



NASA Launch Services Program Kennedy Space Center

(GENERIC) Mission Plan

(insert date here)

The KSC LSP Mission Integration Manager is responsible for the content of this plan, which can be found at: <http://www.ksc.nasa.gov/elv/plan>



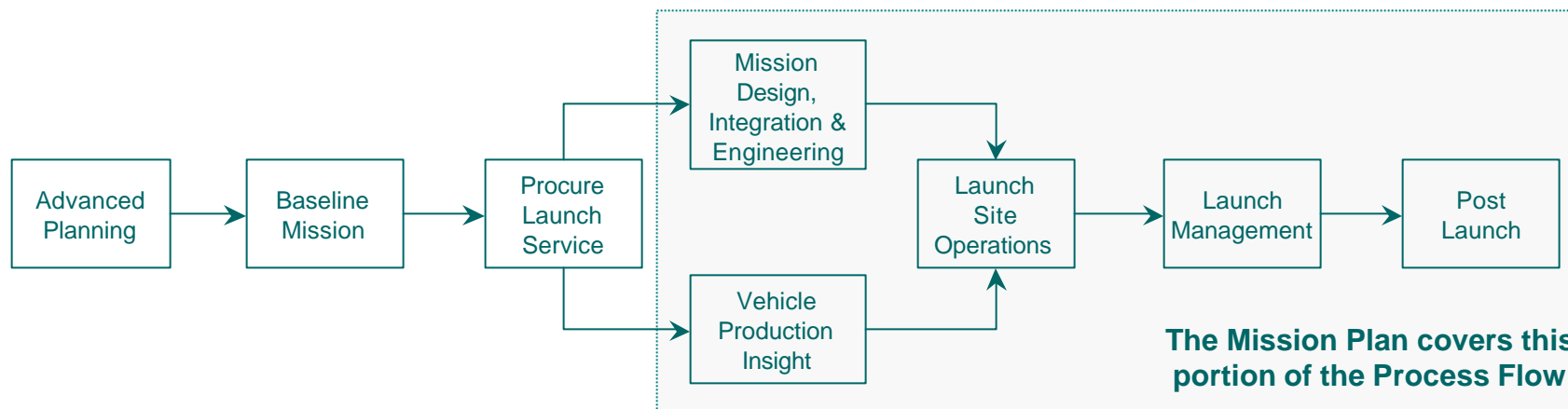
MISSION PLAN

Welcome to the exciting and fast paced world of the Launch Services Program at Kennedy Space Center.

Our goal is to provide NASA Spacecraft Customers with reliable, cost effective launch services.

What the following documentation reflects, is the services and products that you can expect from us, as well as what we will need from you as we begin our voyage together.

LAUNCH SERVICES MAJOR PROCESS FLOW



LAUNCH SERVICES PROGRAM



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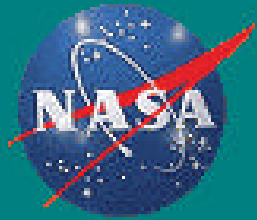
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Text about mission

Official (GENERIC) Home page: [http://xxxxxx/\(GENERIC\)/index.html](http://xxxxxx/(GENERIC)/index.html)

LAUNCH SERVICES PROGRAM



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The **Mission Integration Team**, or **MIT**, is a multi-discipline team that is tasked by the **Launch Service Program** with the responsibility of managing all integration and vehicle engineering aspects of the assigned mission.

The **(GENERIC) Mission Integration Team** is led by the following:

Mission Integration Manager : MIM name / (321) phone / email-1@ksc.nasa.gov

Program Integration Manager : PIM name / (321) phone / email-1@ksc.nasa.gov

Launch Site Integration Manager : LSIM name / (321) phone / email-1@ksc.nasa.gov

Integration Engineer : IE name / (321) phone / email-1@ksc.nasa.gov

The primary areas of responsibility are as follows:

Mission Integration Manager (MIM)

The project manager and primary customer interface for mission specific integration. This person has overall mission management responsibilities for technical, contract deliverables, resources and schedule.

Program Integration Manager (PIM)

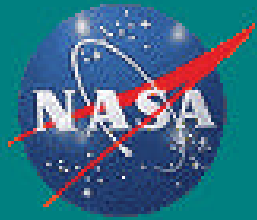
Provides program and business management for the launch services contract, including specialized support in procurement and resource management.

Launch Site Integration Manager (LSIM)

The interface for launch site processing of the spacecraft and is responsible for; advance planning for launch site processing, capturing and implementing spacecraft processing requirements, and acting as the spacecraft's consultant and advocate at the launch site.

Integration Engineer (IE)

Technical lead for the mission specific integration including mission unique requirements definition, development and verification, and providing the interface with the Vehicle Systems Branch for gaining insight into fleet status and assigned hardware production issues.



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The entire Mission Integration Team supports the mission in the following areas:

Vehicle Systems

Provides launch vehicle insight utilizing expertise in areas such as structures, mechanical/fluids, electrical, and propulsion. Launch vehicle fleet changes or anomalies are assessed for their applicability to vehicles assigned to NASA missions and the risks of these are evaluated.

Recommendations for disposition of these risks are developed and forwarded to the LSP Project for consideration. In addition, the Vehicle Systems group provides core vehicle engineering support to Mission Integration for aiding in the development of mission unique modifications to verify proper implementation of mission requirements, and in support of integrated operations.

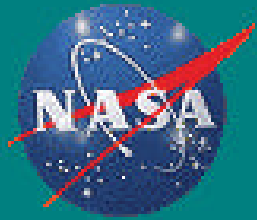
Field Operations

Provides on-site launch vehicle insight into design, fabrication and testing of the launch vehicles assigned to NASA missions, in coordination with the Vehicle Systems Branch. Provides a local point of coordination with the launch vehicle providers to facilitate communication of LSP concerns and information exchange. Offices are established at each of the major production centers and at VAFB.

Mission Analysis

Performs mission analysis in the areas of flight design, loads and environments, flight controls, flight software and thermal design in support of advance mission studies and mission integration activities. Throughout the integration process, each discipline works to assure that the mission analysis requirements are properly defined and achievable. In addition, review and/or IV & V of mission unique design requirements is performed in order to confirm all requirements have been met.

The Mission Integration Team description is continued on the next page.



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Safety and Flight Assurance

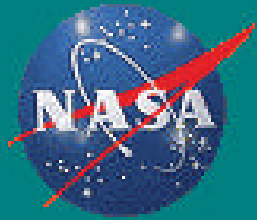
Ensures mission success through review and assessment of Launch Service Contractor (LSC) safety and quality programs ([NASA-STD-8709.2](#)). Implements NASA LSP Safety Standards for spacecraft operations while at NASA facilities ([NASA-STD-8719.8](#)), and for launch vehicle operations from procurement through launch. Provides coordination with KSC Safety and Range Safety. Activities include: review of Launch Service Contractor processes through surveillance, assessments, audits and reviews of LSC operations.

Communications and Telemetry

Provides communication, interfacing and engineering services for launch vehicle, spacecraft and ground support systems. Support includes voice, video, data, timing, RF and network communications as well as telemetry processing of expendable launch vehicles and selected spacecraft telemetry streams.

The Electromagnetics Effects lab provides engineering and services for Electromagnetic Compatibility (EMC), Frequency Control and Analysis (FCA), and the Reradiating Antenna System (RAS) for KSC, the Eastern Test Range and NASA facilities at VAFB. EMC capabilities include specification testing and resolution of hardware, system and facility EMC, RF, and range safety radar beacon transponder measurements and interface resolution.

(Suggest at this point in the Kickoff Meeting that a separate handout be provided with the Mission Integration Team's names, phone numbers and functions. Also consider providing a link to the team roster in the Customer Monthly.)



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EXPORT CONTROL

Four Steps to Compliance

- Identify any export or import activities you are planning to perform.
- Identify foreign persons and the extent of their involvement in the mission phases.
- Get export authorization and Technology Transfer Control Plan's (TTCP) in place.
 - Each program element is responsible for seeking and securing export authorization in advance of the planned export (both NASA and contractors)
 - Each program element is responsible for developing a TTCP
 - Notify contractors of licensing requirements
- Conduct the export in accordance with the agreement, license or exemption.
 - Make sure the authorization is in effect.
 - Act only within Limitations & Provisos, if applicable (MOU's, TAA's, Licenses)
- Record exports as they happen
 - Record export dialogue in a summary form.
 - Keep hard copies of shipping documents and technical data transmissions for five years after last export.

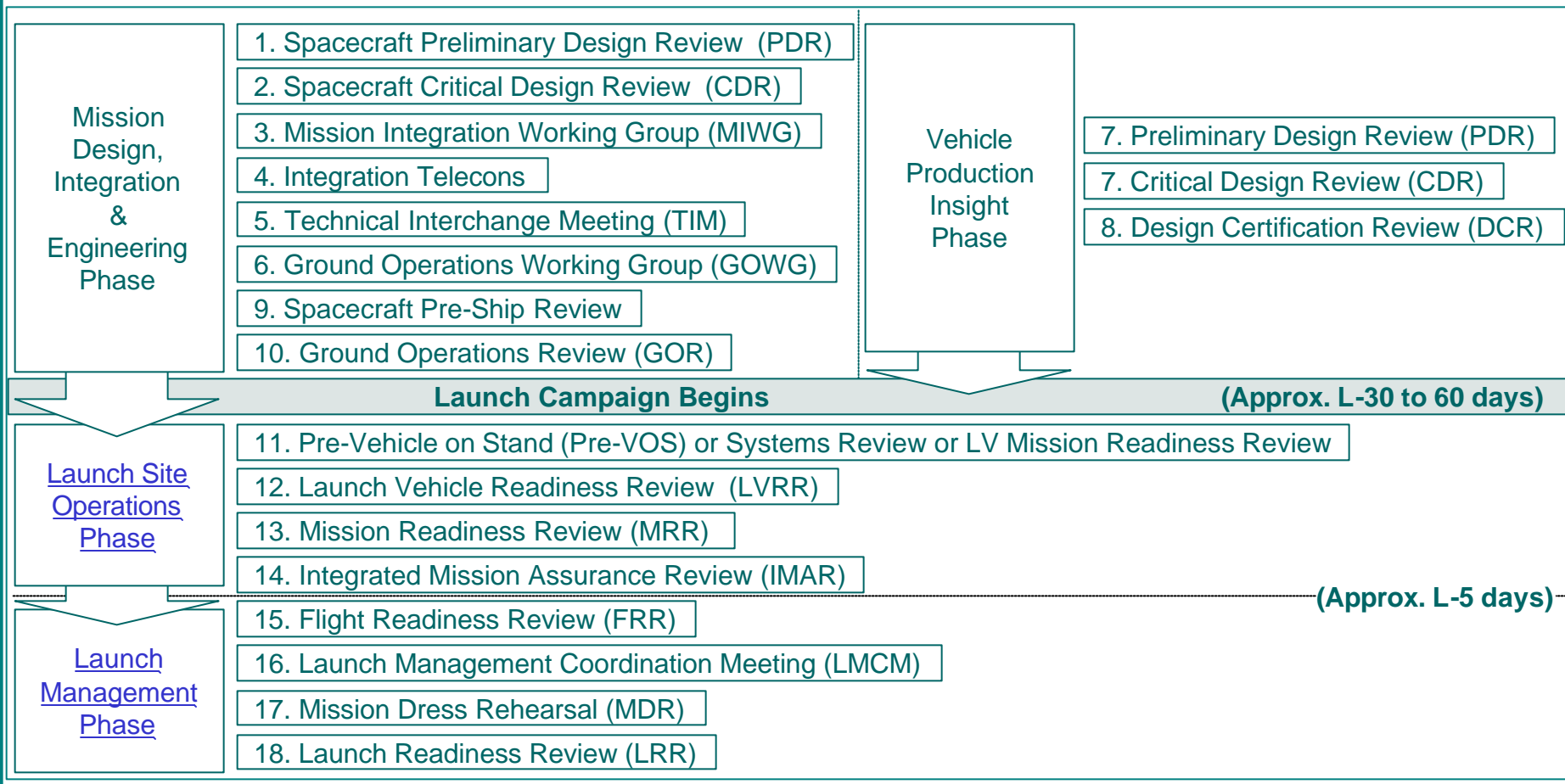
Technology Transfer Control Plan, NPG 2190 A, Section 3.5

- A Technology Transfer Control Plan (TTCP) is a brief document, intended to serve as an aid and a guide to Program and Project Managers, as well as other NASA officials and contractors involved in an international activity. The TTCP responds to four fundamental sets of questions that NASA officials and contractors working with foreign nationals in a NASA program or project should ask:
 - What technologies, software, or hardware am I working with that are subject to export control?
 - What foreign nationals (and what nations) am I working with?
 - What technologies, software, or hardware do I need to provide to those foreign nationals, according to the agreement or contract governing this activity? Which ones do I need to protect?
 - How will I provide those export-controlled technologies, software, or hardware to those foreign nationals with whom I am working? How will I protect export-controlled technologies, software, or hardware from unauthorized transfer?

MISSION SCHEDULE

The mission schedule is originally developed from a generic schedule based on your Launch Service contract (LSC). The KSC Mission Integration Coordinator will maintain the schedule which is located at the following web address: [http://www.ksc.nasa.gov/elv/plan/missions/\(generic\)/schedule.pdf](http://www.ksc.nasa.gov/elv/plan/missions/(generic)/schedule.pdf)

The following table provides an overview of the meetings and reviews and their flow during mission processing. Click on the meeting title to view more detailed information or refer to the Meeting Description pages provided by your MIT.



MEETING/REVIEW FLOW CHART

MEETING / REVIEW DESCRIPTION TABLE

The following table provides more detail to the meetings and reviews during mission processing.

Meeting Name	Purpose / Agenda	When	Attendees
1 Spacecraft Preliminary Design Review (PDR)	KSC attendees provide launch site processing and launch vehicle expertise to spacecraft team and gain an early understanding of processing requirements.	Spacecraft hosts review usually 3-4 years before launch.	KSC MIT (as required), and Spacecraft invitees.
2 Spacecraft Critical Design Review (CDR)	KSC attendees continue to provide launch site processing and vehicle expertise to spacecraft team and present early assessment of processing requirements.	Spacecraft hosts review usually 2-3 years before launch.	KSC MIT (as required), Range Safety, and Spacecraft invitees.
3 Mission Integration Working Group (MIWG)	Formal gathering to review progress of the integration process and program/technical status of the mission. Review integration aspects of mission unique first flight items and discuss interface details in depth. Rotate meeting locations between participating organizations.	Approximately every 4-6 months. Frequency and location can be spelled out in LSP contract.	KSC MIT (as required), Spacecraft, Spacecraft Contractor, and Launch Service Provider.
4 Integration Telecons	Telecons held to define and integrate spacecraft and launch vehicle requirements. Also used to define spacecraft launch site requirements.	Frequency varies, typically monthly or every two weeks.	KSC MIT (as required), Spacecraft, Spacecraft Contractor, and Launch Service Provider
5 Technical Interchange Meeting (TIM)	Detailed review of technical aspect of the Mission, Interface or Launch Vehicle.	As Required or in conjunction with MIWG or GOWG	As required for topics discussed: KSC MIT (as required), Spacecraft, Spacecraft Contractor, and Launch Service Provider
6 Ground Operations Working Group (GOWG)	Formal gathering to review progress of ground operations plans and field site integration process. Discuss launch site processing requirements, safety, training, transportation, badging, etc.	Approximately every 4 -12 months depending on nearness of launch date.	KSC MIT (as required), Spacecraft, Spacecraft Contractor, Launch Service Provider, and Range Safety.

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Meeting Name	Purpose / Agenda	When	Attendees
7 Launch Vehicle Mission Peculiar Preliminary Design Review (PDR) and Critical Design Review (CDR)	Review the implementation of mission requirements on the launch vehicle. Review encompasses the design and qualification of mission peculiar hardware and software, including supporting analyses that verify the design will meet the functional requirements. For some contractors, a separate PDR and CDR are held if the modifications to the LV are significant. In other cases, a single review or series of focused Design TIMs are held in their place, which accomplish the intent.	Variable, but typically the PDR is held when the requirements are well defined and initial preliminary design is complete. The CDR is held when the majority of the engineering is ready for drawing release.	Chaired by NASA LSP Chief Engineer or designee; Launch Service Provider; KSC MIT; vehicle systems engineers; mission analysts; Spacecraft; Spacecraft Contractor
8 Design Certification Review	A post-hardware/software build review is held prior to first usage to certify that the hardware/software was built to meet specifications and complies with final CDR.	Variable, but after hardware build. The LSP Director will approve the need for this review.	Chaired by NASA LSP Chief Engineer or designee; Launch Service Provider; KSC MIT; vehicle systems engineers; mission analysts; Spacecraft; Spacecraft Contractor
9 Ground Operations Review (GOR)	Determine Launch Site readiness for S/C arrival and processing.	Approx. 30 days prior to S/C arrival at launch site.	LSIM present to LSP Project that launch site is ready to receive S/C for processing.
10 Spacecraft Pre-Ship Review	Spacecraft Project review of the readiness to ship the spacecraft to the launch site for system tests and launch preparation.	Approx L – 60-90 days. (Usually 2-4 weeks before arrival at launch site - the same time as the GOR.)	Chaired by Sponsoring NASA Center's Program Management Council (PMC) or designee (Appointed Board). Participants: Spacecraft Project, KSC MIT, and Spacecraft invitees.

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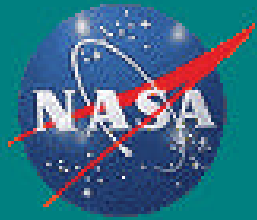
The Launch Campaign

The NASA/LSP launch campaign is the period defined beginning with Pre-Vehicle on Stand (Boeing), Systems Review (LMA) or L/V Mission Readiness Review (Orbital) at approximately L-45 days and ending at launch. It is at this point in which the NASA LSP Chief Engineer and NASA Launch Manager increase their participation with the Mission Integration Team through launch

Meeting Name	Purpose / Agenda	When	Attendees
11 Pre-Vehicle on Stand (Pre-VOS/Boeing) Systems Review (LMA) L/V Mission Readiness Review (Orbital) (TBD) Coleman Research Corp	Obtain concurrence to erect L/V on pad, or to continue with L/V processing at the field site. Review includes mission overview, mission analysis, vehicle hardware and software, status on the factory buildup and launch site schedule.	L- 30 to 60 days (Usually held at LV manufacturing or engineering design center.)	Chaired by LSP Chief Engineer & NASA Launch Manager or designees. Participants: Launch Service Provider, KSC, and S/C Project
12 L/V Readiness Review (LVRR) (Requirement: 8610.24A)	To certify readiness to proceed with S/C/L/V integration activities. Launch Service Programs concurrence to proceed with processing of the L/V and S/C. Review mission integration, significant open action items, configuration, first flight items, significant hardware issues, schedule, tracking support, range support, public affairs, and constraints to launch.	Approx. L – 45 days	Chaired by LSP Program and Board. Presented by LSP Program elements to LSP Program and KSC senior management. Participants: KSC, HQ, S/C Project.
13 S/C Mission Readiness Review (MRR)	S/C Project seeks approval from PMC to continue S/C processing toward the Flight Readiness Review (FRR). S/C team presents/dispositions any open items to management and review panel to gain approval for transport to launch site.	Approx. L-30 days Typically after the Pre-VOS/System. Review/L/V MRR and LVRR. S/C hosts review prior to ship to launch site.	Chaired by Sponsoring NASA Center's Program Management Council (PMC) or designee (Appointed Board). Participants: KSC MIT,NLM, NASA HQ, and S/C Project.

MEETING / REVIEW DESCRIPTION TABLE

LSP Meeting Name	Purpose / Agenda	When	Attendees
14 Prelaunch Integrated Mission Assurance Review (IMAR) – Process Operating Plan – OSMA-IMAR-POP-03-03-Rev 0	To assess, independently from the project/program, the satisfactory completion of all activities necessary to provide an acceptable level of confidence in mission success. The IMAR is used by Headquarters Code Q to independently assess mission preparation status, open work, technical and programmatic issues and concerns, corrective actions and the consolidated mission probability of success of the spacecraft and vehicle.	Approx. L - 30 days	Chaired by: Code Q Participants: Safety, Health and Independent Assessment (SHIA), S/C Project and LSP
15 Flight Readiness Review (FRR) (Requirement: 8610.24A)	Certify readiness to proceed with spacecraft and launch vehicle processing towards launch. Review closeout of readiness review action items, assembly, check out and anomalies of vehicle and spacecraft, tracking support, range support, open work, and launch constraints.	L –5 days	Chaired by NASA Launch Manager or designee. Participants: LSC, Range, LSP, GSFC Networks (as required), Weather Officer, and Spacecraft Program Office, and NASA HQ.
16 Launch Management Coordination Meeting (LMCM)	Brief the launch day management team and familiarize them with all aspects of launch countdown.	L – 3 to 5 days (Sometimes two sessions, one at approx. L-30 days)	Chaired by NASA Launch Manager Participants: KSC Launch Team, Spacecraft Project, LSC Launch Team
17 Mission Dress Rehearsal	Familiarize the launch day team with the countdown and communication by performing a simulated launch.	L - 2 to 3 days (Sometimes two rehearsals within L-30 days)	LSC Launch Conductor and LOM/LSIM coordinate Rehearsal for entire launch team.
18 Launch Readiness Review (LRR) (Requirement: 8610.24A)	Authorize approval to proceed into launch countdown and signature of the Flight Certification Document. Review final Mission readiness and closeout all action items.	L – 1 day	Chaired by the NASA/HQ AAA for Launch Services and Spacecraft Mission Director. Presented by LSC, Range, Weather Officer, and Public



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The Mission Success section of the Mission Plan provides an overview of tools that the Launch Service Program utilizes to gain insight and provide approval during your launch vehicle processing.

Some of these tools will point you to a Customer Monthly Report that will provide you with the current status of your mission. The report is available through the internet and protected with a password, which will be provided by your MIM. Your current mission specific Customer Monthly Report is available at the following location: [http://www.ksc.nasa.gov/elv/plan/missions/\(generic\)/customermonthlyreport.pdf](http://www.ksc.nasa.gov/elv/plan/missions/(generic)/customermonthlyreport.pdf)

Insight & Approval (K-ELV-10.1 Rev. A)

In considering the level of Insight and Approval to be applied to a particular mission, the maturity, complexity and criticality of the mission will be considered. The LSP Insight and Approval Matrix for your mission is included in this package for your reference.

Definitions:

Insight: Acquiring knowledge and understanding of contractors' actions through watchful observation, documentation review, meeting attendance, reviews, tests, and compliance evaluations.

Approval: Providing the launch service contractor authority to proceed and/or formal acceptance of requirements, plans, tests, or success criteria in specified areas.

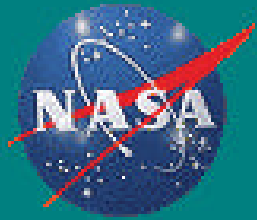
Missions identified as able to tolerate higher risk launch services, as defined in [NPD 8610.7](#), may utilize a modified insight and approval approach which will be reviewed on a case by case basis. Category 2 or 3 missions using KSC managed launch service contracts require expendable launch vehicle certification. If the launch vehicle has not yet been certified, the approach for launch vehicle certification will be agreed to prior to mission ATP.

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	NASA Approval	8610.23 Attachment A	8610.24	8709.2	NASA Insight	8610.23 Attachment A	8610.24	8709.2
Mission Design, Integration and Engineering	<ul style="list-style-type: none"> Spacecraft to launch vehicle mission requirements, ICD's/Mission Specification MIWG minutes and action item resolutions Mission unique hardware design and analysis Mission-unique software design and analysis Mission-unique design and qualification reviews Chair Design Certification Reviews 	a.1 a.2 a.3 a.4 a.3, a.4 a.3, a.4						
Launch Vehicle Design, Production and Test (Core Vehicle Design, Launch Vehicle Production and Test)	<ul style="list-style-type: none"> Risk Management and Systems Effectiveness Plan/Approach (See Note 2) Top level test plans, requirements and success criteria for Integrated Vehicle Systems and for tests that verify the integrated vehicle interfaces Mission unique hardware manufacture and test Mission-unique software test Anomaly resolutions that affect the spacecraft to launch vehicle integrated assembly Pre-Vehicle-on-Stand Review 	a.5 a.6 a.3 a.4 a.13 a1, a3, a4, b.2		II.4 III.10 III.2	<ul style="list-style-type: none"> Production Program Reviews, plans and schedules Baseline core vehicle design, analyses, and configuration management Core Vehicle Design Reviews and Qualification Reviews Major/Critical Problems and Contractor Engineering Board Activities Evaluate adequacy of & attend Change Boards, MRB's, PRB's Production and systems test and Material Review Boards Critical Flight Hardware Pedigree/Hardware Acceptance Reviews Audits of LSP's Safety and Quality Assurance Plans and processes Changes to Contractors System Effectiveness Plans Pre-ship Reviews Major system and integrated systems tests Post Test Data Review Anomaly resolutions Failure analysis Vehicle Walkdown Inspection Operations and Procedure discipline (Audit) Work practices and documentation (ISO) (Audit) In-Plant Surveillance Review of other vehicle problems to assess for generic problems, proper corrective action and trending 	b.2 b.1 b.8 b.9 b.3 b.4 5.c.(5)b.5 b.6 b.7 b.10 b.11 b.12 b.13 b.17 b.18 5.c.(5)b.19		III.8 II.1, II.2, II.3, II.5, (Note 1) II.5, III.5, (Note 1) III.1 III.3 III.7 III.4 III.2 III.6 III.6 III.1 III.1 III.1 III.9
<p>Note 1: All changes are reviewed through pedigree review process, regardless of change classification.</p> <p>Note 2: Plan is written during procurement phase. Plan's approach is used throughout.</p>								

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	NASA Approval	8610.23 Attachment A	8610.24	8709.2	NASA Insight	8610.23 Attachment A	8610.24	8709.2
Launch Site Operations	• Top level test plans, requirements and success criteria for Integrated Vehicle Systems and for tests that verify the integrated vehicle interfaces	a.6			• SFA compliance and spot audits	b.5		IV.2, V.2.
	• Spacecraft handling procedures and deviations	a.9			• Major/critical Problems and Contractor EB's	b.9		V.5, VI.2
	• Integrated spacecraft/vehicle mate, test, and closeout procedures and deviations	a.10			• Major system and integrated systems tests	b.10		IV.1.
	• Integrated spacecraft/vehicle mate, test, and closeout asrun procedures and deviations	a.11			• Post Test Data Reviews	b.11		
	• SC to LV Anomaly resolutions that affect the integrated assembly	a.13			• Anomaly resolutions	b.12		IV.1
	• SC to LV Integration	a.11		V.4	• Failure analysis	b.13		IV.1
					• Vehicle/ground support equipment procedures	b.14		
					• Launch site support work schedules and plans reviews	b.15		
					• Launch site vehicle preparations and closeout data	b.16		VIII.3
					• Vehicle Walkdown Inspection	b.17		V.1, VIII.3
Launch Operations	• Integrated Launch Commit Criteria	a.7			• Contractor chaired mission, Launch, and Flight Readiness Reviews	b.20		
	• LVRR		1.b.(1)		• Vehicle/Ground Support Equipment Procedures	b.14		
	• Chair FRR and LRR		1.b.(2)	VII.4 (SHIA)	• Flight Assurance Pre-Launch Assessment			VII.2.
	• Closeout of actions from NASA-chaired Mission and Flight Readiness Reviews	a.8		VII.4 (SHIA)	• Vehicle Closeouts	b.17		VIII.3.
	• Launch countdown procedures and deviations that affect the spacecraft to launch vehicle integrated assembly	a.12			• NASA Advisory Team		5.b.(2)	
	• Anomaly resolutions that affect the integrated assembly	a.13			• Anomaly Resolutions	b.12		
	• CoFR		5.d.(2)	VII.3. (SHIA)	• Real Time Data Review			VIII.2.
	• Launch Go/No-Go	a.14	1.b.(4) 5.d.(4)	VIII.1 (SHIA)	• Report Status of failed Hardware at MRR, CDLVLR, IMAR, FRR, LRR			IV.3, V.3, VII.1
• Launch Contingency Plan		5.d.(3)	VII.5, X.1, X.2	•				
Post Launch Activities	• Mission success determination				• Post-flight vehicle, tracking, and range data review	b.21, b.11		IX.2, VIII.2
	• Lessons learned and contributions to mission success	7.b		IX.4, IX.5	• Post-flight anomaly investigations/closeouts	b.22		IX.3, X.3



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Verification Matrix

For each mission, LSP will verify that all of the interface requirements between the spacecraft and launch vehicle have been validated and implemented correctly. A verification tracking matrix is a database tool used to support this activity, and will be developed and maintained throughout the mission integration process. For each interface requirement, the appropriate documentation or event is reviewed or witnessed by engineering and the nature and result of the verification is logged. The readiness review process will include a review of the verification status of all interface requirements to ensure proper completion. This verification tracking matrix is separate from any verification matrix maintained by the launch service provider.

Launch Vehicle Orbital Debris (K-ELV-02.12.001)

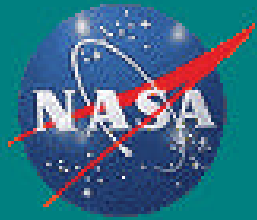
In response to [NPD 8710.3A](#), NASA Policy for Limiting Orbital Debris Generation, the LSP Mission Analysis Branch will support the spacecraft program offices by providing data input for the LSP launch vehicle portion of the orbital debris assessment. This input data will be collected from the most current baseline documents such as preliminary mission specific flight design reports, or the best available and valid sources at the time of the assessment.

(If you are a DPAF mission, INSERT this: For dual spacecraft missions with a DPAF, the spacecraft on top will be responsible for the separable DPAF portion of the analysis and report. The other spacecraft will be responsible for the Delta second stage portion of the analysis and report.)

Collision with On-Orbit Objects during Launch Operations (K-ELV-02.12.007)

Mission Assurance Collision Avoidance measures (MA COLA) will not be routinely conducted for NASA LSP missions. This does not have any bearing on the performance of Safety COLA's, which are conducted against inhabitable objects (i.e. STS,ISS) for every LSP mission.

NOTE: Safety COLAs of inhabitable objects will still be performed for every launch by the Range.



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Guidance on the Number of Coupled Loads Analysis Cycles

(ELVL-2001-0002834 Rev A)

It is recommended that NASA spacecraft to be launched aboard an expendable launch vehicle perform three coupled loads analyses. The Loads and Environments Mission Analyst assigned to your mission can provide a copy of this memorandum as well as further guidance on effective use of these loads cycles.

Spacecraft Structural Dynamic Qualification (ELVL-2001-0025735 Rev A)

The overall purpose of the KSC structural dynamics review of the spacecraft is to work with the Launch Service Provider and the spacecraft team to ensure that the spacecraft structure is adequately qualified for flight. The referenced Memorandum provides the details to meet this philosophy and can be obtained and discussed with the Loads and Environments Mission Analysts assigned to your mission.

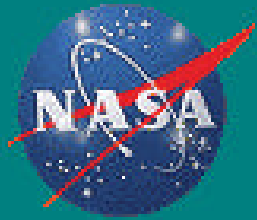
Product and Pedigree Reviews

LSP participates in reviews of completed hardware buildup and non-conformance documentation to ensure completeness, accuracy and sound technical approaches to the corrective actions of any problems that may have occurred during the manufacturing and buildup of the launch vehicle. These reviews may include inspection of the actual flight hardware to verify no visual material defects exist and completeness of assembly. Any potential problems that may be expected during the completion of hardware prior to shipment will be reviewed and discussed as well.

Insight into your current vehicle's Fleet Status can be found in the [Customer Monthly report](#).

Independent Assessment

The KSC Safety, Health and Independent Assessment Directorate provides an independent assessment of the launch vehicle safety and mission assurance activities, flight readiness, mission risk and overall program effectiveness in providing launch services.



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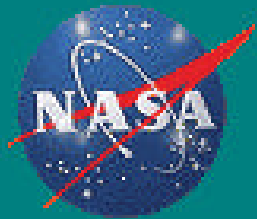
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Engineering Review Board Overview

KSC LSP has an Engineering Review Board (ERB) provides additional insight into launch vehicle flight readiness issues. The LSP Chief Engineer chairs the ERB. The board includes Engineering Division Chief, Engineering Branch Chiefs and any additional members as required. The ERB is a purely technical forum to disposition launch vehicle flight readiness concerns. Programmatic issues such as cost and schedule are not included as part of the ERB discussions. After the board reviews the data associated with the issues, a recommendation is made to LSP Project whether to accept the hardware/software discrepancy and continue launch vehicle processing or discontinue processing until corrective action is taken. There may be situations when the board does not have sufficient data to make a recommendation. The ERB will reconvene on the issue once additional data is available for review and then issue a recommendation. Once the ERB recommendations are dispositioned, action may be required by Engineering, Mission Integration, the Program Office or a combination of these disciplines.

An ERB is convened to assess specific implementation of mission-unique requirements to support NASA missions. The LSP Chief Engineer will determine, after consulting with the Integration Engineer and the Vehicle Lead Engineer, which mission-unique requirement implementations will be considered by ERB. Examples of items that will require ERB approval would be: stretched payload fairings; upgraded vehicle performance options (first use); and first-time options unique to a specific contractor. Examples of items that would not require ERB approval would be: additional fairing doors within existing allowable zones; special cleaning options; and previously-flown, non-standard payload attach fittings. ERB's are also convened at specific points in the development cycle. Prior to option turn-on; after PDR (or completion of trade studies); after CDR (or final design complete/readiness to begin fabrication); and after fabrication/qualification is complete.

The current ERB status summary for your mission, if any, can be found in the [Customer Monthly Engineering Review Process \(K-ELV-02.6\)](#)



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Risk Management Overview

The risk management process is designed to ensure the early exposure and identification of potential problems, enable more efficient use of resources, promote teamwork by involving personnel at all levels of the project, provide information for tradeoffs based on priorities and quantified assessment, and increase the chances of project success.

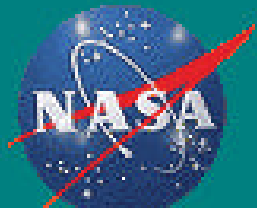
The continuous risk management process, as defined in the LSP Launch Services Project Risk Management Plan (prepared per KSC-PLN-2130), is applicable across all functions and supporting organizations of the NASA LSP Launch Services organization. The plan provides guidance on risk identification, analysis, mitigation planning, tracking, control, and communication/documentation.

Risks are identified by individuals or teams across all levels of the functional and administrative organizations, and are classified as administrative, mission specific, core vehicle, or program. The risks are evaluated using established risk analysis criteria, and then assigned an LSP Risk Analysis Rating, as shown in Figure 3.

	5					
	91-<100%	1x5	2x5	3x5	4x5	5x5
	4					
	51-90%	1x4	2x4	3x4	4x4	5x4
	3					
Probability of Occurrence	11-50%	1x3	2x3	3x3	4x3	5x3
	2					
	6-10%	1x2	2x2	3x2	4x2	5x2
	1					
	1-5%	1x1	2x1	3x1	4x1	5x1
		1	2	3	4	5
		Impact				

Based on the level of risk identified through the analysis, a plan is formulated for risk mitigation. The processes of tracking, controlling, and documenting the mitigation efforts are further defined in the LSP Risk Management Plan.

Any risks identified for your mission will be documented and reviewed at regular intervals, and are summarized in your mission's [Customer Monthly report](#).



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LAUNCH SERVICES

Contract utilized for this mission:

Planned Launch Date:

(All launch dates must be approved by the Flight Planning Board)

Launch Site:

Launch Service Provider:

Launch Vehicle / Configuration:

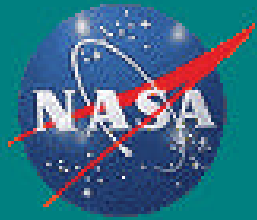
Mission risk category per [NPD 8610.7A](#) :

The Total Launch Service Budget Includes:

- *Launch Service Costs*
- *Mission Unique Requirements*
- *Launch Telemetry Support (if required)*
- *Payload Processing / Engineering Services*
 - Users Budget Guide [KSC-UG-2101](#)
 - *(Insert the following if you are using an NLS or SELVS contract:)*

The following Web site provides an on-line planner's guide for the products and services that are available on your contract.

<http://elvppg.ksc.nasa.gov>



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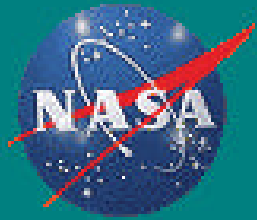
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The Launch Services listed below are the ones that were identified at ATP. For a monthly update of your mission services and task assignments click below for your Customer Monthly Report.

[http://www.ksc.nasa.gov/elv/plan/missions/\(generic\)/customermonthlyreport.pdf](http://www.ksc.nasa.gov/elv/plan/missions/(generic)/customermonthlyreport.pdf)



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The following list identifies the documents that the LSC will use to define and control the construction and performance of the launch vehicle and interfaces to the spacecraft. Included in the description of each document is an approximate timeframe for input required from the spacecraft, if any, and LSC release date. The listing is in order of required spacecraft inputs, which are depicted in red and underlined.

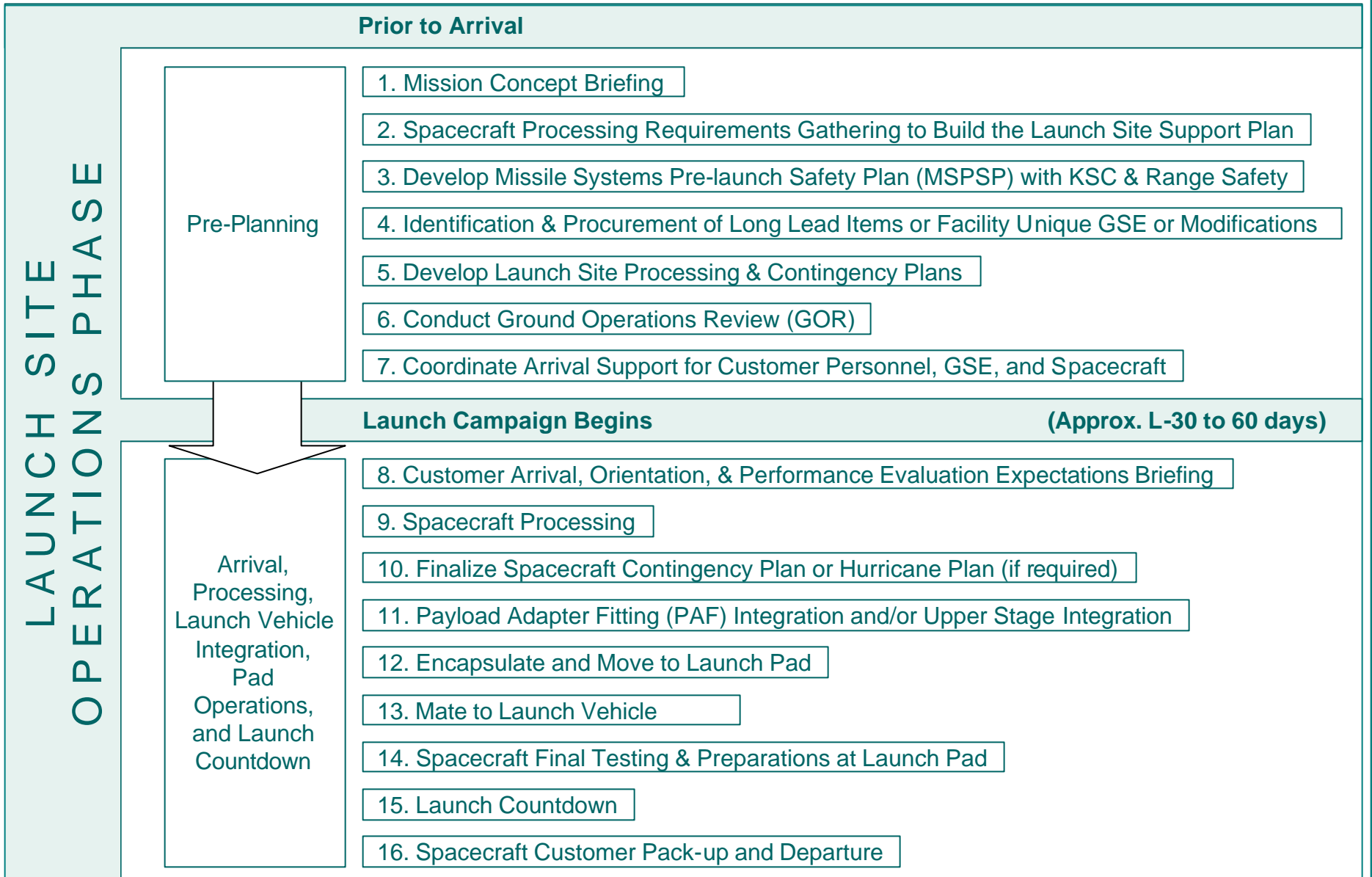
Performance and Guidance Accuracy Analysis (PGAA) - Input 1

Trajectory Feasibility Analysis (TFA) (L-104 weeks)

S/C TFA requirements are due at L-120 weeks.

This analysis is normally the first step in the mission planning process. It uses best available mission requirements (spacecraft weight, orbit requirements, tracking requirements, etc.) and is primarily intended to uncover and resolve any unusual problems inherent in accomplishing the mission objectives. Specifically, the TFA results include nominal and 3 sigma limits for the orbit elements (altitude, latitude, longitude, initial velocity, flight path angle, azimuth angle, semimajor axis, apogee, perigee, eccentricity, inclination, argument of perigee, and nodal right ascension), payload attitude, payload tip-off rates, and payload spin rate at final injection; a launch window sensitivity analysis including, if required, parametric sun angle and eclipse time data over the planned launch window or window thus determined and any changes in the trajectory design parameters required to achieve the launch window; a separation distance history for a period of one orbit, including description of any collision/correlation avoidance maneuver required; definition of nominal spent stage and fairing impact, plume, and predicted dispersions; analyses of consumables and battery lifetimes; information pertaining to vehicle environment; performance capability and margins and reserves; sequence of events, and tracking coverage. The orbit dispersion data are presented in the form of variations of the critical orbit parameters as functions of probability level. A covariance matrix, mass history; and a trajectory printout are also included.

The following table provides an overview of the processing flow of Launch Site Operations. Click on the title to view more detailed information or refer to the Meeting Description pages provided by your MIT.



LAUNCH SITE OPERATIONS FLOW CHART

LAUNCH SITE OPERATIONS REFERENCE TABLE

The following table provides a description of the processing flow of Launch Site Operations.

Prior To Arrival	
<p>1 Mission Concept Briefing</p>	<p>The core spacecraft design and/or program management team presents a mission overview to Range Safety and launch site representatives at the launch site. This briefing generally includes; the Spacecraft's design configuration, safety requirements, the science objectives, the mission parameters, and the target launch date.</p> <p>This formal briefing to range occurs approximately 3 years prior to the planned launch date.</p>
<p>2 Spacecraft Requirements Gathering to Build the Launch Site Support Plan</p>	<p>Ground Operations Working Group (GOWG) Technical Interchange Meetings (TIMs) define spacecraft processing requirements so that appropriate support can be arranged at the launch site. Requirements definition typically begins 2 - 3 years prior to launch. Major requirement categories include:</p> <ul style="list-style-type: none"> Selection of appropriate Payload Processing Facility (PPF) in accordance with K-ELV-02.12.006 (Draft) Identification of any unique facility modifications LSP Payload Safety Review Process (NASA-STD-8719.8) (More information on KSC PPF's can be found at https://elvprogram.ksc.nasa.gov/) Standard and/or Unique Ground Support Equipment (GSE) Consumables (propellants, cryos, gases, etc.) Communication & Telemetry Radio Frequency Emission Sensitivities and Permitting (ionizing and non ionizing) Cleanliness /Contamination Training & Badging Arrival Support, Transportation, and Security Personnel Offices, Telephones, Network Drops, etc. <p>Documentation of all known spacecraft launch site processing requirements is captured in the Launch Site Support Plan (LSSP) which becomes the contractual agreement for spacecraft support at the launch site.</p>

LAUNCH SITE OPERATIONS REFERENCE TABLE

Prior To Arrival	
<p>3 Develop Missile Systems Prelaunch Safety Plan (MSPSP) with KSC & Range Safety</p>	<p>The spacecraft customer, with guidance from launch site safety and Range safety representatives, develops the Spacecraft Missile System Prelaunch Safety Package (MSPSP). Payload Safety Working Groups (PSWGs) serve as the forum for the development and tailoring of the MSPSP. The MSPSP provides a comprehensive description of all hazardous spacecraft components, a brief summary of all hazardous spacecraft procedures to be performed at the launch site, and a comprehensive spacecraft systems safety evaluation to reduce hazards to personnel and hardware. NASA-STD-8719.8 describes the payload safety process.</p> <p>All hazardous procedures performed at the launch site require approval by KSC Safety and/or AF Range Safety. The Launch Site Integration Manager is responsible for coordinating review and approval signatures of these procedures prior to spacecraft arrival at the launch site.</p> <p>Guiding documents for preparation of the MSPSP are EWR 127.1 (Eastern and Western Range Safety Requirements) and NASA KHB - 1710.2 (NASA Kennedy Space Center Safety Practices Handbook.) MSPSP development typically begins 2 - 3 years prior to launch and is approved by both launch site and Range Safety prior to spacecraft arrival.</p>
<p>4 Identification & Procurement of Long Lead Mission or Facility Unique GSE or Modifications</p>	<p>Spacecraft processing support requirements which are peculiar or unique may require payload facility modifications, launch pad modifications, special government furnished equipment (GFE), or facility modifications, launch pad modifications, special government furnished equipment (Long lead procurement. Early identification of these unique items allows timely procurement initiation or that these items to be added to the launch service provider Mission Unique items list so that they are in place prior to spacecraft arrival.</p> <p>Payload Processing Facility unique items or special facility GSE are tracked in the Launch Site Support Plan (LSSP). The Customer Processing Support Manager (CPSM) ensures that these items are completed prior to spacecraft arrival. At VAFB, a Launch Site Support Engineer (LSSE) performs the CPSM role. The CPSM (or LSSE) also acts as a consultant to assist in development of the spacecraft launch site process flow.</p> <p>Identification and procurement initiation of these items can occur at contract turn on (ATP) as much as 2 years prior to spacecraft arrival.</p>

LAUNCH SITE OPERATIONS REFERENCE TABLE

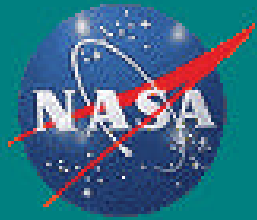
Prior To Arrival	
<p>5 Develop Launch Site Activity Plan</p>	<p>The Launch Site Activity Plan (also called the Ground Operations Plan or the Launch Site Test Plan) includes a description of the operations performed at the launch site, as well as flowcharts and day-by-day planning schedules of spacecraft processing. The plan covers the period from spacecraft arrival at the launch site, through launch, including pack-up and ship post launch. Very often this Launch Site activity plan is contained within the spacecraft MSPSP (discussed above.)</p> <p>The spacecraft team should also address how they plan to react to a spacecraft contingencies in the payload processing facility and the launch pad/area. Specific preparations for hurricanes are contained in the Spacecraft Hurricane Plan which is developed by the spacecraft team from a standard document supplied by the LSIM.</p> <p>Draft or preliminary versions of these plans are due to the launch site 9 months prior to launch, with final plans presented approximately 30 days before spacecraft arrival (at the launch site Ground Operations Review meeting).</p>
<p>6 Conduct Ground Operations Review (GOR)</p>	<p>This review determines that the launch site and the launch vehicle are ready for spacecraft arrival. The Launch Site Integration Manager and the launch service provider are responsible to present to the ELV Program and to the spacecraft that the launch site is ready to receive the spacecraft for processing.</p> <p>The Ground Operations Review occurs approximately 30 days prior to spacecraft arrival at the launch site and typically just prior to the Spacecraft Project's Pre-Ship review.</p>
<p>7 Coordinate Arrival Support for Customer Personnel, GSE, and Spacecraft</p>	<p>The Launch Site Integration Manager (LSIM) ensures that arrival of customer personnel, GSE, and the spacecraft itself is coordinated and that required support such as, office areas, forklifts, off loading equipment, badging, security, etc. are in place to support the spacecraft processing team's arrival.</p> <p>The LSIM uses the Launch Site Support Plan as a reference for arranging arrival support from various launch site entities and works closely with the spacecraft launch processing team during the final 30 to 60 days prior to spacecraft arrival to arrange any last-minute support needs.</p>

LAUNCH SITE OPERATIONS REFERENCE TABLE

	Launch Site Processing Phase (Approximately L-30 to 60 days)
8 Customer Arrival, Orientation, & Performance Evaluation Expectations Briefing	<p>Within 2 working days of arrival at the launch site, the spacecraft customer launch team is provided a comprehensive orientation package and formal briefing, including a facility familiarization walkdown, to allow the team to become familiar with the launch site. The briefing package includes safety guidelines, driving tips, a complete map of the launch site, location of launch site cafeterias, post office location, and various additional information topics to ease the transition to a new work location.</p> <p>After spacecraft arrival at the launch site payload processing facility, the Customer Processing Support Manager (CPSM) becomes the primary interface for all daily spacecraft processing support and for ensuring that customer requirements, especially real time requirements, are properly identified and satisfied. For spacecraft processing at VAFB (for a Western Range Launch), a contractor Launch Site Support Engineer (LSSE) performs the CPSM role. The CPSM (or the LSSE) is located in the facility where the spacecraft is being processed.</p>
9 Spacecraft Processing	<p>Spacecraft test and checkout to prepare for launch including; integrated systems testing, propellants or consumables loading, ordnance installation, RF systems validation, battery charging, spin balance, final weight and center of gravity determination, and third stage mate (if required).</p> <p>Processing usually requires 30 – 60 days at the launch site, including time spent at the launch pad.</p>
10 Develop Spacecraft Contingency Plan	<p>The Spacecraft Contingency Plan is developed by the spacecraft team and the Launch Site Integration Manager during spacecraft processing at the launch site. The plan identifies key personnel, critical spacecraft hardware, and critical actions that must be taken by the spacecraft team in the even of a pad or launch mishap and is due to NASA LSP Program Management approximately one week before launch.</p> <p>The Contingency Plan reference document is NPG 8621.1 (NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Record keeping) is available on NODIS.</p>
11 Payload Adapter Fitting (PAF) Integration	<p>The launch service provider installs the required payload adapter fitting (PAF) according to the contract or the spacecraft mission unique items list. PAF installation and integration occurs in the payload processing facility where the spacecraft has been undergoing processing.</p> <p>PAF installation/integration occurs approximately 2-3 days prior to spacecraft encapsulation or can-up for transport to the launch pad.</p>

LAUNCH SITE OPERATIONS REFERENCE TABLE

Prior to Arrival	
12 Encapsulate and Move to Launch Pad	Spacecraft encapsulation or can-up for transport to the launch pad is accomplished by the launch service (vehicle) provider with assistance from the spacecraft team. Some launch service providers place the spacecraft in the payload fairing prior to moving to the launch pad. Encapsulation and move to the pad occurs anywhere from 7- 15 days prior to launch.
Launch Site Processing Phase (Approximately L-30 to 60 days)	
13 Mate to Launch Vehicle	The spacecraft mate to the launch vehicle generally occurs at the launch pad and includes launch vehicle payload fairing installation if not accomplished during encapsulation. After mating to the launch vehicle, spacecraft access and testing must be coordinated due to launch vehicle operations. The launch service provider coordinates pad operations with the spacecraft team whenever possible. The spacecraft is expected to be represented at the daily launch vehicle operations meeting up to launch day.
14 Spacecraft Final Testing & Preparations at Launch Pad	Spacecraft customer conducts final consumables top-offs, battery charging, verification of spacecraft readiness, and then places the spacecraft in flight configuration for launch. Spacecraft on-pad testing typically lasts 7 –10 days and is usually complete no later than 12 hours prior to launch. Concurrent with final spacecraft preparations and closeouts at the launch pad, the spacecraft launch team participates in launch countdown rehearsals. Spacecraft project managers attend the final formal readiness reviews prior to launch countdown including; the Flight Readiness Review, the Launch Management Coordination Meeting, the Mission Dress Rehearsal, and the Launch Readiness Review. These launch site reviews generally occur in last five days before launch.
15 Launch Countdown	The launch countdown typically lasts 24 hours and requires the spacecraft team to provide continuous monitoring of critical spacecraft health parameters, usually via the fairing umbilical connection. The spacecraft launch team is provided dedicated communication networks to advise NASA launch management of spacecraft readiness for launch.
16 Spacecraft Customer Pack-up and Departure	Post-launch activities include verification of proper orbit parameters, and confirmation of a functioning, orbiting spacecraft. The spacecraft launch team maintains the ability to monitor spacecraft parameters (like solar array deployment, battery charging, attitude, pointing, etc.) from the launch site for several hours up to two or three days post launch. Spacecraft customer then prepares for GSE and personnel departure from the launch site. Customer pack-up and departure takes 5-10 working days depending on the size of the team and the amount of unique GSE brought to the launch site.



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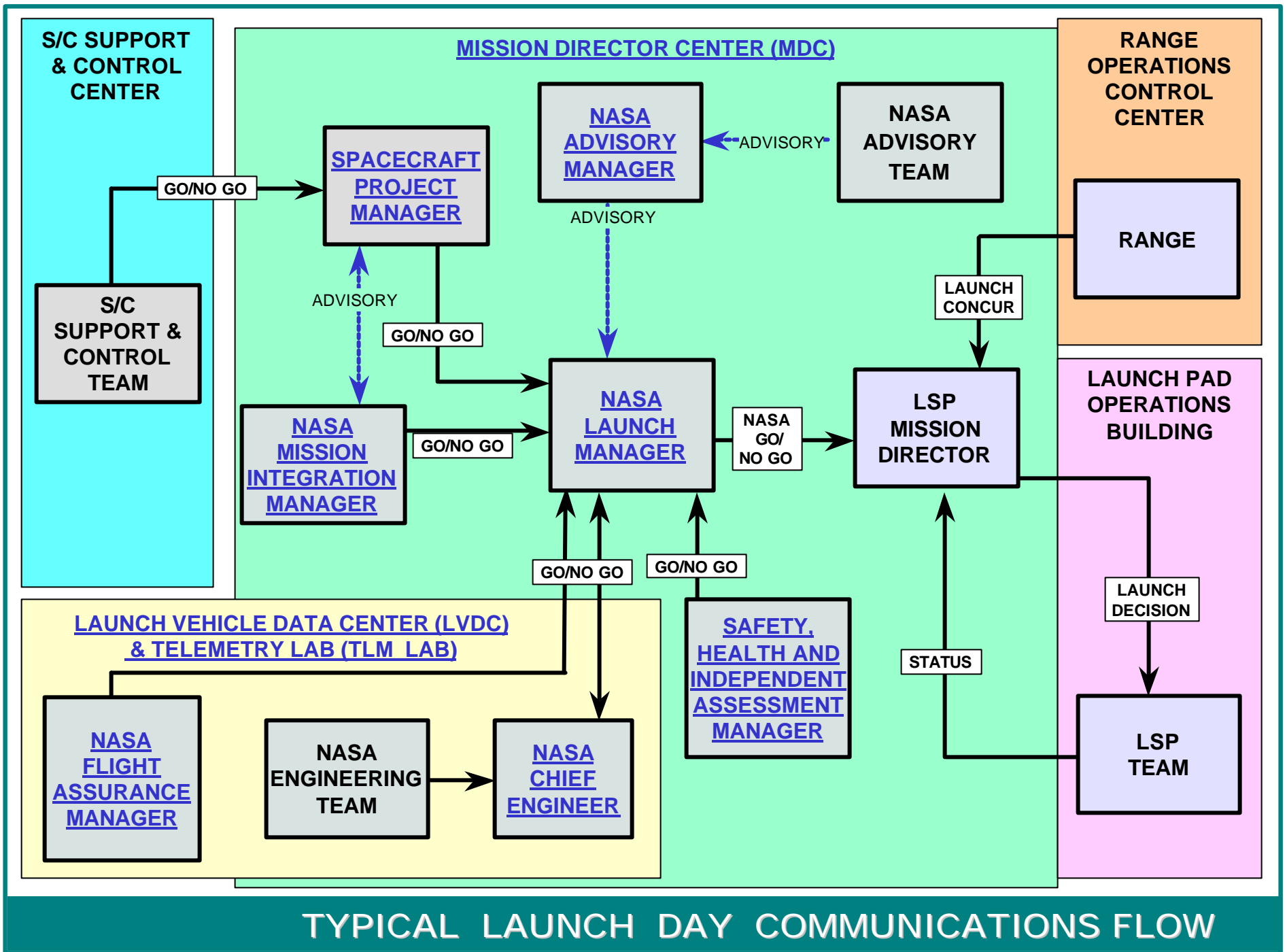
LAUNCH
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The NASA/LSP launch campaign is the period defined beginning with **(Insert the appropriate one of the following: Pre-Vehicle on Stand (Boeing), Systems Review (LMA) or L/V Mission Readiness Review (Orbital))**, at approximately L-45 days and ending at launch. It is at this point in the flow when the NASA LSP Chief Engineer and NASA Launch Manager increase their participation with the Mission Integration Team through launch.

On the following page is a typical launch day communications flow. For more detail about launch day roles or facilities, click on the hypertext of the diagram.

The Launch Management Coordination Meeting (LMCM) will provide an in-depth review of this chart, which will be tailored specifically to your mission. The purpose of the LMCM is to review all aspects of the launch countdown with key personnel to ensure the launch team is knowledgeable and properly trained for the dress rehearsal and launch. Other highlights of this meeting are also presented in this section of the mission plan.



LAUNCH DAY ROLE DESCRIPTION TABLE

Launch day responsibility table	
1 NASA Launch Manager (NLM)	The NASA Launch Manager (NLM) is the highest authority for NASA and is located in the MDC and is responsible for insuring that the countdown and launch decision processes are properly conducted for the NASA team. This responsibility requires advisory and "go/no-go" concurrence from the following elements:
2 NASA LSP Chief Engineer (NASA CE)	The NASA LSP Chief Engineer (NASA CE) is located in the LVDC and is responsible for advising the NLM of any technical concerns with status and readiness of the launch vehicle. This status and assessment is obtained from the KSC Engineering Team. The NASA CE provides the NASA Engineering Team's concurrence to launch to the NLM.
3 NASA Safety And Flight Assurance Office (SFAO)	The NASA SFAO Flight Assurance Manager is located in the LVDC. An SFAO quality assurance specialist is located at the launch pad or vicinity until a "pad clear" is called. SFAO is responsible for independently verifying that pre-launch final close-out procedures and processes are performed correctly by the LSC. SFAO participates in problem/anomaly resolution and makes recommendation to continue with launch or not through "go/no-go" polling.
4 NASA Advisory Manager (NAM)	The NASA Advisory Manager (NAM) oversees the NASA Management Advisory Team, which is composed of NASA personnel who are experienced in launch operations. This team provides the NLM an assessment of launch countdown, launch team performance, and weather conditions. The NASA Management Advisory Team will assure that the launch decision process is properly executed.
5 Safety, Health and Independent Assessment (SHIA) Manager	The SHIA Manager is responsible for providing an independent assessment of the countdown operations and overall launch decision process. This responsibility includes an assessment of the operation in order to evaluate whether the proper safety and health guidelines are followed and provides go/no-go status to the NLM. The SHIA Manager also serves as the integrator of both launch vehicle and spacecraft independent assessments, and as such represents NASA Headquarters Code Q in the launch process.

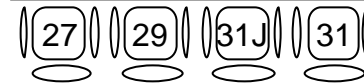
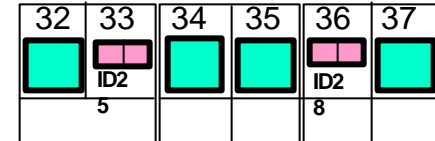
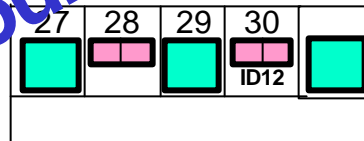
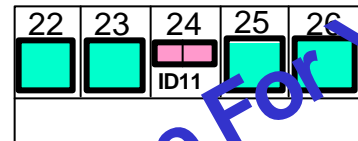
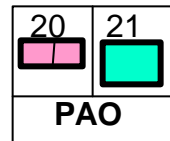
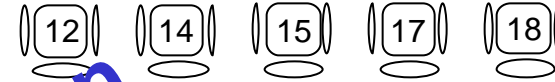
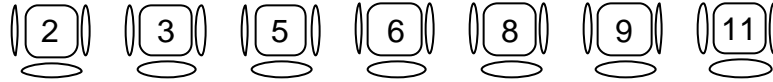
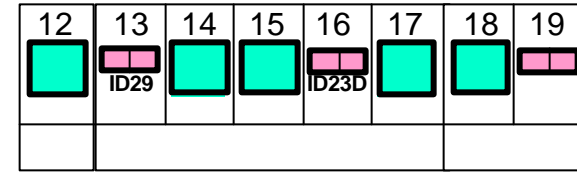
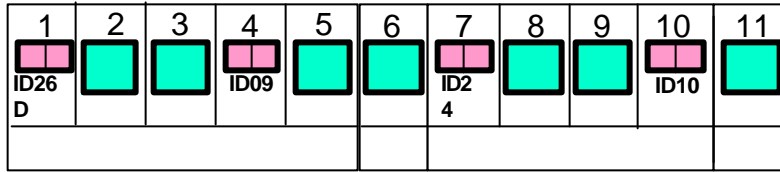
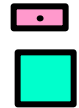
LAUNCH DAY ROLE DESCRIPTION TABLE

Launch day responsibility table	
6 Mission Integration Manager (MIM)	The Mission Integration Manager (MIM) is a member of the LSP Launch Services Project and is located in the MDC. The MIM will advise the Spacecraft Program Manager and the NLM during the countdown on items related to mission integration.
7 Spacecraft Mission Director (SMD)	<p>The Spacecraft Mission Director (SMD) is located in the MDC and is responsible for overall conduct of the spacecraft mission. He has the ultimate authority on launch day for spacecraft operations. The SMD will receive spacecraft status and recommendations from the Spacecraft and Launch Support Teams and is responsible for the following:</p> <ul style="list-style-type: none"> - Authorizing the start of the spacecraft launch countdown - Providing the NASA Launch Manager with scrub or hold direction for spacecraft anomalies - Informing the NASA Launch Manager of mission status, providing concurrence to the NASA Launch Manager that countdown anomalies are satisfactorily resolved - Providing concurrence to the NASA Launch Manager for continuation of countdown operations - Providing the NASA Launch Manager with the final mission “go/no-go”
8 NASA Spacecraft Coordinator (NSC)	<p>The NSC (generally the LSIM) is located in the LV control room and provides a redundant communication path and advisory role between the S/C countdown team, the MIM, and the NLM.</p> <p>Because the NSC is familiar with the S/C launch countdown procedure, he/she can advise the LV test conductor of S/C readiness or problems.</p>

MISSION DIRECTOR'S CENTER CCAFS

EXAMPLE

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COMM



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PAO

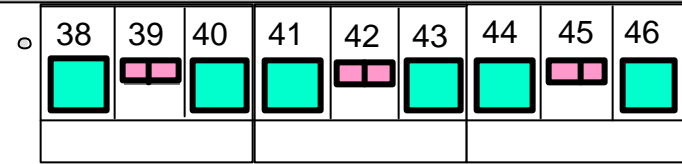
AMOD
MDC OD

EXIT

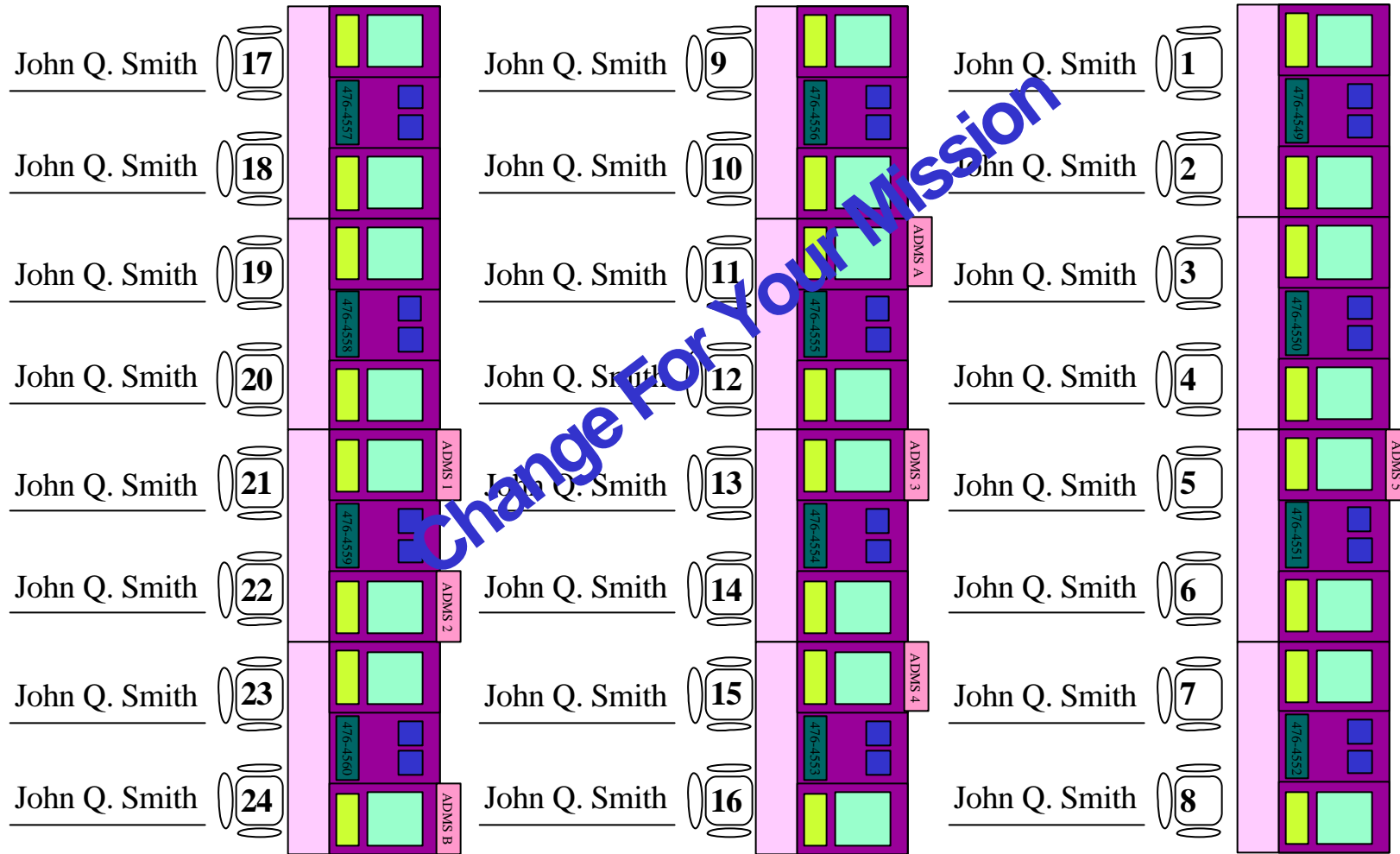
Change For Your Mission

CCAFS Hangar AE MISSION DIRECTOR'S CENTER

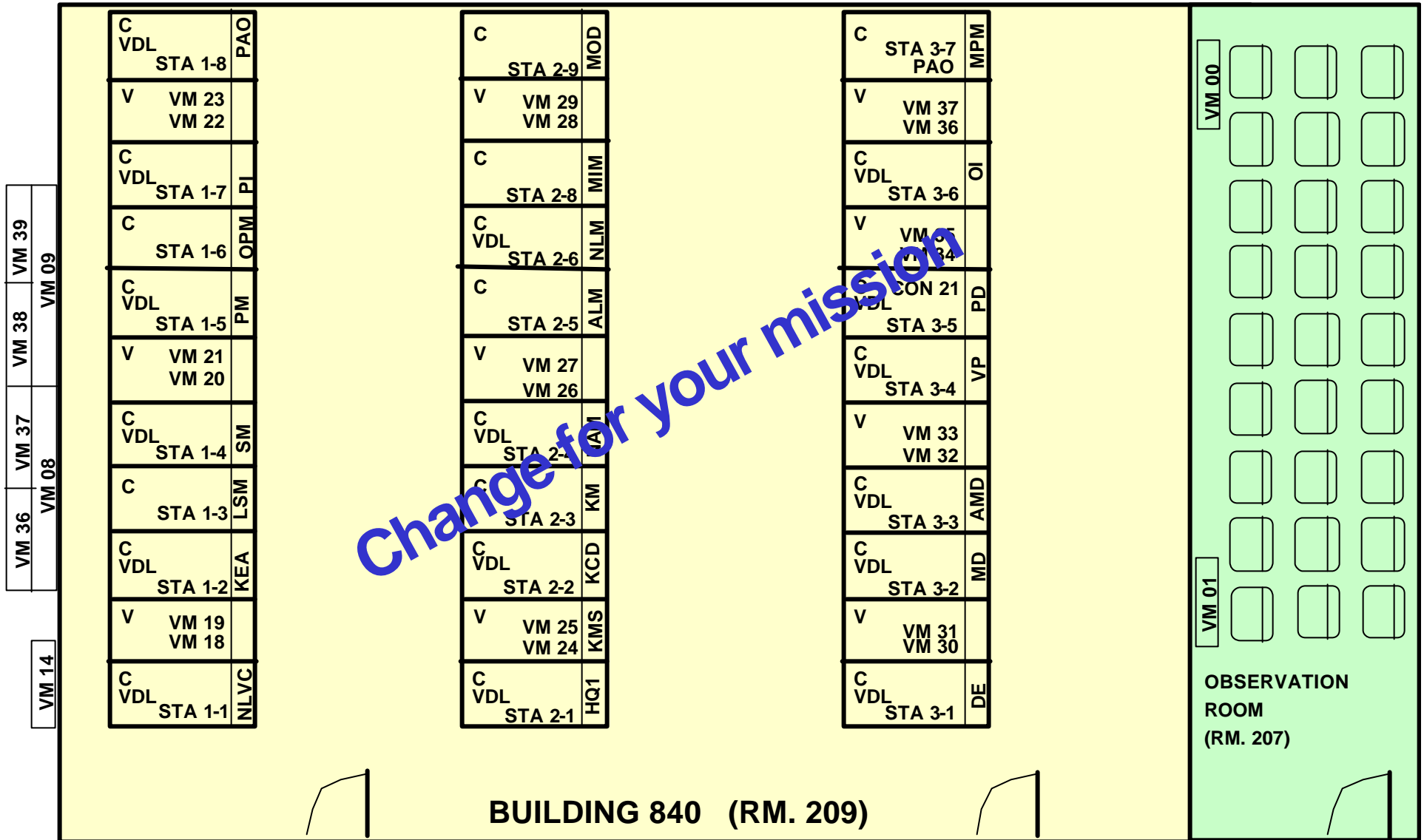
NOTE: POSITIONS 21,21J,31, & 31J ARE NOT AVAILABLE FOR ASSIGNMENT



LAUNCH VEHICLE DATA CENTER CCAFS

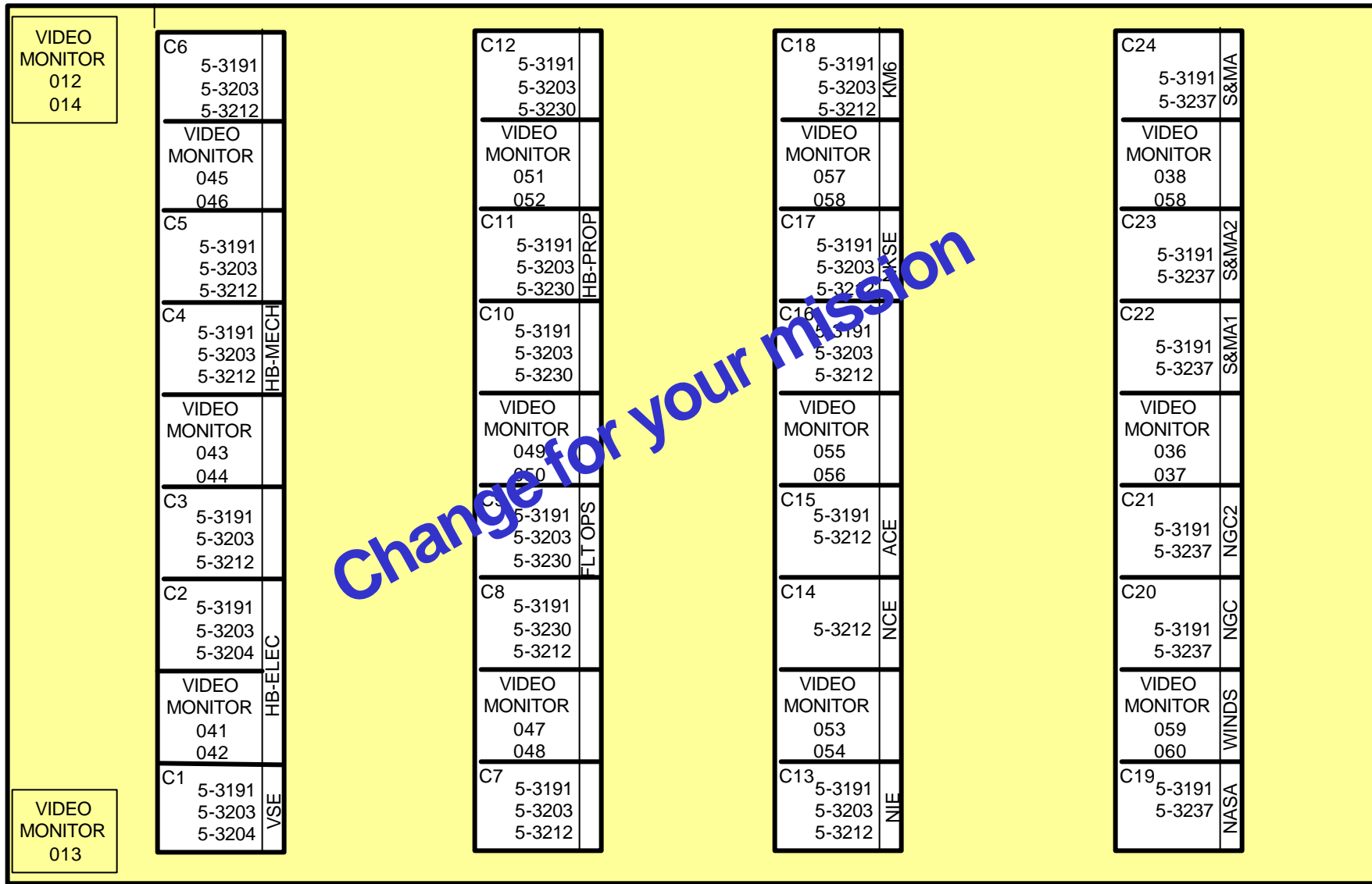


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VAFB - LAUNCH VEHICLE DATA CENTER



VIDEO MONITOR
012
014

VIDEO MONITOR
013

C6	5-3191 5-3203 5-3212	
VIDEO MONITOR	045 046	
C5	5-3191 5-3203 5-3212	
C4	5-3191 5-3203 5-3212	HB-MECH
VIDEO MONITOR	043 044	
C3	5-3191 5-3203 5-3212	
C2	5-3191 5-3203 5-3204	HB-ELEC
VIDEO MONITOR	041 042	
C1	5-3191 5-3203 5-3204	VSE

C12	5-3191 5-3203 5-3230	
VIDEO MONITOR	051 052	
C11	5-3191 5-3203 5-3230	HB-PROP
C10	5-3191 5-3203 5-3230	
VIDEO MONITOR	049 050	
C9	5-3191 5-3203 5-3230	FLT OPS
C8	5-3191 5-3230 5-3212	
VIDEO MONITOR	047 048	
C7	5-3191 5-3203 5-3212	

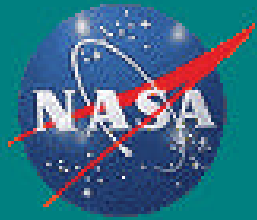
C18	5-3191 5-3203 5-3212	KMG
VIDEO MONITOR	057 058	
C17	5-3191 5-3203 5-3212	WPKSE
C16	5-3191 5-3203 5-3212	
VIDEO MONITOR	055 056	
C15	5-3191 5-3212	ACE
C14	5-3212	NCE
VIDEO MONITOR	053 054	
C13	5-3191 5-3203 5-3212	NIE

C24	5-3191 5-3237	S&MA
VIDEO MONITOR	038 058	
C23	5-3191 5-3237	S&MA2
C22	5-3191 5-3237	S&MA1
VIDEO MONITOR	036 037	
C21	5-3191 5-3237	NGC2
C20	5-3191 5-3237	NGC
VIDEO MONITOR	059 060	WINDS
C19	5-3191 5-3237	NASA

ENTRANCE

ENTRANCE

Fax Machine →
(805) 605-3321



MISSION PLAN

LAUNCH MANAGEMENT

MISSION
INTERFACES

SCHEDULE /
REVIEWS

MISSION
SUCCESS

LAUNCH
SERVICES

LAUNCH SITE
OPERATIONS

LAUNCH
MANAGEMENT

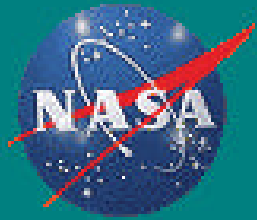
PERFORMANCE
EVALUATION

Launch Date Range Request Process

Each Launch Service Contractor (LSC) is responsible for securing the agreed upon launch date on the Range. The LSC receives a “green sheet” from the Range confirming the launch date. Typically, the Range will also provide the day following the requested date as a backup day to use if necessary. Although not receiving a backup day occurs infrequently, the decision is at the discretion of the Range, and is influenced by the nature of other operations on the Range. Therefore, a typical mission has at least two attempts to accomplish the launch. In special cases like planetary windows, the Range may grant more than two days. However, those cases are rare and are an exception, not a rule.

The Range will need the day before the requested date and the day after the backup date to allow for configuration changes. This is worked on a case by case basis and is influenced by the length of the operation and the time of day of launch.

If the launch attempt cannot occur within the two days granted, the LSC will either request another launch date or enter into negotiations with the Range for the best date available.



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LSP Mission Contingency Action Plan Overview

This plan is developed in accordance with [NPD 8621.1G](#) and will be developed by the the SFAO. This document defines the responsibilities, format and procedures to be followed for a NASA mission contingency. It provides for specific immediate actions that NASA personnel, associated with the launch, will take in response to a launch vehicle related mishap.

Launch Countdown Procedure - Launch Commit Criteria

Mission constraints fall into three categories:

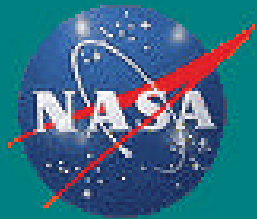
Desired A "nice to have", not necessary to make mission.

Required A necessary requirement, however, can be waived with the proper rationale.

Mandatory A constraint that cannot be waived within terminal count, (after **(INSERT THE APPROPRIATE TERMINAL COUNT TIME: T -150 FOR DELTA & ATLAS; OPENING OF CHECKLIST FOR PEGASUS; OR CONSULT YOUR LD)** minutes).

NASA Policy [NPD 8610.24A](#) prohibits waiving mandatory constraints within the terminal count.

To maintain the most flexibility within the terminal count, it is suggested that as many constraints as possible be classified as "**Required**". The countdown **can** be halted for a violation of a required constraint.



MISSION PLAN

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SCHEDULE / REVIEWS

MISSION SUCCESS

LAUNCH SERVICES

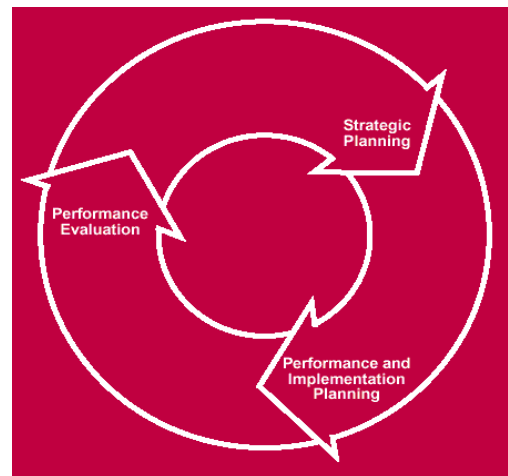
LAUNCH SITE OPERATIONS

LAUNCH MANAGEMENT

PERFORMANCE EVALUATION

LSP Program Performance Evaluation Process

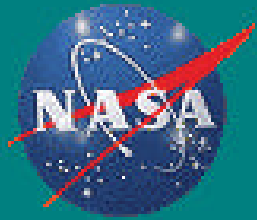
The NASA KSC Customer Assurance and Analysis Office, an organization that is independent of LSP, will collect customer satisfaction feedback from our Spacecraft Customers regarding our performance in accordance with NASA Strategic Management Handbook ([NPG 1000.2](#)). Confidential customer input will be analyzed utilizing quantitative and qualitative survey tools during the mission integration flow.



The information gathered will be discussed with NASA LSP Management and will assist in driving improvement throughout the organization.

Lessons Learned ([NPD 8610.23A](#)) are gathered and published within 90 days of launch.

The MIT is available throughout the Launch Campaign to discuss any issues or concerns.



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PERFORMANCE EVALUATION

Responding to Our Customers' Feedback Data

- Customer feedback (surveys & interviews) obtained at three critical milestones.
 - Launch Services ATP/ Kick-off MIWG
 - L-12 Months
 - Post-Launch
- Assure adequate response by the Launch Services Program to the customer feedback data.
- Feedback must be effectively communicated throughout the organization at all levels.
- Periodic reporting provided to aid management's assessment of the organization's responsiveness to the data.
- Our customers should be aware of the efforts in place to address the needs identified through the surveys and interviews.
 - Surveys: Evaluate items with low ratings of satisfaction
 - Interviews: Opportunity for customer to provide clarification on feedback items

REFERENCE PAGE

Throughout this document you will find references to NASA Directives, Standards and Documents, for instance, [NPG 1000.2](#).

The URL for the Main Menu of the NODIS II Application is;

<http://nodis.hq.nasa.gov/>

A User Guide can be found at the following location;

http://nodis.hq.nasa.gov/Library/Directives/NASA-WIDE/MSWord_Docs/N_PG_1000_0002_.pdf

Other URL's referenced in this guide;

KSC Mission Plan Homepage

<http://www.ksc.nasa.gov/elv/plan>

KSC LSP External Homepage;

<http://www.ksc.nasa.gov/elv/>

Mission Schedule;

[http://www.ksc.nasa.gov/elv/plan/missions/\(generic\)/schedule.pdf](http://www.ksc.nasa.gov/elv/plan/missions/(generic)/schedule.pdf)

Mission Specific Customer Monthly Report;

[http://www.ksc.nasa.gov/elv/plan/missions/\(generic\)/customermonthlyreport.pdf](http://www.ksc.nasa.gov/elv/plan/missions/(generic)/customermonthlyreport.pdf)