

## **REVISION B**



# **Coordinating OSMA Participation in the Space Shuttle CoFR Process**

  
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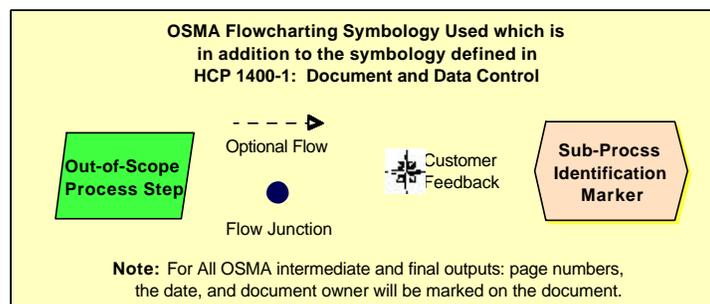
### DOCUMENT HISTORY LOG

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Baseline		January 13, 2000	
Revision	A	April 14, 2000	Editorial corrections to section 4 references, Section 5 Flowchart; step 6.04 and 3 <sup>rd</sup> Quality Record; and modified Step 6.08.
	B	February 1, 2002	Added customer list and customer feedback in Section 5 and step 6.12. Editorial correction to step 6.10. Added electronic record retention to Section 7.

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## 1. Purpose

The purpose of this Office of Safety and Mission Assurance (OSMA) Headquarters Office Work Instruction (HOWI) is to document the process for the Safety and Mission Assurance participation in the Space Shuttle Certification of Flight Readiness (CoFR) Process. The OSMA plays a key role in the review of the Shuttle program's safety. This OSMA HOWI provides the flowchart, and steps for the process as well as establishing the quality records associated with the task.

## 2. Scope and Applicability

This OSMA HOWI is applicable to the OSMA Staff who is assigned to perform tasks within the OSMA Space Shuttle CoFR process in support of the AA/SMA responsibilities assigned in NSTS 08117 (Reference 4.3). This HOWI will assist in ensuring that the involved staff perform a quality assessment of the Shuttle mission assurance. The process is repeated for each Space Shuttle launch and mission.

## 3. Definitions

- 3.1. AA/SMA: Associate Administrator for Safety and Mission Assurance
- 3.2. CoFR: Certification of Flight Readiness
- 3.3. FRR: Flight Readiness Review
- 3.4. HEDS: Human Exploration and Development of Space
- 3.5. NFSAM: Nuclear Flight Safety Assurance Manager
- 3.6. NLSA: Nuclear Launch Safety Approval
- 3.7. NSTS: National Space Transportation System
- 3.8. PAR: Prelaunch Assessment Review
- 3.9. PMMT: Prelaunch Mission Management Team Review
- 3.10. SSRP: System Safety Review Panel

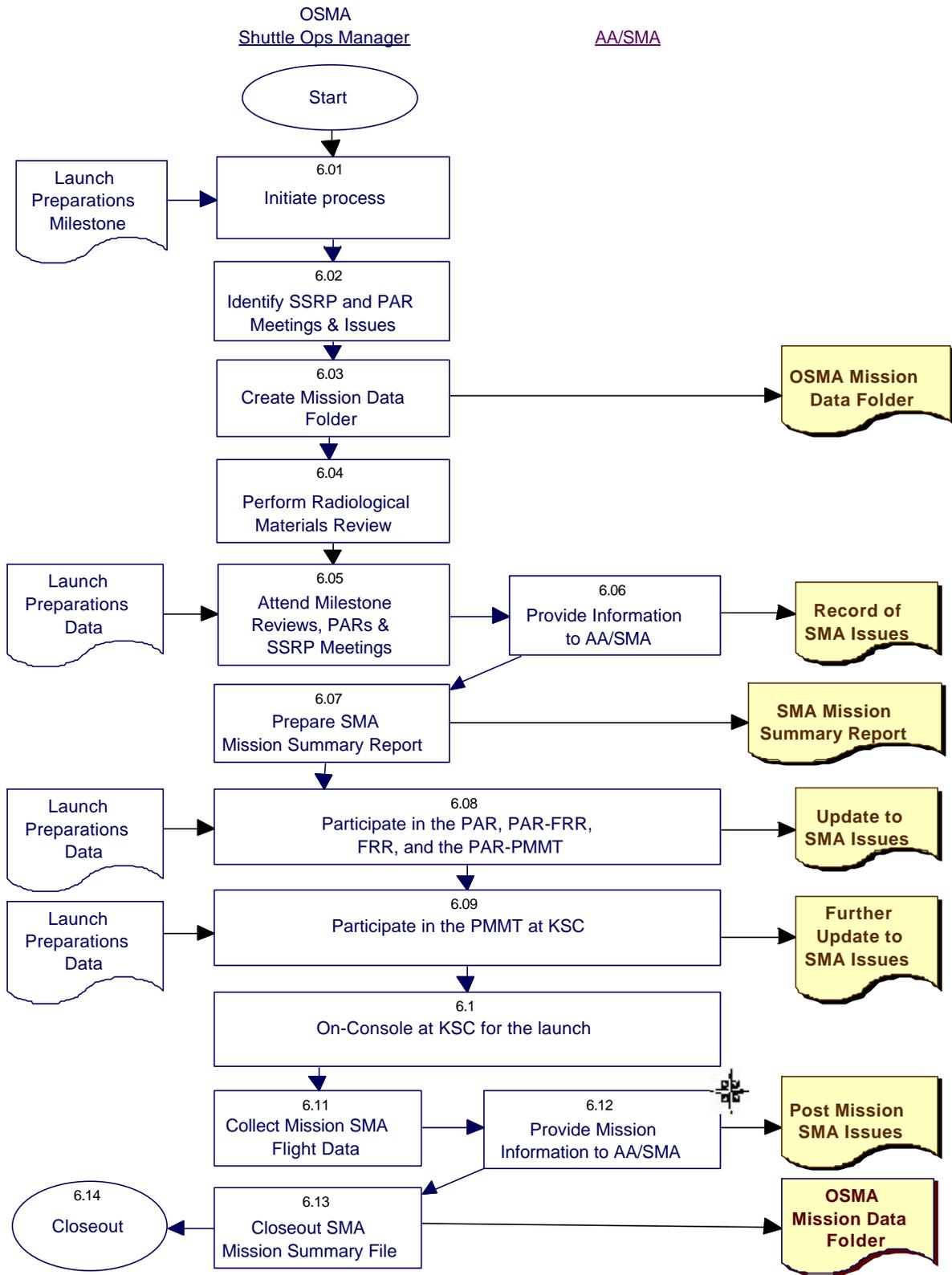
## 4. Reference Documents

The documents listed in this section are used as reference materials for performing the processes covered by the Quality Management System (QMS). Since all NASA Headquarters Level 1 (QMS Manual) and level 2 (Headquarters Common Processes) documents are applicable to the QMS, they need not be listed in this Section unless specifically referenced in this OSMA HOWI.

- 4.1. [NPG 8715.3: NASA Safety Manual](#)

- 4.2. NSTS Directive No. 110E, *National Space Transportation System (NSTS) System Safety Review Panel (SSRP) Charter*.
- 4.3. NSTS 08117, *Requirements and Procedures for the Certification of Flight Readiness*  
Note: Change 58 added the requirement.
- 4.4. NSTS 22778, *Space Shuttle Program Safety, Reliability, and Quality Assurance Commit-To-Flight Assessment Review Process Operating Plan*  
Note: Change 1 added the requirement
- 4.5. [Safety and Mission Assurance for the Human Exploration and Development of Space \(HEDS\) Enterprise](#)

## 5. Flowchart



## 6. Procedure

### 6.01 Shuttle Ops SMA Manager Initiate Process:

The Shuttle Operations SMA Manager as authorized in reference 4.1, identifies that a milestone review for a given mission is coming. References 4.2-4.5 define the role of OSMA in the CoFR process. The reviews nominally begin a few weeks prior to a scheduled launch.

### 6.02 Shuttle Ops SMA Manager Identify SSRP and PAR Meetings and Issues:

The Shuttle Operations SMA Manager reviews the available mission data and launch preparation schedules to identify System Safety Review Panel (SSRP) issues. Available data is obtained from the Shuttle program offices at Johnson Space Center, Kennedy Space Center, and Marshall Space Flight Center as well the NASA Headquarters Office of Space Flight. Open SMA issues identified on previous flights are also reviewed for inclusion. The Shuttle Ops SMA Manager also attends the meetings for the Prelaunch Assessment Reviews (PAR) for a given mission. From this review, SMA issues are recorded.

### 6.03 Shuttle Ops SMA Manager Create OSMA Mission Data Folder:

Prepare an OSMA Mission Data Folder to collect appropriate risk information for a given mission. The folder becomes the first step in generating the Quality Record for the mission.

### 6.04 Shuttle Ops SMA Manager Perform Radiological Materials Review:

The Shuttle Operations SMA Manager reviews the vehicle and payload data to determine if ANY radiological materials will be present at launch. If there are radiological materials planned, the OSMA Nuclear Flight Safety Assurance Manager (NFSAM) is contacted. HOWI 8710-Q014 is used in accordance with NPG 8715.3 Chapter 5. The Shuttle Ops SMA Manager will remain in contact with the NFSAM to assist in the obtaining of Nuclear Launch Safety Approval (NLSA).

### 6.05 Shuttle Ops SMA Manager Attend Milestone Reviews, PARs, and SSRP Meetings:

Attend the milestone reviews which have SMA impact and file information on SMA Issues as a part of the OSMA Mission Data Folder:

1. External Tank/Solid Rocket Booster Mate Milestone Review
2. Orbiter Rollout Milestone Review
3. Prelaunch Assessment Review (PAR). The agenda is coordinated through OSMA for participation in weekly PAR-5 teleconferences.
4. SSRP teleconferences. Evaluate data presented regarding affect on the overall Space Shuttle risk posture and file information in mission folder:
  - New or modified Hazard Reports
  - List of Government Furnished Equipment
  - Safety issues and concerns

**Note:** There may be additional or multiples of reviews associated with a mission other than those listed above.

6.06 Shuttle Ops SMA Manager Provide Information to AA/SMA:

Periodic electronic and verbal notes are prepared and sent to AA/SMA and Deputy AA/SMA on issues and concerns with the upcoming mission. The information is added to the OSMA Mission Data Folder as a Quality Record.

6.07 Shuttle Ops SMA Manager Prepare SMA Mission Summary Report:

Prepare draft OSMA Mission Summary Report prior to the Flight Readiness Review, including the four basic sections and appendix:

- Introductory Section
- Mission Description Section; including launch data, crew size, mission duration, launch and landing sites, and other mission- and payload-related information.
- Unresolved Risk Factors Section; identifying constraint-to-flight issues and concerns, including in-flight anomalies from the previous flight.
- Resolved Risk Factors Section; identifying those issues or concerns, including in-flight anomalies from previous missions, with appropriate flight rationale from an OSMA position.
- Appendix A, list of commonly used acronyms.

The OSMA Mission Summary is filed as a Quality Record.

6.08 Shuttle Ops SMA Manager with the AA/SMA Participate in the PAR teleconference, PAR-Flight Readiness Review (FRR), the FRR, and the PAR-Prelaunch Mission Management Review Team (PMMT) Review:

The OSMA Shuttle Ops Manager participates (normally via telecon) in the:

- PAR teleconference and PAR-Flight Readiness Review (FRR) Tag-Up teleconference in accordance with NSTS 22278.
- FRR at KSC in support of the AA/SMA
- PAR for the Prelaunch Mission Management Team teleconference in accordance with NSTS 22278.
- Member of the Shuttle FRR Board with the AA/SMA (the AA/SMA is a member of the Board), to attest to the readiness for flight (to be in the Certification of Flight Readiness (CoFR)) in accordance with NSTS 08117. If any of the Shuttle FRR Board members disagree with the readiness for flight, then this step will repeat with appropriate actions taken until all members can agree on readiness for flight. At that time, the AA/SMA will sign the CoFR.

The Shuttle Operations SMA Manager also participates with the AA/SMA to provide real-time assessment of information to the AA/SMA, as required.

The SMA Mission Summary is updated by the Shuttle Operations SMA Manager with the results/concerns/decisions of each review and prior to each follow-on review to provide the AA/SMA with the latest status of the launch preparations. The report is distributed via e-mail and filed as a Quality record.

**Note:** There may be additional or multiples of reviews associated with a mission other than those listed above.

6.09 Shuttle Ops SMA Manager Participate in the PMMT Review at KSC:

The AA/SMA participates in the PMMT review at KSC. The Shuttle Operations SMA Manager also attends to provide real-time assessment of the issues and concerns discussed at the meeting for the AA/SMA. Further updates are added to the OSMA Mission Data Folder.

6.10 Shuttle Ops SMA Manager On-Console at KSC for the Launch

The Shuttle Ops SMA Manager or his designee participates in the launch preparations at KSC. The Shuttle Ops SMA Manager reviews the SMA data for the mission and must vote during the Launch Director's final call for Go for Launch. A no-go response by SMA will hold the launch.

The Shuttle Ops SMA Manager participates at the OSMA Console in the back-up firing room in accordance with NPG 8715.3 (nee, NHB 1700.1, paragraph 615), fulfilling the role of Headquarters Safety for the launch. Any notes/observations during the PMMT and the launch are added to the mission data folder.

6.11 Shuttle Ops SMA Manager Collect Mission SMA Flight Data:

Collect and file all SMA flight data collected during the mission in the designated mission folder.

6.12 Shuttle Ops SMA Manager Provide Mission Information to AA/SMA:

The Shuttle Ops SMA Manager provides the AA/SMA with mission status and summarizes SMA concerns and issues throughout the mission. Concerns/Issues/Resolutions/Actions are filed as a Quality Record with the OSMA Mission Data Folder. The concerns & issues that affect the follow-on missions are included in subsequent OSMA mission data files. (Internal customer feedback).

6.13 Shuttle Ops SMA Manager Closeout the SMA Mission Summary File:

Any questions raised by the AA/SMA are researched and answered, the SMA Mission Data File is reviewed, duplicate and outdated materials are removed and the file is finalized.

6.14 Shuttle Ops SMA Manager Closeout:

The Shuttle Operations SMA Manager ensures that all Quality Records are filed and then closes out the process.

## 7. Quality Records

Record ID	Owner	Location	Media Electronic /hardcopy	Schedule Number & Item Number	Retention & Disposition
OSMA Mission Data Folder	Shuttle Ops SMA Manager	Code QE files	Electronic & Hardcopy	Schedule: 1 Item: 1.120.E	Keep until no longer has reference value then destroy when 15 years old
Record of SMA Issues	Shuttle Ops SMA Manager	Code QE files	Electronic & Hardcopy	Schedule: 1 Item: 1.120.E	Keep until no longer has reference value then destroy when 15 years old
SMA Mission Summary Report	Shuttle Ops SMA Manager	Code QE files	Electronic & Hardcopy	Schedule: 1 Item: 1.120.E	Keep until no longer has reference value then destroy when 15 years old
Update to SMA Issues	Shuttle Ops SMA Manager	Code QE files	Electronic & Hardcopy	Schedule: 1 Item: 1.120.E	Keep until no longer has reference value then destroy when 15 years old
Further Update to SMA Issues	Shuttle Ops SMA Manager	Code QE files	Electronic & Hardcopy	Schedule: 1 Item: 1.120.E	Keep until no longer has reference value then destroy when 15 years old
Post Mission SMA Issues	Shuttle Ops SMA Manager	Code QE files	Electronic & Hardcopy	Schedule: 1 Item: 1.120.E	Keep until no longer has reference value then destroy when 15 years old

**\*\* Note:** When Post Mission SMA Issues are filed, duplicates from other Quality Records may be destroyed and files combined \*\*