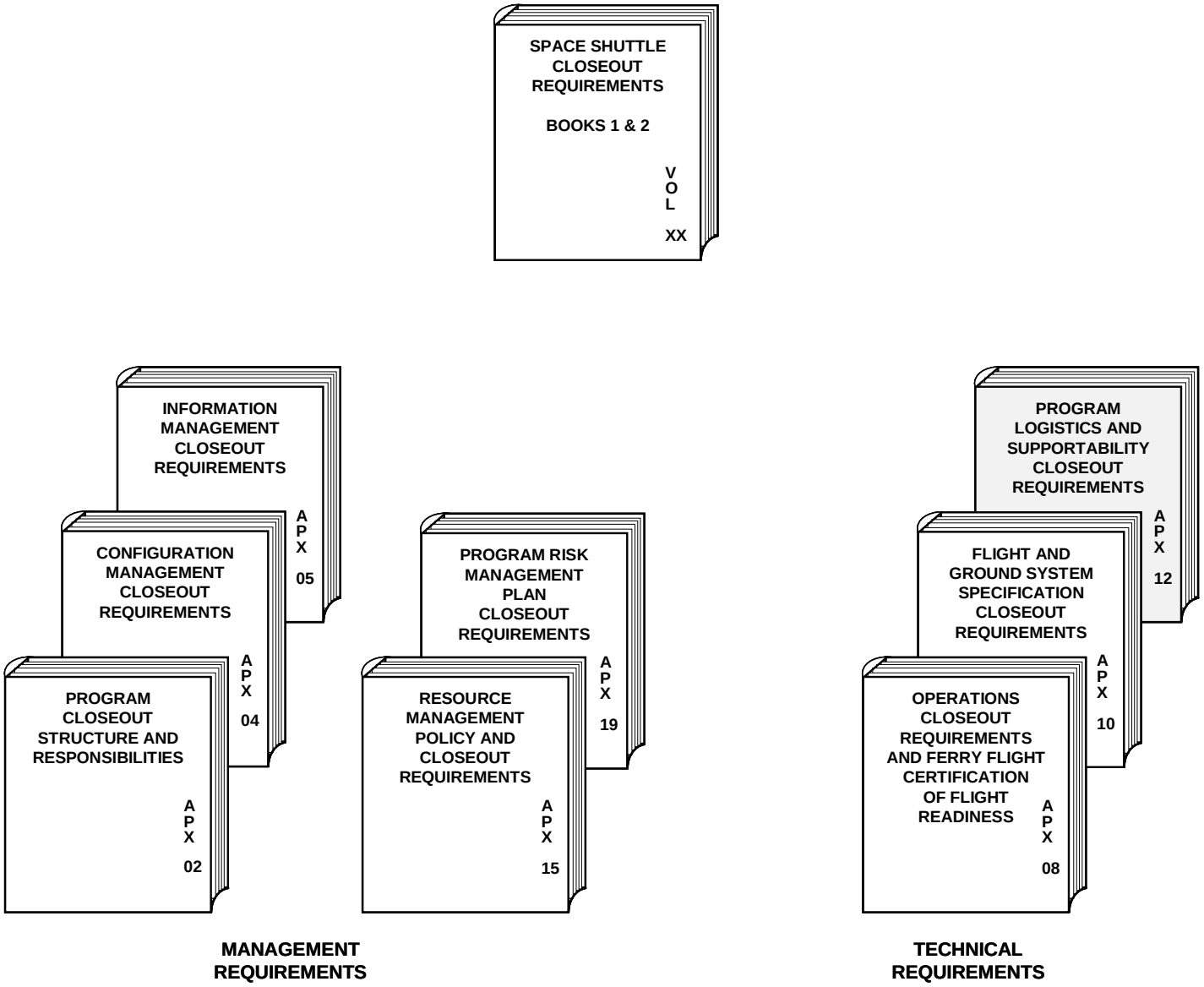
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, interface agreements, and system capabilities shall be documented, baselined, and subsequently controlled by SSP management.

Program logistics and supportability requirements, directives, procedures, etc., controlled by the Manager, Transition and Retirement, are documented in this appendix. Requirements to be controlled by the NASA support element/project managers are to be identified, documented and controlled by the element/project.

This appendix of NSTS 07700, Volume XX - Book 2, defines the Space Shuttle logistics and supportability requirements for Transition and Retirement (T&R)/closeout to assure that flight and ground systems are maintained to complete display state processing in a safe manner. This document encompasses integrated logistics and performance reporting, as well as maintenance, supply support and related activities.

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the SSP T&R managers to be in the best interest of the SSP to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume XX - Book 2, Appendix 04, Configuration Management Closeout Requirements and dispositioned by the Transition and Retirement Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 PURPOSE

This document identifies the logistics and supportability requirements, and responsibilities for all Space Shuttle Program (SSP) closeout elements/projects in support of closeout activities at the Conclusion of the Operational Phase of the Program (COPP).

1.1 APPLICABILITY AND SCOPE

These requirements are applicable to all NASA SSP systems hardware that is provided by either the government or the contractor, as listed below:

a. Orbiter

b. Space Shuttle Main Engine (SSME)

c. Solid Rocket Booster (SRB)

d. Reusable Solid Rocket Motor (RSRM)

e. External Tank (ET)

f. Government Furnished Property (Government Furnished Equipment [GFE]/ Government Furnished Material)

g. Space Shuttle Ground Systems (including control centers, off-line laboratories, Ground Support Equipment [GSE], test equipment, facilities, etc.)

h. Flight Crew Equipment (FCE)

i. Payload Integration Hardware

Should conflicting statements regarding logistics requirements exist between this appendix and any other program- or project-level document, the requirements of this document will take precedence. However, if the Manager, Transition and Retirement subsequently issues a program directive that affects the statements herein, the program directive shall take precedence. Definitions of terms used in this document, as well as other commonly used logistics terms, are contained in Section B.

1.2 RESPONSIBILITIES

The Manager, Transition and Retirement shall be responsible for developing and maintaining the Transition and Retirement (T&R)/closeout program logistics requirements. The Space Shuttle project T&R element managers shall be responsible for developing, maintaining, and implementing Logistics Support (LS) to ensure compliance with the requirements of this document. The Space Shuttle Business Management Office (BMO) shall be responsible for ensuring logistics integration across the program.

1.3 EFFECTIVITY

Until down processing of the last mission has been completed, NSTS 07700, Volume XII will remain in effect. NSTS 07700 Volume XX - Book 2, Appendix 12 shall be in effect after post-mission down processing is completed for the last vehicle to fly.

2.0 APPLICABLE DOCUMENTS

The following publications are referenced in this document, and apply to the most current issue, unless otherwise stated. The latest revision of SSP documents shown may be determined from the Program Documentation Center.

NSTS 07700 Volume X - Book 1 (Current Issue)	Flight and Ground System, Requirements Ref. Section B, C
NSTS 07700 Volume XII (Current Issue)	Program Logistics and Supportability Requirements Ref. Para. 1.3
NSTS 07700 Volume XX - Book 2 Appendix 04 (Current Issue)	Space Shuttle Closeout Requirements, Configuration Management Closeout Requirements Ref. Preface
NSTS 07700 Volume XX - Book 2 Appendix 08 (Current Issue)	Space Shuttle Closeout Requirements, Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness Ref. Para. 3.4
NSTS 5300.4(1D-2) (Current Issue)	Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program Ref. Para. 3.4
NSTS 08114 (Current Issue)	Requirements for Periodic Certification of Material Handling Equipment and Operating Personnel Ref. Para. 3.4

NSTS 22206 (Current Issue)	Requirements for Preparation and Approval of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL) Ref. Section B
NSTS 60575 (Current Issue)	Space Shuttle Program Transition and Retirement Environmental Plan Ref. Para. 4.0
FAR, Part 45	Federal Acquisition Regulation (FAR) Government Property Ref. Para. 3.2
MIL-STD-12	Abbreviations for Use on Drawings, Specifications Standards and in Technical Documents Ref. Section C
NASA FAR	Supplement 1845, Government Property Ref. Para. 3.2
NPG 6000.1	Requirements for Packaging, Handling, and Transportation Equipment and Associated Components Ref. Para. 3.3
<u>United States Air Force Technical Order (TO)</u>	
00-25-195	Source, Maintenance and Recoverability Coding of Air Force Weapons, Systems and Equipment Ref. Section D

3.0 GENERAL PERFORMANCE REQUIREMENTS

The SSP T&R project element managers shall develop and maintain LS that meets the needs of the SSP during SSP/closeout activities, as defined by the Manager, Space Shuttle Program Transition and Retirement. At a minimum, this LS shall address the areas of maintenance; supply support; Packaging, Handling, Storage and Transportation (PHS&T); and training necessary to complete display state processing and the safe disposition of excess hardware.

3.1 MAINTENANCE

The T&R project element managers shall ensure that sufficient maintenance is performed on the flight and ground hardware during end-state processing and ferry flight to ensure that the Shuttle closeout activities are performed in a safe manner.

All levels of maintenance shall be accomplished in a manner that provides support of operational time constraints, prevents deterioration of operating safety and reliability, ensures timely return of failed items to a serviceable condition to meet essential demands, and accomplishes this support at minimum, practical costs.

Limited Organizational Level Maintenance capability shall be available to perform removal and replacement of Line Replaceable Units (LRUs) on the vehicle(s) or GSE end items. The Organizational Level capability shall include cannibalization from one end item to another if approved by the PRCB. Organizational Level maintenance activities shall utilize spares still available on the shelf from the Operations and Maintenance period of the Shuttle Program. Excess of Organizational Level LRUs shall be evaluated to ensure there is minimal probability of need to support Ferry Flight Operations on End-State or Display-State requirements.

Intermediate Level Maintenance capability in support of vehicles and processing GSE shall be phased down in accordance with the KSC facility exit plan.

Depot Level Maintenance at NASA Shuttle Logistics Depot (NSLD) and Original Equipment Manufacturers (OEMs) shall not be retained after the end of operations. Depot Level Maintenance Capability at White Sands Test Facility (WSTF) shall be maintained as authorized to provide safing activities for certain components as directed by the Program.

3.2 SUPPLY SUPPORT

The T&R project element managers are responsible for managing the supply chain to support T&R/closeout activities. They shall ensure that the functions and actions necessary to accomplish acquisition and management of the inventory of parts, materials, supplies, tools, equipment, and services are available to support T&R/closeout of Space Shuttle flight and ground hardware. The following defines supply support requirements that shall be met:

a. A property management system shall be provided to account for all government property, pursuant with the requirements set forth in the FAR, Part 45 Government Property and NASA FAR, Supplement 1845, Government Property.

b. An inventory control system with the capability to status spares in the procurement cycle, and repairable items, which have been dispositioned for repair or modification, shall also be provided for all Space Shuttle flight and non-flight hardware.

c. Each element shall be responsible for determining the appropriate range and depth of spares required to support Shuttle closeout activities Inventory and equipment shall include LRUs, Shop Replaceable Units (SRUs), piece parts, consumables, special tooling, test equipment, and special test equipment.

d. Provisioning shall be conducted and provisioning data records; and Source, Maintenance and Recoverability (SMR) codes shall be retained in accordance with Sections C and D.

3.3 PACKAGING, HANDLING, STORAGE AND TRANSPORTATION

The T&R project element managers shall ensure that specifications are identified and appropriate certifications are obtained to meet their particular PHS&T requirements in accordance with NASA Procedures and Guidance (NPG) 6000.1, Requirements for Packaging, Handling, and Transportation Equipment and Associated Components. In addition, the T&R project element managers shall ensure all PHS&T activities are performed in accordance with applicable laws and regulations, including export control.

3.4 TRAINING

Shuttle Closeout Handling, Maintenance, and Ferry Flight Activities shall be performed by appropriately trained personnel. Personnel training and certification requirements are defined by NSTS 08114, Requirements for Periodic Certification of Material Handling Equipment and Operating Personnel; NSTS 07700, Volume XX - Book 2, Appendix 08, Operations Closeout Requirements and Ferry Flight Certification of Flight Readiness. These requirements are derived from NSTS 5300.4(1D-2), Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program, and are mandatory. Records of training conducted and certification of personnel shall be maintained for the operational life of the hardware and software for which the training was developed to support.

4.0 SPACE SHUTTLE INTEGRATED LOGISTICS

The primary objective of integrated logistics during T&R/closeout is to provide required support during T&R/closeout activities and to support the closeout phase in an economical and timely manner. This includes developing an integrated excess plan to ensure that assets/material/consumables required to support T&R/closeout activities support all program objectives prior to being excessed. The Space Shuttle BMO shall be responsible for assuring that these Integrated Logistics Support (ILS) objectives are met across the SSP. The T&R project element managers shall provide integration of element logistics and support across program integrated logistics efforts.

Other program initiatives, such as, NSTS 60575, Space Shuttle Program Transition and Retirement Environmental Plan, for environmental, materials obsolescence and replacement technology issues, and process control for the management of supply

chain processes, shall interface and coordinate with the Space Shuttle BMO for overall integration of logistics efforts.

SECTION A

ACRONYMS AND ABBREVIATIONS

BMO	Business Management Office
CCB	Configuration Control Board
COPP	Conclusion of the Operational Phase of the Program
CR	Change Request
ET	External Tank
FAR	Federal Acquisition Regulation
FCE	Flight Crew Equipment
GFE	Government Furnished Equipment
GSE	Ground Support Equipment
ILS	Integrated Logistics Support
IM	Item Manager
LEA	Logistics Engineering Analysis
LLS	Launch and Landing Site
LORA	Level of Repair Analysis
LRU	Line Replaceable Unit
LS	Logistics Support
MRB	Material Review Board
NHA	Next Higher Assembly
NPG	NASA Procedures and Guidance
NSLD	NASA Shuttle Logistics Depot
OEM	Original Equipment Manufacturer
ORLA	Optimum Repair Level Analysis
PHS&T	Packaging, Handling, Storage and Transportation
PRCB	Program Requirements Control Board
PRCBD	Program Requirements Control Board Directive
POS	Probability of Sufficiency
PSM	Product Support Manager

RSRM	Reusable Solid Rocket Motor
SMR	Source, Maintenance and Recoverability
SRB	Solid Rocket Booster
SRU	Shop Replaceable Unit
SSME	Space Shuttle Main Engine
SSP	Space Shuttle Program
T&R	Transition and Retirement
TO	Technical Order
WSTF	White Sands Test Facility

SECTION B

DEFINITIONS

Cannibalization - The removal of a serviceable (i.e., flight certifiable) installed item in a Shuttle element to replace an unserviceable or missing item in another Shuttle element when spare availability does not meet demand. This definition of cannibalization applies only to those Shuttle elements delivered to the launch site.

Certification - Documentation stating that personnel, facilities, tools, or test equipment meet prescribed SSP standards.

Closed-Loop Accounting - The act of performing traceability and compliance of program configuration, operation, and maintenance requirements through planning and implementation.

Commercial Tools - Reference NSTS 07700, Volume X - Book 1, Flight and Ground System Specification, Requirements, Section 6.

Corrective Action - Action to correct a problem cause which includes one or more of the following dispositions:

a. Design change (e.g., engineering order)

b. Manufacturing method/procedures/process change

c. Test procedure change

d. Facility/Test equipment change

e. Transportation or shipping change

f. Maintenance procedure change

g. Training or certification of personnel

h. Limited time or cycle of component

i. Change to quality assurance inspection requirements

Critical Items - Reference to NSTS 22206, Requirements for Preparation and Approval of Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL), Paragraph 3.2.

Exceptions - Authorizing directions not to comply with specific requirement(s) as the results of formal board action (Configuration Control Board [CCB], Program Requirements Control Board [PRCB], Material Review Board [MRB], etc.)

Failure - The inability of a system, subsystem, component, or part to perform its required function within specified limits, under specified conditions, for a specified duration.

Ground Support Equipment - Reference NSTS 07700, Volume X - Book 1, Section 6.

Indenture - A method of showing relationships to indicate dependence and an order of dependence. It breaks an item down into assemblies, subassemblies, components, and parts.

Integrated Logistics Support - A disciplined, unified, and iterative approach to the management and technical activities necessary to:

a. Integrate support considerations into system and equipment design.

b. Develop support requirements that are related consistently to readiness objectives, to design, and to each other.

c. Acquire the required support.

d. Provide the required support during the operational phase in an economical and timely manner.

Integration - The task of assuring that all of the program elements/projects perform in such a manner so that, collectively, they will accomplish the program/project objectives in the most efficient manner.

Interchangeability - A condition which exists when two or more items possess such functional and physical characteristics as to be equivalent in performance and durability, are capable of being exchanged one for the other without alteration on the items themselves or of adjoining items, except for adjustment, and without selection for fit and performance.

Interface - A region common to two or more elements, systems, projects or programs, characterized by mutual physical, functional, and procedural properties.

Item - Any level of hardware assembly, such as, a system, segment of a system (element), a subsystem, equipment, component, or a part.

Level of Repair Analysis (LORA) - See Optimum Repair Level Analysis (ORLA)

Limited Life Item - Any item designated as having a limited useful life regardless of whether it is a limited operating life, limited shelf life, operating life sensitive, or combinations of these.

Line Replacement Unit (LRU) - Any item for which replacement constitutes the normally accepted organizational maintenance repair action for a higher indenture item.

Logistics - The science of management, engineering, and technical activities concerned with requirements, design, and supplying and maintaining resources to support objectives, plans and operations. Logistics includes near and long-term planning, implementing the control of the efficient flow and storage of raw materials, work in progress, spares and components, services and related information from point-of-origin

to point-of-consumption for the purpose of conforming to customer requirements. Principle processes involved are: maintenance, supply support, PHS&T, and training.

Logistics Engineering Analysis (LEA) - A composite of analysis techniques which are used to identify the necessary logistics resources to support operation and maintenance functions in a timely and economical manner.

Logistics Interoperability - A form of interoperability in which the service to be exchanged is assemblies, components, spares, or repairs. It is achieved by making such assemblies, components, spares, or repairs interchangeable, but can sometimes be a capability less than interchangeability when a degradation of performance or some limitations are operationally acceptable.

Logistics Reliability - The measure of the ability of an item to operate without placing a demand on the LS structure for repair or adjustment. It recognizes the effects of occurrences that place a demand on the LS structure without regard to the effect on mission or function.

Logistics Support (LS) - The application of a comprehensive, integrated approach to the key areas of logistics: maintenance, supply, PHS&T, and training.

Logistics Support Elements - A traditional group of items that, taken together, constitute LS. These include: maintenance planning; manpower and personnel; support; support equipment; technical data; training and training support; computer resources support; facilities; PHS&T; and design interface.

Logistics Supportability - The degree of ease to which system design characteristics and planned logistics resources (including LS elements) allow for the meeting of system availability to meet operational requirements.

Maintainability - An inherent characteristic of system or product design that pertains to the ease, accuracy, safety, and economy in the performance of maintenance actions.

Maintenance - All actions necessary for retaining a system or product in, or restoring it to, a serviceable condition.

Maintenance Levels - All maintenance performed, either directly on the vehicle or in a supporting role, are categorized in one of the following categories:

a. Organizational Level: Maintenance performed on vehicle subsystems and related support equipment in direct support of the turnaround flow. It includes scheduled and unscheduled maintenance actions required to inspect, service, calibrate, replace, repair, modify in place, and reverify subsystems and associated components.

b. Intermediate Level: Maintenance that is performed in direct support of organizational level maintenance and involves disposition, repair, service, modification, calibration, and verification of items removed during organizational maintenance.

c. Depot Level: Maintenance that is performed by designated maintenance sources. It normally consists of maintenance that requires maintenance ground equipment, facilities, or skills that are not economically available at the intermediate level (e.g., repairing, modifying, overhauling, reclaiming, or rebuilding parts, assemblies, subassemblies, components, and end items; manufacturing of unavailable parts; and providing technical assistance to the organizational and intermediate levels).

Maintenance Sampling - The systematic removal of LRUs, SRUs, and critical parts for test, tear down and evaluation in order to validate their design life. Maintenance sampling is also utilized to extend or shorten the design life or reclassify as a time/age/cycle item.

Modification - A physical change to delivered hardware/software and spares.

Obsolescence - The loss or anticipated loss of availability/reparability of parts or materials at a cost effective price.

Off-line Maintenance - The maintenance performed at the intermediate and depot levels. (See maintenance levels.)

Off-line Operations - Operations/Activities performed at the intermediate or depot level maintenance facilities.

On-line Maintenance - The maintenance performed at the organizational level. (See maintenance levels.)

On-line Operations - Those operations/activities performed at the Launch and Landing Site (LLS).

Optimum Repair Level Analysis (ORLA) - A basis on which to evolve an optimum approach to repair recommendations concurrent with the design and development process. Also, referred to as Repair Level Analysis or Level of Repair Analysis (LORA). An ORLA forms the basis for a repair item disposition, repair at intermediate/depot level or discard-at-failure, based on economic considerations.

Probability of Sufficiency (POS) - The probability that, when a given piece of equipment (LRU) requires removal and replacement, there will be at least one spare available for the replacement. For example, if “N” spares are required for 90% POS, the probability is 90% that there will not be more than “N” failures during the specified period of time.

Problem Analysis - Documented results of investigations performed to determine the validity of the problem and recommendations for disposition.

Reliability - The probability that an item will perform its intended function adequately, without failure, for a specified time period, under specified conditions.

Remedial Action - Action taken to bring a specific failed unit to operational status or to eliminate an unsatisfactory condition on the specific unit; e.g., remove and replace, repair a defect, MRB disposition, etc.

Repair Part - An item capable of supply and replacement.

Repairable Item - An item that can be restored to a serviceable condition.

Reparable Item - An item that has been determined by the application of engineering, economic, and other factors to be feasible for restoration to a serviceable condition through regular repair procedures.

Scheduled Maintenance - Those actions performed periodically to retain an item in an operable condition by systematic inspection, detection and prevention of incipient failures, replacement of life/cycle limited components, adjustment, calibration, cleaning, and lubrication.

Shop Replaceable Unit - Any item whose replacement constitutes the optimum intermediate or depot level of repair actions for a higher indentured item.

Source, Maintenance and Recoverability Code - The code used to communicate maintenance and supply instructions to the various support/maintenance activities.

Spare Part - A replacement item used for the maintenance, overhaul, or repair of the article for which it is provisioned.

Supply Support Management - All functions and management actions necessary for determining spares requirements, acquisition, cataloging, packaging, preservation, receipt, storage, transfer, issue and disposal of spares, repair parts, bulk materials, consumables, propellants, and clothing.

Support Requirements Analysis - A study that defines the requirements for support equipment, spare parts, consumables, personnel, specialized maintenance training, maintenance documentation, and any special facilities requirements; e.g., temperature/humidity, cleanliness, etc. The analysis is performed to the depth necessary to identify acquisition of resources, as determined by the ORLA.

Supportability - A composition of all the considerations necessary to assure the effective and economic support of a system for its life cycle.

Technical Data - All types of specifications, standards, engineering drawings, instructions, reports, manuals, tabular data, and test results used in logistics activities necessary to support, process, maintain, and turnaround the vehicle at the LLSs, and hardware at the repair locations.

Training - Teaching and instructing personnel so they can obtain the knowledge and develop skills necessary to operate and support/maintain a system (hardware and software). It includes the processes, procedures, curricula, techniques, devices, simulators, and other necessary equipment.

Unscheduled Maintenance - Actions performed to restore an item to operable condition.

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SECTION C

PROVISIONING DATA ELEMENTS

TABLE C.1
PROVISION DATA ELEMENTS

DATA ELEMENT AND DESCRIPTION	DIGITS	ALPHA/ NUMERIC	APPLIES TO	ESSENTIAL/ APPLICABLE	FIELD JUSTIFY
1. Prime Contractors' Part Number - The part number assigned by the prime contractor to indicate this part number or the number assigned to the part if different from the true manufacturers' part number. If not applicable, leave blank.	20	A/N	R N	E E	L
2. Commercial and Government Entity - This code is the 5-digit Federal manufacturers' code assigned to the prime manufacturer by the Federal Cataloging Handbooks, H-4-1 and 2. If not applicable, leave blank.	5	A/N	R N	E E	
3. True Manufacturers' Part Number - This is the part drawing or catalog number of the actual manufacturer of the part. The manufacturer is the company or government activity exercising design control over the item. Part number will be assigned as prescribed by DOD 4100.39-M and DOD 4130.2-M.	20	A/N	R N	E E	L
4. Commercial and Government Entity for True Manufacturer - This is the Federal Manufacturers' code assigned to the true manufacturer.	5	A/N	R N	E E	
5. Item Name - The name that has been established for this item to categorize it into a group of related items of supply. Federal Cataloging Handbook H6-1 and MIL-STD-12 will be used in obtaining the approved item name.	16	A/N	R N	E E	L
6. Unit Price - The actual or best estimated price (based on current quote) per unit of an item based on the unit of acquisition; expressed in dollars to two decimal places.	10	N	R N	E E	R

TABLE C.1
PROVISION DATA ELEMENTS - Continued

DATA ELEMENT AND DESCRIPTION	DIGITS	ALPHA/ NUMERIC	APPLIES TO	ESSENTIAL/ APPLICABLE	FIELD JUSTIFY
7. Unit of Measure - The abbreviation of the term which denotes the physical measurement, count, or quantities of an item for procurement, storage and/or issue, such as dozen, gallon, pair, pound, etc. The approved abbreviations are specified in DOD 4100.39-M, Appendix 3-E-2.13.	2	A	R N	E E	
8. Item Indenture - This data element defines the lateral and descending relationship of each line item and within the system or end item and its discrete components (units), assemblies, subassemblies, detail parts and attaching parts. The codes are as follows: A B C D E F G End item or system. . Component (Unit) . . Assembly . . . Sub-assembly . . . . Detail parts Attaching parts will be identified under the indenture code of the item to which they attach.	1	A	R N	E E	
9. Lead Time - The period of time expressed in months required by the contractor or vendor from receipt of an order until the first production quantity can be delivered.	3	N	R N	E E	R
10. Next Higher Assembly (NHA) Number - The part number of the NHA in which the part is installed.	20	A/N	R N	E E	L
11. Quantity Per Assembly - This quantity indicates the total number of times the line item is used in the assembly of which it is a part.	4	N	R N	E E	R
12. Quantity Per End Item - This data element indicates the total number of times the line item is used in the end item and/or end article of which it is a part.	4	N	R N	E E	R

TABLE C.1
PROVISION DATA ELEMENTS - Continued

DATA ELEMENT AND DESCRIPTION	DIGITS	ALPHA/ NUMERIC	APPLIES TO	ESSENTIAL/ APPLICABLE	FIELD JUSTIFY
13. Source Maintenance and Recoverability Code - This code will be assigned per instructions in Section D.	6	A	R N	E E	
14. Maintenance Issue Rate - The actual or estimated repair rate of the item which creates a demand on the supply system. The rate is normally expressed as the anticipated average maintenance replacement rate per operating program increment of 1000 hours. The first digit is a whole number to three decimal places.	4	N	R N	E E	L
15. Shelf Life Codes - Shelf life codes shall be used as listed in the latest revision of DOD 4100.39-M, System (DIDS).	1	A/N	R	A	
16. Special Material Content Code - This code indicates that an item represents or contains peculiar material requiring special treatment, precautions, or management control of the item. Codes to be entered shall be as follows: A - Antibiotic (Medical/Drugs) B - Flammable Compressed Gas C - Corrosive Liquid D - Alcohol (Medical/Drugs) E - Precious Metals F - Flammable Liquid G - Combustible Liquid H - Hazardous Substance J - Oxidizing Material K - Medical Kits containing any combination of Codes A, D, L and N L - Drugs, other than A, D, N, and K requiring special handling/issue/storage M - Magnetic Material	1	A	R N	E E	

TABLE C.1
PROVISION DATA ELEMENTS - Continued

DATA ELEMENT AND DESCRIPTION	DIGITS	ALPHA/ NUMERIC	APPLIES TO	ESSENTIAL/ APPLICABLE	FIELD JUSTIFY
N - Narcotics P - Poison Q - Extremely Flammable Liquid R - Radioactive Material S - Combustible and Toxic Substance T - Toxic Substance U - Mercury (Medical) V - Acid (Medical) W - Nonflammable Compressed Gas X - Radioactive and Magnetic Material Y - Non-Magnetic Z - Flammable Solids					
17. Change Authority - This is the document that authorizes change in part number configurations, i.e., engineering orders, drawings, etc.	15	A/N	R N	A A	L
18. Traceability Codes - Traceability code is the classification of a raw material, part, assembly or end item for determining the traceability marking and traceability records required or excluded for the item. (Refer to NSTS 07700, Volume X - Book 1, Paragraph 3.6.13.1). The following codes shall be used: “S,” Serial traceability “L,” Lot traceability “M,” Member traceability “E,” Exempt from Traceability	1	A	R N	E E	

TABLE C.1
PROVISION DATA ELEMENTS - Concluded

DATA ELEMENT AND DESCRIPTION	DIGITS	ALPHA/ NUMERIC	APPLIES TO	ESSENTIAL/ APPLICABLE	FIELD JUSTIFY
19. Effectively - The model number of the end item that the spare is being procured to support. More than one effectivity may be applicable.	11	A/N	R N	E E	L
20. Quantity Recommended - Total quantity of the item recommended to be procured.	3	A/N	R N	E E	R

Legend: The first column is a title and narrative description of the data element. The second column indicates the number of digits that will be required by the data element. The third column indicates the alpha or numeric construction of the data element. The fourth column indicates the type of item “R” to indicate reparable or “N” to indicate non-reparable. The fifth column indicates whether this data element is essential or applicable for other items to which it applies. The sixth column indicates the field justification, left or right.

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SECTION D

SMR CODES

D1.0 GENERAL

This section contains the current SMR Code chart used by the SSP. SMR Codes will not be reassigned for T&R activities. The SMR Code format is outlined in the following section.

D2.0 SMR CODES

SMR code format is composed of six parts consisting of: a two-part Source Code; a two part Maintenance Code; a one part Recoverability Code; and a one part Reserved Code (reference Figure D-1).

D2.1 SOURCE CODES (1ST AND 2ND POSITION)

The first two positions of the SMR code indicate the source for acquiring the item (procurable, manufacture, assemble, etc.) and the 2nd position provides additional information. Source codes are entered in the 1st and 2nd positions of the SMR code format as follows:

CODE	DEFINITION
PA	Item is procurable and is stocked for anticipated or known usage.
PB	Item is procurable and stocked for insurance purposes because essentiality dictates that a minimum quantity be available in the supply system.
PC	Item is normally coded PA except those that are deteriorative in nature.
PE	Support equipment procured and stocked for initial issue or outfitting to specified maintenance repair.
PG	Item is procured and stocked and is not economical for remanufacturer.
KD	An item of depot overhaul/repair kit and not purchased separately. A depot kit provides items required at the time of depot overhaul or repair.
KF	An item of a maintenance kit and not purchased separately. An intermediate or organizational maintenance kit provides items that are required at time of organizational or intermediate levels of maintenance.
KB	Item included in both a depot overhaul/repair kit and a maintenance kit.
MO	Item to be manufactured or fabricated at the organizational level.
MF	Item to be manufactured or fabricated at an intermediate maintenance level.
MD	Item to be manufactured or fabricated at the depot maintenance level.
AO	Item to be assembled at organizational level.
AF	Item to be assembled at intermediate maintenance levels.
AD	Item to be assembled at the depot maintenance levels.
XA	Item is not procured or stocked. Requisition next higher assembly.
XB	Item is not procured or stocked. If required obtain from salvage or requisition. The alternate sources must be feasible options.
XC	Installation drawing, diagram, instruction sheet, field service drawing that is identified by manufacturer's part number.
XO	Item of obsolete.

D2.2 MAINTENANCE CODES (3RD AND 4TH POSITIONS)

Codes entered in the 3rd and 4th positions of the SMR code indicate the levels authorized to remove, replace and repair the item.

D2.2.1 Remove/Replace (3rd Position)

The maintenance code entered in the 3rd position indicates the level authorized to remove/replace the item. The decision to code the item for removal and replacement by the indicated maintenance level will require that all capabilities necessary to install and assure proper operation after installation of a replacement item (pre-installation inspection, testing and post-installation checkout) are provided. The 3rd position codes are as follows:

CODE	DEFINITION AND APPLICATION
O	Support item that is removed, replaced, at the organizational level of maintenance.
F	Support item that is removed, replaced, at the intermediate levels.
D	Support item that is removed, replaced, at the depot level.

D2.2.2 Repair (4th Position)

The maintenance code in the 4th position indicates whether the item is reparable and identifies the maintenance level responsible for performing or obtaining the necessary maintenance. The decision to code an item for repair at a particular maintenance level requires that this level have all repair capability for the item or the authority to obtain repair support from another level of maintenance. Support from another source will be upon request as needed. The 4th position codes are as follows:

CODE	DEFINITION AND APPLICATION
O	The maintenance level responsible for complete repair of the support item is the organizational level. May require repair support from intermediate level.
F	The maintenance level responsible for complete repair of the support item is at the intermediate level.
C	Non-reparable, cleaning and replacement of soft goods and functional testing only.
D	Limited maintenance/repair authorized at the intermediate/organizational level, complete repair/overhaul authorized at the depot level.
L	Repair/overhaul authorized at the depot level only.
Z	Non-reparable. No repair is authorized.
B	No repair is authorized. The item may be reconditioned by adjusting, lubricating, proof testing, etc. at the organizational or intermediate level as specified by use code. No parts are procured for returning this item to a serviceable condition.

D2.3 RECOVERABILITY CODES (5TH POSITION)

The recoverability code entered in the 5th position reflects the maintenance level authorized to condemn an item (either an item predetermined to be non-reparable under any failure condition or an item for which, due to the type/magnitude of failure, repair is not feasible). Also available is a code for special handling. The 5th position codes are as follows:

CODE	DEFINITION AND APPLICATION
Z	Non-reparable item. When unserviceable, condemn and dispose at the level indicated by the code in Position 3.
O	Reparable item. When repair is not economically feasible, condemn and dispose at the organizational level.
F	Reparable item. When repair is not economically feasible, condemn and dispose at the intermediate level.
D	Reparable item. When beyond identified level repair capability, return to depot. Condemnation and disposal at the depot level.
A	Special handling.

D2.4 RESERVED CODES (6TH POSITION)

The code entered by the organization having logistics and maintenance responsibility used to reflect special requirements for the item. The 6th position codes are as follows:

CODE	DEFINITION AND APPLICATION
P	Precious metals, e.g., recoverable gold, silver and the platinum group metals (iridium, osmium, palladium, platinum, rhodium, and ruthenium)
E	Explosives
H	Hazardous, e.g., contaminated with hypergolics
C	Priority spare
R	Radioactive
M	Mission critical
K	Initial cleaning prior to installation (non-reparable item)

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TABLE D.1 SMR CODE BREAKDOWN AND DEFINITION

SOURCE				MAINTENANCE				RECOVERABILITY		RESERVED	
				REMOVE/REPLACE		REPAIR					
1ST POSITION		2ND POSITION		3RD POSITION		4TH POSITION		5TH POSITION		6TH POSITION	
P	PROCURABLE	A	STOCKED	O	REPLACE AT ORGANIZATIONAL LEVEL	Z	NO REPAIR	Z	NON-REPARABLE CONDEMN AT ANY AUTHORIZED LEVEL	P	PRECIOUS METALS
		B	INSURANCE			B	NO REPAIR; RECONDITION			E	EXPLOSIVES
		C	DETERIORATIVE			C	NO REPAIR; CLEAN, REPLACE SOFT GOODS AND TEST ONLY	O	REPARABLE CONDEMN AT ORGANIZATIONAL LEVEL		
		E	GSE							H	HAZARDOUS
		G	LIFE OF SYSTEM SUPPORT								
K	COMPONENT OF A REPAIR KIT	F	INTERMEDIATE KIT	F	REPLACE AT INTERMEDIATE LEVEL	O	REPAIR AT ORGANIZATIONAL LEVEL			C	PRIORITY SPARES
		D	DEPOT KIT								
		B	IN BOTH KITS					F	REPARABLE CONDEMN AT INTERMEDIATE LEVEL		
M	MANUFACTURE	O	ORGANIZATIONAL			F	REPAIR AT INTERMEDIATE LEVEL			R	RADIOACTIVE
		F	INTERMEDIATE								
		D	DEPOT								
A	ASSEMBLE	O	ORGANIZATIONAL	D	REPLACE AT DEPOT LEVEL ONLY	D	LIMITED REPAIR AT INTERMEDIATE OVERHAUL AT DEPOT	D	REPARABLE CONDEMN AT DEPOT LEVEL	M	MISSION CRITICAL
		F	INTERMEDIATE								
		D	DEPOT								
X	NON STOCKED	A	SEE NHA*			L	REPAIR DEPOT LEVEL ONLY			K	INITIAL CLEANING
		B	RECLAMATION REQMT FROM IM/PSM**					A	SPECIAL HANDLING		
		C	DRAWINGS								
		O	OBSOLETE								

* NHA - Next Higher Assembly
** IM/PSM - Item Manager/Product Support Manager

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SPACE SHUTTLE

APPENDIX 13

NASA SUPPORT TO VAFB LAUNCH AND LANDING SITE DEVELOPMENT ACTIVATION

No applicable requirements have been identified in NSTS 07700, Volume XIII to transition into Appendix 13 for closeout.

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SPACE SHUTTLE

APPENDIX 14

SPACE SHUTTLE SYSTEM PAYLOAD ACCOMMODATIONS

No applicable requirements have been identified in NSTS 07700, Volume XIV to transition into Appendix 14 for closeout.

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SPACE SHUTTLE

APPENDIX 15

RESOURCE MANAGEMENT POLICY AND CLOSEOUT REQUIREMENTS

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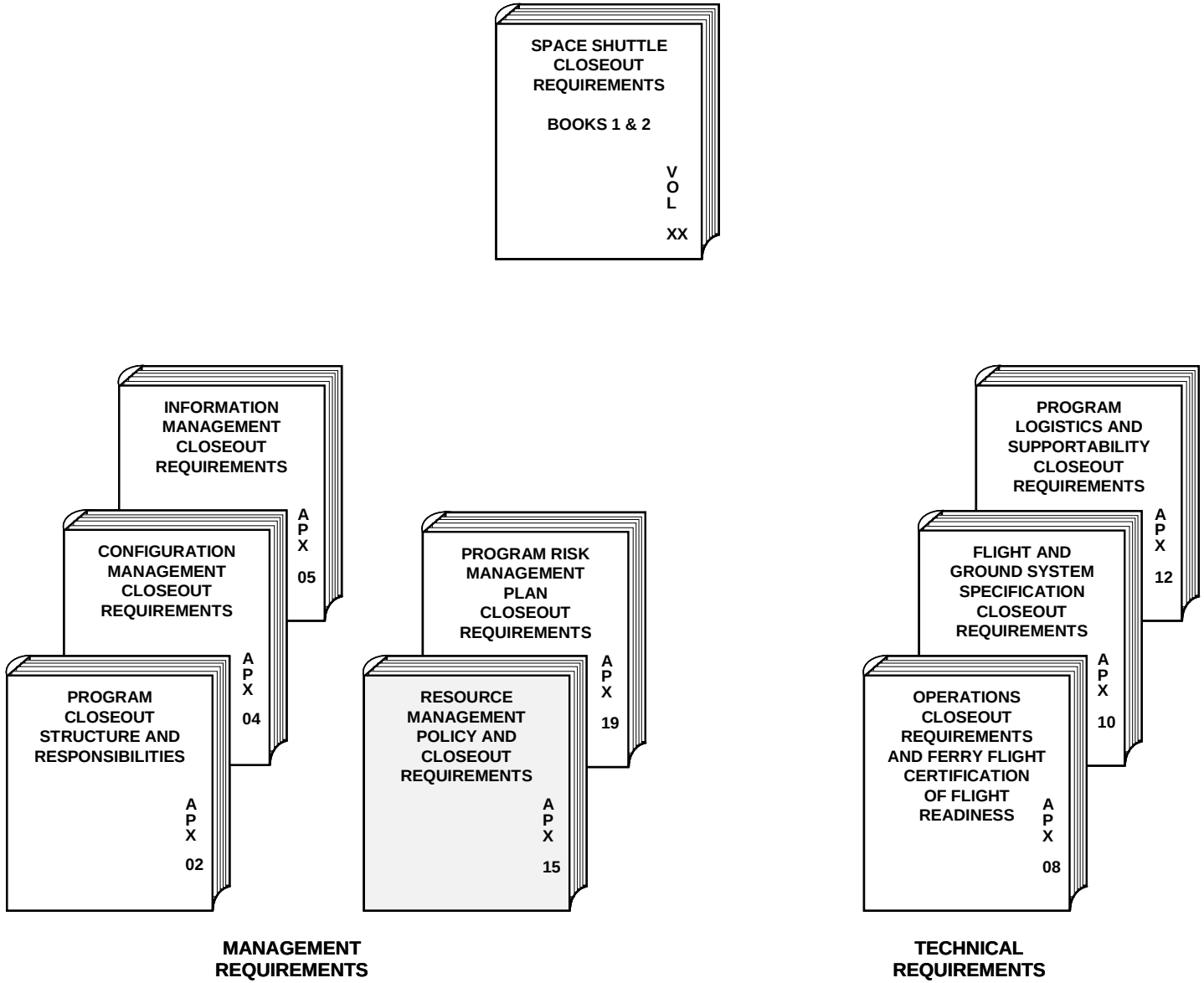
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, interface agreements, and system capabilities shall be documented, baselined, and subsequently controlled by SSP management.

This Appendix 15 of NSTS 07700, Volume XX - Book 2, defines the business management policy requirements, responsibilities, and closeout procedures for the SSP.

All elements of the SSP must adhere to these baselined requirements. When it is considered necessary by the Space Shuttle program element/project managers to be in the best interest to change, waive or deviate from these requirements, an SSP Change Request (CR) shall be submitted to the Program Requirements Control Board (PRCB) Secretary. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume IV - Book 1, and dispositioned by the Manager, Space Shuttle Program, on a Space Shuttle PRCB Directive (PRCBD).

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to define the policy, requirements, and responsibilities for the Space Shuttle Program (SSP) closeout activities at the Conclusion of the Operational Phase of the Program (COPP).

1.2 SCOPE

The provisions of this appendix shall apply to all elements either influencing or participating in business planning, implementation, and monitoring activities.

1.3 DELEGATION OF AUTHORITY

Manager, Space Shuttle Program has responsibility for planning and implementing the SSP in a cost-effective manner and for providing information and analysis required for closeout business decisions. The Space Shuttle Business Office is delegated the responsibility for implementing and coordinating business management activities.

Each affected program element shall have the responsibility of developing means for implementing requirements as defined in this document. The Space Shuttle Business Office relies on the program elements, the center's Chief Financial Officers, and center's financial management and procurement organizations to assure compliance with and implementation of the Federal Acquisition Regulations and the NASA supplement, accounting standards, and contractor reporting systems requirements. The Space Shuttle Business Office is responsible for implementation of the Headquarters Program Planning Budget and Execution (PPBE) calls requirements for the SSP and closeout related activities.

1.4 EFFECTIVITY

Until down processing of the last mission has been completed, NSTS 07700, Volume XV, Resource Management Policy and Requirements, will remain in effect. NSTS 07700, Volume XX - Book 2, Appendix 15 shall be in effect after post-mission down processing is completed for the last vehicle to fly.

2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this document to the extent specified herein. "(Current Issue)" is shown in place of a specific date and issue when the document is under governing program control.

NSTS 07700 Volume IV - Book 1 (Current Issue)	Configuration Management Requirements, Requirements
	Ref. Preface
NSTS 07700 Volume XV (Current Issue)	Resource Management Policy and Requirements
	Ref. Para. 1.4
NPG 9501.2C	NASA Contractor Financial Management Reporting
	Ref. Para. 3.2

2.1 APPLICABLE REFERENCES

Current versions of the following reference documents form a part of this volume for conveying necessary business and programmatic requirements:

NSTS 07700	Space Shuttle Program Definition and Requirements
FMM Volumes 9000 - 9799	NASA Financial Management Manual
NPD 9501.1F	NASA Contractor Financial Management Reporting System
NPG 9501.2C	NASA Contractor Financial Management Reporting
NPG 7120.5D	NASA Program and Project Management Processes and Requirements
No Number	Annual OSF Operating Plan and Program Operating Plan Calls
No Number	Federal Acquisition Regulations
No Number	NASA Federal Acquisition Regulations Supplement

3.0 BUSINESS MANAGEMENT RESPONSIBILITIES

Space Shuttle Business responsibilities include resource planning and implementation, assessment and reporting, acquisitions and decommissioning and closeout.

3.1 RESOURCE PLANNING

Resource planning produces an operating plan and a budget baseline consistent with schedule milestones, technical and Space Shuttle operational objectives, and funding constraints. Tasks of the Space Shuttle Business Office include implementing policy guidelines and providing programmatic instructions to program elements, performing reviews and analyses, integrating element budget estimates, and developing a recommended, balanced total program resources plan which is responsive to program direction, requirements, and resource commitments and constraints.

Budgets are formally prepared in accordance with Space Operations Mission Directorate (SOMD) calls, and are presented in PPBEs. The PPBE process is comprised of the request for budget estimates (the call), the preparation of budget request, reviews, and the approved budget (mark). Call guidelines are issued by the NASA Chief Financial Officer, based on the approved Office of Management and Budget (OMB)/Congressional budget including the input and recommendations of the Manager, Space Shuttle Transition and Retirement Program. They provide objectives, groundrules, program milestones, data requirements, and review process/schedules.

PPBE inputs are reviewed at successive organizational levels before final approval. Each project manager reviews total project content. The Manager for the Space Shuttle Business Office is responsible for the final consolidation, review, and recommendation of the total Space Shuttle PPBE to the Manager, Space Shuttle Program. He provides an analysis of each project submittal, identification of resource conflicts, and a recommended budget. The Manager, Space Shuttle Program conducts a detailed review with decisions resulting from these reviews incorporated into the program recommended budget. This recommendation is forwarded to the Lead Center Director for his review. The Lead Center Director, in turn, provides a recommendation to the Associate Administrator (AA) - SOMD for his review. After deliberations at NASA Headquarters, the budget recommendation is submitted to OMB as part of the total agency recommendation.

3.2 RESOURCE IMPLEMENTATION

The appropriations from Congress finalize the budget process and result in an approved and funded operating plan which becomes the basis for evaluation of performance within cost controls while maintaining schedule and performance goals. The Space Shuttle Business Office assures the proper distribution of resources to closeout activities, assuring that funding is consistent with current resource planning and technical goals. It also provides resources management information to the Manager, Space Shuttle Program.

In response to the appropriations from Congress, the Space Shuttle Program Manager, develops and implements a current fiscal year cost phasing plan. The Space Shuttle Business Office issues guidelines to the project elements consistent with Congressional appropriations. The project elements develop a monthly phased plan to be approved by the Manager, Space Shuttle Business Office. This plan forms the basis for distribution of resources authority consistent with congressional appropriations.

Contractor financial reporting is in compliance with NPG 9501.2C, NASA Contractor Financial Management Reporting.

3.3 ASSESSMENT AND REPORTING

Periodic assessments are made to determine the adequacy of the current financial planning and the potential need for corrective action. Assessments are made of progress toward technical goals, appraisal of work quality and content, and of cost and workforce utilization. Assessments are a means of identifying deviations from plans which may impact resource planning. These assessments are completed by periodic reviews, formal reports, and routine day-to-day interface. Results are communicated to management. A current resource status is maintained to support timely decision-making and planning.

3.4 ACQUISITION

The Space Shuttle Business Office relies on center procurement organizations to perform the acquisition functions and ensure compliance with acquisition regulations.

SECTION A

ACRONYMS AND ABBREVIATIONS

AA	Associate Administrator
COPP	Conclusion of the Operational Phase of the Program
CR	Change Request
OMB	Office of Management and Budget
OSF	Office of Space Flight
PPBE	Program Planning Budget and Execution
PRCB	Program Requirement Control Board
PRCBD	Program Requirement Control Board Directive
SOMD	Space Operations Mission Directorate
SSP	Space Shuttle Program

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SPACE SHUTTLE

APPENDIX 16

SPACE SHUTTLE PROGRAM/SPACE STATION FREEDOM PROGRAM PROGRAM MANAGEMENT PLAN

No applicable requirements have been identified in NSTS 07700, Volume XVI to transition into Appendix 16 for closeout.

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APPENDIX 17

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APPENDIX 18

COMPUTER SYSTEMS AND SOFTWARE REQUIREMENTS

No applicable requirements have been identified in NSTS 07700, Volume XVIII to transition into Appendix 18 for closeout.

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APPENDIX 19

PROGRAM RISK MANAGEMENT PLAN
CLOSEOUT REQUIREMENTS

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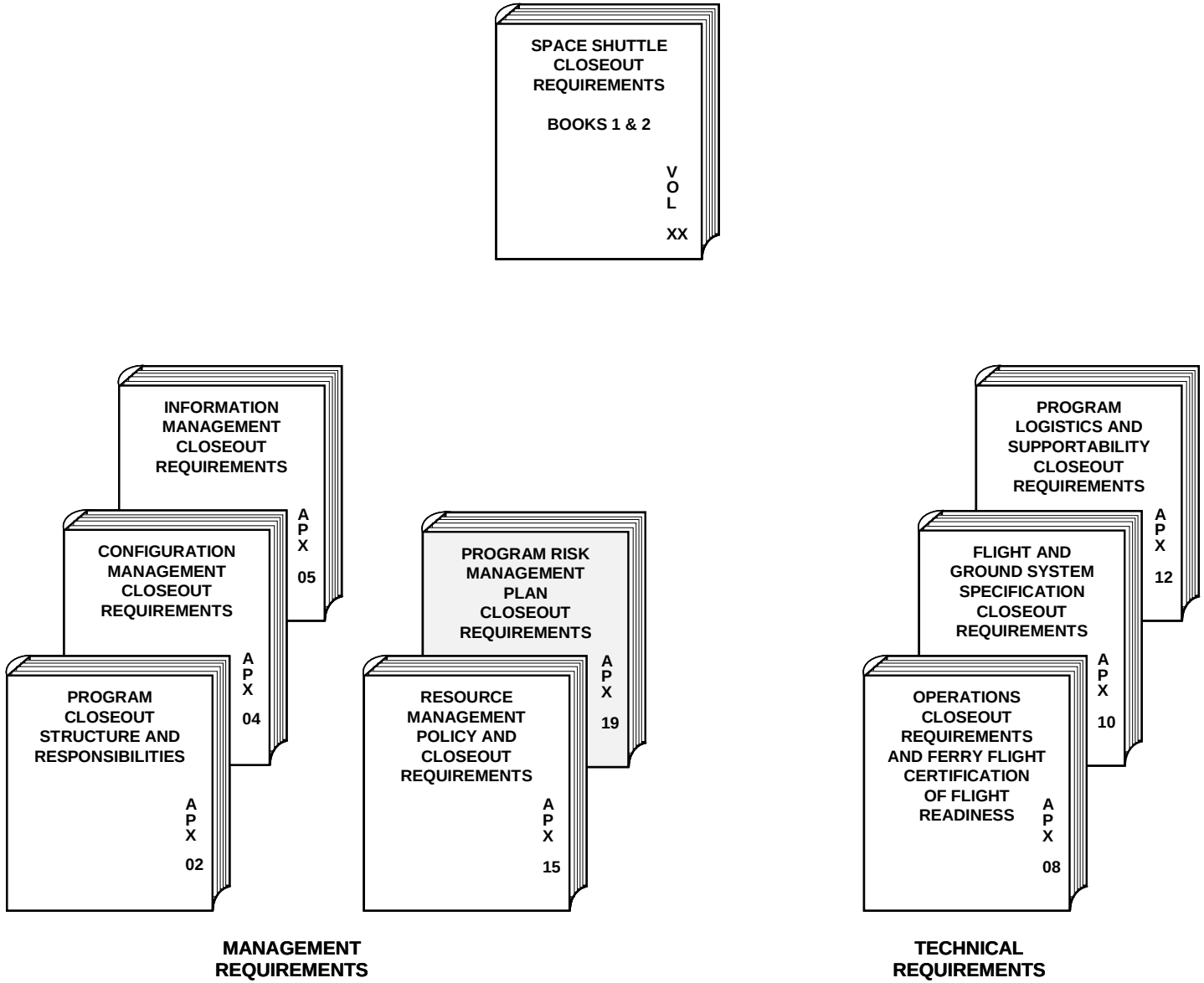
SPACE SHUTTLE CLOSEOUT REQUIREMENTS



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PREFACE

Efficient management of the Space Shuttle Program (SSP) Transition and Retirement (T&R) closeout activities dictates that effective control of program activities be established. Requirements, directives, procedures, interface agreements and system capabilities shall be documented, baselined and subsequently controlled by SSP T&R management.

SSP T&R closeout requirements controlled by the T&R Manager are documented in, attached to, or referenced from NSTS 07700, Volume XX, Books 1 and 2.

This appendix of NSTS 07700 defines the SSP T&R Risk Management (RM) Plan. The purpose of this document is to:

a. Define SSP T&R RM processes, standards and tools

b. Establish the scope and focus of SSP T&R RM activities

c. Define how risk related initiatives are integrated to ensure that the significant risks are fully and consistently characterized and sufficiently communicated

d. Describe how risk is incorporated into strategic program decision making

e. Define SSP T&R roles and responsibilities for the implementation of this plan

All elements of the SSP T&R must adhere to these baselined requirements. When it is considered necessary by the SSP T&R element/project managers to change, waive or deviate from these requirements, an SSP T&R Change Request (CR) shall be submitted to the Change Management Support Tool (CMST) found on the SSP web. The CR must include a complete description of the change, waiver or deviation and the rationale to justify its consideration. All such requests will be processed in accordance with NSTS 07700, Volume XX - Book 2, Space Shuttle Closeout Requirements, Appendix 04, Configuration Management Closeout Requirements, and dispositioned by the T&R Manager on an SSP T&R PRCB Directive (PRCBD).

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1.0 INTRODUCTION

The closeout of the Space Shuttle Program (SSP) and its assets is complex both technically and programmatically and may pose risks. Shuttle closeout operations may pose risks. It is likely that as closeout activities commence, technical, schedule and financial challenges may impose risk to meeting program objectives. Effective Risk Management (RM) is therefore essential to the successful attainment of SSP Transition and Retirement (T&R) closeout objectives.

NASA has defined policies and requirements regarding the implementation of RM. The SSP T&R RM program defined in this document builds on these practices to ensure that the risks associated with SSP T&R operations are understood and effectively managed.

This RM Plan provides an integrated view of the program's approach to executing its RM responsibilities. The RM plan defines specific RM processes and requirements, but also describes how these are to be integrated into a continuous RM process. The plan was formerly intended for use during the operational spaceflight phase. Personnel engaged in T&R functions should interpret these guidelines in the context of the closeout mission, consisting primarily of ground activities and ferry flight. While all attributes (safety, mission success, supportability, cost and schedule) required for successful SSP T&R closeout operations are considered within the scope of the SSP T&R RM process, safety shall be the overarching consideration in all SSP T&R decisions.

This document provides an overview of the major elements of the SSP T&R RM program. It defines responsibilities which have been assigned to SSP T&R organizations for accomplishing program RM activities.

1.1 PURPOSE

The purpose of this document is to define the program requirements and responsibilities for implementing and operating the SSP T&R RM Plan.

1.2 OBJECTIVES

The SSP T&R RM Plan objectives are:

a. Ensure organized, methodical, decision-making processes are utilized to identify and assess risks and effectively eliminate or mitigate them.

b. Ensure the RM process is proactive in nature and structured to provide early insight through appropriate collection and use of data, implementation of proven analytical techniques, execution of identified mitigation plans and through management review and verification.

c. Ensure safety is maintained as the overarching objective in all SSP T&R decisions. This emphasis and focus on safety extends to any potential risk involving the public, employees and SSP assets.

d. Ensure that the integrated effect of various risk categories (safety, mission success, supportability, cost and schedule) is properly analyzed and evaluated during program decision making.

1.3 APPLICABILITY

This document is applicable to Johnson Space Center (JSC), Marshall Space Flight Center (MSFC), Kennedy Space Center (KSC) and Stennis Space Center (SSC) organizations and personnel involved in the conduct of the SSP T&R. In order to meet the requirements contained in this document, project requirements have been imposed on the functional organizations of JSC, MSFC, KSC, SSC and on the SSP T&R contractors. Space Shuttle Program T&R elements/projects are responsible for developing and implementing these project level requirements.

1.4 RESPONSIBILITIES

1.4.1 SSP T&R Manager

The SSP T&R Manager has overall responsibility for establishing and implementing the SSP T&R RM policy. Ultimately, the T&R Program Manager (PM) is responsible for managing program risks. NASA policy requires that the PM do the following:

a. Apply a Continuous Risk Management (CRM) process within the program throughout its life cycle.

b. Document and approve that process within a RM Plan.

c. Document and manage risks throughout the program's life cycle.

d. Approve the formal acceptance of Top Program Risks (TPRs).

e. Provide program risk status.

NOTE: PM is required to approve all Program Hazard Reports (HRs).

1.4.2 SSP T&R Risk Manager

The SSP T&R Risk Manager is responsible for the development and implementation of this plan, and development and oversight of the day-to-day operation of RM activities. In addition, the SSP T&R Risk Manager is responsible for establishing and chairing a Risk Management Working Group (RMWG). The RMWG will be used as a forum to communicate and track all risks/concerns within T&R.

1.4.3 Other SSP T&R Managers and Leads

Each of the managers and leads with the SSP T&R Element Offices, Project Offices, and line or staff organizations is responsible for implementing the RM policies and processes described in this plan within that element, project or organization office.

1.4.4 RM Focal Points

RM focal points have been established within SSP T&R and supporting organizations at each center. Their role is to facilitate the implementation of this plan within their organization, and communicate any proposals or potential issues arising within their organization to the Risk Manager. The focal points will also participate in the RMWG to communicate any concerns or new developments coming from the Risk Manager to their organization.

1.5 RESOURCES AND SCHEDULES

The SSP T&R RM effort is allocated among SSP T&R elements and organizations. Therefore, each organization is responsible for providing the resources required to support the activities defined in this plan. RM focal points are funded by their owning organization and are responsible for identifying any additional resource requirements to support RM initiatives.

1.6 ASSUMPTIONS AND CONSTRAINTS

This plan assumes compliance by all personnel and organizations within or funded by the SSP T&R. All portions of this plan may change over time; however, these changes will be reviewed by the SSP T&R Program through the SSP T&R Change Request (CR) process.

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2.0 APPLICABLE DOCUMENTS

The following documents of the date and issue shown form a part of this document to the extent specified herein. "(Current Issue)" is shown in place of a specific date and issue when the document is under Space Shuttle PRCB control. The current status of documents shown with "(Current Issue)" may be determined from NSTS 08102, Program Document Description and Status Report.

NSTS 07700 Volume XX - Books 1 and 2 (Current Issue)	Space Shuttle Closeout Requirements
	Ref. Preface
NSTS 07700 Volume XX - Book 2 Appendix 04 (Current Issue)	Space Shuttle Closeout Requirements, Configuration Management Closeout Requirements
	Ref. Preface, Para. 3.1.6
NSTS 5300.4(1D-2) (Retired)	Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program
	Ref. Para. 4.2.2
NSTS 22254 (Retired)	Methodology for Conduct of Space Shuttle Program Hazard Analyses
	Ref. Para. 3.1.5, 4.2.2
FAR, Part 45	Federal Acquisition Regulation (FAR), Government Property
	Ref. Para. 5.0
NPR 5100.4	NASA/FAR Supplement [48CFR 1800-1899]
	Ref. Para. 5.0
NPR 7120.5C	NASA Program and Project Management Processes and Requirements
	Ref. Para. 5.0

2.1 REFERENCE DOCUMENTS

NSTS 07700 Volume XX - Book 2 Appendix 02	Space Shuttle Closeout Requirements, Program Closeout Structure and Responsibilities
NSTS 07700 Volume XX - Book 2 Appendix 05	Space Shuttle Closeout Requirements, Information Management Closeout Requirements
NSTS 60576	Space Shuttle Program Transition Management Plan
NPR 1600.1	NASA Security Program Procedural Requirements
NPR 2190.1	NASA Export Control Program
NPR 2810.1	Security of Information Technology
NPR 8715.3	NASA Safety Manual

3.0 CONTINUOUS RISK MANAGEMENT

3.1 CRM PARADIGM

Risk is characterized by the combination of the probability that a program or project will experience an undesired event (some examples include a cost overrun, schedule slippage, safety mishap, health problem, malicious activity, environmental impact, failure to achieve a needed scientific or technological breakthrough or mission success criteria) and the consequences, impact, or severity of the undesired event, were it to occur.

Risk is driven by purpose. The importance of a risk is directly related to the importance of the potential impact. The SSP T&R has defined goals which represent values and priorities. Therefore, the importance of identified risks can best be understood by understanding their impact on those same goals and priorities. With this in mind, the SSP T&R risk categories correspond closely to defined program goals. The risk consequence categories have been defined as follows: Safety, Mission Success, Supportability, Schedule and Cost.

FIGURE 3-1
CRM PARADIGM

RM is a process wherein the program/project team is responsible for identifying, analyzing, planning, tracking, controlling and communicating effectively the risks (and the steps being taken to handle them) both within the team and with management and other stakeholders. As depicted in Figure 3-1, RM is a continuous, iterative process to manage risk in order to achieve mission success. It should be a key consideration and an integral part of normal program/project management and engineering processes.

a. Identification of Risks - State the risk in terms of condition (description of current conditions that are causing concern) and consequence(s) (description of negative outcome[s]). Capture the context of the risk (e.g., what, when, where, how and why).

b. Analysis of Risks - Evaluate risk probability and impact/severity in accordance with the SSP Risk Management Scorecard. Determine the time frame (when action

needs to be taken). Classify/Group risks with similar/related risks and prioritize. Risk analysis shall be in the context of what the consequence and likelihood would be if no mitigating action were taken.

c. Planning of Risks - Assign responsibility, determine approach (accept, mitigate or monitor) and, if risk will be mitigated, define mitigation level (e.g., action item list or more detailed task plan).

d. Tracking of Risks - Acquire/Update, compile, analyze and organize risk data. Verify and validate mitigation actions.

e. Control of Risks - Analyze tracking results, decide how to proceed (re-plan, close the risk, invoke contingency plans, continue tracking), and execute the control decisions.

The paradigm is called continuous because the steps are meant to be iterative. For example, once a control plan is in place to mitigate a particular risk, it will periodically be re-examined to ensure that the risk has not changed due to changing circumstances. Additionally, the efficacy of the control plan will be evaluated and new or altered steps enacted to improve risk mitigation. Communication and tracking will occur regularly to ensure that all stakeholders are aware of progress.

The SSP T&R has adopted this CRM process paradigm to establish a common understanding of what constitutes a risk and how it should be managed. This paradigm forms a basis for the RM processes and activities defined in this RM plan. The RM plan defines how the SSP T&R will implement this paradigm, and how individual elements of the paradigm will be put into action. The CRM paradigm provides a central model for how risks will be handled once they are uncovered.

3.1.1 Identification of Risks

The effectiveness of RM hinges upon a robust capability to identify risks. Unless a risk is recognized early, it cannot be managed effectively. Furthermore, unless risk identification is part of each significant program risk activity, it will be difficult to ensure full risk recognition. For this reason, various venues are used to identify SSP T&R risks.

Periodic, organizational risk review and roll-up is a cornerstone of risk identification. However, the conduct of issue driven focused risk assessments, periodic quality and reliability program assessments, technical discussions at the program boards and external reviews provide important risk insights. Risks identified in these venues are defined and managed using the CRM paradigm. And unless inputs from all venues are included in the development of program level risk assessment, it is probable that significant risks will fail to be recognized.

3.1.2 Defining the Risk Statement

Prior to evaluating likelihood and consequence, it is critical to establish a clear definition of the risk to be assessed. This is done through use of the risk statement. The risk statement clarifies what conditions give rise to the potential for impact.

a. CONDITIONS represent facts currently known that cause concern. Conditions are based in reality; they reflect what is actually happening today vs. a projected scenario. In order to understand the risk fully, it is important to minimize or eliminate any uncertainty surrounding the conditions that drive the risk.

b. CONSEQUENCES represent an undesired impact that could occur if no additional actions are taken to address the conditions of concern.

The risk statement is therefore defined using the following format:

Given the CONDITION there is a possibility that CONSEQUENCE will occur.

Clarity in the risk statement has a significant effect on the accuracy of the risk analysis, as well as the accuracy of risk communication that results. Therefore, significant attention is needed to ensure that the risk statement is accurate and complete prior to assessing likelihood and consequence. The risk statement should reflect the time period being assessed.

3.1.3 Analysis of Risks

The purpose of risk analysis is to characterize the significance of risks once they have been identified. An evaluation of risk probability and impact/severity in accordance with Figure 3-3.1 is used to establish this significance relative to other program risks. Furthermore, an evaluation of the time frame when action needs to be taken provides additional insight. Based on this information risks may be classified, grouped and prioritized. The risk analysis is conducted in the context of what the consequence and likelihood would be if no mitigating action were taken.

3.1.3.1 Determine Likelihood and Consequence Ratings

Figure 3-3.1 provides guidance for the assignment of likelihood and consequence scores to each risk. Guidance as to the application of the scorecard, definitions of terms and explanations of key concepts may be obtained by contacting T&R Management.

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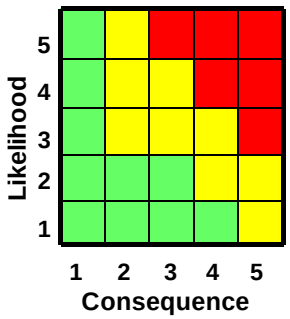
FIGURE 3-3.1
SSP T&R RISK MANAGEMENT SCORECARD

Space Shuttle Program Transition and Retirement Risk Management Scorecard

Likelihood Rating	
5	**Very Likely: ~10^{-1}** Expected to happen.
4	**Likely: ~10^{-2}** Could happen. Controls have significant limitations or uncertainties.
3	**Possible: ~10^{-3}** Could happen. Controls exist with some limitations or uncertainties.
2	**Unlikely: ~10^{-4}** Not expected to happen. Controls have minor limitations or uncertainties.
1	**Highly Unlikely: ~10^{-5}** Extremely remote possibility that it will happen. Strong controls in place.



Identify and Assess Risk

1. Start with a Concern. Is this a program risk?
   - What information is available? Gather information: requirements status, problem data, trends, hazards, critical item history, etc.
2. Define Risk Statement.
   - Given the condition (A), there is a possibility that (B) will occur.
     - (A) - Single phrase briefly describing current key circumstances or situations that are causing concern, doubt, anxiety, or uncertainty
     - (B) - Consequences or impacts of the current conditions that could be realized due to (A)
3. Define the Consequences (B). Locate the most accurate description(s) among the Safety, Mission Success, Supportability, Cost, and Schedule consequence descriptions.
4. How likely is this risk scenario? Likelihood is the chance of a risk occurring.
   - Evaluating the likelihood rating requires subjective judgment. Select the most accurate rating based on the quantitative values or the qualitative descriptions.
   - Only one rating is selected per risk statement. It is evaluated for the period being assessed.
5. Plot the Risk. Select the highest consequence score. Plot this against the ONE Likelihood Score on the RED/YELLOW/GREEN risk matrix.

Consequence Rating			1	2	3	4	5
TECHNICAL	**Safety**	*Human Health*	Minor or first aid Injury	Moderate injury, illness, incapacitation or impairment	Significant or long-term injury, illness, incapacitation or impairment	Permanent or major injury, illness, Incapacitation or impairment	Death
		T&R Activities	-Minor damage to property -Minor environmental impact	- Moderate damage to property - Moderate environmental impact	-Significant damage to property -Significant environmental Impact	-Permanent or major property damage -Major environmental impact	-Catastrophic environmental impact - Loss of major asset
		HSE Compliance	Minor non-compliance	Moderate non-compliance	Significant non-compliance	Major non-compliance	None defined
	Mission Success	*T&R Mission*	Minor impact to T&R processes and/or requirements noncompliance relating to divestment/disposition of: Personal/Real Property, Records, Recordation, Contracts, Flight Assets/Orbiter & Software/IT Assets	Moderate impact to T&R processes and/or requirements noncompliance relating to divestment/disposition of: Personal/Real Property, Records, Recordation, Contracts, Flight Assets/Orbiter, and Software/IT Assets	Significant impact to T&R processes and/or requirements noncompliance relating to divestment/disposition of: Personal/Real Property, Records, Recordation, Contracts, Flight Assets/Orbiter, and Software/IT Assets	Major or Serious impact to T&R processes and/or requirements noncompliance relating to divestment/disposition of: Personal/Real Property, Records, Recordation, Contracts, Flight Assets/Orbiter, and Software/IT Assets	Unable to complete T&R processes and/or requirements noncompliance relating to divestment/disposition of: Personal/Real Property, Records, Recordation, Contracts, Flight Assets/Orbiter, and Software/IT Assets
	Supportability	*T&R Technical Performance*	Minor impact to completion of T&R Activities (sustaining support)	Moderate impact to completion of T&R Activities (sustaining support)	Significant impact to completion of T&R Activities (sustaining support)	Major or Serious impact to completion of T&R Activities (sustaining support)	Unable to complete T&R Activities due to unavailability of necessary assets or resources
PROGRAMMATIC	**Schedule**	*T&R Integrated Master Schedule (IMS)*	Minor delay in completing Major IMS Milestones	Moderate delay in completing Major IMS Milestones	Significant delay in completing Major IMS Milestones	Major delay in completing Major IMS Milestones	Unable to complete Major IMS Milestone
	Cost	*T&R Budget*	-≥5% and < 10% impact to Org's T&R Budget	≥10% and < 15% impact to Org's T&R Budget	≥15% and < 20% impact to Org's T&R Budget	≥20% and < 25% impact to Org's T&R Budget	≥25% impact to Org's T&R Budget

2/29/2012

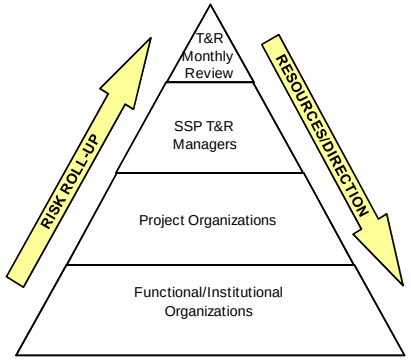
Reference NSTS 07700, VOLUME XX BOOK 2, Appendix 19

FIGURE 3-3.2
SSP T&R RISK MANAGEMENT SCORECARD SUPPORTING INFORMATION

SSP T&R Risk Management Elements

- Establish and Control Safety Baseline
- Apply Focused Quantitative Risk Assessment
- Risk-Informed Decision Making at Program Boards
- Top Program Risk Review
- T&R Risk Management

Top Risk Reporting Process



The Top Risk Reporting Process is a "bottoms-up" process in which significant risks are identified and ranked for management and stakeholder review. Risks may be elevated to raise awareness due to adverse changes or if additional resources are required.

Interpreting Risk Consequence Descriptions

The consequence is the possible negative outcome that could occur due to the current condition. The consequence definitions represent values in a continuum of damage states and are used as qualitative guidelines for comparison when selecting the severity rating.

In situations where consequences are not specifically represented on the scorecard, interpolation may be required to capture the rating that best reflects the assessment. Notations regarding the interpolation rationale should be documented in SIRMA.

SIRMA and SSP T&R Risk Management Assistance

SIRMA (Shuttle Integrated Risk Management Application) is used to document, track, and report program management risks and concerns. SIRMA permissions are based on the individual's role and area of responsibility. SIRMA can be found at: http://irma-sma.jsc.nasa.gov/sirma/

2/29/2012

SSP T&R Scorecard Definitions

TECHNICAL	**Safety**	
	Minor or first aid injury:	Treated without lost time or hospitalization
	Moderate injury, illness, incapacitation or impairment:	Lost time without hospitalization
	Significant or long-term injury, illness, incapacitation or impairment:	Significant lost time; hospitalization required
	Permanent or major injury, illness, incapacitation or impairment:	Permanent loss of function, long-term hospitalization, significant lost time or medical retirement required
	Damage to Property:	Impacts to a property's attributes (functional and/or visual)
	Minor:	Minor damage
	Moderate:	Moderate damage to how the property looks and/or functions
	Significant:	Significant damage to how the property looks and/or functions & may be irreversible
	Major:	Major irreversible damage
	Environmental Safety:	Impacts to environment or ecological values, such as endangered species or wildlife populations
	Minor:	Minor damage
	Moderate:	Localized, short-term damage
	Significant:	Widespread/short-term or localized/long-term damage
	Major:	Major widespread/long-term or irreversible damage
	Health, Safety, and Environmental (HSE) Compliance:	Non-compliance with federal, state and local regulations is evaluated independent of a potential impact to human health or the environment
	Minor:	Minor regulation deviation
	Moderate:	Moderate regulation deviation, potential for minor fines/penalties
	Significant:	Significant deviation, potential for significant fines/penalties
	Major:	Major regulation deviation, potential for program stand-down
	Mission Success	
	Mission is equal to a successful transition and retirement of the space shuttle program: • Within budget • Within the two-year T&R timeframe • With limited impacts to other stakeholders	
	Supportability	
	Personal Property Divestment:	Resulting in impacts to divestment process or end-state item readiness or loss of artifacts
	Real Property Divestment:	Resulting in impacts T&R Facility readiness process
	Recordation:	Impacts to National Historical Programs (NHRP/NHL) requirements compliance.
	Flight Assets/Orbiter:	Resulting in impacts to flight asset safing, end-state, and transfer activities.
	Records or Contracts Management:	Impacts to record retention/archiving or Contracts work
	Software/IT Assets Management:	Resulting in impacts to the SW disposition process
PROGRAMMATIC	**Schedule**	
	Milestone:	A significant, scheduled program activity or event
	Cost	
	Cost impacts incurred toward the T&R Budget as: • part of the mitigation plan and/or • a direct result of an impact and costs incurred in corrective action	

Reference NSTS 07700, VOLUME XX BOOK 2, Appendix 19

3.1.3.2 Supporting Analysis

Use of the scorecard depends upon developing a basis of understanding regarding the likelihood and consequences associated with the risk statement. Many methods and tools may be employed to provide this insight and thus support accurate and consistent use of the card. In particular, the accuracy of the risk likelihood estimate can be improved through the use of quantitative methods such as statistical analysis, fault tree analysis and Probabilistic Risk Assessments (PRAs). In some cases qualitative assessment such as Hazard Analysis (HA) may be used as a basis for the likelihood assessment as well. Ultimately, the results of these supportive analyses are brought back to the scorecard, and used to select the appropriate likelihood and consequence rating.

The extent of supportive analysis that should be performed to assign likelihood and consequence ratings depends upon many factors.

a. Availability of Data - In some cases historical data is available to support a more rigorous assessment of likelihood of occurrence. Given the long history of Shuttle operations, much historical data will be available to inform risk analysts. However, if data is scarce or unavailable, a lower granularity assessment method may be required. In these cases the risk owner should take care to define and communicate the level of uncertainty that exists in the analysis.

b. Expected Value of More Information - If the investment required to define a more rigorous estimate of risk likelihood is significant but the benefit of that increased accuracy is considered minimal, then it may be determined that resources are best applied to other risks. Conversely, in some cases, significantly improved risk insight may be gained through additional analysis and the investment of time and resources may be deemed necessary. In some cases, the program may decide to invest in additional testing to provide the needed insight.

c. Significance of the Risk - Does the significance of the risk justify the initiation of a more rigorous study? There are many potential risks that SSP T&R organizations face, and prudence dictates that resources are best applied to the more pressing risks.

Whether the scorecard criteria alone is used to characterize likelihood and consequence, or more rigorous methods are used to better inform the assignment of scores, the risk owner has the responsibility to communicate the rigor and uncertainty of the assessment so that program decision makers and stakeholders alike may fully understand the limitations of the risk analysis.

3.1.4 Management of Risks

Once a risk has been identified, analyzed and characterized as described in the previous sections a plan for how to manage risk reduction is developed. The management (or handling) phase of the CRM paradigm includes planning, tracking and controlling elements.

a. The CRM planning element includes assignment of responsibility for overall risk handling and a determination of approach.

   1. When a potential SSP T&R risk or concern is identified, it is initially defined in the Shuttle Integrated Risk Management Application (SIRMA) as a ***concern*** or directly as a ***risk*** by the organization's Risk Manager. A ***concern*** status is used while the risk is being evaluated and a decision is being made as to how significant the risk actually is, who the most appropriate risk owner is, and what strategy should be employed in mitigation. A ***concern*** will only be visible by the organization that identified it.

   2. Risk ownership should be assigned to the organization and person best able to define and implement prevention or mitigation efforts. Visibility and support for significant risks is achieved through escalation in the reporting process. Ownership of the risk, however, should remain at the action level even when such escalation is done.

   3. ***Concerns*** are changed to ***risks*** and statused by the organization's Risk Manager with the concurrence of the organizational lead/manager once sufficient information and analysis is available, and a decision to either mitigate or accept the risk must be taken.

b. Once a concern has been changed to risk status, the CRM tracking element addresses the requirement to acquire/update, compile, analyze and organize risk data.

   1. Such data should be reviewed and updated in the SIRMA system on at least a monthly basis. However, updates are recommended on a more frequent basis as the need arises in order to ensure that all stakeholders are aware of changes affecting the risk.

   2. Periodic updates should include a re-assessment of the defined mitigation plan to ensure that risk reduction efforts are on track and that changes are not needed.

The CRM control element calls for periodic analysis of risk tracking results, including consideration of re-planning mitigation, risk acceptance, risk closure or the invocation of a contingency plan. Any changes deemed necessary in how the risk is being handled should be implemented as soon as practical.

3.1.5 Risk Status

Once defined as a risk, one of the following statuses will be maintained in the SIRMA database:

a. Open - Proactive efforts are in work to prevent or mitigate an open risk. New risks are automatically assigned an open status by the SIRMA database.

b. Closed - Closed risks will no longer be actively mitigated or monitored. Risks that have been reduced to a level where the residual risk is considered negligible and

further risk reduction activity is deemed unnecessary may be closed. Also, risks that have been incorporated or combined with a new risk may be closed. In order to close a risk, closure rationale must be defined in SIRMA and approved. Approval from the owning organization, affected stakeholders and the highest level of escalation is required to close an open risk.

NOTE: A risk that has been incorporated into a new risk for clarification can be closed; however, the closure rationale must reference the new risk. In addition, the new risk must reference the risk that was closed to ensure Configuration Management (CM).

c. Accepted - Accepted risks have residual risk, but continued efforts to prevent/ mitigate are not deemed practical. Periodic reviews will be conducted at least annually to re-evaluate acceptance rationale and ensure risk controls are still valid and effective. The results of the periodic accepted risk rationale review will be posted in the SIRMA under “Status.” Accepted risks could potentially be re-opened or closed based on these reviews. Approval from the owning organization, affected stakeholders and the highest level of escalation is required to assign an accepted risk status.

NOTE: Risk status definitions differ from hazard acceptance and closure definitions defined in NSTS 22254, Methodology for Conduct of Space Shuttle Program Hazard Analyses.

3.1.6 Communication of Risks

As the CRM paradigm graphically illustrates, risk communication is central to effective RM. Communication among all affected stakeholders is needed to ensure that the risk is properly understood, that all impacts are considered and that all options for action are identified and prioritized accurately. As a risk is managed, stakeholders provide unique insights into evolving conditions that affect the risk which may not be clear to the formally designated risk owner. Both horizontal (peer organization) and vertical risk communication is needed to ensure that significant risks are understood and influence key program activities accordingly.

Risk communication occurs at many levels and in many forms. Informally, program personnel are encouraged to address risks in the normal course of their daily activities. Program personnel are asked to consciously address risk whenever decisions are being made. Formal program decision making is conducted through defined SSP T&R boards and panels as described in NSTS 07700, Volume XX - Book 2, Space Shuttle Closeout Requirements, Appendix 04, Configuration Management Closeout Requirements.

3.1.6.1 Documentation Using the SIRMA

In order to support robust risk communication, the SSP T&R will continue to utilize a modified version of SIRMA. SIRMA is a web-based tool used to document, track and report risks and concerns. It provides a framework to implement the CRM paradigm

and the policies outlined in the SSP T&R RM plan as supporting directives. It further provides reports that may be used for risk communication in all program venues.

All risks are required to be documented in SIRMA. Section 4.0 outlines the processes by which risks identified in systems safety assessments, PRAs and other program activities will be integrated with program risks in SIRMA. However, the general approach is to capture the most significant risks identified in each venue and document them as program risks in SIRMA in order to support the definition of a comprehensive program risk posture, and to ensure that mitigation progress is made on all significant open risks.

SIRMA user permissions are established based on the individual's role and area of responsibility.

a. SIRMA contains functionality designed to support several special program risk related processes:

    1. SIRMA includes functionality to document cost threats and cost information relating to mitigation plans. The SSP T&R cost threat process is defined in more detail in Section 4.4.

    2. When needed, SIRMA provides a mechanism for conduct of independent risk reviews by Safety and Mission Assurance (S&MA) personnel. These are performed in support of the development of a periodic independent S&MA technical risk assessment report.

b. SIRMA requirements for risk documentation are the following:

    1. Only one risk owner for each risk is allowed. This ensures accountability and a primary Point of Contact (POC).

    2. The risk owner is responsible for completing all required fields (i.e., Risk Title, Risk Statement, Score, Status and Mitigation) in SIRMA, coordinating with the appropriate personnel, and recommending risk escalation.

    3. Risk analysis (i.e., risk statement, context, likelihood and consequence scoring, mitigation planning, and identifying teams affected) must be completed for each risk.

    4. The risk record must be maintained in SIRMA at least monthly to ensure communication to all stakeholders.

Information regarding SIRMA can be found at http://irma-sma.jsc.nasa.gov/sirma/.

3.1.6.2 Risk Reporting

Risk reporting is done both informally and formally within the SSP T&R. Informally, program personnel are encouraged to continuously identify risks in discussion, reports and meetings. Such informal risk communication is very important to ensuring that significant risks are understood by all potential stakeholders, and that the consideration

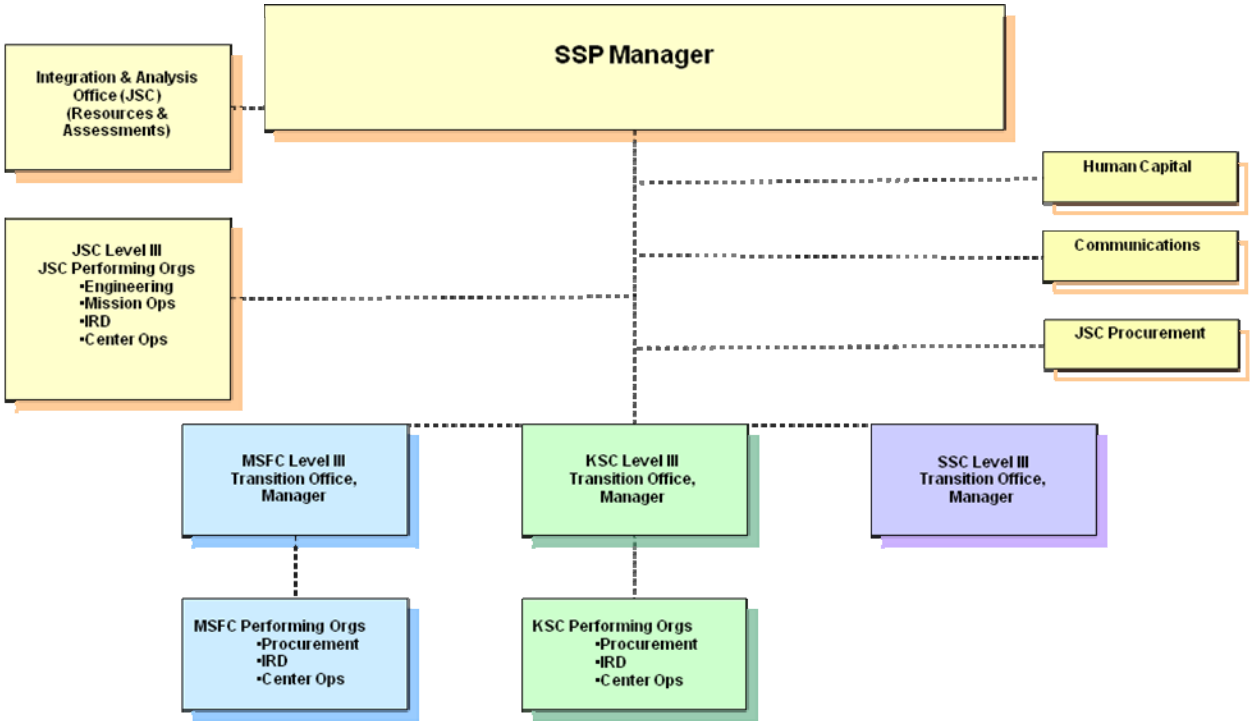
of risk permeates program decision making. In order to augment and support risk communication, the SSP T&R has established a periodic formal risk reporting process as well. This process acts as a stimulus to ensure regular attention is paid to program risks. It further serves as an integration forum to pull together the various risk identification activities defined in Section 4.0 into a complete, whole program and cross discipline, assessment.

At the T&R Program Monthly Resources Status Meeting, the T&R Program Manager will review the program's top risks using the Top Risk Reporting (TRR) process. The TRR process establishes the procedures, documentation and responsibilities for formal risk reporting. The TRR process serves as an integrative risk forum in that risks identified through various program activities are documented in the SIRMA and escalated for program review based on their significance. The TRR process does not include all risks and concerns identified throughout the SSP T&R. It rather focuses on the more significant risks escalated by the management structure to the level of attention needed, based on their significance and/or the need of the owning organization for decision or support. While the RM program and SIRMA tool provide the capability to manage a great many risks, the TRR process is aimed at clarifying which are most significant and the ones needing higher level attention or action. Therefore, the TRR process acts as a screen to identify and communicate the most important risks being addressed across the SSP T&R on a regular basis.

The TRR process includes all risks within the scope of this plan, including those related to SSP T&R Safety, Mission Success, Supportability, Schedule and Cost objectives. It is a sequential, "bottoms-up," process in which significant risks are identified, defined and ranked for management and stakeholder review. The process is hierarchal in nature, beginning at the technical team/institutional organizational tier and culminating with the SSP T&R Program Manager.

The SSP T&R reporting structure depicted in Figure 3-4 represents a minimum implementation. Additional organizations are included in the TRR structure in order to improve the effectiveness of RM and communication throughout the SSP T&R. Functional offices will participate in the risk reporting process through their normal interfaces. The hierarchy within SIRMA will be setup to allow for across the board access from all organizations from all four centers (JSC, MSFC, KSC and SSC). Risk escalations include Top Program Risk (TPR), Top Directorate Risk (TDR) and Top Organization Risk (TOR).

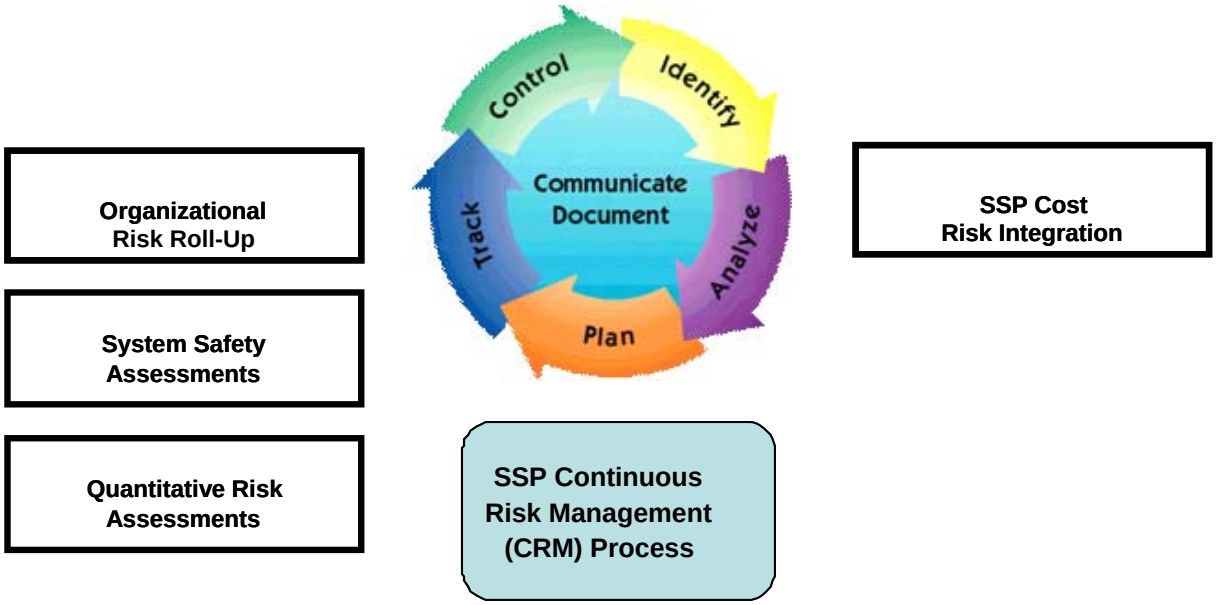
FIGURE 3-4
SSP T&R ORGANIZATION TRR STRUCTURE



4.0 PROGRAM RISK INTEGRATION

SSP T&R risk identification and analysis are accomplished in many different venues and in many different ways across the SSP T&R. These venues are defined in this section. However, regardless of their origin, the CRM paradigm guides how SSP T&R risks will be characterized and managed. All significant risks are integrated into the SSP T&R CRM process to ensure that: 1) all significant risks are actively managed, and 2) periodic SSP T&R risk reviews contain an accurate and comprehensive assessment of SSP T&R risks. This allows program decision makers to better understand relative risk priorities, and the integrated affect of dissimilar risks on plans and projects.

FIGURE 4-1
SSP T&R RISK IDENTIFICATION VENUES



4.1 ORGANIZATIONAL RISK ROLL-UP

Risks are generally identified using informal methods such as brainstorming, but are identified through the conduct of SSP T&R daily activities and in many different technical forums. The organizational risk roll-up is a foundational element of the RM process since the majority of program personnel will utilize this venue for formally communicating their risks.

SSP T&R organizations are required to formally discuss risks in order to support the TRR process. This is true for all SSP T&R organizations, whether or not they have been assigned a specific homepage within the SIRMA application. Risk identified in these forums will be subjected to the SSP T&R RM process and evaluated using the SSP T&R risk scorecard. They will need to be escalated as needed to ensure that

significant risks are communicated and that needed direction or resources are obtained for mitigation.

4.2 SYSTEM SAFETY ASSESSMENTS

4.2.1 System Safety Process Overview

NSTS 5300.4(1D-2), Safety, Reliability, Maintainability and Quality Provisions for the Space Shuttle Program, Section 1D201 and NSTS 22254 define acceptable System Safety HA methodology which shall be implemented but only to the extent necessary to verify ferry flight safety, transportation safety and safe disposition to end state.

Hazard identified to the SSP T&R PRCB shall be limited to those associated with new risks that are (1) identified during SSP T&R asset nonconformance or unsatisfactory condition resolution, or (2) associated with deconfiguring or decommissioning an SSP asset.

4.3 PROBABILISTIC RISK ASSESSMENTS

4.3.1 PRA Definition

PRA evaluates risks using quantitative methods by combining the probability/frequency of events and their consequences. This type of assessment requires the most comprehensive data and analysis in order to perform, and therefore is not necessarily applicable to evaluate all risks.

4.4 SSP T&R COST RISK INTEGRATION

SSP T&R cost risks potentially arise in several ways. Unplanned activities that are necessitated by evolving program requirements represent potential additional cost commitments beyond the approved cost baseline. Further, technical or schedule risks often have a potential cost impact and, therefore, represent threat to remaining within the planned cost baseline. Cost risks may also stem from estimating inaccuracy, variances to labor rates and other reasons unassociated with cost and schedule risk or unplanned work. The SSP T&R RM system is organized to incorporate all types of potential cost risk arising at any level of the SSP T&R organization.

The SSP T&R Management Integration (MI) Office is prime for ensuring that all cost risks are recognized and integrated into a total program cost risk assessment. However, developing a complete assessment relies upon the active participation of all SSP T&R organizations and elements. SSP T&R organizations evaluate their work elements to determine if a potential for cost impact exists, and identify this in SIRMA. SSP T&R organizations identify all potential cost threats evolving from changes to program plans and requirements. These are entered into SIRMA. Similarly, the MI Office is responsible for identifying any additional program level cost risks and entering these into SIRMA. However, the MI Office exercises an integration role in reviewing all risks with a cost impact, and works with the SSP T&R owning organizations to define accurate cost threat information in SIRMA to support an integrated cost risk assessment.

Cost threat information defined in SIRMA includes the following:

a. Annual cost estimates for the risk impact and probability for impact occurrence

b. Annual risk mitigation and recovery cost estimates

c. Estimate of project funds currently available to mitigate risks

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5.0 RISK-BASED ACQUISITION MANAGEMENT (RBAM)

As defined in NPR 7120.5C, NASA Program and Project Management Processes and Requirements, the Project Manager shall develop an Acquisition Plan which establishes a continuous RBAM process. RBAM is the integration of the analysis of programmatic risk with the formulation of acquisition strategies. The principles of CRM are incorporated into the acquisition process. RBAM facilitates the identification of significant risk areas associated with procurement and focuses acquisition team resources to mitigate identified risks. Refer to FAR, Part 45, Federal Acquisition Regulation (FAR), Government Property and NPR 5100.4, NASA/FAR Supplement for additional information regarding acquisition processes. The NASA RBAM website is located at http://www.grc.nasa.gov/WWW/spaceiso/rbam/.

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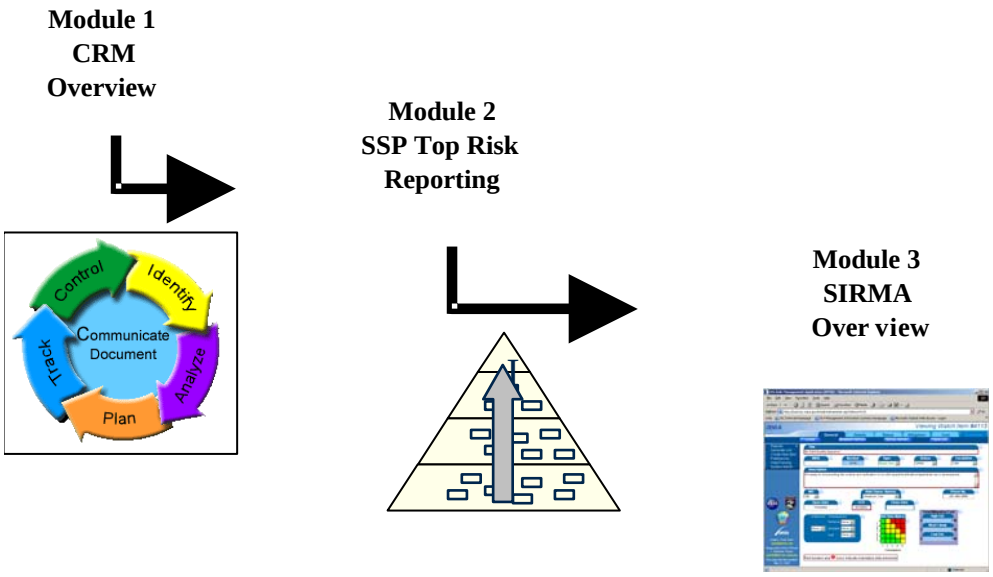
6.0 TRAINING

The SSP T&R RM training program is multi-tiered in that it aims at preparing decision makers, organizational focal points and other program personnel with different levels of rigor. Several training programs are available through the agency to assist program personnel in gaining RM skills.

SSP T&R RM Training Module - The Shuttle RM organization has developed a training course to support the RM processes outlined in this plan. This half-day training course covers CRM, Shuttle TRR and the SIRMA database processes (reference Figure 6-1).

FIGURE 6-1
SSP RM TRAINING



a. Objectives:

The primary objectives of this course are to ensure the trainee can perform the following:

1. Comprehend the value of communicating risk implications to the SSP T&R projects/organizations.

2. Comprehend and apply the principles of the CRM process to a project or program.

3. Comprehend how the SSP T&R risk assessment reporting process supports the SSP T&R RM process.

4. Demonstrate how to incorporate concerns and/or risks into the SSP T&R RM database.

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SECTION A

ACRONYMS AND ABBREVIATIONS

CM	Configuration Management
CMST	Change Management Support Tool
CR	Change Request
CRG	Change Review Group
CRM	Continuous Risk Management
FAR	Federal Acquisition Regulation
HA	Hazard Analysis
HR	Hazard Report
HSE	Health, Safety and Environmental
IMS	Integrated Master Schedule
IRD	Information Resources Directorate
JSC	Johnson Space Center
KSC	Kennedy Space Center
MI	Management Integration
MSFC	Marshall Space Flight Center
PM	Program Manager
POC	Point of Contact
PRA	Probabilistic Risk Assessment
PRCB	Program Requirements Control Board
PRCBD	Program Requirements Control Board Directive
RBAM	Risk-Based Acquisition Management
RM	Risk Management
RMWG	Risk Management Working Group
S&MA	Safety and Mission Assurance
SIRMA	Shuttle Integrated Risk Management Application
SSC	Stennis Space Center

SSP	Space Shuttle Program
T&R	Transition and Retirement
TDR	Top Directorate Risk
TOR	Top Organization Risk
TPR	Top Program Risk
TRR	Top Risk Reporting