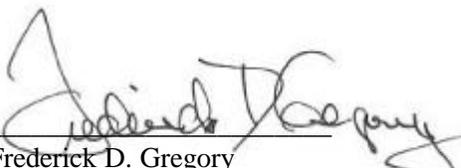


## ***REVISION A***



# **Perform OSMA's SMA Insight/Oversight of ELV Launches**



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Frederick D. Gregory  
Associate Administrator for  
Safety and Mission Assurance

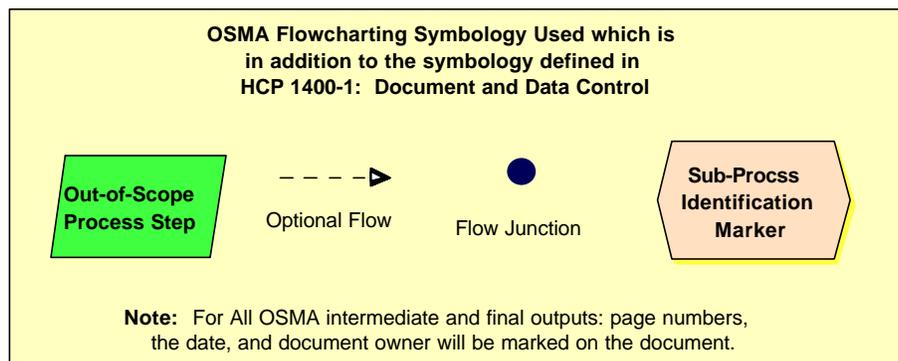
April 14, 2000  
Date

### DOCUMENT HISTORY LOG

Status (Draft/ Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		January 13, 2000	
Revision	A	April 14, 2000	Editorial corrections to references 4.2, 4.3, and 4.8 and steps 6.04, and 6.15, and Section 7 Quality Record; Modified the Section 5 flowchart and steps 6.03, through 6.08, 6.12; and 6.13 and added reference 4.5 (new #) and new steps (new #) 6.09, 6.10 and 6.13.

HOWI Author: QE/Roger Mielec

OSMA Staff Member Responsible for this HOWI: QE/Pete Rutledge



## 1. Purpose

The purpose of this Office of Safety and Mission Assurance (OSMA) Headquarters Office Work Instruction (HOWI) is to document the process for participation in expendable launch vehicle (ELV) launch preparation activities and their contingency planning. This OSMA HOWI provides the flowchart for participation in subject activities and contingency planning. This HOWI also specifies the Quality Records associated with the process.

## 2. Scope and Applicability

This HOWI is applicable to all OSMA Staff at NASA Headquarters in their role of providing Safety and Mission Assurance (SMA) insight/oversight for launches of expendable launch vehicles (ELV). This HOWI is mainly for the use of the OSMA Staff member charged with the responsibility as the lead in this process.

## 3. Definitions

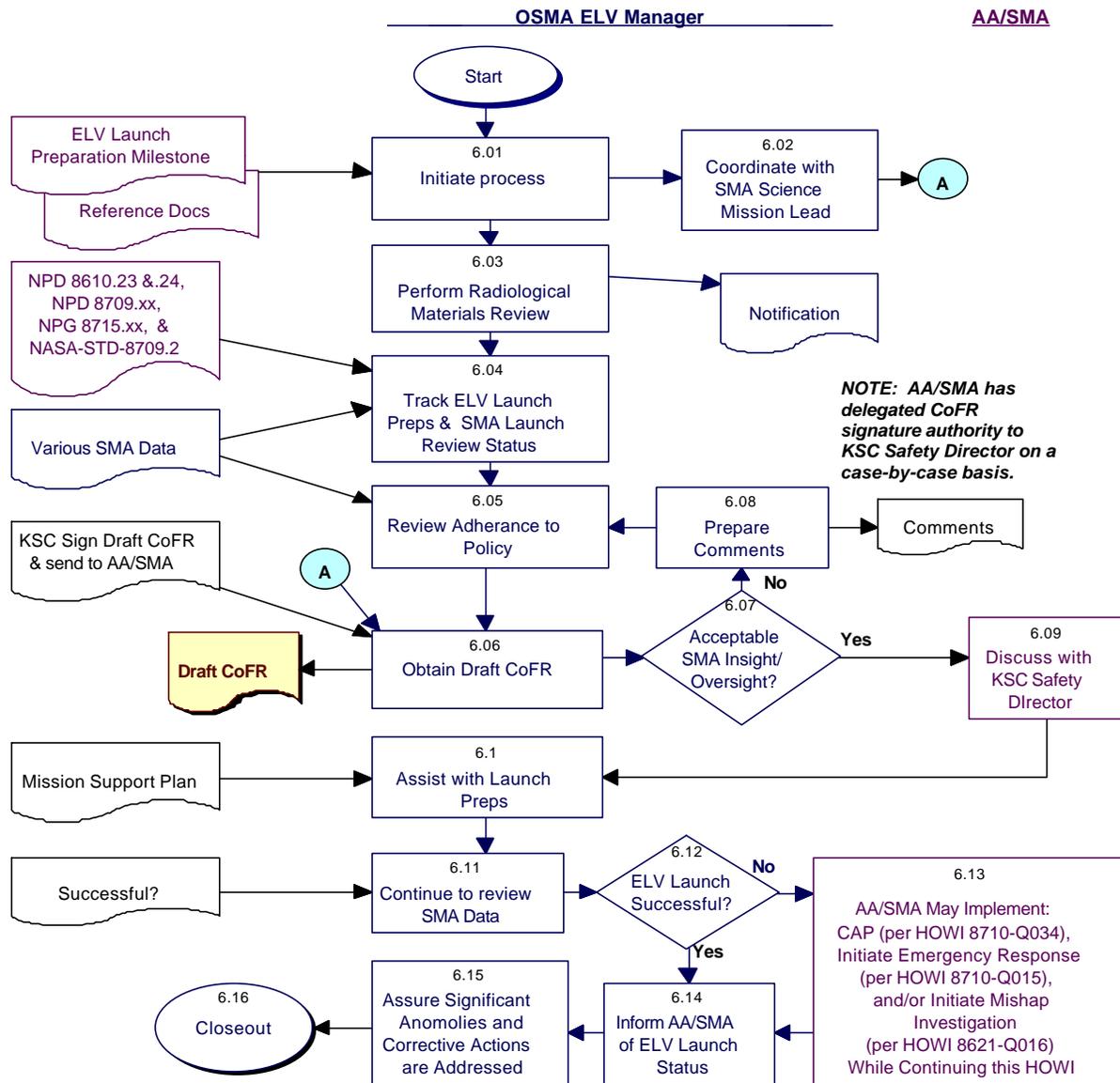
- 3.1. AA/SMA: Associate Administrator for Safety and Mission Assurance
- 3.2. CAP: Contingency Action Plan
- 3.3. CoFR: Certificate of Flight Readiness
- 3.4. Contingency: A contingency is defined as any mishap, mission failure, incident, or close call that impacts programs and/or significantly delays or jeopardizes operations or prevents accomplishment of a primary objective.
- 3.5. Expendable Launch Vehicle (ELV): These include orbital launch vehicles (such as Delta, Titan, Atlas) and sub-orbital vehicles (sounding rockets, balloons) that launch payloads.
- 3.6. HATS: Headquarters Action Tracking System
- 3.7. Insight: Surveillance mode requiring only the monitoring of customer-identified metrics and contracted milestones. Insight is a continuum that can range from low intensity, such as reviewing quarterly reports, to high intensity, such as the customer performing surveys and reviews.
- 3.8. NFSAM: Nuclear Flight Safety Assurance Manager
- 3.9. NLSA: Nuclear Launch Safety Approval
- 3.10. Oversight: Surveillance mode which is in-line with the supplier's processes. The customer retains and exercises the right to concur or non-concur with the supplier's decisions. Non-concurrence must be resolved before the supplier can proceed. Oversight is a continuum that can range from low-intensity, such as customer concurrence in reviews (i.e.; PDR, CDR), to high intensity oversight, in which the customer has day-to-day involvement in the supplier's decision making processes (i.e., hardware inspections).
- 3.11. PBMA: Process Based Mission Assurance (See HOWI 8700-Q007)

## 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. [NPD 8700.1: NASA Policy for Safety and Mission Success](#)
- 4.2. [NPD 8610.23: Technical Management of Expendable Launch vehicle \(ELV\) Launch Services](#)
- 4.3. [NPD 8610.24: Expendable Launch vehicle \(ELV\) Launch Service Prelaunch Reviews](#)
- 4.4. [NPG 8715.3: NASA Safety and Health Program Policy](#)
- 4.5. Draft NPG 8715.xx: *NASA Safety and Mission Assurance Policy for Expendable Launch vehicles*
- 4.6. [NASA-STD-8709.2: NASA Safety and Mission Assurance Roles and Responsibilities for Expendable Launch Vehicle Services](#)
- 4.7. [NASA-STD-8719.8: Expendable Launch Vehicle Payload Safety Review Process Standard](#)
- 4.8. Letter, Code Q, dated October 8, 1997, subject: Delegation of Authority for NASA Safety and Mission Assurance (SMA) Concurrence on Certificates of Flight Readiness (CoFR) for Spacecraft Missions on Expendable Launch Vehicles/Services.
- 4.9. Office of Space Flight Contingency Action Plan  
NOTE: As issue of this HOWI, May 1999, was the latest version).
- 4.10. DRAFT NPD 8709.xx (Draft dated Dec 3, 1999), Safety and Mission Assurance (SMA) Requirements for NASA Spacecraft/Expendable Launch Vehicle (ELV) Missions
- 4.11. DRAFT NPG 8709.xx, NASA Safety and Mission Assurance Roles and Responsibilities (Currently this is NASA-STD 8709.2, same title, Aug 1998.)

## 5. Flowchart



## 6. Procedure

**Note:** The need for providing SMA insight/oversight for an ELV launch can come from various sources. Sources can include the NASA Administrator, Enterprise Associate Administrator, Associate Administrator for Safety and Mission Assurance (AA/SMA) or Center/Project/Program Management and their staffs. All requests are routed through the AA/SMA for approval. The documents listed in Section 4 above, provide further detail on when OSMA support would be used.

**Note:** AA/SMA has delegated the CoFR signature authority to the KSC SMA Director on a case-by-case basis.

6.01 OSMA ELV Manager                      Initiate Process:

The OSMA is notified that an ELV launch is planned. The OSMA ELV Manager reviews the status of the launch and initiates the process. Notification may come from any of the sources in the above notes.

6.02 OSMA ELV Manager                      Coordinate with SMA Science Lead

The OSMA ELV Manager will coordinate with the OSMA SMA Science Lead throughout the launch preparation process. This coordination is ad hoc based on the mission and individual SMA issues.

6.03 OSMA ELV Manager                      Perform Radiological Materials Review:

The OSMA ELV 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 8715.2 Chapter 5. The OSMA ELV Manager will remain in contact with the NFSAM to assist in the obtaining of Nuclear Launch Safety Approval (NLSA).

6.04 OSMA ELV Manager                      Track ELV Launch Preps & SMA Launch Review Status:

Staff monitors the results of the NASA and non-NASA managed ELV launches – success/failure, problems, and status of any investigations or assessments. Tracking is done per NPD 8610.23 and NPD 8610.24 guidelines for the current launch and reviews SMA data for past launches of similar vehicles.

6.05 OSMA ELV Manager                      Review Adherence to Policy:

The ELV Manager will track the available launch readiness information for the upcoming NASA managed ELV launches.

The ELV Manager, as required by Division Director, may attend NASA managed ELV launch preparation reviews to gather information on SMA processes and issues concerning ELV launch readiness, success, and the associated risk. OSMA ELV Manager will review KSC/SMA ELV launch position based on SMA policy, and assessments leading up to the launch. If deemed necessary by the ELV Manager, HOWI 8700-Q007: Process Based Mission Assurance, may be initiated to assist with the independent reviews.

6.06 OSMA ELV Manager                      Obtain CoFR

The OSMA ELV Manager receives the Draft CoFR from KSC and reviews it for completeness, accuracy and acceptability against the guidelines in the documents referenced in Section 4, above.

6.07 OSMA ELV Manger                      Acceptable SMA Insight/Oversight?

The ELV Manager receives insight information from KSC/SMA as to SMA issues and preliminary SMA position concerning upcoming NASA managed ELV launch. The OSMA Staff Members participating with the ELV launch assess the effectiveness of the SMA preparations for the launch to determine if acceptable SMA insight/oversight exists per the Section 4 references.

The decision on acceptability is based on the professional expertise of the OSMA ELV Manager. In making this assessment, the OSMA ELV Manager may confer with the AA/SMA or others involved with the mission.

6.08 OSMA ELV Manager Prepare Comments:

OSMA comments on the Draft CoFR are collated and forwarded to the KSC SMA Director. This forwarding may be done verbally, electronically or in writing based on the scope and urgency of the comments. The comments are passed to the KSC Safety Director.

6.09 AA/SMA Discuss with KSC SMA Director

The AA/SMA will review the launch preparation and any CoFR issues with the KSC SMA Director prior to the launch. The review is based on his professional expertise and experience for completeness, accuracy and conformance to NASA SMA Policy. The AA/SMA will determine if KSC Safety Director or the AA/SMA will sign the CoFR. (See reference 4.8).

6.10 OSMA ELV Manager Assist with Launch Preparations

The OSMA ELV Manager is 'on-call' to assist the KSC SMA Director with any final pre-launch preparations as the representative of the AA/SMA. This support will vary with each launch.

6.11 OSMA ELV Manager Continue to Review SMA Data:

Throughout the remainder of the pre-launch and early flight phases of the mission, the OSMA ELV Manager continues to monitor the SMA Mission Data and readiness reviews.

6.12 OSMA ELV Manager ELV Launch Successful?

*ELV Launch Director will determine if ELV launch was successful. AA/OSF (or AA for affected Strategic Enterprise) will determine an ELV launch contingency based on launch results.*

The OSMA ELV Manager will assess launch success.

6.13 AA/SMA May Implement CAP, Initiate Emergency Response and/or Mishap Investigation While Continuing with this HOWI:

For launches which are not fully successful as determined by the OSF, the AA/SMA may implement the OSMA ELV CAP. Implementation of these response(s) is at the option of the AA/SMA based on his expertise and the available information. This may be based on official contingency declaration by the Strategic Enterprise responsible for the mission or the AA/SMA's professional expertise. If the Strategic Enterprise has not declared a contingency based on a failed ELV launch attempt, the AA/SMA may elect to invoke the OSMA ELV CAP per HOWI Q8710-Q034, declare a contingency, initiate emergency response per HOWI Q8710-Q015 or Initiate a Mishap Investigation per HOWI 8621-Q016 or a combination of these.

6.14 OSMA ELV Manager Inform AA/SMA of ELV Launch Status:

The OSMA ELV Manager will brief the AA/SMA on the launch and mission operations.

6.15 OSMA ELV Manager                      Assure Significant Anomalies and Corrective Actions are Addressed:

The OSMA ELV Manager will continue to represent the AA/SMA in assisting and oversight of the KSC SMA Director for the closeout of significant anomalies and other corrective actions. The OSMA ELV Manager will informally provide OSMA staff members with lessons learned from the mission.

6.16 OSMA Staff                                      Closeout:

When the launch operations are complete, then the process is closed out.

## 7. Quality Records

<b>Record ID</b>	<b>Owner</b>	<b>Location</b>	<b>Media Electronic /hardcopy</b>	<b>Schedule Number &amp; Item Number</b>	<b>Retention &amp; Disposition</b>
Draft CoFR	OSMA Corres Control	OSMA Chron File	Hardcopy	Schedule: 1 Item: 22	Retire to FRC when 5 years old in 5 year blocks, then retire to NARA when 10 years old