

**NATIONAL SECURITY SPACE LAUNCH (NSSL)
PHASE 3 LAUNCH SERVICE PROCUREMENT
FA8811-23-R-0002**

**ATTACHMENT 1
PERFORMANCE WORK STATEMENT (PWS)**

dRFP #2: 13 July 2023

**United States Space Force
Space Systems Command (SSC)
Assured Access to Space (AATS)
Los Angeles Air Force Base, California**

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1 NATIONAL SECURITY SPACE LAUNCH SERVICES

The Space Force Space Systems Command (SSC) will award three requirements contracts for launch services delivering multiple National Security Space (NSS) missions with annual ordering periods from Fiscal Year (FY) 2025 through FY 2029 comprising a portion of the National Security Space Launch program's manifest that will be ordered during that period. The Contractor shall have the capability to deliver at least eight (8) NSS Launch Services per year.

1.1 DESCRIPTION AND SCOPE OF THE LAUNCH SERVICES

A National Security Space Launch (NSSL) service includes all tasks which the Contractor shall perform necessary to deliver NSS payloads to defined orbital parameters in compliance with mission requirements as described in Section 3 (Space Launch Service).

National Security Space Launch (NSSL) Phase 3 will utilize an innovative dual-lane acquisition approach to meet warfighter needs. The dual-lane acquisition approach consists of: Lane 1, where launch services for certain missions will be procured via multiple award Indefinite-Delivery Indefinite-Quantity (IDIQ) contracts; and Lane 2 where launch for specified missions will be procured via Indefinite-Delivery Requirements (IDR). This Performance Work Statement (PWS) only covers Phase 3 Lane 2 IDR. This Performance Work Statement (PWS) defines the Launch Services (LS), Mission Integration (MI), Mission-Unique (MU), Early Integration Studies (EIS), Fleet Surveillance (FS) tasks, and Level of Effort (LOE) work the Contractor will perform for National Security Space (NSS) missions. This PWS also defines Launch Service Support (LSS) work that will be performed annually. The PWS includes the Program Management, Systems Engineering, Launch Vehicle (LV) Production, Mission Integration, Mission Operations, and Support to Government Space Flight Worthiness (SFW), LOE Activities, and Mission-Unique Options necessary to deliver healthy Payloads (PL) into their intended orbits managed by Headquarters (HQ) United States Space Force (USSF), Space Systems Command (SSC).

A National Security Space Launch (NSSL) service includes all tasks necessary to deliver National Security Space (NSS) payloads to defined orbital parameters in compliance with mission requirements as described in Section 3 (Space Launch Service), including compliance with the Orbital Debris Mitigation Standard Practices. LS requirements apply to discrete activities for each individual NSS mission and will be executed in accordance with (IAW) Contract Line Item Number (CLIN) 0001. LSS requirements apply to non-discrete, NSS-driven activities, and will be executed IAW CLIN 2000 (Series). Mission Integration (MI) requirements (subsection 3.4) and Mission-Unique (MU) requirements (subsection 3.8) will be executed IAW CLIN's 0002 & 0003 for procurement funded items, or CLIN 0006 for Special Study items. Early Integration Studies (EIS) for non-NRO missions will be executed IAW CLIN 4000(Series). LOE requirements (subsection 3.7) will be executed IAW CLIN 0005, and FS requirements (for non-NSS launches will be executed IAW CLIN 3000 (Series).

Mission Integration tasks, Mission Unique Services, and additional unique requirements (e.g., enhanced security) for National Reconnaissance Office (NRO) missions may be executed via a separate companion contract managed by the NRO Office of Space Launch (OSL). The NRO may also conduct Leading Edge Integration (LEI) studies on an NRO companion contract.

During post-award contract execution, the Contractor may request, in writing, United States Government (USG) approval to allow relevant activities, documentation, and information

developed under other contracts/agreements with the USG, to be used to satisfy the requirements of this PWS. Acceptance on previous activities does not guarantee acceptance on this contract.

A glossary of definitions for terms used in and applicable to this PWS is provided in Appendix A. Acronyms and Abbreviations list provided in Appendix B.

1.2 DEFINITION OF ROLES AND RESPONSIBILITIES

1.2.1 Roles

1.2.1.1 Launch Service Provider (LSP)

The term Launch Service Provider (LSP), used interchangeably with The Contractor, refers to the party responsible for supplying the LS and LSS detailed in this PWS.

1.2.1.2 Government

The term Government refers to Department of Defense (DoD) personnel, including military and Government civilians.

1.2.1.3 United States Government Team

The term USG Team refers to the Space Force Space Systems Command/Assured Access to Space (SSC/AA) program office and Space Force Program Executive Officer (PEO) office personnel, but also includes the Aerospace Federally Funded Research and Development Center (FFRDC), SSC/AA Systems Engineering and Integration (SE&I) contractors, SSC/AA Systems Engineering and Technical Assistance (SETA) support contractors, SSC/AA Advisory & Assistance Service contractors, the NRO/Office of Space Launch (OSL), NRO/OSL SE&I contractors, FAA (Federal Aviation Administration), NASA (National Aeronautics and Space Administration), NRO/OSL SETA support contractors, NRO/OSL Mission Assurance Team (MAT), NRO/OSL Independent Verification and Validation (IV&V) support contractors, the SSC Independent Readiness Review Team, Defense Information Systems Agency, Defense Contract Management Agency, Defense Counterintelligence and Security Agency (DCSA), Defense Contract Audit Agency, Space Launch Delta 30 (SLD 30), Space Launch Delta 45 (SLD 45), and other organizations as designated by SSC/AA Procuring Contracting Officer (PCO). Refer to Appendix G (Enabling Requirements for SSC Program Contracts Requiring Interface with Aerospace FFRDC Contract Support) and Appendix H (Government Program Contracts Requiring Interface with Prime and Support Contractors) for information regarding support contractors and FFRDC support on this contract. Estimates of the number of USG Team individuals associated with specific requirements in this PWS are listed in Appendix E (Meetings and Reviews).

1.2.1.3.1 Government Hardware Review Team

The Government Hardware Review Team is the team composed of USAF, USSF, civilian, SE&I, and Aerospace FFRDC personnel directly involved with supporting and performing independent hardware reviews. The OSL/MAT will also participate in these reviews.

1.2.1.3.2 Launch Mission System Integrator (LMSI)

The Launch Mission System Integrator is the contractor with responsibility, authority, and accountability for delivering a NSSL Integrated Flight System (IFS) end-item (including Multi-Manifest Space Vehicles) to the LSP.

1.2.1.3.3 Government Mission Integration Manager (GMIM)

For USSF missions, the Government Mission Integration Manager (GMIM) is the lead interface between LV and PL programs orchestrating launch services, including operations planning, flight certification, and mission rehearsals. The GMIM also manages technical and funding changes between the PL Integrated Payload Stack/Aft Multi-Payload Stack (IPS/APS) and the LV, and coordinates LV/PL interface requirements. For NRO missions, the GMIM is the lead interface between SSC/AA and OSL.

1.2.1.3.4 Government Mission Director (GMD)

The Government Mission Director (GMD) is the Senior Space Force (for USSF missions) or NRO/OSL (for NRO missions) official who is assigned responsibility for successfully delivering the integrated LV/PL to the proper orbit(s). The GMD must be involved in issue resolution for both the LV and the PL through the launch service.

1.2.1.3.5 Rehearsal Anomaly Team (RAT)

The Rehearsal Anomaly Team (RAT), consisting of representatives from each agency participating in the launch, is responsible for planning rehearsals. The RAT generates launch countdown scenarios, including anomalies that will exercise their teams for Day of Launch (DoL) preparation.

1.2.1.3.6 Space Launch Delta (SLD)

The term Space Launch Delta (SLD) includes subordinate units that provide generation and launch execution of space launch systems. SLD 30 provides generation and launch execution of space launch systems for Vandenberg Space Force Base (VSFB) missions. SLD 45 provides generation and launch execution of space launch systems for Cape Canaveral Space Force Station (CCSFS) and Kennedy Space Center (KSC) missions.

1.2.1.3.7 Government Launch Operations Team

The Government Launch Operations Team is the mission team, composed of USAF, USSF, NRO/OSL, SE&I, and FFRDC personnel directly involved with planning and execution of Government launch operations of a specific mission. This team includes personnel at SSC and the respective SLD at the launch site.

1.2.1.4 Space Vehicle Team (SV Team)

The term SV Team refers to the SV Directorate(s)/System Program Office(s) (SPO), Space Vehicle Contractor(s) (SVC), and Launch Systems Integration Contractor (LSIC) personnel, but also includes the FFRDC supporting the SPO, SE&I and SETA Contractors supporting the SPO, the SV's Payload Processing Facility (PPF) personnel, and the LMSI representing the Multi-manifest SVs.

1.2.1.5 Space Vehicle Contractor (SVC)

The Space Vehicle Contractor (SVC) is the contractor with responsibility for delivering an SV and necessary data documentation to the respective SPO for non-NRO missions.

1.2.1.6 Launch Systems Integration Contractor (LSIC)

The LSIC is the contractor with responsibility for assisting in the integration of the SV to the LV for NRO missions. The LSIC is responsible for defining spacecraft mission requirements, launch base and range support requirements, interface requirements, development and maintenance of integration schedules and plans, and coordination of integration activities with the Launch Vehicle Integration Contractor.

1.2.1.7 Launch Vehicle Integration Contractor (LVIC)

The LVIC is the Launch Vehicle contractor responsible for performing the LV side of the SV integration and launch of all missions. Also referred to as Launch Vehicle Contractor and Launch Service Provider (LSP).

1.2.2 Responsibilities

1.2.2.1 Notify

Notification is a Contractor responsibility to officially inform the USG Team about an action, activity, or decision process. The Contractor is not required to deliver data, generate action items to be tracked and closed outside of the relevant event, or attain USG approval, unless otherwise specified in the relevant PWS paragraph. Notification is considered complete when the USG Team acknowledges receipt (or other method as determined by mutual agreement).

1.2.2.2 Invite

Invitation is a Contractor responsibility to allow USG Team to observe meeting/event. When the Contractor is required to invite the USG Team to observe a meeting/event, USG approval of that meeting/event (or data generated therein, unless otherwise required by the contract) is not required. The Contractor is required to answer the USG's clarification questions. The Contractor is not required to generate action items to be tracked and closed outside of the relevant meeting/event. When the Contractor is required to invite, the relevant meeting/event can be completed without Government attendance, so long as the USG Team was notified of the meeting/event IAW with paragraph 1.2.2.1. For questions on the meetings/events that require USG Team invitations, consult the relevant PWS paragraph.

1.2.2.3 Support

Support is a Contractor responsibility to actively cooperate with the USG Team in a USG-led meeting/event. When the Contractor is required to support a meeting/event, the Contractor may be required to provide data or a recommendation. The Contractor may also be required to generate action items to be closed outside of the relevant meeting/event, and to track the status of those action items throughout the Period of Performance (PoP). For questions on the data products required for a given meeting/event, consult the relevant PWS paragraph.

1.2.2.4 Lead

Leading is a Contractor or Government responsibility consisting of scheduling a meeting/event, facilitating appropriate participation in the meeting/event, and ensuring meeting/event objectives are met. When the Contractor is required to lead a meeting/event, the Contractor is required to provide a standard set of data products, unless otherwise indicated in the relevant PWS paragraph. This standard set of data products includes a meeting notice, meeting agenda, presentation

materials, and meeting minutes. The Contractor may also be required to generate action items to be closed outside of the relevant meeting/event, and to track the status of those action items throughout the PoP. For questions on the data products required for a given meeting/event, consult the relevant PWS paragraph.

1.2.2.5 Participate

Participation is a USG Team activity comprised of actively cooperating with the Contractor in a Contractor-led meeting/event. The USG Team may provide data or a recommendation for the Contractor to consider, but USG approval of the meeting/event (or data generated therein, unless otherwise required by the contract) is not required. The Contractor may be required to generate action items to be tracked and closed outside of the relevant meeting/event, so long as those action items are directly related to the fulfillment of a paragraph or multiple paragraphs in this PWS.

1.2.2.6 Provide

Provide is a Contractor responsibility to make something or someone available for use by the USG Team, through physical or virtual delivery of that which is being provided. The responsibility to provide is accomplished when the specified recipient acknowledges receipt (or other method as determined by mutual agreement). When applied to a Contract Data Requirements List (CDRL), the responsibility to provide is accomplished when the Contracting Officer's Representative (COR) acknowledges receipt or the PCO approves the relevant CDRL."

2 APPLICABLE DOCUMENTS

2.1 COMPLIANCE DOCUMENTS

The Contractor shall comply with the applicable documents listed in Appendix C unless tailoring is approved per the instructions listed in CDRL A019.

2.2 REFERENCE DOCUMENTS

The reference documents applicable to this PWS are listed in Appendix D.

2.3 DOCUMENTATION DE-CONFLICTION

For each mission, if a conflict exists between the signed mission Interface Control Document (ICD), the Interface Requirements Document (IRD), and the Standard Interface Specification (SIS), the signed mission ICD shall take precedence.

Other documents shall be given precedence IAW Federal Acquisition Regulation (FAR) 52.212-04(s).

3 SPACE LAUNCH SERVICE

The Government requires services to meet NSS launch needs. Space Launch Services for NSS missions include LV production and or refurbishment (as applicable), transportation, mission integration, launch operations, support to independent Government mission assurance, base and range support, mission commodities, all associated program management and systems engineering functions and tasks, and special studies.

The Contractor shall provide Space Launch Services for NSS missions IAW the performance requirements stated in the System Performance Requirements Document (SPRD), Standard Interface Specification (SIS), and relevant mission ICD(s).

The Contractor shall control, document, and provide the USG Team continuous access and insight into its processes, assessments of progress and performance of all Space Launch Service requirements as defined in CDRL requirements, provide continuous access to the Contractor's command media, and support the USG's Independent Mission Assurance activities, as defined in the paragraphs below and the associated CDRLs.

3.1 LSS/LS: PROGRAM MANAGEMENT FUNCTIONS AND TASKS

The Contractor shall identify a Program Manager (PM) and perform all program management functions and tasks necessary to deliver launch services and to satisfy the requirements for the mission consistent with operational quality, safety, security, and environmental standards.

The Contractor shall provide insight to the Government for all technical and programmatic activities performed under this contract.

3.1.1 LSS: Risk and Issue Management

The Contractor shall establish and maintain risk and issue management processes that comply with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.1.2 LSS: Manufacturing Management

The Contractor shall establish and maintain a manufacturing management process that complies with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.1.3 LSS: Reliability Program

The Contractor shall establish and maintain a reliability program that complies with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.1.4 LSS: Launch System Data

3.1.4.1 LSS: Launch System Integrated Data Environment

The Contractor shall work with the USG Team to partner and implement requirements within this section.

3.1.4.1.1 LSS: Implement and Maintain Integrated Data Environment

The Contractor shall implement and maintain continuous USG access to an Integrated Data Environment (IDE) comprised of all Launch System Data used in support of this contract. The Contractor shall enable the USG Team to access and download both raw and processed Launch System Data. The USG may incorporate this data into a USG Digital Engineering Environment (DEE), in support of the principles outlined in the DoD Digital Engineering Strategy. The Contractor shall ensure that the IDE duplicates the Contractor's internal databases with a latency of no later than 15 minutes.

3.1.4.1.2 LSS: Government Rights to Technical Data

The USG has rights IAW the contract to all technical data and drawings, to include technical data that is archived by the USG team.

3.1.4.1.3 LSS: Download and Synchronization of Launch System Data

The Contractor shall enable USG enterprise-level (large-scale) ability to perform bulk and incremental download and synchronization of Launch System Data.

3.1.4.1.5 LSS: Notification of IDE Content Updates

The Contractor shall notify the USG Team of any updates to delivered Launch System Data products as soon as possible, but no later than 1 calendar day (CD) after the update.

The Contractor shall provide the USG Team with a capability to subscribe and receive automated notifications about IDE content changes.

3.1.4.1.6 LSS: Access to Data Environment Collaboration Platforms

3.1.4.1.6.1 LSS: Access to Data

The Contractor shall provide the USG Team with access to the Contractor's Launch System Data collaboration platforms, including collaboration spaces, ticketing systems to exchange data and review launch system data.

3.1.4.1.7 LSS: Remote Access to Data Environment

The Contractor shall enable the USG and SV Teams to remotely access the Launch System Data via the Contractor's electronic repository host systems for the purpose of reviewing, uploading, and downloading data on the Contractor host systems.

3.1.4.1.8 LSS: IDE Account Administration

The Contractor shall be responsible for providing access to the data, administering user IDE accounts, marking the data, and ensuring the integrity of the data.

3.1.4.1.9 LSS: Data Access Permissions

The Contractor shall provide server/folder location of data and confirm appropriate permissions have been provided.

3.1.4.1.10 LSS: Notification of IDE Outages

The Contractor shall notify the Government at least 24 hours in advance of all planned network outages and system upgrades that could interrupt access to the systems, or as soon as possible in the case of unplanned interruptions.

3.1.4.1.11 LSS: Data Access Requirements for Subset of Launch System Data

The Contractor shall provide the USG team with access to a website, using a web browser on the USG Team's computer using a VPN client or alternative secure solution without additional connection elements such as virtual machine, that (1) hosts and provides a downloadable version of the Subset of Launch System Data dataset in a common format such as CSV or JSON; (2) provides dataset annotations based on text classifications, sentiment, intent, semantic, and relationship; (3)

provides metadata related to data collection; and (4) describes the dataset, data format, key value descriptions, units of measurement, fields available to query, definitions of the fields, how these database schemas map across databases, data collection, preprocessing, annotations, definitions, and visual of sample dataset.

The Contractor shall provide Subset of Launch System Data using the Contractor's Representative State Transfer (REST) Application Programming Interface (API) access or USG approved functional equivalent capability for all the Contractor built items on the FCIL and Pedigree Review Matrix (PRM) for all fleet missions. The Contractor shall ensure that the API access enables the USG team to retrieve key fields approved by the USG Product Line Chief Engineer associated with the Subset of Launch System Data in large batches (>10,000 rows of data) through an automated service connection. The Contractor shall provide API documentation. The Contractor shall notify the USG team of API changes (i.e., key, fields, URL, and access requirements) at least 7 days prior to implementation.

Subset of Launch System Data consists of Enterprise Resource Planning; Material Requirements Planning; Bill of Materials; Work Orders; Purchase Orders; Nonconformances; Qualification Traceability; Acceptance Test Data; Engine, Stage, and Integrated Test Data; Non-Destructive Evaluation Data; Material Certification Data; Changes; Risks; Containment; Engineering Change Notices; As Built Configuration List; and Closeout Photos.

For all missions, the Contractor shall provide API accessible data at full and 1 hz rate, which includes launch vehicle and GSE telemetry data, operational voice, launch site video (except third party proprietary video and audio that requires NDAs), countdown timing, processed telemetry displays, telemetry parameter list, and telemetry parameter definitions table. The API telemetry data shall be decommutated, delimited and provided per government defined Mission ID, date time start, date time end, data frequency rate, and parameter list.

3.1.4.1.12 LSS: Interactive Data Review Platform

The Contractor shall provide the USG team with access to a web-based interactive platform for the USG Team to independently evaluate Subset of Launch System Data for each NSSL mission in support of Section 3.6.

The Contractor shall create work tickets based on USG Team review criteria as approved by the USG Product Line Chief Engineer for USG review on the interactive platform.

The Contractor shall ensure that the interactive platform provides the USG Team with the capability to 1) review, export, organize, query, track, manage, and sort the data; 2) track review progress using custom workflow, reports, dashboards, scrum boards, and roadmaps; 3) receive automated notifications; 4) collaborate within the USG Team; and 5) visualize and analyze time series data.

The Contractor shall provide annual training for the USG Team on how to use the interactive platform.

3.1.4.2 LSS: Software Product Specification

3.1.4.2.1 LSS: IDE Software and Licenses

The Contractor shall provide the USG Team access to the IDE, to include all applicable computer software and licenses needed to instantiate. The Contractor shall provide IDE access for up to 500 USG users and a like number of licenses if required for IDE access on the Contractor's IDE.

3.1.4.2.2 LSS: IDE Software Code Modifications

If modifications to commercial computer software (e.g., Microsoft SharePoint) need to be made by the USG Team to instantiate the IDE on USG Systems, then the Contractor shall deliver the source code or other instructions necessary for the USG Team to instantiate the IDE.

The Contractor shall notify the USG Team of any security incidents or malware infection affecting the IDE system no later than 72 hours after discovery, per DFARS requirements.

3.1.4.3 LSS: Software Version Description

The Contractor shall identify all versions of commercial computer software used to create the IDE, and Contractor modifications made to those software applications that are needed for the USG Team to instantiate the IDE on USG systems. (CDRL A002)

3.1.4.4 LSS: Database Design Description

3.1.4.4.1 LSS: IDE Database

The Contractor shall provide a Database Design Description to describe the design of the database that comprises the IDE.

The Contractor shall provide description of the IDE instantiation, to include the file folder structure/hierarchy, levels of access rights and privileges specified at the user level (e.g., administrator, guest, super-user) and at the data/deliverable level (e.g., ability to allow access to specific data/deliverables to selected users only based upon the classification level and level of license rights associated with that data) into which the data will be deposited, and search functions. (CDRL A002)

3.1.4.5 LSS: Data Accession List

The Contractor shall maintain a list of all data supporting this contract on a Data Accession List. (CDRL A001)

3.1.4.6 LSS: Supplier Data Access

3.1.4.6.1 LSS: Web Browser Access

The Contractor shall provide the USG Team with the ability to access supplier data that the Contractor received, for supplier-built FCIL items, using a web browser on the USG Team's computer with a VPN client or alternative secure solution without the need for an additional connecting element such as a virtual machine.

3.1.4.6.2 LSS: Supplier Data Content

The Contractor shall provide the USG Team with web browser access to the specifications, purchase orders, work orders, non-conformances, acceptance test plans, acceptance test reports, raw test data, and drawings associated with the supplier-built items on the FCIL.

3.1.5 LSS: Launch System IDE Training

3.1.5.1 LSS: IDE On Demand Computer-Based Training

The Contractor shall provide the USG Team on demand, computer-based training for the Launch System IDE used in support of this contract. USG team users will receive IDE access only after completing the necessary security and data access training.

3.1.5.2 LSS: IDE Training Content

Such IDE training will include items such as: Work Authorizing Documents (WAD) access and feedback, anomaly/non-conformance system, launch console data system, specification and engineering file management system, protection of proprietary and export-controlled information and others.

3.1.5.3 LSS: Training Material Updates for IDE Changes

In the event of changes to the Software Product Specification, Software Version Description, Database Design Description, or user interfaces to the IDE, the Contractor shall update the computer-based IDE training. (IDE)

3.1.6 LSS: Program Management Data Reporting

Note: The Contractor may provide the data items listed in this paragraph outside the IDE in a standard digital file format.

The Contractor shall collect and report program data to SSC/AA by providing the following:

- A. Cost and Hour Report (CDRL A003)
- B. Technical Data Reporting (CDRL A004)
- C. Contractor Business Data Report (CDRL A005)
- D. Quantity Data Report (CDRL A006)
- E. Small Business Utilization Report (CDRL A007)
- F. Integrated Program Management Report Integrated Master Schedule (IMS) (CDRL A008)

3.1.6.1 LSS: Integrated Master Schedule (IMS)

The Contractor shall provide and maintain an Integrated Master Schedule (IMS) CDRL A008 for each mission that begins at Authority to Proceed (ATP) and ends after conclusion of the Government Post-Flight Review at approximately Launch plus 60 CDs (L+60).

The IMS shall include the following: LV production or refurbishment (as applicable) & transportation, launch operations, system level testing if required (e.g., Wet Dress Rehearsal, Static Fire), systems engineering, independent Government mission assurance support, flight worthiness & pedigree support, and mission integration.

The Contractor shall ensure that all IMS tasks are logically linked horizontally and vertically, to include all interdependencies and the ability to show critical path. (CDRL A008).

The Mission Integration Section of the IMS shall include all tasks, mission analyses, reviews, working groups, meetings, and milestones required to accomplish the mission integration process to meet the mission Initial Launch Capability (ILC).

3.1.7 LSS: Program Management Reviews

The Contractor shall lead bi-monthly (once every other month) Program Management Reviews (PMRs) to report development and production status, report CDRL status, ensure schedules support program objectives, review action items, review program data reports, and discuss all new, open, and emerging issues. The intent of the PMR is to provide a forum for open dialog between the USG Team and the Contractor.

The Contractor shall provide the USG Team the PMR briefing materials No Later Than (NLT) 5 Calendar Days (CDs) prior to the review or as agreed to by the COR. The Contractor and the COR will agree to the PMR agenda NLT 14 CDs prior to the PMR, or as agreed to by the COR.

The PMR agenda shall include a status of the following topics at a minimum: Programmatic, Business Operations, Flight Manifest Status, Production Operations, Quality Metrics, Configuration Management, Risk and Issue Management, Program Protection/Cybersecurity Status, Subsystem(s) Status, Mission Integration Status, Non-Recurring Work Status, Launch Operations, Major Subcontractor(s) Performance, IV&V status, working group status, special topics and Wrap Up/Action Items. PMRs will be planned for 2 hours but last no more than 1 business day. Locations may rotate between Contractor and Government facilities.

The Contractor shall invite the USG Team to major subcontractor PMRs or equivalent reviews. (IDE)

3.1.7.1 LSS: Business Review Meeting

The Contractor shall hold a BMR every 6 months combined with the PMR.

The first PMR/BMR shall occur NLT 45 calendar days after contract start IAW CDRL A049.

3.1.8 LSS: Mission Integration Management Plan (MIMP)

3.1.8.1 LSS: Mission Integration Management Operations Plan (MIMOP)

The Contractor shall provide a Mission Integration Management and Operations Plan (MIMOP), which defines the Contractor's standard process flow for first time and previously flown PL integration with the LV.

3.1.8.2 LSS: MIMP Content

The MIMP shall include the organizational roles and responsibilities, management approach, documentation products, integration meetings, working groups, reviews, and controls required to implement the integration process for the mission. (CDRL A023)

3.1.9 LS/LSS: Launch Manifesting Process

3.1.9.1 LSS: Reviews and Meetings

The Contractor shall support the Government-led launch scheduling and manifesting process with manifest and scheduling information for the following reviews and meetings: a semi-annual Current Launch Schedule Review Board, a monthly Senior Management Review, and twice a month launch manifest status teleconferences.

The Contractor shall provide manifest insight to the USG twice a month in existing USG engagements for the purpose of launch manifest reviews.

3.1.9.2 LSS: Launch Schedule Option Assessments

The Contractor shall develop and provide the applicable USG Team member(s) Launch Schedule Option Assessments as part of the launch manifesting process. (IDE)

3.1.9.3 LS: Launch Slot and Date Recommendation

The Contractor shall provide the applicable USG Team member(s) a Launch Slot Recommendation and Launch Date Recommendation within the assigned launch period for each launch mission. (CDRL A022)

3.1.10 LSS: System Safety Program

3.1.10.1 LSS: System Safety Program Plan and Assessment Report; SPRD360 Compliance

The Contractor shall provide a System Safety Program Plan and Safety Assessment Report for each launch campaign IAW MIL-STD-882E (T), per the instructions listed in CDRL A019. (CDRLs A012, A029).

3.1.10.2 LSS: System Safety Working Groups

The Contractor shall support the quarterly NSSL USG System Safety Working Group (SSWG*) and annual USG System Safety Group (SSG) meetings IAW the SMC-G-012 Space and Missile Systems Center System Safety Program Guide.

Footnote: * - shared acronym with System Security Working Group

3.1.10.3 LS: System Safety Non-Compliance Meetings

The Contractor shall lead a weekly system safety meeting to discuss open safety non-compliances for all awarded missions. All safety non-compliances for NSSL missions should be discussed in a single meeting (not a meeting for each mission).

3.1.11 LSS: Range Safety

The Contractor shall coordinate requests for relief from the tailored SFSPCMAN 91-710 for all missions under this contract with SSC/AA and NRO/OSL in parallel with formal submittal to Range Safety. The final approval determination will be made by Range Safety. (CDRL A019)

3.1.11.1 LSS: SPRD400 Compliance

The Contractor shall coordinate Range Commander's Council (RCC) 324-11 tailoring requests, equivalent level of safety certifications, and non-compliance waiver relief requests for all missions

under this contract with SSC/AA in parallel with formal submittal to Range Safety, and per the instructions in CDRL A019. The final approval determination will be made by Range Safety. (CDRL A019)

3.1.11.2 LSS: SPRD410 Compliance

The Contractor shall coordinate RCC 319-10 (T) tailoring requests, equivalent level of safety certifications, and non-compliance waiver relief requests for all missions under this contract with SSC/AA in parallel with formal submittal to Range Safety, and per the instructions in CDRL A019. The final approval determination will be made by Range Safety. (CDRL A019)

3.1.12 LS: Autonomous Flight Safety System (AFSS)

The Contractor shall equip its launch system with an AFSS.

3.1.13 LS/LSS: Safety Training

3.1.13.1 LS: Contractor-Required Safety Training

The Contractor shall provide all Contractor-required safety training to applicable USG Team member(s) and SV Team personnel for Contractor facilities and flight hardware used in performance of individual launch service task orders on this contract to ensure applicable USG Team member(s) access to those facilities and flight hardware. (Ref. paragraph 3.6.2.4)

3.1.13.2 LSS: Facilities Access Training

The Contractor shall provide applicable USG Team member(s) all training required to enter Contractor facilities or to access the LV at all stages of production for LVs used in performance of fleet processing (including launch sites) and non-discrete, NSS-driven activities on this contract to ensure applicable USG Team member(s) access to those facilities and flight hardware (Ref. paragraph 3.6.2.4). The USG Team will follow all guidelines and rules for access to Contractor facilities at all stages of production. USG Team member(s) who fail to complete the required training or fail to follow rules and guidelines may be denied access.

3.1.14 LSS: Launch System Familiarization Course

The Contractor shall provide the USG Team an instructor-led Launch System Familiarization (FAM) Course three times per calendar year to provide training to the Government team supporting NSS missions with the LSP, at locations to be determined and provided by SSC/AA. The standard FAM course may be held virtually or in person per agreement of the UGS Team. A single session on a special subject may be offered for one of the sessions per direction of the USG Team. The subject matter will be mutually agreed upon by the USG Team and the Contractor.

The Contractor shall provide the standard FAM course; to be conducted in two parts: a 1-day overview for non-technical personnel and a 2-day in-depth engineering system familiarization.

The standard FAM Course shall cover all training material, and the Contractor shall provide a self-study guide to accompany the training course consisting of the training materials, test questions, and answers. (CDRL A018)

3.1.15 LSS: LSP Organizations Level Security Requirements

3.1.15.1 LSS: OPSEC Program

The Contractor shall develop, implement, and maintain an OPSEC program IAW contract Attachment 2, DoD Contract Security Classification Specification (DD254). (Ref. AFI 10-701 and the NSSL OPSEC Plan). The contractor shall deliver a product detailing personnel and facility support, IT system and data protection safeguards, and SV and LV processing protection, demonstrating how all data associated with the launch service is protected whether on the classified or unclassified side.

3.1.15.2 LSS: Program Protection

The Contractor shall develop, provide, implement, and maintain a Contractor-specific Program Protection Implementation Plan (PPIP) IAW the NSSL Program Protection Plan (PPP). (CDRL A011)

3.1.15.2.1 LSS: Program Protection Surveys

The Contractor shall support the applicable USG Team member(s) in annual NSSL Program Protection Surveys at all Contractor facilities IAW the NSSL PPP.

3.1.15.2.2 LSS: Security Related Meeting Support

The Contractor shall support the quarterly NSSL System Security Working Group (SSWG*) and one security-related meeting per month IAW the NSSL PPP (e.g., Information Technology [IT] Security Breach or Unauthorized Information Distribution Resolutions).

The Contractor shall support SSWG splinter working groups as required to resolve specific identified issues.

Footnote: * - shared acronym with System Safety Working Group

3.1.15.2.3 LSS: NSSL PPP Contractor-Specific Annex Support

The Contractor shall provide support to applicable USG Team member(s) in the development of the NSSL PPP Contractor-specific Annex. The Contractor shall provide the LV-specific and 'support ground system architecture' specific information necessary to document, identify, assess, and mitigate security related vulnerabilities and risks.

3.1.15.3 LSS: Cyber Security

The Contractor shall provide evidence of compliance with National Institute of Standards and Technology Special Publication (NIST SP) 800-171 for development, manufacturing and business systems, derived from activities performed to establish and maintain compliance upon Government request.

The Contractor shall provide evidence of compliance with security controls in accordance with DoDI 8510.01, for mission operations systems (ground and launch vehicle systems), derived from activities performed to establish and maintain compliance upon Government request.

Evidence shall include initial and annual audit reports, Contractor-developed compliance documentation, such as plans, procedures, and reports, plan of action and milestones, and requests for waivers.

The Contractor shall notify the Government of cyber security audits and coordinate schedules to ensure Government participation. (CDRL A011)

3.1.15.4 LSS: Physical Security

Contractor shall permit physical access to NSSL restricted areas to the host base DoD Security Forces to maintain compliance with DAFI 31-101, Integrated Defense, applicable supplements to DAFI 31-101, SLD 30 and SLD 45 Integrated Defense Plans (IDPs), and operations and physical security requirements.

Contractor-developed structures within NSSL restricted areas shall comply the NSSL PPP and Contractor-specific Program Protection Implementation Plan (PPIP) physical security requirements and shall not degrade DAFI 31-101 physical security requirements.

Contractor facilities outside of NSSL restricted areas housing NSSL Critical Program Information and critical components shall comply with physical security requirements identified in the NSSL PPP and use Contractor-specific PPIP derived protection and countermeasures. (CDRL A011)

3.1.15.5 LSS: Defense Technical Information Center (DTIC)

The contractor is authorized to use the services of DTIC by complying with all established safeguards and following the registration procedures as set forth in Section 5 of the NISP, AFMAN 16-1406 volume 2 and 32 CFR Part 117 NISPOM. DTIC is not authorized for SAP or SCI information, as outlined in the DD254.

3.1.16 LSS: NSSL Classified Mission Support

3.1.16.1 LSS: Security Levels for Work Performed

The work to be performed under this contract shall be performed at levels up to Top Secret (TS) with access to Sensitive Compartmented Information (SCI) & Special Access Programs (SAP). Classified information will be processed and transmitted over approved networks (i.e., JWICS, CWAN, CV2, etc.). SCI work at contractor sites must be performed in either a United States Space Force (USSF) accredited Sensitive Compartmented Information Facility (SCIF) or an Other Government Agency (OGA) SCIF that has either a Memorandum of Agreement (MOA), Memorandum of Understanding (MOU), or Co-Use Agreement with USSF for this effort. SAP work at contractor sites must be performed in a Department of the Air Force (DAF) Office of Special Investigations Special Projects (OSI/PJ) accredited SAP Facility (SAPF) or SCIF with a valid Co-Use agreement between OSI/PJ and the SCI owner. If an OGA SCIF or SAPF is used with a MOA, MOU or Co-Use Agreement, then that agreement must include sufficient safeguards to ensure the contractor will have access to the facility throughout the PoP of this contract.

3.1.16.2 LSS Classified Facilities

The Contractor shall provide secure facilities to accommodate security levels up to TS//SCI//SAP at their mission management HQ and each launch site location launching NSSL missions. These facilities will be able to accommodate small meetings in support of classified missions and house

classified networks as defined in section 3.1.16.3 in order to coordinate classified information pertaining to mission execution and maintenance of classified access lists. If the Contractor chooses to use an organically procured SAPF or SCIF, they shall provide the support necessary for monitoring and oversight of SCIF and SAPF facilities in accordance with DoD and Intelligence Community (IC) guidelines. Each facility will have a GSA approved storage container (i.e. safe, or other container) certified for storage of classified information up to TS//SCI//SAP.

3.1.16.3 LSS: Classified Networks and Administrative Personnel

The contractor shall provide technical and programmatic support required to maintain access to the DoD's Secure Integration Cloud (SIC) or DAF Common Operating Environment (CORE) services via an approved network at their mission management HQ and at each launch site location launching NSSL missions, as identified in the DD254. The contractor must have at minimum two (2) workstations for the SAR IT access, one (1) printer and two (2) classified TS//SCI//SAP VoIP phones.

The Contractor's support shall include connectivity to existing computers, printers, and file servers, including electronic file transfer capability, within and among DoD or OGA-sponsored SCIFs or SAPFs. If the contractor is electronically processing TS//, SCI// & SAP information at their facility then TEMPEST should be checked off on the DD 254. The Contractor shall perform lifecycle management of its IT solutions for operations including business requirements analysis, strategic roadmap development, implementation, and recurring technology management.

The Contractor shall provide the necessary personnel with DoDM 8140.03 qualified IT and IA technical expertise to achieve and maintain accreditation and authorization to operate classified networks IAW with applicable guidelines including the Joint SAP Implementation Guide (JSIG), DoDI 8510.01 Risk Management Framework for DoD Systems, and Air Force Instruction (AFI) 17-101 Risk Management Framework for Air Force Information Technology. At minimum this should include an Information Systems Security Manager (ISSM), Information Systems Security Officer (ISSO), and a Systems Administrator.

3.1.16.4 LSS: Classified Facilities and Administrative Personnel

The Contractor shall provide dedicated, cleared security personnel to manage oversight of all classified facilities accredited by the USG. Security personnel shall be responsible for SCIF/SAPF Management, Access & Visitor Control, Industrial Security, Personnel Security, Physical Security, Information Security, and maintaining standards for facility accreditation/re-accreditation IAW all relevant DoD guidelines as listed on the DD-254.

The Contractor shall provide a Contractor Program Security Officer (CPSO) as a primary interface with the Program Security Officer (PSO) and Government SAP Security Officer (GSSO) regarding the assigned program security matters and requirements for SAPs. The CPSO is responsible for the management, direction, administration of SAPs in compliance with Government oversight and direction. Responsibilities of the CPSO include maintaining an access roster, managing the PAR process, conducting security training and briefings, refreshers and debriefings, preparing for inspections, and developing security plans in coordination with the Government.

The contractor shall provide personnel to fill security roles including but not limited to Facility Security Officer (FSO) providing leadership management of collateral physical and information security, Contractor Special Security Officer (CSSO) providing management of SCI and information, Contractor Program Security Officer (CPSO) providing management of SAP

information, and Information Systems Security Officer(s) (ISSO) ensuring Information Assurance (IA) and security controls compliance, and Information Systems Security Manager(s) (ISSM) managing authority to operate (ATOs), classified network layout and installation. Personnel in these positions must have access to DISS and JADE at a minimum to perform these actions. They will also be required to establish and manage contractor employees' access to SIC and or CORE and IC networks via the appropriate SAR and SCI networks.

3.1.16.4.1 LSS: Secure Electronic Transmission Storage And Safeguarding

The Contractor shall maintain a COMSEC account. All DoD communications are subject to COMSEC review. Use of DoD telephones and telephone systems constitutes consent to COMSEC monitoring.

The Contractor shall comply with USG COMSEC procedures and rules and guidance as set forth in the DD 254.

The Contractor shall abide by the requirements set forth in the DD Form 254, Contract Security Classification Specification, included in the contract, and the 32 CFR Part 117 NISPOM, for the protection of classified information at its cleared facility if applicable, as directed by the Defense Counterintelligence and Security Agency (DCSA) and applicable security policies and regulations.

3.1.16.5 LSS: Cleared Personnel

The Contractor shall provide a number of upper management, mission management, chief engineer and technical lead personnel that hold active TS clearances with SCI and SAP eligibility. These personnel should be able to provide overall input on classified considerations from NSSL customers on a as needed mission basis. These personnel shall maintain active network accounts per mission need to access SCI and SAP information.

Security personnel shall be required to maintain continuous active network accounts to support administration of classified areas, networks, and personnel management. All secure areas shall maintain personnel for oversight including at the mission management HQ and launch site locations. Personnel may obtain TS clearances via DoD or IC sources. However, contractor security personnel must ensure clearances are properly reflected on DoD clearance databases to include JADE, and DISS. The Contractor shall obtain required personnel clearances IAW guidance provided on the DD-254.

All SAP briefed personnel shall be maintained on an access roster by the CPSO and security staff and updated on a regular basis to reflect new additions and debriefed personnel. This access roster should be re-validated on an annual basis.

3.1.16.6 LSS: Classified Analysis Capability

The Contractor shall be prepared to support USSF mission requirements to perform an integrated LV and SV classified Coupled Loads Analysis (CLA) and Integrated Thermal Analysis (ITA) at a TS//SCI level as part of an EIS, MI or other effort.

On a mission unique basis, the Contractor may be requested to support USSF mission requirements to perform an integrated LV and SV classified CLA and ITA at a TS//SCI//SAP level as part of an EIS, MI or other effort.

3.1.17 LSS: Anti-Terrorism

The Contractor shall implement and maintain an Anti-Terrorism Program for activities at CCSFS, KSC, and VSFB as appropriate.

The Contractor shall ensure SSC/AA and NRO/OSL approval prior to taking action regarding anti-terrorism requirements requested by the SLD 30/45 Anti-Terrorism Office that change or add additional anti-terrorism requirements to this PWS paragraph and sub-paragraphs. (CDRL A015)

3.1.17.1 LSS: Meeting Support

The Contractor shall provide a site security lead for the Anti-Terrorism Program.

The Contractor shall support quarterly and/or emergency SLD anti-terrorism meetings.

3.1.17.2 LSS: Program Reviews

The Contractor shall perform and document an in-house Annual Review of its Anti-Terrorism Program IAW the host base Anti-Terrorism Office checklist. (CDRL A015).

3.1.17.3 LSS: Training

The Contractor shall ensure all applicable Contractor personnel perform annual training utilizing the host base anti-terrorism training materials as a guideline.

The Contractor shall create a Corporate Annual Training Letter stating that all site personnel have completed their individual anti-terrorism training.

3.1.17.4 LSS: Force Protection Condition (FPCON) Checklists

The Contractor shall utilize site-specific FPCON checklists.

3.1.17.5 LSS: Random Anti-Terrorism Measures (RAMs)

The Contractor shall document completed RAMs or alternate RAMs that are pre-approved by the host base (up to five per month).

Completed RAMs shall be documented in a format prescribed by SSC/AA and reported quarterly to the host base Anti-Terrorism Office. (CDRL A015)

3.1.17.6 LSS: Mission Essential Personnel

The Contractor shall create and maintain a Mission Essential Personnel list and an Emergency Essential Personnel list for higher FPCON levels (Charlie and Delta) and other emergency situations at each launch site.

The Contractor shall provide continuous access to updated versions of these lists to the appropriate launch site personnel. (IDE)

3.1.20 LSS: Environmental Requirements

3.1.20.1 LSS: Impact Analysis Documentation

The Launch Service Contractor shall be solely responsible for all Environmental Law and Policy compliance associated with their Launch System(s) and Services utilized on this contract. The Contractor shall produce and provide to the applicable USG Team member(s), each environmental

impact analysis document, environmental report, and applicable meeting notices related to or that impact the launch system. This responsibility of the Contractor includes associated correspondence sent to or received from environmental regulatory agencies and the host base but does not include informal telephone and e-mail communication. (IDE)

3.1.20.2 LSS: Coordination Process

The Contractor shall include SSC/AA in the coordination process with the host base and the environmental regulatory agencies relating to the application, development, or modification of permits or required environmental compliance plans, environmental clean-up actions, or other major efforts subject to environmental laws and regulations.

During the coordination process, the Contractor shall provide information to the on-site USG Team environmental representatives to ensure that the applicable USG Team member(s) are aware of the risks and alternatives that are evaluated or accepted. The onsite representative will be notified of all environmental spills at the same time as the base duty office/host base is notified. (IDE)

3.1.20.3 LSS: Data Requirements

The Contractor shall provide applicable web browser data needed to allow SSC/AA to monitor, in coordination with the SLD 30/45, the Environmental Impact Analysis Process IAW National Environmental Policy Act and Executive Order 12114, Environmental Effects Abroad of Major Federal Actions, dated 4 January 1979. (CDRL A016)

3.1.21 LSS: Hazardous Materials

The Contractor shall provide a Hazardous Materials Management Plan IAW SFSPCMAN 91-710 and Task 108 of MIL-STD 882-E (T) (Refer to NAS 411: Hazardous Materials Management Program for further guidance). (CDRL A013)

3.1.22 LSS: Incident and Discrepancy Reporting

The Contractor shall maintain an incident and discrepancy reporting system available.

The Contractor shall notify the applicable USG Team member(s) of all incidents and discrepancies. (IDE)

3.1.22.1 LSS: Incident and Discrepancy Notification

The Contractor shall notify the applicable USG Team member(s) of incidents and discrepancies during the execution of this contract that involve (1) loss of life or severe personal injury as defined per Occupational Safety and Health Administration reporting requirements; (2) damage to flight hardware or launch infrastructure critical ground systems; or (3) damage to launch infrastructure critical ground systems occurring during vehicle build, test, transportation, processing, or facility readiness operations.

The Contractor shall provide notification within 1 hour and follow up within 48 hours (post-emergency response and safety hazard securing) and IAW already-established Contractor reporting procedures.

The Contractor shall provide the status of ongoing investigations, Contractor incident root cause data, and determination and associated corrective actions. (IDE)

3.1.22.2 LSS: Hazardous Materials and Waste

The Contractor shall notify the onsite USG Team as soon as operationally possible (post-emergency response) of hazardous materials and waste releases that require coordination with Governmental regulatory agencies. [Note: SSC/AA Program Office may compare notification against those timeline requirements of reporting in the Operations Report (OPSREP) and Situational Report (SITREP) reporting up the chain of command to the PEO, Assured Access to Space (AATS). Reference DoDI 6055.07, AFI 91-204, AFMAN 91-222, AFMAN 10-206.]

3.1.22.3 LSS: Major Non-conformance Incident Reporting

The Contractor shall report within 48 hours of an event's occurrence all incidents and all discrepancies that may be or are a major non-conformance or that may lead to one or more of the following: (a) delay to the ship date of flight hardware for NSS missions, (b) out-of-position (OOP) work transferred to the launch site, (c) changes to the IMS (including applicable Mission Integration Schedules), (d) waivers or exceptions to test or verification requirements, or (e) impact to a scheduled launch date.

The Contractor shall provide the status of on-going investigations, preliminary and on-going Contractor incident root cause data and analyses, and determination and associated corrective actions and access to an IDE with such information.

For all other incidents and discrepancies, the Contractor shall provide notification NLT 14 CDs of an event's occurrence and status reporting will be determined by SSC/AA on a case-by-case basis. (IDE)

3.1.23 LS: Public Affairs Activities

3.1.23.1 LS: USSF Missions

For USSF missions, the Contractor shall support Public Affairs activities related to this contract by coordinating with SSC/AA and the Space Systems Command Public Affairs Office (SSC/PA).

The Contractor shall notify SSC/PA and the COR NLT 1 hour prior to public release of press statements, press releases, and all related public affairs items related to missions executed under this contract.

3.1.23.2 LS: NRO Missions

For NRO missions, the Contractor shall support Public Affairs activities by coordinating with the NRO Office of Public Affairs (OPA).

The Contractor shall submit all press statements, press releases, broadcast material, videos, podcasts, photographs, social media plans/posts, or any related public affairs items to the NRO OPA for approval prior to release to the press or general public.

The Contractor shall follow NRO OPA guidance regarding timing of public and media releases. The design for memorabilia (e.g., coins, patches, logos) must be approved by the Director, NRO.

The Contractor shall submit proposed designs to NRO OPA and receive written prior approval prior to production of any material.

3.1.24 LS: Mission Milestone Reviews

The Contractor shall lead or support the Mission Milestone Reviews, as defined in Appendix F (Mission Milestone Reviews).

The Contractor shall provide the applicable USG Team member(s) the briefing slides for each Mission Milestone Reviews NLT 5 CDs prior to the review or as agreed to by the parties. Support to USG Team readiness reviews includes attendance, presentation of requested information, and providing answers to questions posed during reviews or as follow-up questions related to material presented.

For the milestone reviews, the Contractor shall attest to the review Chairman whether the Launch System is ready to proceed with continued processing, assess the margin to the planned schedule, and discuss risks and issues as appropriate.

For the Government's Flight Readiness Review (FRR) and Launch Readiness Review (LRR), the Contractor shall attest to the review Chairman whether the Launch System is ready to proceed with launch.

The Contractor shall provide the USG Team member(s) with access to a web-based collaborative platform (i.e., Jira) for USG Team member(s) to assess and track mission-specific requirements, derived requirements, verification methods, and verification evidence; (2) completion status of all mission milestone review success criteria; (3) disposition and resolution status for review comments; and (4) compliance status for all mission requirements.

3.2 SYSTEMS ENGINEERING FUNCTIONS AND TASKS

In order to ensure the successful completion of the missions on this contract, the Contractor shall perform systems engineering functions and tasks necessary to provide launch services consistent with operational safety, suitability, and effectiveness (OSS&E) and Environmental Safety and Occupational Health guidance on NSSL systems.

In order to ensure the Government can accomplish its mission assurance functions and tasks, the Contractor shall maintain and provide the applicable USG Team member(s) insight into the systems engineering processes supporting the launch service.

In order to facilitate smooth and unimpeded communication between the USG Team and the Contractor, the Contractor shall identify a Product Line Chief Engineer (or equivalent) to work with the USG Product Line Chief Engineer to manage and control the activities in this subsection. Contractor will assist SSC/AA Engineering in efforts to automate Systems Engineering functions and tasks by reviewing and consulting on USG systems developed.

3.2.1 Technical Interchange Meetings (TIMs)

The Contractor shall invite the applicable USG Team member(s) to TIMs or all Contractor-equivalent boards 48 hours in advance (or as soon as possible, if scheduled less than 48 hours in advance) and make available all meeting documentation materials. (IDE)

3.2.2 LSS: Contractor Engineering Databases

The Contractor shall provide the applicable USG Team member(s) remote access to the Contractor's non-recurring, recurring, manufacturing, and engineering databases, to include, but not be limited to non-conformances, drawings, configuration control, risks and issues, production,

refurbishment, launch operations, risk and issue management, change management, quality management, test database, design repositories, systems engineering models, requirements tracking, closeout photos, flight observations, anomalies, and other similar engineering databases that meet both of the following criteria: (1) are used by the Contractor to assess the launch system, and (2) are used to support USG space flight worthiness (SFW) process, crossover assessments, and in-plant technical surveillance by the USG Team. (IDE)

3.2.3 LSS: Systems Engineering Boards and Processes

The Contractor shall obtain COR approval of a plan to meet the requirements in this paragraph and its subparagraphs.

The Contractor shall include a comprehensive list of their equivalent systems engineering boards (with the nominal meeting date and time) and processes in this plan.

The Contractor shall invite the applicable USG Team member(s) to all Launch System: Risk Management Boards (RMB); Engineering Review Boards (ERB); Anomaly Review Boards (ARB); Technical Review Boards (TRB); Corrective Action Boards; Change Control Boards for technical issues; Material Review Boards (MRB); Failure Review Boards (FRB); Parts, Materials, and Processes Control Boards (PMPCB); System Verification Review; Production Readiness Review (PRR); Test Readiness Review (TRR); Shipping Readiness Reviews (SRR); Pre-Launch Reviews; or Contractor-equivalent boards or processes. (IDE)

3.2.3.1 LSS: Life Cycle Systems Engineering Process

The Contractor shall establish and maintain a life cycle systems engineering process that complies with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.2.3.2 LSS: Review and Audit Participation

The Contractor shall lead and facilitate applicable USG Team member(s) participation in Launch System Preliminary Design Review (PDR); Critical Design Review (CDR); Functional and Physical Configuration Audits (FCA/PCA), or Contractor-equivalent boards or processes.

The Contractor shall support applicable USG Team member(s) audits and reviews of operating processes within Contractor facilities for recurring verification of adherence to approved procedures pertaining to this Contract for all LS flight hardware.

The Contractor shall establish and maintain a process for technical reviews and audits that complies with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.2.3.3 LSS: Design, Analysis, Test and Operations Compliance

The Contractor shall establish and maintain processes for design, analysis, test, and operations that complies with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.2.3.4 LSS: Recurring Review Boards

For recurring review boards, the Contractor shall invite the applicable USG Team member(s) NLT 10 CDs in advance of the board (or shorter timeline, as approved by the COR).

For all other review boards, the Contractor shall invite the applicable USG Team member(s) as soon as possible after the board is scheduled. (IDE)

3.2.3.5 LSS: System Engineering Board Virtual Participation

The Contractor shall facilitate applicable USG Team member(s) virtual participation for Systems Engineering boards. (Ref. Appendix E) (IDE)

3.2.3.6 LSS: System Engineering Board Entrance/Exit Criteria

The Contractor shall provide the applicable USG Team member(s) entrance and exit criteria for System Engineering boards, as required by their command media used to comply with the applicable standards listed in Appendix C, per the instructions in CDRL A019. (IDE)

3.2.4 LSS: Launch System Configuration Management

3.2.4.1 LSS: Configuration Management Process Compliance

The Contractor shall establish and maintain a configuration management process that complies with the applicable standards listed in Appendix C per the instructions in CDRL A019.

3.2.4.2 LS/LSS: Launch System Configuration Reporting

3.2.4.2.1 LS: As Designed Configuration List

The Contractor shall provide an As Designed Configuration List (ADCL) and update the ADCL for each unique LV configuration to be delivered under this contract. (CDRL A033).

3.2.4.2.2 LS: As-Built Configuration List

The Contractor shall provide and update the As-Built Configuration List (ABCL) specific to the NSS launch services provided under this contract. (CDRL A034)

3.2.4.2.3 LS: Flight Critical Items List

The Contractor shall provide and update the Flight Critical Items List (FCIL) specific to the NSS launch services provided under this contract. (CDRL A035)

3.2.4.2.4 LS: Ground Critical Items List

The Contractor shall provide and update the Ground Critical Items List (GCIL) specific to the NSS launch services provided under this contract. (CDRL A035)

3.2.4.2.5 FS: As-Built Configuration List for Fleet Insight

For Launch System families intended to be used on this contract, the Contractor shall provide and update the As-Built Configuration List for Fleet Insight. (CDRL A020)

3.2.4.3 LS: Launch System Configuration Change Reporting

3.2.4.3.1 LS/LSS: Change Notification

For all launch services provided under this contract, the Contractor shall provide notification of all changes to the ADCL specific to each launch service.

The change notification shall identify the class of change (Ref. Tables 3-1).

For Class 1A changes, the Contractor shall provide initial technical rationale (Design Evolution Narrative, Design Requirements and Interfaces, Principles of Operation, Acceptance/Qualification

Test Plans/Procedures, Test-Like-You-Fly (TLYF), and exceptions/deviations) as soon as available and NLT L-15 months for first affected NSS mission, unless approved by the COR for a later date or 60 CDs after task order for missions with a Government accelerated schedule of 12 months or less.

For Class 1A changes, the Contractor shall provide the final technical rationale (CDRL A036) that includes Design Evolution Narrative, Design Requirements and Interfaces, Design Environments, As-built Design, Software Design, Supporting Design Analyses, Principles of Operation, Limited Operating Life Items Tracked, Summary of Required Manufacturing Processes, Summary of Logistics, Summary of Failure Modes and Effects Analysis and Reliability Assessment, Summary of Identified Risks, Acceptance/Qualification Test Plan/Procedures, TLYF Exceptions and Deviations, Qualification Rationale, Qualification Test Results, List of Test Non-conformances, Summary of Flight Data, and Configuration Differences Between Unit Under Test (UUT) and Qualification Unit (e.g., UUT includes Flight and Proto Qualification Units), unless determined by the Government to be non-applicable, as soon as available and reporting NLT L-12 months, unless approved by the Government for a later date.

For Class 1B changes, the Government Product Line Chief Engineer will work with the Contractor Product Line Chief Engineer (or equivalent) to mutually establish the appropriate level of data requirements (see Class 1A above) and reporting NLT L-12 months for the first affected NSS mission, unless approved by the COR for a later date.

For Class 2 changes, the Contractor shall notify the applicable USG Team member(s) and provide the initial technical rationale as available and as soon as possible but NLT 10 CDs after identifying the change.

The Contractor shall provide the final technical rationale NLT 30 days prior to coordinating the Government Hardware Reviews as defined in Section 3.6.6 (Government Hardware Review).

The Contractor shall provide the applicable USG Team member(s) with a list of all flight hardware components/systems removed and replaced during the launch vehicle production and testing flow NLT 7 CDs prior to Wet Dress Rehearsal (WDR) or equivalent, NLT 7 CDs prior to FRR, and immediately for all flight hardware component/system removed and replaced afterwards. Change Classifications identified below may be used in support of this contract. (IDE)

Table 3-1: Type Change Classification

Change Classification	
CLASS 1A CHANGE	Change that affects compliance with the SPRD, SIS, ICD, or substantial changes as specified in Table 3-2.
CLASS 1B CHANGE	Change that meets one or more of the following: <ul style="list-style-type: none"> · Drives assessments across multiple technical disciplines/systems

Change Classification	
	<ul style="list-style-type: none"> · A redesign that has been assessed by the Contractor or USG Team as driving qualification by test · A form/fit/function change · Any changes to flight-critical items listed in the Flight Critical Items List.
CLASS 2 CHANGE	A deviation from the ADCL that does not meet the definition of a Class 1A or 1B change as described above.

Table 3-2: Substantial Changes from Qualification Baseline Established as Part of NRDV Definition

Factor	Increase ^	Decrease ^
Minimum qualified chamber pressure at engine cutoff command (Stage 2 engine)	+1.5%	-1.5%
Minimum qualified chamber pressure (Stage 2 engine)	+1.5%	-1.5%
Maximum thrust (Each engine)	+3%	-1.5%
Specific impulse (Each engine)	+1%	-0.5%
Total impulse (Each stage)	+1%	-0.5%
Length of vehicle	+1%	-1%

Factor	Increase ^	Decrease ^
Propellant Tank Diameter (each stage)	+1%	-1%
Structural safety factor	—	-5%
Design Fatigue Life Margins	—	-10%

3.2.4.4 LS: Launch System Configuration Change Approval and Implementation

3.2.4.4.1 LS: Class 1A Change Approval

The Contractor shall obtain USG Product Line Chief Engineer approval for Class 1A changes NLT L-12 months unless approved by the USG Product Line Chief Engineer for a later date or as soon as possible if change occurs within L-12 months. With a Government accelerated schedule of 12 months or less, provide list of changes from as proposed launch vehicle configuration no later than 60 CDs after task order for USG Approval.

3.2.4.4.2 LS: All Change Class Approval

The Contractor shall obtain USG Product Line Chief Engineer approval for all classes of changes after L-60 days.

3.2.4.4.3 LS: Class 1A and 1B Change Implementation

The Contractor shall implement (engineering drawings released, hardware produced and incorporated for this launch service or another mission, qualification/acceptance testing complete) all Class 1A and Class 1B changes 60 CD prior to L-12 months for the first affected NSS mission, unless approved by the USG Product Line Chief Engineer for a later date.

3.2.4.5 LSS: Communication of Changes to Interface with Engineering Launch Support System

The Contractor shall communicate changes to the launch system's interface with Engineering Launch Support System (ELSS) or a change to the Operational Surveillance Requirements as defined in paragraph 3.5.2.10 (Operational Surveillance Requirements) and its subparagraphs as soon as possible but NLT 90 CDs prior to testing operations or launch.

The Contractor shall obtain USG approval for final design of changes to the launch system interface with ELSS or a change to the Operational Surveillance Requirements prior to implementation NLT 60 CDs prior to testing operations or launch. (IDE)

3.2.5 LSS: Launch System Verification (component, unit, subsystem, system, launch site)

The Contractor shall develop the initial Launch Vehicle Test and Verification Plan (LVTVP) for the certified/approved launch system configuration(s) NLT ATP+90 CDs. If a LV has already been certified, the approved LVTVP can be delivered via the IDE. (CDRL A037).

The LVTVP shall include each phase of testing (e.g., hot fire, wet dress rehearsal, system level high-pressure proof test), and the respective performance verification requirements during that critical test.

The Contractor shall design the verification program, including test, inspection, and analysis activities, to demonstrate compliance to system level performance and environmental specifications, system interface requirements, and contractual compliance requirements.

The Contractor shall design the verification program to ensure hardware and software qualification, and screening of workmanship defects prior to each launch.

The Contractor shall submit waivers to the plan, when an exception is warranted. Waivers to the plan shall be submitted for Government approval NLT 30 CDs prior to execution or 5 CDs following when the Contractor violated requirements through test execution. (IDE)

3.2.5.1 LS: LVTVP Update

The Contractor shall update the LVTVP for each NSS mission (CDRL A037).

The Contractor shall provide the baseline for items listed in paragraph 3.2.5 (Launch System Verification [component, unit, subsystem, system, launch site]) from the USG certified/approved launch vehicle configuration at L-6 months.

From L-6 months until launch, the Contractor shall maintain the baseline and notify the applicable USG Team member(s) of all changes to this electronic baseline along with the information requested in paragraph 3.2.5 (Launch System Verification [component, unit, subsystem, system, launch site]). (IDE)

3.2.5.2 Pre-Coordination of Launch Site Access

The Contractor shall allow the applicable USG Team member(s) physical access to observe all work as result of WADs, including hazardous operations and NCOP work, with a see and hear what the Contractor sees and hears philosophy such that the applicable USG Team member(s) can perform their mission assurance role with the same information being used by the Contractor. The number of USG personnel will be determined by the USG Team, except in the cases of hazardous and payload operations. Access to payload-specific and hazardous operations for non NSSL missions will be determined on a case-by-case basis and is subject to the approval of the Contractor's customer(s).

3.2.6 LS/FS: Launch System Parameters

3.2.6.1 LS: NSS Mission Launch System Parameters

For NSS missions, the Contractor shall provide launch countdown parameters; launch commit criteria, including nominal, above/below nominal, and unacceptable values or conditions, including discrete conditions (e.g., on/off, yes/no); and the data, rationale, source, and justification for selecting or changing the specific limits on parameters that affected continued processing from initiation of launch countdown until completion of the launch countdown NLT L-6 months.

From L-6 months until launch, the Contractor shall maintain the baseline and provide the applicable USG Team member(s) a weekly summary of all changes to this electronic baseline. (IDE)

3.2.6.2 FS: Non-NSS Launch System Parameters

For non-NSS missions, the Contractor shall provide all data listed in paragraph 3.2.6.1 NLT L-1 month.

From L-1 month until launch, the Contractor shall maintain the baseline and notify the applicable USG Team member(s) of all changes to this electronic baseline. (IDE)

3.2.7 LSS: Performance Capabilities Guide

The Contractor shall provide and maintain a Performance Capabilities Guide (CDRL A021).

3.2.8 LSS: Logistics

The Contractor shall establish and maintain logistics processes that comply with MIL-STD-1367A or are consistent with industry standards per the instructions in CDRL A019.

3.2.9 LSS: Quality Management

The Contractor shall establish and maintain a quality management system IAW LE-T-014 per the instructions in CDRL A019.

The Contractor shall provide Supply Chain Data consisting of Supplier name, cage code, part name, part number, and system for tier one suppliers and suppliers two tiers below the Contractor on the FCIL.

The Contractor shall conduct monthly Technical Interchange Meetings with the USG Team to discuss the Supply Chain Data.

3.2.10 Transformative Mission Assurance (EMA)

The Contractor shall work collaboratively with NSSL Program to: 1) Identify opportunities for mutually beneficial process improvements and adjustments to aid overall reduction of USG independent Mission Assurance effort while maintaining an acceptable level of risk. 2) Support NSSL implementation of Transformative Mission Assurance initiatives including participation in recurring TIMs (Ref. Appendix E) for developing and incorporating Transformative Mission Assurance processes and Joint Work Plans (if required).

3.3 LS/ LSS: LAUNCH VEHICLE PRODUCTION

In order to ensure the successful launch of a healthy PL (IPS) into the intended orbit, the Contractor shall provide a Launch System, as defined in the SPRD, capable of placing the PL (IPS) into their mission orbits IAW the performance and accuracy requirements stated in the current SPRD and SIS Revisions, and further defined in the IRD and the Mission ICD.

The Contractor shall identify a primary production facility Point of Contact (POC) to interface with the members of the USG Team working in the Contractor's production facility.

3.3.1 LS/LSS: Launch Vehicle Hardware and Software

3.3.1.1 LS/LSS: Manufacture, Test, Assembly and Transport

The Contractor shall manufacture, test, assemble, and transport the LV and its components (e.g., Stage 1, Stage 2, Interstage, Fairings and Solid Rocket Motors [if applicable]) to the appropriate launch site for each launch.

For all recovered flight equipment to be reused on NSS missions, the Contractor shall provide all inspection and refurbishment data to the applicable USG Team member(s) and allow applicable USG Team member(s) physical access to inspection and refurbishment operations. (IDE)

3.3.1.1.1 LS: LV Hardware and Software Compliance

The Contractor shall document and provide evidence of Contractor specification compliance for all LV hardware and software.

3.3.1.1.2 LSS: Production Process Change Notice

The Contractor shall communicate all production process changes that impact qualification configuration NLT 60 days from the date of the process change decision and provide that information.

3.3.1.1.3 LSS: Production and Testing Activity Status

The Contractor shall provide a status of all production and testing activities (including applicable test sites).

3.3.1.1.4 LSS: Access to NSS Program Documents

The Contractor shall provide USG with access to the NSS production program plan reviews, plans, and schedules.

3.3.1.2 LS: Acceptance Rationale

The Contractor shall provide acceptance rationale for the LV at the appropriate assembly milestones IAW the Contractor's command media, providing evidence that the LV meets the performance requirements for a specified PL (IPS) launch. (IDE)

3.3.1.3 LS: Environmental Parameter Monitoring

The Contractor shall ensure all environmental parameters (e.g., temperature, pressure, humidity, shock, RF, and vibration) that are required for the specific LV hardware (to include major subcomponents) and transportation modes, are monitored, and recorded before, during, and after the transportation. (IDE)

3.3.1.4 LSS: USG Team Office Accommodations

The Contractor shall provide office accommodations in the engineering, primary production, testing, and launch facilities/sites for a small on-site USG Team (not to exceed 16 total) personnel for each engineering, production, and launch facility, and 2 personnel for test facilities) as designated by SSC/AA.

Accommodations shall include access to telephones, copy machines, conference room, and high-speed network connectivity to support electronic access to the IDE.

3.3.1.4.1 LSS: Access and Non-Escort Privileges

The Contractor shall grant physical access and non-escort privileges for SSC/AA's designated USG Team representatives who have completed all required safety/security training to all areas of the Contractor's facility where work is being performed under this contract, subject to applicable safety rules and regulation.

The Contractor shall grant admit and escort privileges within Government program office areas, for a limited set of Government and FFRDC personnel who have had proper admit/escort briefings, to facilitate visits by other Government representatives.

The Contractor shall ensure that SSC/AA-designated representatives have access to the program's manufacturing areas, verification and test activities, and program schedules and data. (Ref. Appendix E)

3.3.2 LS: Mission-Specific Requirements

The Contractor shall perform all mission-specific activities and meet the specific requirements as defined in the IRD, and further defined and finalized in the mission ICD (Ref. paragraph 3.4.4).

3.3.2.1 LS: LV Configuration Changes

The Contractor shall identify all mission-specific and mission unique changes to the LV configuration (hardware and software) and supporting analysis to meet the requirements of the IRD and mission ICD.

3.3.2.2 LS: Standard Interface Adapter (SIA)

The Contractor shall provide a SIA IAW the SIS and Mission ICD.

The Contractor shall identify whether the SIA is an existing qualified and flight-proven design, or if a mission-unique design is required.

3.3.2.3 LS: Payload Fairing (PLF)

The Contractor shall provide a PLF IAW the SIS and Mission ICD.

The Contractor shall identify whether the PLF is an existing qualified and flight-proven design, or if a mission-unique design is required. In addition to any Contractor standard PLF Access Doors, the PLF shall include (2) mission specific access doors IAW the SIS requirements (Section 3.1.4). To support Payload access, the Contractor shall provide (2) temporary GSE Doors (w/cable pass-thru provisions) and standardized Payload access GSE (for simultaneous access) accommodating the range of possible PLF Access Door positions to support Mission ICD designated locations The Contractor shall perform PLF Aerodynamic flow/backpressure analysis and include the results in the Contractor's Door Control Plan to address these additional PLF Access Doors.

3.3.2.3.1 LS: Mission Logo or Decal

The Contractor's PLF shall accommodate, and the Contractor shall affix, a highly visible USG mission logo, approximately 6 ft by 6 ft., (applique or decal), which shall be included in the price of the mission launch service. The design, and location of the mission logo is at the discretion of the applicable Mission Director (MD) but must be within the Contractor's defined allowable logo locations and parameters. If the PLF is to be recovered after launch and reuse, the previously mentioned mission logo decal must have provisions for removal post flight.

The Contractor shall identify the required electronic format and delivery date for the mission logo to be provided by the applicable USG Team member(s).

The Contractor shall produce the logo from the provided electronic file and apply it to the PLF.

The Contractor may position and orient the mission logo in any manner necessary to avoid critical PLF features (e.g., vents, antennas).

The Contractor shall also include both a U.S. Flag and a USSF logo, appropriately sized per the chosen location (applique or decal) in size, which shall be included in the price of the mission launch service. These items can be located on the LV in locations other than the PLF.

The Contractor shall identify the required electronic format and delivery date for the mission logo to be provided by the applicable USG Team member(s).

The Contractor shall produce the logo from the provided electronic file and apply it to the PLF.

The Contractor may position and orient the mission logo in any manner necessary to avoid critical PLF features (e.g., vents, antennas).

3.3.2.4 LSS: Payload Environment Instrumentation

The Contractor shall provide payload environment flight instrumentation (e.g., temperature, pressure, acoustic sound pressure level, shock and acceleration) in order to collect adequate flight data to verify mission requirements were met and to make a Mission Success determination.

The Contractor shall be responsible for all instrumentation mounting and harness routing provisions.

3.3.2.5 LS: Previously Flown Boosters

Previously flown boosters will use either new hardware or previously flown hardware at the Contractor's discretion. The following requirements apply for each such NSSL mission using previously flown boosters;

A. The Contractor shall maintain a Space Flight Worthiness risk posture of flight worthy as required by Section 3.6.3 and defined by the Technical Issue Resolution Process (TIRP) LRG OI-1 and the NRO Mission Assurance Team Process, OSL OI-008A (for NRO missions only) NLT L-12 months, unless both parties agree to a later date.

B. The Contractor shall allocate booster(s) to the NSS mission NLT L-6 months. At the time of booster(s) allocation for an applicable NSSL mission (NLT L-6 months), the Government shall have first priority to booster or boosters that were previously flown on an NSSL mission (if available to be allocated), unless waived by the NSSL Program Manager for the applicable NSSL mission.

3.4 MI: MISSION INTEGRATION

In order to ensure the successful integration of the PL (IPS) with the LV, the Contractor shall provide all services necessary to integrate the PL (IPS) with the LV IAW SPRD Rev. B; Standard Interface Specification (SIS) Rev C; IRD, and mission ICD(s).

The Contractor shall be responsible for managing all the mission integration of the PL (IPS), flight, and ground systems with the launch vehicle and its associated Ground Support Equipment (GSE).

The Contractor shall plan, schedule, and manage all mission analyses required to define and verify compatibility with the interface requirements and environments. Work statements in this

subsection are for USSF missions. OSL missions are addressed under a separate NRO Companion Contract for Mission Integration requirements. (IDE)

The Contractor shall identify a single principal mission manager as the POC to interface with the GMIM and the SV Team for every mission.

3.4.1 MI: Mission Integration Data

Government can incorporate CDRL data from the Contractor's database into the Government's database.

The Contractor shall provide mission integration data, to include mission integration CDRLs and any manufacturing, modeling, analysis, testing, operational, or process changes involved in supporting this contract

The Contractor shall communicate with the applicable USG Team member(s) all updates to provide mission integration CDRLs (to include relevant manufacturing, modeling, analysis, testing, operational, or process changes related to Mission Integration) as soon as possible but NLT 5 business days after the updates. (IDE)

3.4.2 MI: Mission Integration Management

3.4.2.1 MI: Mission Integration Working Groups and Reviews

For each mission, the Contractor shall lead mission integration working groups and reviews IAW the table below and as defined in Appendix F (Mission Milestone Reviews).

The Contractor shall facilitate applicable USG Team member(s) participation in all reviews.

The Contractor shall provide appropriate technical/engineering representation at each of these reviews.

The Contractor shall be responsible for preparing and distributing agendas, meeting presentation materials, minutes, and action item logs for each review.

The Contractor shall make available the meeting presentation materials to the USG and SV Team NLT 3 days prior to all working groups and meetings listed in Table 3-3, NLT 5 days prior for reviews listed in Table 3-3, and NLT 1 business day for weekly/twice a month meetings.

The Contractor shall maintain an action item database and ensure closure of all actions for each review. (IDE)

Table 3-3: Mission Integration Working Groups and Reviews

Working Groups/Meetings	Nominal Timeline/Location	Nominal Frequency/Duration
Day of Launch Working Group	L-8 months to ILC per 4-party* agreement	Twice/1 day

Working Groups/Meetings	Nominal Timeline/Location	Nominal Frequency/Duration
Government Mission Director teleconference	L-8 weeks to FRR After FRR	Weekly/1 hour Daily/1 hour
Ground Operations Working Group	L-18 months to ILC Held at launch site per 4-party agreement or virtually with USG concurrence	Quarterly/2 hours
Integrated Payload Stack Working Group (Multi-Manifest Missions only)	L-18 months to ILC Held at Contractor's facility	Monthly/ 2 hours
Mission Kickoff Review	Authority to Proceed + 1 month Held at Contractor's facility	Once/1 day
Mission Integration Working Group	L-2 years to L-6 months L-6 months to ILC	Twice a month/1 hour Weekly /1 hour
Launch Security Working Group	L-24 months to SV Ship	Quarterly/ 0.5 day
Management Working Groups (MWG)	L-2 years to ILC	Quarterly/4 hours

*The IDIQ PWS is not intended to be the same as IDR PWS and this Working Group (Integrated Payload Stack Working Group) may be required at the mission task order.

* Note: Four (4) Parties are LV Government (GMIM), LV Contractor, SV Government, and SV Contractor. Additional parties may be involved for multi-manifest missions.

3.4.2.2 MI: Quarterly Management Working Group Reviews

The Contractor shall lead quarterly Management Working Group Reviews that include status on all active missions under this contract. The USG may waive this meeting requirement if is no longer required for a particular mission.

Reviews shall include the mission summary overviews, which provide status on contractual actions, flight risks and technical issues, LV multi-mission schedule, recent accomplishments, upcoming events, and other related issues.

3.4.2.3 MI: Other Contractor Mission Readiness Reviews

The Contractor shall facilitate applicable USG Team member(s) participation in Other Contractor Mission Readiness Reviews (MRR) as defined in CDRLs A008 (IMS), and A023 (MIMOP).

For regularly scheduled reviews, the Contractor shall invite the applicable USG Team member(s) NLT 14 CDs in advance of the review.

For reviews scheduled less than 14 CDs out, the Contractor shall invite the applicable USG Team member(s) as soon as possible after the review is scheduled. (IDE)

3.4.2.4 MI: Ground Operations Working Group (GOWG) for Each Mission

For each mission, the Contractor shall lead a GOWG subject to the requirements listed for working groups in Table 3-3.

3.4.2.5 MI: USG Participation in GOWG

The Contractor shall facilitate applicable USG Team member(s) participation in the GOWG on a quarterly basis, for 2 hours per meeting, from L-18 months until launch. This meeting shall be held at the launch site or can be held virtually with concurrence from the USG. The GOWG can be combined with the IPS/WG if they coincide, and this arrangement is mutually agreeable.

3.4.2.6 MI: Launch Security Working Group (LSWG)

For each mission, the Contractor shall lead a LSWG that reviews the baseline LVC security plan, develops a mission specific plan as needed and coordinates synchronization of security teams from the USG, SVC and LVC in support of ground operations from the start of integrated operations to launch. The COR is the authority to relieve contractors of this meeting requirement.

3.4.3 MI: Payload Integration Information

For missions, the Contractor shall provide the applicable USG Team member(s) the appropriate LV and integration information necessary to satisfy IRD and ICD requirements.

The Contractor shall provide the applicable USG Team member(s) information exchanged between the Contractor and the SV Team. (IDE)

3.4.4 MI: Interface Control Document

The Contractor shall generate and maintain a mission ICD that is derived from the IRD requirements.

The ICD shall include all mission requirements including launch vehicle and launch site interface definition and environments (including GSE).

The ICD shall include the payload to launch vehicle/launch site electrical and mechanical interface drawings. (CDRL A025)

3.4.4.1 MI: IRD-to-ICD Traceability Matrix

The Contractor shall generate an IRD to mission ICD traceability matrix that documents where each IRD requirement is captured in the mission ICD.

For IRD requirements not captured in the mission ICD, the Contractor shall document in the traceability matrix where that specific IRD requirement is captured in other Contractor documents and how it will be met and verified by the Contractor. (CDRLs A025, A026)

3.4.4.2 MI: ICD Configuration Management

The Contractor shall perform configuration management for the mission ICD once it is baselined and signed by all parties.

Subsequent changes to the mission ICD shall be documented through an ICD Change Notice (ICN) process defined by the Contractor.

Subsequent changes shall require approval by all the signed parties.

The ICN process shall be described in the ICD.

The Contractor shall provide all revisions to the ICD in the Change Notice log to record the number of approved changes.

3.4.4.3 MI: Open Requirements List

The Contractor shall generate and maintain a list of open requirements that require further negotiation between the Contractor and applicable USG Team member(s) after the mission ICD has been baselined and approved.

This list shall be reviewed at Mission Integration Working Groups and Management Working Groups until all open requirements have been negotiated, approved, and incorporated into the mission ICD. (IDE)

3.4.4.4 MI: ICD Compliance

The Contractor shall ensure that all LV hardware and software, including mission-unique hardware and software modifications, and the mission design complies with the ICD.

3.4.4.5 MI: Verification Process

The Contractor shall manage verification process, including coordinating with LSIC and USG to ensure that all "shall" requirements are verified and approved prior to launch. The Contractor shall also ensure all "will" requirements are met. This process includes tracking verification burndown status, holding working groups, and providing status.

3.4.5 MI: Mission Design and Analyses

The Contractor shall perform mission design and analyses, as outlined in Table 3-2 (and further described in detail within CDRL A039), to ensure that the requirements of the IRD (or the signed mission ICD) are met. The specific completion dates for each analysis will be negotiated with the GMIM and documented in the IMS and data exchange list as described in paragraph 3.4.2 (Mission Integration Management). CDRL A039

The Contractor shall provide a mission specific design in accordance with the mission specific requirements and constraints as specified in the mission IRD or ICD.

The Contractor shall reserve performance for SSC/AA management composed of 2 percent of LV capability plus payload equivalent mass of 75 pounds-mass for mission assurance equipment/add-on instrumentation.

Table 3-4: MI: Mission Specific Analyses*

Mission Specific Analysis			# of Analyses	
Environments	Aerophysics	PLF Venting Analysis	2	Preliminary & Final
		ECS Impingement Analysis	2	Preliminary & Final
	Contamination	Contamination Analysis	2	Preliminary & Final
	Loads & Dynamics	Coupled Loads Analysis	2	Final Design Load Cycle & Verification Load Cycle
		EA Transportation and Handling Analysis	2	Preliminary & Final
		Loss of Clearance Analysis	2	Preliminary & Final
	Dynamic Environments	Payload Acoustics Analysis	2	Preliminary & Final
		Payload Vibration Analysis	2	Preliminary & Final
		Interface Shock Analysis	2	Preliminary & Final
	Thermal	ECS Thermal Analysis	2	Preliminary & Final
		PLF Aero Heating Analysis	2	Preliminary & Final
		Free Molecular Heating Analysis	2	Preliminary & Final
		Integrated Thermal Analysis	2	Preliminary & Final
	Mission Design	Trajectory & Performance	Orbit Box Trajectory Analysis	2

		RF Link Analysis	2	Preliminary & Final
		Final Target Orbit Trajectory Analysis	1	Final
	Guidance & Navigation	Orbit Dispersion/Mission Variability Analysis	2	Preliminary & Final
Vehicle Control Systems	Flight Controls	LV/SV Separation Analysis	2	Preliminary & Final
		Controls and Stability Analysis and Autopilot Design	2	Preliminary & Final
Structures	Payload Accommodations	SV Access Analysis	2	Preliminary & Final
		Payload Accommodations Strength Analysis	1	Final
Avionics	Avionics	EMI/EMC Analysis	2	Preliminary & Final
		Electro-Explosive Device (EED) RF Susceptibility Analysis	2	Preliminary & Final

: *Note: Reflight missions will require a single final analysis cycle. Missions with a previously performed EIS, may only require a single, final analysis cycle. If no requirements or inputs have changed since Preliminary analysis cycle a formal delivery of the Final analysis is not required, this is only applicable if the Final analysis would exactly match the Preliminary

3.4.6 MI: Integrated Operations Planning

The Contractor shall support the applicable USG Team member(s) in launch operations preparations, planning, and execution for all mission-specific integrated operations occurring at the launch site.

3.4.6.1 MI: Launch Site Integrated Operations

The Contractor shall coordinate all Integrated Operations procedures with SSC/AA, to plan for and execute launch site integrated operations and provide the applicable USG Team member(s) with an

integrated operations schedule NLT 30 CDs prior to the start of Integrated Operations and moving the setback date to NLT 60 CDs prior to the start of Integrated Operations.

The Contractor shall maintain the integrated operations schedule and provide updates for daily scheduling meetings.

The Contractor shall initiate daily meetings with the applicable USG Team member(s) throughout integrated operations.

All Integrated Operations procedures shall be coordinated with SSC/AA. (CDRL A023)

3.4.7 MI: Launch Rehearsal Support

The Contractor shall perform launch rehearsals with the applicable USG Team member(s), SV Teams, and NRO Operations Squadron (NOPS) using the SSC/AA Generic Government Baseline Launch Rehearsal Plan as guidance.

The Contractor shall lead rehearsal planning efforts, and the development and rehearsing of anomalies in coordination with the Government, Rehearsal Working Groups, and Rehearsal Anomaly Team (RAT).

3.4.7.1 MI: Rehearsal Anomaly Team

3.4.7.1.1 MI: LV Program Rehearsal Lead

For the RAT, the Contractor shall provide the Launch Vehicle Program Rehearsal Lead to lead all Contractor rehearsal activity and a Mission RAT member (LV Simulation), a technical Subject Matter Expert (SME), to be responsible for coordinating the development of integrated LV and PL (IPS) anomalies.

3.4.7.1.2 MI: RAT Meeting Support

The Contractor shall support the RAT Kickoff meeting and recurring RAT meetings leading up to the rehearsals starting at L-6 months. RAT meetings occur as often as once per week based on the complexity/need for rehearsal planning.

3.4.7.2 MI: Rehearsal Documentation

The Contractor shall assist the RAT with the development of all documentation required for the rehearsal to include white cards (anomaly scenario technical detail), profile letter, rehearsal script, rehearsal timeline, and integrated mission script and mission-specific DoL support.

3.4.7.3 MI: Launch Information Dissemination and Simulation

For mission rehearsals, the Contractor shall support the Government's Launch Information Dissemination and Simulation (LIDS), which will be used in all mission rehearsals and exercises.

The Contractor shall comply with the LIDS interface requirements as specified in the LIDS Interface Requirements Document (IRD) in Appendix C.

3.4.7.4 MI: Integrated Launch Rehearsals

The Contractor shall perform three integrated launch rehearsals for each mission, unless agreed to otherwise by the GMD, in which case, the USG agrees to waive additional consideration beyond what was factored in at the time of contract award. The first two rehearsals will be referred to as

Integrated Crew Exercise (ICE) 1 and ICE 2; the third rehearsal will be a Mission Dress Rehearsal (MDR) using the SSC/AA Generic Government Baseline Launch Rehearsal Plan for guidance. Three rehearsals are the norm, but others may be required.

The Contractor shall configure facilities for rehearsals such that connectivity between facilities shall represent that of DoL.

3.4.7.5 MI: Academic and Hotwash sessions

The Contractor shall lead Academic sessions, to include development of the briefing materials, prior to each rehearsal and Hotwashes following each rehearsal.

3.4.7.6 MI: DoL Scenario Simulation

During rehearsals, the Contractor shall provide key DoL personnel necessary to simulate an authentic DoL scenario.

At a minimum, key DoL personnel shall include the Launch Director, launch conductor, anomaly coordinator, LV mission manager, mission requirements engineer, range coordinator, and the SV ground operations coordinator, unless the Contractor and the GMD mutually agree to different roles.

3.4.7.7 MI: Launch and Launch Rehearsal Documentation

The Contractor shall make available, in printable format, the equivalent documentation that will be used for leading rehearsals and launch, to include LV countdown procedures, Launch Console Handbooks, and rehearsal anomaly documentation as defined in the SSC/AA Generic Government Baseline Launch Rehearsal Plan, and as approved by the GMIM, NLT 7 CDs prior to rehearsals and launch (or as pre-coordinated with the USG). (IDE)

3.4.8 MI: Mission Interface Control Document Requirements Verification

The Contractor shall verify that the LV requirements documented in the mission ICD are met and facilitate applicable USG Team member(s) participation in requirements verification.

The Contractor shall provide a Verification Planning Matrix, and Verification Evidence Records. (CDRLs A026, A027 and A028).

3.4.8.1 MI: Requirement Verification Closure Methodology

For each “shall” requirement in the ICD, the Contractor shall identify and develop a requirement verification closure methodology (such as Analysis, Inspection, Demonstration, or Test) and a verification plan (short description of the analysis, inspection, demonstration, or test to be performed) that is acceptable to the ICD signatories.

Multiple verification methodologies can be assigned to a single requirement but will be tracked as individual verifications.

This information shall be included in the mission ICD.

Verifications shall be updated within 30 days when underlying analyses are updated. The Contractor shall make available documentation validating the requirement.

All verifications shall be individually approved by the ICD signatories prior to closure. (CDRLs A025 and A027).

3.4.9 MI: Flight Hardware Interface Checks

The Contractor shall perform test(s) to verify the compatibility of the physical and electrical interfaces and clearances between the LV and PL.

The testing shall verify that all physical and electrical interfaces, including electrical continuity, meet mission ICD requirements.

The Contractor shall perform electrical and mechanical fit checks of the adapter harness to the standard electrical interface panel for the primary PL.

Fit checks shall be two in number for each mission. If a mission requires more than two fit checks, these will be procured as a Mission Unique option.

The Contractor shall recreate the as-built electrical and mechanical fit checks digitally on both sides of the interface for the Government Team(s) to verify the ICD requirements are met.

The Contractor shall accomplish the interface test(s) NLT L-12 months subject to the availability of facilities and PL hardware.

In the event of unavailability of facilities or PL hardware, the Contractor shall coordinate test timing with applicable USG Team member(s).

Flight Hardware Interface Checks may be waived for cases in which the relevant fit-checks have already been accomplished (e.g., reflight missions), at the discretion of the USG, and as directed by the PCO. (CDRL A024)

3.4.10 MI: Ground Hardware Interface Checks

The Contractor shall support SV-provided PL or the (IPS) GSE interface fit-checks with the Launch System.

The Contractor shall coordinate test timing with the SV Team and the USG Team. Ground Hardware Interface Checks may be waived for cases in which the relevant fit-checks have already been accomplished (e.g., reflight missions), at the discretion of the Mission Management Team (MMT) and as directed by the PCO.

3.4.11 MI: Launch Range Coordination

For each mission, the Contractor shall capture mission-unique hardware, processing, and hazards, including SV team inputs and reports for SV identified hazardous items (including explosives/ordnance), in the Missile System Prelaunch Safety Package (MSPSP) (e.g., updates to the MSPSP, mission-unique MSPSPs) and submit to Range Safety IAW SSCMAN 91-710.

The Contractor shall also coordinate PL (IPS) integrated operations and launch requirements (e.g., RF emitter control, telemetry support) with the Launch Range via the Universal Documentation System and other base support documentation.

The Contractor shall coordinate approval of all related operation requests received from the Launch Range with the applicable USG Team member(s). (CDRL A014)

3.4.12 MI: Payload Processing and Encapsulation

3.4.12.1 MI: Mission Requirements Coordination

The Contractor shall coordinate the mission requirements for launch site support within the Contractor's organization and ensure the requirements are incorporated into all relevant designs, maintenance and operational requirements, and plans and procedures.

The Contractor shall identify all relevant launch site facility constraints and requirements and resolve all incompatibilities that may impact LV system design and operations for the mission. The Contractor shall assess all relevant mission requirements and coordinate any LV-system design incompatibilities or constraints with the applicable USG team.

For any LS Contractor driven changes to the SIS compliant LS baseline that adversely impacts the SV mission, the remedy shall be provided by the LS Contractor. (IDE)

3.4.12.2 MI: Integrated Operations Plans Development

The Contractor shall support development of the integrated operations plans at both the Mission-specified PPF, and Contractor's launch facilities. These plans will include the following:

3.4.12.2.1 MI: CONOPS Development

The Contractor shall develop, in coordination with the applicable USG Team member(s) and SVC(s), a Concept of Operations (CONOPS) for integrated SV/LV operations performed in the PPF, and at the Contractor's launch facilities. (IDE)

The Contractor's CONOPS inputs shall include provisions for SV mating/stacking and IPS encapsulation per the requirements of the ICD(s) and shall take into consideration:

- A) Any SV Adapter mating operations done in the Payload Processing Bay(s) (PPBs) before Payload Encapsulation Bay (PEB) entry.
- B) Stacking/mating and encapsulation operations performed in the Payload Encapsulation Bay (PEB).
- C) SV requirements for any EGSE connectivity and SV testing/processing operations performed in the PEB.

3.4.12.2.2 MI: Facility Requirements Document

The Contractor shall develop a Facility Requirements Document (FRD) that documents all of the Contractor's constraints and requirements for the PPF and PEF. The FRD shall also include all communications requirements needed by the Contractor in order to operate in the PPF and PEF. The USG team will review and assess the requirements identified in the FRD during the integration process and provide feedback on acceptability leading to formal acceptance at reviews in Table 3-4.

The Contractor shall provide a draft FRD to the applicable USG Team member(s) by L-18 months and a final FRD by L-12 months. Development and delivery of the FRD shall be captured in the IMS and the Data Exchange List. (CDRL A017)

Development and delivery of the FRD shall be captured in the IMS and the Data Exchange List. (CDRL A017)

Selection of the PEF shall take into consideration: A) Any SV/Adapter mating operations to be performed in the PPF prior to PEF entry. B) PEF proximity to the PPF to minimize movement and transfer of the SV(s). C) Stacking/mating and encapsulation activities to be performed in the PEF. D) SV requirements for any Electrical Ground Support Equipment (EGSE) connectivity and SV testing/processing operations to be performed in the PEF.

3.4.13 MI: Launch Operations Validation Activities

The Contractor shall conduct, support, and coordinate launch operations validation requirements IAW the interface requirements of the PPF per the ICD(s), which may include but are not limited to the following activities:

- A) Validation of SV/LV mating and encapsulation activities.
- B) Validation of LV and SV hardware space requirements, cleaning, buildup, use, movement, storage during the operational flow.
- C) Fit check/demonstration of SV/Adapter and SV/SIA mate to LV hardware, and fit check/validation of SV/LV electrical and mechanical interfaces.
- D) For 3D visualization support (LV flight and GSE hardware models).

The Contractor shall provide 3D models, in the form of CAD models or drawings provided to the PPF operators in support of integrated operations planning. Models to include the LV fairing, P/L Adaptor and associated GSE used in the PPF.

3.4.14 MI: Reflight Mission Integration

The Mission Integration tasks and processes required for a Mission that utilizes a Launch Vehicle and Space Vehicle combination that has flown on previous Mission would constitute a Reflight Mission Integration. The Mission Integration tasks for a Reflight Mission are the same for a Non-Refight Mission. These tasks listed in Table 3-4 (Mission Specific Analysis), may be reduced from those required for a Non-Refight Mission. Reflight Missions will require a single final analysis cycle. It is possible some design and analysis listed in Table 3-4 from previous missions may be utilized for a Reflight Mission. The design, analysis, and mission integration tasks (to include verification data) from a Reflight Mission shall only be utilized if approved by the Mission's GMIM per the requirements and timelines of a standard mission integration.

3.5 LS/LSS/FS: MISSION OPERATIONS

LS/LSS: In order to ensure the successful launch of a healthy PL (IPS) into the intended orbit, the Contractor shall process and launch missions and deploy the PL (IPS) into the intended orbit IAW individual IRD and mission ICDs.

The Contractor shall maintain and provide the applicable USG Team member(s) insight into activities covered in the Launch Operations section of the PWS.

All launches on this contract shall occur from CCSFS, VSFB, or KSC. The Contractor Launch System shall be capable of performing CAT B & C missions from the eastern range (including missions that require vertical integration) and CAT B & C missions from the western range on this contract NLT 1 Oct 2026.

The Contractor shall identify a Site Director (or equivalent) to serve as the primary POC to interface with the local Space Launch Squadron Commander (SLS/CC) to manage and control the activities in this subsection.

3.5.1 LS/LSS/FS: Personnel Access

3.5.1.1 LS: Discrete Personnel Access

Discrete Personnel Access: For NSS missions, the Contractor shall allow the applicable USG Team member(s) physical access for questions and answers to engineers and technicians performing work on an as-needed, non-interference basis during each shift of technicians/engineers, for the purpose of discussing urgent/critical task specific inquiries. Non-emergent items will be addressed with appropriate technical representatives in a TIM to be arranged in a timely fashion, or in a preexisting forum in which the USG Team member(s) are participants.

3.5.1.2 LSS: Non-discrete Personnel Access

Non-discrete Personnel Access: For all launch site activities that are not directly associated with an individual mission, or associated with a specific non-NSS mission, the Contractor shall allow the applicable USG Team member(s) physical access for questions and answers to engineers and technicians performing work on an as-needed, non-interference basis during each shift. This access will include coordination with the contractor site director or launch technical Lead for personnel performing work to minimize interference to the maximum extent possible. Access for USG Team during non-NSS missions shall not include non-NSS customer processing areas, non-NSS customer personnel, or non-NSS customer proprietary data unless specifically agreed to by non-NSS customer.

3.5.1.3 FS: Discrete, Non-NSS Personnel Access

For all launch site activities directly associated with a specific non-NSS mission, the Contractor shall allow the applicable USG Team member(s) physical access for questions and answers to engineers and technicians performing work on an as-needed, non-interference basis during each shift of technicians/engineers in a TIM to be arranged in a timely fashion, or in a pre-existing forum in which the applicable USG Team member(s) are participants.

Access for USG Team during non-NSS missions shall not include non-NSS customer processing areas, non-NSS customer personnel, or non-NSS customer proprietary data unless specifically agreed to by non-NSS customer.

3.5.2 LSS: Launch Site Operations and Support Services (Non-Discrete)

The Contractor shall provide launch site operations and support services necessary to support a sustained NSS readiness posture.

Note: Data requirements are only applicable to the USG certified/approved launch system configuration(s) for the Launch System families eligible for use on this contract. Data requirements are not applicable to other Contractor products or third-party proprietary information.

3.5.2.1 LSS: Work Authorizing Documents

The Contractor shall modify, update, control, and maintain the launch operations procedures, OOP procedures, Non-conforming Out-of-position Procedures (NCOP), and all other Work Authorizing

Documents (WADs). The Contractor shall produce procedures IAW NSSL-S-016 (2023) paragraph 4.8.2., unless tailoring of the compliance standard is approved by the Government (CDRL A019).

The Contractor shall provide a process for comment adjudication or incorporation.

Except for OOP procedures, the Contractor shall provide access to these procedures and notify the applicable USG Team member(s) NLT 5 CDs prior to their use (or as soon as available for procedures released within 5 CDs.

The Contractor shall provide OOP procedures to the applicable USG Team member(s) as soon as possible.

The Contractor shall provide near real time access (data latency not to exceed 5 minutes) to view launch site procedure updates at the location where the procedure is being performed, unless personnel are prohibited for safety reasons. This access can be achieved using Contractor-provided hardware and software, or by providing access compatible with Government-supplied equipment. (IDE)

3.5.2.2 LSS: Safety and Access Training

The Contractor shall provide select USG Team members all necessary safety and access training required for entering the vehicle such as confined space training, alternate breathing apparatus training, and fall hazard training. Applicable USG Team member(s) access into the vehicle skin line will be on a non-interference basis and limited to NSS missions.

3.5.2.3 LSS: Physical Access and Non-Escort Privileges

The contractor shall grant physical access and non-escort privileges for SSC/AA designated USG Team representatives on a non-interruptive basis, as required for mission assurance and fleet surveillance activities, who have completed all required safety/security training to all areas of the Contractor's facility (including launch site) where work is being performed and systems are in place for current and future NSS missions.

The Contractor shall grant admit and escort privileges within Government program office areas, for a limited set of Government and FFRDC personnel who have had proper admit/escort briefings, to facilitate visits by other Government representatives.

The Contractor shall ensure that SSC/AA designated representatives have access to the program's verification and test activities, program schedules, and data.

3.5.2.4 LSS: Launch Site Designated Workspace

The Contractor shall provide dedicated workspace in launch sites processing/integration facilities for a two-member on-site USG Team.

Accommodations shall include appropriate access to electrical outlets, chairs, and appropriate tabletop space for two personal laptops, high-speed network connectivity to support electronic access to the IDE. (Ref. Appendix E)

3.5.2.5 LSS: Pre-Coordination of Launch Site Processing Activities

3.5.2.5.1 Pre-Coordination of Work Authorizing Documents

The Contractor shall provide the appropriate (SLD 30 or SLD 45), a list of all WADs planned to be used for a mission and those that may be used for contingencies NLT 30 CDs prior to hardware readiness for launch site processing operations. For each item listed include the anticipated date each item will be performed, and a brief description of the work directed by the WAD. (IDE)

The Contractor shall include revisions to the WAD list within 3 CDs of the addition, removal or replacement of a WAD or a change to a description of a WAD for a mission notify the Government that a change has been made. (IDE)

3.5.2.6 LSS: Daily Schedule

The Contractor shall maintain and provide the applicable USG Team member(s) a daily schedule that forecasts relevant operations NLT 7 CD in advance of flight operations and provides updates to operations less than 7 days out. Daily status includes work directed by WADs and non-conformance process in addition to major maintenance activities associated with the launch site and LV.

Schedule format and content determined to be acceptable by the COR, but at a minimum, schedules shall be linear, legible, use common scheduling techniques, that may include relationships between tasks and contain the current critical path to key milestones such that government can plan resources to execute Mission Assurance and fleet surveillance.

3.5.2.7 LSS: Disaster Preparedness Plan

The Contractor shall provide the disaster preparedness plan NLT 30 CDs prior to first LV hardware delivery for the first NSS mission at each launch site and maintain on an annual basis after that.

The plan shall address contingency safing and storage of the LV and, if mated, PL (IPS). (IDE)

3.5.2.8 LSS: Launch Site Status Meetings

The Contractor shall invite the applicable USG Team member(s) to all recurring launch site status meetings, or equivalent meetings where flight hardware and ground system status, processing activities, and/or system maintenance is presented.

For meetings with formal pre-prepared presentations, the Contractor shall make available all presentation material (current drafts) to the applicable USG Team member(s) NLT 2 business days in advance.

For any meetings or reviews that include Non-NSS/Commercial Customer proprietary sensitivities, thereby preventing USG Team attendance, the Contractor shall communicate to the applicable USG Team member(s) a summary of any major issues or courses of action after conclusion of the meeting. (IDE)

3.5.2.9 FS: Transportation Planning (Non NSS)

The Contractor shall invite the applicable USG Team member(s) to all LV transportation planning meetings and make all presentation materials available to the applicable USG Team member(s).

The Contractor shall provide timely notification and status (within 24 hours) of LV hardware movements. For hardware movements onto and around CCSFS and VSFB, the Contractor shall follow each locations' established processes for access and transports. (IDE)

3.5.2.10 LSS: Operational Surveillance Requirements

The Contractor shall enable Government surveillance and analysis of Contractor processes and launch operations from launch base testing and operations to post-flight/test analysis. The surveillance and analysis are in support of the Government mission assurance plan as outlined in AFSPCI 13-610 Launch & Range Operations. The applicable USG Team member(s) will monitor Contractor-performed launch base testing by viewing test and launch operations data, monitoring voice communications, viewing Closed Circuit TV video, and by witnessing the test. Launch operations include readiness activities such as launch rehearsals. Government mission assurance activities will be implemented with a see and hear what the Contractor sees and hears philosophy such that the applicable USG Team member(s) can perform their mission assurance role with the same information being used by the Contractor. (IDE)

For all missions, the Contractor shall provide full-rate native format launch vehicle and GSE telemetry data, operational voice, launch site video (except third party proprietary video and audio that requires NDAs), countdown timing, and processed telemetry displays as defined below.

The Contractor shall provide services during launch site launch system testing, launch processing, and launch operations from the start of pre-launch LV processing operations, through mission completion. (IDE)

3.5.2.10.1 LSS: ELSS General Requirements

The Contractor shall provide all interfaces and services described in this paragraph (and subparagraphs) to USG-approved demarcation points to fulfill ELSS System Requirements Document (SRD) requirements for all Contractor launches in support of USG mission assurance crossover assessments.

3.5.2.10.1.1 LSS: USG Approval of Demarcation Points

The Contractor shall obtain USG approval prior to establishing demarcation points used for interface operational voice, video, data, and timing signals. Communication equipment racks and power within the demarcation facilities and inter-facility fiber connectivity to the Contractor facility will be provided by the USG.

3.5.2.10.1.2 LSS: Standards Compliance

The Contractor shall ensure that all operational voice, video, native-format telemetry data, and timing signal interfaces between the contractor facility and the approved demarcation point comply with Institute of Electrical and Electronics Engineers (IEEE) and/or Electronic Industries Alliance (EIA)/Telecommunications Industry Association standards, with modifications and deviations as approved by the USG.

3.5.2.10.1.3 LSS: Data Distribution

The Contractor shall enable the applicable USG Team member(s) to distribute operational voice, video, countdown timing, and native format telemetry data between the Eastern Range (ER), Western Range (WR), NOPS, and Aerospace General Offices (AGO) Spacelift Telemetry

Acquisition and Reporting System (STARS) in El Segundo, CA to satisfy independent assessment, LV ascent coverage, remote participation, and shadow operations.

3.5.2.10.2 LSS: Operational Voice Requirements

The Contractor shall provide the capability for applicable USG Team member(s) talk/listen access on all Contractor operational voice nets during CCSFS, KSC, and VSFB activities for NSS missions, with modifications or deviations as approved by the COR. Talk/listen or monitor-only net configurations will be determined on a net-by-net, operation-to-operation basis for NSS missions.

3.5.2.10.2.1 LSS: Full Duplex Communication Interfaces

The Contractor shall provide direct full duplex communication interfaces at USG-approved demarcation points, capable of supporting a minimum of 72-channel capacity to the CCSFS and VSFB Launch Support Centers (LSCs), and a minimum 48-channel capacity to ER and WR STARS, for USG communication distribution.

3.5.2.10.2.2 LSS: Mobile Devices

If the Contractor utilizes mobile devices (e.g., headsets) to communicate during launch vehicle processing, operational testing, and mission operations at CCSFS, KSC, or VSFB, the Contractor shall provide the applicable USG Team member(s) the same capability and access to all applicable voice nets.

The Contractor shall provide a minimum of 5 devices with this capability to the applicable USG Team member(s).

The Contractor shall be responsible for maintaining and upgrading all device hardware and software.

3.5.2.10.3 LSS: Video Requirements

3.5.2.10.3.1 LSS: Full-Time Video Access

The Contractor shall provide the USG Team with full-time video access at CCSFS, KSC, and VSFB to all LV and site Contractor video feeds, with LV and ground system views, including special test cameras, with modifications or deviations as approved by the COR (except third party proprietary video that requires NDAs).

3.5.2.10.3.2 LSS: Simultaneous Video Scene Interfaces

The Contractor shall provide a direct interface (i.e., shared by both ends, with no nodes in between) at the USG-approved demarcation points capable of supporting a minimum of 16 simultaneous video scenes for the CCSFS and VSFB LSCs, and 6 simultaneous video scenes for ER and WR STARS.

3.5.2.10.3.3 LSS: Video User Source Selection Control

The Contractor shall provide programmable Internet Protocol (IP) network-based, hard panel video source selection controllers in the USG LSCs at CCSFS, VSFB, ER STARS and WR STARS to independently select sources from all launch site video feeds.

3.5.2.10.3.4 LSS: Video Countdown Clock

The Contractor shall provide a video countdown clock display from each of the Contractor's operational launch pads at CCSFS, KSC and VSFB.

The video countdown clock display format shall be coordinated with the USG prior to deployment.

The video countdown clock display shall be made available via the existing video control and distribution systems to the USG LSCs at CCSFS, VSFB, ER STARS and WR STARS.

3.5.2.10.4 LSS: Data and Timing Requirements

3.5.2.10.4.1 LSS: Telemetry

Prior to T-0, the Contractor shall provide full-rate time-correlated telemetry data for ground and vehicle systems in native format.

After T-0, the Contractor shall provide all available ground and vehicle telemetry throughout the flight in real-time, including disposal burn.

The Contractor shall also provide all vehicle telemetry that was received and stored for later retransmission. The Contractor may use multiple space-based or ground stations to meet the real-time requirement.

3.5.2.10.4.1.1 LSS: LV and Ground System Telemetry Data

The Contractor shall provide LV and GSE telemetry data in native signal format to demarcation points for ER STARS, WR STARS, and to NRO for AGO STARS approved by the respective COR, utilizing an architecture that will minimize packet and data loss. The USG will transmit data from each launch site to AGO STARS via NRO.

3.5.2.10.4.2 LSS: Live and Archived Launch Telemetry Data

The Contractor shall provide ground system and vehicle telemetry via a 50 ms., or less, average ping time to demultiplexed Application Programming Interface Server and 3.5 seconds, or less, average latency for requesting a single 1 Hz parameter containing 3 hours of numeric Telemetry data from said demultiplexed Application Programming Interface.

The Contractor shall provide data during launch site launch system testing, launch processing, and launch operations from the start of pre-launch LV processing operations throughout the flight in real-time, including stage landing and disposal burn.

3.5.2.10.4.2.1 LSS: Telemetry Parameter List

Each mission of live and archived telemetry shall have a parameter list consisting of all active telemetry streams to include all calculated/derived telemetry streams.

3.5.2.10.4.2.2 LSS: Telemetry Parameter Definitions Table

The Contractor shall provide a parameter list for each mission of the live and archived telemetry to define for each parameter whether the telemetry is numeric or alpha, the engineering units, and the maximum frequency of the data.

3.5.2.10.4.2.3 LSS: Telemetry Decommuted, Delimited, and Provided

The Contractor shall decommutate, delimit, and provide API telemetry data per the government defined Mission ID, date time start, date time end, data frequency rate and parameter list.

3.5.2.10.4.3 LSS: Pre-Flight LV Trajectories

The Contractor shall provide pre-flight LV trajectories, telemetry compositions, telemetry data/memorandum, and vehicle link information as specified in CDRL A031.

3.5.2.10.4.4 LSS: Inter-Range Instrumentation Group Time Code Format B (IRIG-B) Signal

The Contractor shall transmit IRIG-B signal for all LV or ground systems signals that do not have imbedded time references to the USG-approved demarcation points.

3.5.2.10.5 LSS: Data System Workstations

The Contractor shall provide and maintain data system workstations (both hardware and software) to the applicable USG Team member(s) utilizing the same versions of the Contractor's graphic user interfaces used by Contractor personnel for each mission.

All data system workstations shall be capable of supporting a minimum of 2 monitors each.

All data system workstations shall provide access to databases, mission files, WADs, and Launch System files.

The data system workstations shall display real-time LV (umbilical and airborne) and ground system data within 1 second of generation from the Contractor's system.

All data system workstations shall provide the same displays and tools equivalent to systems used by Contractor personnel.

All data system workstations shall provide the capability to select between LV and GSE data streams from the launch sites or LV processing facilities at CCSFS, KSC, or VSFB.

The Contractor data system workstations shall provide the necessary tools to perform analysis between real-time and archived data.

All data system workstations shall be capable of supporting continuously updated display of active data with simultaneous data retrieval and review functionality without interrupting data retrieval by other software applications.

3.5.2.10.5.1 LSS: Workstation Support to the USG Launch Support Centers

The Contractor shall provide 44 rack-mounted data system workstations for the USG LSCs at CCSFS, 44 rack-mounted data system workstations for the USG LSCs at VSFB and 12 rack-mounted data system workstations for the Engineering Room (Eng Rm) at CCSFS, including all supporting hardware (e.g., servers, switches).

The Contractor shall install rack-mounted data system workstations in the CCSFS and VSFB Mission Assurance Data Rooms (MADR) and interface with a USG provided Keyboard/Video/Mouse (KVM) system. The USG will provide workstation peripherals (keyboard, monitors, and mouse). Contractor responsibilities for hardware support and boundary for IT security ends at the KVM connection point (keyboard, monitor and mouse ports) on the rack-

mounted data system workstations. The USG will support and ensure IT security compliance for the KVM system and console peripherals (keyboards, monitors and mouse).

3.5.2.10.5.2 LSS: VSFB Remote Monitoring Support

The Contractor shall provide 6 data system workstations and all supporting hardware (e.g., servers, switches), in a USG-provided remote monitoring facility at VSFB for monitoring of daily processing and test activities. The Government will provide workstation peripherals (keyboard, monitors, and mouse).

3.5.2.10.5.3 LSS: LV Integration and Test Monitoring

The Contractor shall make at least one data system workstation available at each booster and/or second stage processing facility to the applicable USG Team member(s) to monitor LV integration and test activities, co-located with the primary Contractor test engineer's system.

If this location is not possible, a location shall be agreed upon by the USG and the Contractor.

The Contractor shall provide two seats at this workstation.

The Contractor shall provide peripherals (keyboard, monitors, and mouse). Note: the number of USG personnel allowed in the facility is not limited to the number of seats provided.

3.5.2.10.5.4 LSS: Archived LV and Ground System Data

The Contractor shall record and provide access to archived LV and ground system data from every test and launch operation performed.

3.5.2.10.5.5 LSS: Recurring Maintenance and Updates

The Contractor shall provide all necessary recurring maintenance and updates to the provided hardware and software for each data system workstation.

3.5.2.10.5.6 LSS: MOC Data System Workstations

The Contractor shall provide access to 2 (physical or virtual) data system workstations in CCSFS Morrell Operations Center (MOC) Bldg. 81900, including all supporting hardware (e.g., servers, network switches) and software, for the USG Team to monitor launch countdown operations. Workstation peripherals (keyboard, monitors and mouse) will be provided by the USG.

3.5.2.10.5.7 LSS: WROCC Data System Workstations

The Contractor shall provide access to 2 (physical or virtual) data system workstations in VSFB Western Range Operations Control Center (WROCC) Bldg. 7025, including all supporting hardware (e.g., servers, network switches) and software, for the USG Team to monitor launch countdown operations. Workstation peripherals (keyboard, monitors and mouse) will be provided by the USG.

3.5.2.10.6 LSS: Countdown Clock Requirements

3.5.2.10.6.1 LSS: Countdown Clock Signal

The Contractor shall provide a countdown clock signal for each countdown operation at CCSFS, KSC, and VSFB.

3.5.2.10.6.2 LSS: IRIG Countdown Clock Signal Interface

The Contractor shall provide an IRIG countdown clock signal interface at Government-approved demarcation points for the CCSFS and VSFB LSCs, and ER and WR STARS for all launch systems that do not have countdown clock parameters imbedded in an already provided data signal. The Contractor shall provide a countdown clock signal via the GSE data interface at USG-approved demarcation points for the CCSFS and VSFB LSCs, and ER and WR STARS.

If countdown clock is not available via the GSE data interface, the Contractor shall provide a separate IRIG signal interface.

3.5.2.10.7 LSS: Technical Support

3.5.2.10.7.1 LSS: Technical and On-Call Support

The Contractor shall provide technical support and on-call response for the voice, video, data, network, and timing interfaces, and Contractor-provided data system workstations during system-level tests and countdown operations.

3.5.2.10.7.2 LSS: Support Response Time

The Contractor shall ensure a response within 2 business days for daily response scenarios, and within 4 hours, or as soon as possible, so as not to interfere with critical operations for countdown operations.

3.5.2.10.8 LSS: NOPS Requirements

The Contractor shall provide real-time, full-rate LV PCM or native signal format LV telemetry data to USG-approved points at CCAFS and VAFB for NOPS pre-launch checkout in accordance with the Mission Support Requirements Document (MSRD) or other coordinated documents.

3.5.2.10.9 LSS: Contractor Facility Requirements

3.5.2.10.9.1 LSS: User Training

The Contractor shall provide user training to the applicable USG Team member(s) on the Contractor's console systems.

3.5.3 LS/LSS: Launch Site Operations and Support Services (Discrete)

3.5.3.1 LS: Master Launch Operation Schedule

The Contractor shall provide a master Launch Operation schedule NLT 30 CDs prior to the start of flight hardware processing at the launch site and provide updates when the master schedule changes (reporting not required for changes less than 1 calendar day). (CDRL A042)

3.5.3.2 LS: Facilitation of USG Meeting Participation

The Contractor shall facilitate applicable USG Team member(s) participation to all launch integration and scheduling meetings.

3.5.3.3 LS: Facilitation of USG Readiness Review Participation

The Contractor shall facilitate applicable SVC and USG Team member(s) participation in Contractor readiness reviews prior to major operational events (e.g., LV transport to the launch

pad; PL (IPS) mating/encapsulation, EA transport/ mate to the LV, and the LV propellant loading operations).

For integrated operations, the Contractor shall invite the applicable USG Team member(s) NLT 7 CDs in advance of each readiness review or as soon as possible if scheduled less than 7 CD prior to review.

The Contractor shall make available current drafts of all presentation material to the applicable USG Team member(s) NLT 2 business days in advance of readiness review. (IDE)

3.5.3.4 LS: Transportation Planning

3.5.3.4.1 LS: Facilitation of USG Transport Participation

The Contractor shall facilitate applicable USG Team member(s) participation in transport activities by including applicable USG Team member(s) in convoy with support vehicles and in real-time discussions during transports involving LV components.

3.5.3.4.2 LS: Pre-Route Survey

The Contractor shall conduct a pre-route survey prior to moving flight hardware and shall facilitate applicable USG Team member(s) participation in this process.

3.5.3.4.3 LS: Environmental Consideration Monitoring

The Contractor shall ensure that all required environmental conditions (e.g., temperature, shock, humidity, and acceleration) are monitored and recorded before, during, and after the transportation and handling of the LV or its components.

The Contractor shall report discrepancies to the applicable USG Team member(s) IAW paragraph 3.1.22 (Incident and Discrepancy Reporting). (IDE)

3.5.3.5 LS: SV/Adapter Mating, IPS Encapsulation and EA Mate to the LV

The Contractor shall support required SV/Adapter mating operations in the PPB. The Contractor effort shall include staging and use of Contractor-provided GSE, conduct of operations including pre-mate flight interface surface inspections, final flight surface mating, and securing of the SV to the Contractor-supplied Adapters with Contractor-supplied fasteners per the requirements of the ICD(s) and the approved CONOPS.

The Contractor shall perform any remaining SV/Adapter mating operations and IPS encapsulation in the PEB. This shall include staging and use of Contractor-provided GSE, conduct of operations including final flight surface mating inspections, remaining SV to contractor-supplied Adaptor and SIA stacking/mating, and encapsulation of the PL (IPS) using Contractor-supplied fasteners per the ICD and the approved CONOPS

The Contractor shall provide the fasteners and launch service GSE necessary to secure the Encapsulated Assembly (EA) and transport from the PPF to the launch complex.

The Contractor shall provide all required GSE (e.g., platforms, diving boards, ladders, access stands, and lighting) to access the PL (IPS) via all necessary PLF doors, at the PEBF and at the launch complex IAW the ICD and the approved CONOPS.

The Contractor shall provide all required GSE (e.g., platforms, diving boards, ladders, access stands, and lighting) to access the PL (IPS) via all necessary PLF doors, at the PEB and at the launch complex IAW the ICD and the approved CONOPS.

3.5.3.6 LS: Equipment and Procedures Compatibility

The Contractor shall ensure that all LV equipment and procedures related to PL (IPS) mating, stacking, encapsulation and EA transport are compatible with the mission specified PPF and launch facilities.

3.5.3.7 LS: Encapsulated Area Environments

The Contractor shall maintain, monitor, and record EA environments as defined in the mission ICD or the IRD.

3.5.3.8 LS: Environmental Protection at Launch Complex

At the launch complex, the Contractor shall provide environmental protection, to include weather, smoke, contamination, and RF mitigation IAW the SPRD, SIS, and the mission ICD for the PL (IPS) and personnel during access to the PL (IPS).

3.5.3.9 LS: Verification Testing and Operations Procedures

The Contractor shall perform verification testing and operations procedures, as mutually agreed upon with the SVC, for post-mate to the SIA; post-encapsulation; pre-mate readiness and post-mate to LV; and pre-launch on-pad.

3.5.3.10 LS: Contingency Operations

The Contractor shall conduct Contingency Operations as follows: (a) once the EA is mated to the LV, the Contractor shall coordinate with the SV Team all deviations from planned procedures and timelines. If directed by the MD, the Contractor shall de-mate the EA and transport it to the PEB; and (b) in the event of an on-pad abort, the Contractor shall re-establish pre-launch access capabilities as coordinated with the SVC and directed by the MD, considering post-abort safing procedures.

3.5.3.11 LS: Launch Operations Coordination Meetings

The Contractor shall support daily Launch Operations Coordination meetings from 2 weeks prior to the start of integrated operations at the launch site through launch.

3.5.3.12 LSS: Unique Communication Links Testing

LS: The Contractor shall support testing of PL (IPS)-unique communication links as specified in the mission ICD.

3.5.3.13 LS: Interface Testing

The Contractor shall perform interface testing in advance of launch site processing.

The Contractor shall perform final system level integrated test to verify the compatibility of the physical and electrical interfaces and clearances between the LV, PL (IPS), and range as defined in the mission ICD.

3.5.3.14 LS: Integrated Launch System Tests

The Contractor shall perform integrated launch system test(s) or provide technical rationale for why testing is not required, subject to Government Product Line Chief Engineer approval. The Contractor shall obtain Government Product Line Chief Engineer approval of technical rationale NLT L-12 months, unless approved by the Government Product Line Chief Engineer for a later date.

The Integrated Launch System Test(s) performed by the Contractor shall verify functionality of all interfaces between launch vehicle and ground systems, and all critical launch vehicle mechanical/propulsion subsystems.

The Contractor shall not conduct integrated mechanical/propulsion launch system testing with the IPS/APS integrated on to the LV.

The Contractor shall not conduct integrated mechanical/propulsion launch system testing with the IPS/APS integrated on to the LV.

The Integrated Launch System Test(s) shall ensure all flight software and avionics systems that are critical for launch are functionally verified. The flight software and avionics systems testing can be conducted with the IPS/APS integrated to the LV. Multiple subsystem tests are not acceptable to meet the requirements of the Integrated Launch System Tests. The Government Product Line Chief Engineer will provide concurrence that no re-testing is required.

The Contractor shall complete all integrated launch system testing NLT 2 CDs prior to the LRR. (IDE).

3.5.3.14.1 LS: Launch Information Dissemination and Simulation (LIDS) Requirements

3.5.3.14.1.1 LS: Real-Time, Full-Rate Telemetry Data

The Contractor shall provide real-time, full-rate LV telemetry data in native signal format for LIDS plus-count display generation at USG approved demarcation points at CCSFS and VSFB.

3.5.3.14.1.2 LS: Data or Packet Loss

The Contractor shall provide telemetry data with no data or packet loss.

3.5.3.14.1.3 LS: Pre-Flight LV Data

The Contractor shall provide the applicable USG Team member(s) with pre-flight LV trajectories, telemetry compositions, telemetry data/memorandum and vehicle link information as specified in CDRL A031.

3.5.3.14.1.4 LS: Communications Equipment Rack Room Configuration

The Contractor shall provide communication equipment room rack space and Category 6 (or equivalent) Ethernet cabling distribution for LIDS computer placement on each of the 9 required consoles for the applicable USG Team member(s) within the Contractor's launch control facility.

3.5.3.14.1.5 LS: Countdown Clock Signal

The Contractor shall provide a Countdown Clock signal for LIDS to USG-approved demarcation points at CCSFS and VSFB.

The Contractor shall provide a countdown clock signal via the GSE data interface for LIDS to USG-approved demarcation points at CCSFS and VSFB.

If countdown clock is not available via the GSE data interface, the Contractor shall provide a separate IRIG signal interface.

3.5.3.14.1.6 LS: LIDS Operational Voice Nets

The Contractor shall provide operational voice nets for LIDS to USG-approved demarcation points at CCSFS and VSFB.

3.5.3.14.2 LSS: Contractor Facility Requirements

3.5.3.14.2.1 LSS: Launch Site Consoles

At the launch site, the Contractor shall provide 8 consoles containing operational voice instruments and data system.

Seating shall be in the same room and co-located with Contractor counterparts for the following roles: GMD, Deputy GMD, AGO General Manager, Launch Vehicle Lead, and four SV Team positions. The Contractor shall provide a list of Contractor counterparts to these roles to the COR.

For NRO missions only, the Contractor shall provide an additional 6 consoles containing operational voice instruments and data system. Seating shall be in the same room and co-located with Contractor counterparts for the following roles: GMD support, OSL Chief Engineer, OSL Aerospace Chief Engineer and OSL Aerospace Deputy Chief Engineer. The seating shall be co-located in the same facility as the other Government consoles for the following roles: 2 OSL support positions.

For NRO missions only, the Contractor shall provide the following space and power accommodations in close proximity to the GMD and Deputy GMD console locations in order to support GMD and Deputy GMD secure communications capability. The Contractor shall have space to accommodate a cabinet of approximate size 2 feet (wide) X 3.5 feet (height) x 1.5 feet (depth). This cabinet will connect to pre-installed NRO fiber at these console locations. The Contractor shall have space to accommodate two phones (one on each of the GMD and Deputy GMD console locations). The Contractor shall make available four standard grounded power receptacles.

If the Contractor uses restricted systems, such as foreign suppliers or NRO restricted suppliers, the Contractor shall provide eight additional consoles containing operational voice instruments and the Contractor's data system workstations per subsystem.

3.5.3.14.3 LS: Launch Operations

3.5.3.14.3.1 LS: Government Launch Operations Team Integration

The Contractor shall develop and execute the procedures that integrate the Government Launch Operations Team into all aspects of integrated launch system tests (e.g., mechanical pathfinders, WDR, or static fire), and launch countdown (e.g., T-0 times, anomaly resolution, resource conflicts, reporting of vehicle capability with respect to winds aloft, Range Safety and Mission Assurance COLAs).

3.5.3.14.3.2 LS: Government Launch Operations Team Coordination

The Contractor shall perform the launch operations in close coordination with the Government Launch Operations Team, which culminates in an operational readiness statement to the GMD. The GMD will make the final Ready/Not Ready determination to proceed with LV propellant tanking and movement of the LV or facility around the LV in support of launch of the integrated LV/PL (IPS) for NSS missions. The GMD will also make the final Go/No-Go for the operation determination of the integrated LV/PL (IPS) for NSS missions.

3.5.3.14.3.3 LS: Secondary Objectives Considerations

3.5.3.14.3.3.1 Secondary Considerations: Go/No Go IAW Attachment 10, Addendum to FAR 52.212.04

Secondary Objectives may be considered as a factor in the final Go/No-Go decision at the discretion of the GMD, and the LV system design and operations shall be capable of supporting the GMD's decision. IDE

3.5.3.14.3.3.2 Secondary Objective Requirements

The Contractor shall provide a document of historical usages of the secondary objective on a minimum of four missions, including impacts to the mission integration (i.e., schedule delays and performance impacts) and post-flight analysis/lessons learned due to the secondary objectives that were implemented on previous missions.

The Contractor shall develop a compatibility assessment between the secondary objectives to the deliverables provided in CDRL A039 as defined in Table 3-5 for the Government to develop its risk posture statement.

The Contractor shall provide the security plan to demonstrate de-confliction between the primary mission requirements and the secondary objectives to meet mission specific classification and security guidelines.

The Contractor shall provide all indemnification documents for review by the government for secondary objectives that increase risk to public safety and require unique approval by the Launch Authority.

The Contractor shall complete and submit Request for Secondary Objectives – Multi-Manifest Services for multi-manifest missions only.

The Contractor shall update, quantify, and provide the excess performance margin to be used for secondary objective(s).

The Contractor shall update, quantify, and provide the total mission performance margin.

3.5.3.14.3.3.3 Secondary Risk Assessment

The Contractor will perform a schedule risk assessment due to the secondary objectives to included impacts to launch availability due to any day of launch constraints, increased hardware development timelines to support the secondary objective, and contingency plans to support the primary mission ILC in the case the secondary objective is not ready to support. (IDE)

3.5.3.14.3.3.4 Secondary Considerations: Hardware Recovery Plan

The Contractor will coordinate any planned attempts to recover/land flight hardware, as applicable. Rational for recovery/landing (technical or business) will be provided to the Government to justify the Contractor plan for each applicable Task Order at L-12 months (for Accelerated Schedule of 12 months, L-6 months) format acceptable.(CDRLs A039, Attach 1, Section XX) (IDE)

3.5.3.14.3.4 LS: Critical Operations During Launch Countdown

The Contractor shall provide status prior to, and obtain approval from GMD to proceed for all critical operations during launch countdown, including (as appropriate to the Launch System):

- A. Propellant loading and unloading
- B. Integrated system test
- C. Enter Terminal Count
- D. Final Go/No-Go for launch
- E. Recycle operations for the next launch attempt in an event of a scrub or abort

3.5.3.14.4 LS: Countdown Procedure Compliance

The Contractor launch countdown procedure shall comply with block-out periods in the launch window due to Government-determined and GMD-accepted COLA restrictions nominally specified at L-2 hours.

3.5.3.14.5 LS: Real-Time Anomaly Investigation

The Contractor shall conduct a real-time anomaly investigation and coordinate with the USG DoL Team for concurrence and approval.

For anomalies that result in violation of mission ICD requirements, the Contractor shall conduct a DoL ICD waiver process that includes the USG DoL Team for coordination and approval.

3.5.3.14.6 LS: Winds Team Voice and Data Communication

The Contractor shall provide a dedicated voice network and dedicated individual to transmit real-time information such as balloon terminations (if applicable), file formats and naming conventions for specific runs and steering profile names, between the USG winds team and the Contractor winds team.

The Contractor shall provide real-time controls and loads results from each wind profile run during the DoL count.

If the Contractor vehicle requires a flight software steering load, the Contractor shall provide the load to the USG winds team in real time during the DoL count. (CDRL A039)

3.5.3.14.7 LS: No-Go Contingency

In the event the GMD calls a No-Go, the terminal count sequence will be discontinued, and the Contractor will recycle for the next launch opportunity.

3.5.3.14.8 LS: USG or SV "Hold" Provision

The Contractor shall have the capability for select USG and SV Team personnel to be able to call a Hold during the terminal count sequence.

These individuals shall have talk capability on the Contractor's countdown net, and if a Hold is called by one of them, the terminal count sequence will be discontinued, and the Contractor shall recycle for the next launch opportunity. SV Hold calls may be discontinued at T-10 seconds, or a mutually agreed upon time.

3.5.3.14.9 LS: Upper Stage Orbital Vector and Attitude Data

The Contractor shall provide the upper stage orbital vector and attitude data at the time of PL (IPS) separation NLT 20 minutes after the Contractor's receipt of LV telemetry data or as specified in the mission ICD. (IDE)

3.5.3.14.10 LS: 3D Computer Simulation Support

The Contractor shall support 3D computer simulation of the LV during ascent for demonstration and rehearsals. 3D modeling of the LV will include engine firings and shutdowns, staging events, attitude control thruster firings, and body attitude and rates to visualize the LV and SV during ascent. The simulation will be driven by LV telemetry. 3D modeling, live video/data, and/or alternate method of viewing the launch vehicle, with the concurrence of the USG.

3.5.3.15 LS: Mission Contingency Plan

The Contractor shall generate and provide the applicable USG Team member(s) a Mission Contingency Plan for the contingency of a Launch Failure for each NSS launch at least 14 CDs prior to launch using SLD 30I 91-101, 30 SLD Operating Plan (SWOP) and 45 SWOP 91-204, Volume 2, and 30 SLD and 45 SLD Commercial Space Operations Support Agreement Annexes as guides. (IDE)

3.5.4 LSS: Launch Infrastructure and GSE

The Contractor shall maintain and sustain the launch site, launch pad, and supporting launch infrastructure and GSE to meet NSS launch requirements.

The Contractor shall establish formal agreements with the appropriate designated Air Force/Space Force and NASA officials at those launch sites and supporting infrastructure locations to establish the use, access, and grounds-maintenance expectations and guidance for the sites.

The Contractor shall provide evidence of maintenance (to include all maintenance WADs and schedules) for flight and ground critical systems used at the launch site under this effort via Contractor. IDE (Ref. AFI 20-114) (IDE)

3.5.4.1 LSS: Contractor-Led Facility and Infrastructure Meetings

The Contractor shall invite the applicable USG Team member(s) to Contractor-led facility and infrastructure meetings and working groups concerned with facilities and infrastructure necessary to meet NSS launch requirements and maintain the required NSS readiness posture.

When the time between launches at a launch complex exceeds six months, the Contractor shall lead and invite the applicable USG Team member(s) to a monthly meeting covering the status of

facilities and infrastructure necessary to meet NSS launch requirements and maintain the required NSS readiness posture.

3.5.4.2 LSS: Corrective Action Status

For NSS missions, the Contractor shall provide the status of all corrective actions, and identify all repairs required to return or maintain the launch complex operational readiness for the next NSS mission after the FRR and NLT 72 hours prior to the LRR.

The Contractor shall also identify all first use items, special attention items, and mission-unique items for all Critical GSE in the same timeframe. (IDE)

3.5.4.3 LSS: Virtual Access to Launch Infrastructure Documentation

The Contractor shall provide the applicable USG Team member(s) virtual access to Launch Infrastructure documentation and implementation plans/schedules for planned design changes to launch infrastructure and GSE and provide in person, the contractor's responsible engineer(s) for a TIM to discuss the design changes, at the USG team's request. (IDE)

3.5.4.4 LSS: Performance Anomaly Findings

The Contractor shall provide launch infrastructure and GSE performance anomaly findings NLT 4 CDs following a launch. (IDE)

3.5.4.5 LSS: Quick-Look Post Launch Damage Assessment

The Contractor shall provide the applicable USG Team member(s) virtual access to a quick-look post launch damage assessment NLT 14 CDs following a launch for all corrective actions or repairs required to return the launch complex back to full mission capability. (IDE)

3.5.4.6 LSS: Change Notification

The Contractor shall notify the applicable USG Team member(s) of all changes to launch infrastructure and GSE associated with the launch system NLT 7 CDs before completion of the change. (IDE)

For changes to systems identified in the GCIL, the Contractor shall notify the applicable USG Team member(s) and provide initial technical rationale (Design Evolution Narrative, Design Requirements and Interfaces, Design Environments, As-built Design, Software Design, Supporting Design Analyses, Principles of Operation, Summary of Identified Flight Risks, Activation/Functional Test Plan/Procedures, Test-Like-You-Fly Exceptions and Deviations, Mission Readiness Rationale, Activation Test Results, List of Test Nonconformances, Summary of Performance Data, and Configuration changes after Activation Testing) as available and as soon as possible but NLT 10 CDs after implementation of the change and activation testing is complete.

The Contractor shall provide the final technical rationale NLT 30 days prior to NSS mission hardware arrival. (IDE)

3.5.4.7 LSS: Launch Site Walk-Down Support

The Contractor shall support weekly launch site walk-downs by the applicable USG Team member(s) during the implementation of scheduled modifications, alternate timing can be arranged with USG concurrence.

The Contractor shall invite the applicable USG Team member(s) to witness modification checkout testing and verification unless the Contractor and USG mutually agree upon an alternate schedule.

The Contractor shall also provide the applicable USG Team member(s) virtual access to applicable checkout, testing, and verification procedures, and data collected. (IDE)

3.5.5 LS: Base and Range Support

The Contractor shall interface with the appropriate launch site representatives to acquire all necessary launch range operations and base support services for NSS launches.

Contractor shall provide their support requirements to the launch range using the Universal Documentation System as specified in RCC 501-12, or other methods, as specified by the range. The contractor will reimburse the launch range for all support costs as specified by the range.

3.5.6 LS: Mission Commodities

The Contractor shall provide required launch commodities (e.g., propellants, liquids, and gases) to support all phases of LV processing and launch for NSS missions.

The Contractor shall provide insight on usage for critical commodities for major launch operation events at launch sites and inform the government when commodities requirements cannot be met, maintained, or are at risk of not being met.

The Contractor shall provide sufficient commodities to support the primary and backup launch window opportunities.

The Contractor shall provide the sampling services reports for all mission commodities IAW the mission ICD. (IDE)

3.5.7 LSS: Landing and Recovery Operations

Note: Paragraph 3.5.7 and its subparagraphs do not apply to launch vehicles that are flown exclusively in fully expendable configurations (for NSS missions).

In order to maintain Assured Access to Space for reusable launch systems, the Contractor shall maintain and provide the applicable USG Team member(s) insight into landing and recovery operations (including de-orbit, re-entry, landing, recovery, safing, inspection, test, refurbishment, and recurring verification) performed for all reusable flight hardware items eligible (as determined by the Contractor and approved by USG Team for initial uses or subsequent reuse on future NSS missions).

3.5.7.1 LSS: Landing and Recovery Operations

3.5.7.1.1 LSS: SSCMAN 91-710 Compliance

The Contractor shall provide landing and recovery site operations and support services necessary to support scheduled NSS missions that utilize recovered flight elements IAW SSCMAN 91710.

3.5.7.1.2 LSS: USG Access to Engineers and Technicians

For all landing and recovery site activities, the Contractor shall allow the applicable USG Team member(s) physical access for questions and answers to engineers and technicians performing work on an as-needed, non-interference basis during each shift of technicians/engineers in a TIM

to be arranged in a timely fashion, or in a pre-existing forum in which the applicable USG Team member(s) are participants.

3.5.7.1.3 LSS: Vehicle Safety and Access Training

The Contractor shall provide select USG Team members all necessary safety and access training required for entering the vehicle such as confined space training, alternate breathing apparatus training, and fall hazard training. Applicable USG Team member(s) access into the vehicle skin line will be on a non-interference basis and limited to hardware eligible (as determined by the Contractor) for reuse on NSS missions.

3.5.7.1.4 LSS: Physical Access and Non-Escort Privileges

The Contractor shall grant physical access and non-escort privileges for SSC/AA's designated USG Team representatives who have completed all required safety/security training to all areas of the Contractor's facility where work is being performed on reusable flight hardware items eligible (as determined by the Contractor) for reuse under this contract.

The Contractor shall grant admit and escort privileges within Government program office areas, for a limited set of Government and FFRDC personnel who have had proper admit/escort briefings, to facilitate visits by other Government representatives.

The Contractor shall ensure that SSC/AA-designated representatives have access to the program's verification and test activities, and program schedules and data.

3.5.7.1.5 LSS: Post-Landing Vehicle Hazards

The Contractor shall identify, and track hazards associated with post-landing vehicle safing and plans for mitigating associated hazards or mission-related mishaps as specified in paragraph 3.1.10.

The Contractor shall identify potentially hazardous materials and conditions present during the safing phase and address mitigation measures in the Hazardous Materials Management Program Plan specified in paragraph 3.1.21.

3.5.7.1.6 LSS: Landing, Recovery, and Refurbishment Site Operations and Procedures

The Contractor shall develop, modify, update, control, and maintain the landing, recovery, and refurbishment site operations procedures, NCOP, and other WADs.

Procedures shall identify the components, subsystems, and flight elements proposed for reuse on NSS missions and provide the rationale, analyses, and proposed test/inspection data necessary to qualify each hardware item for reuse.

Procedures shall identify methods for forecasting lifetime and remaining lifetime, allowable margins, and threshold of acceptance for recurring verification of flight worthiness equivalent to original un-flown flight hardware.

The Contractor shall ensure that complete flight history and flight environment data is provided, as well as the production and maintenance history, as part of the Pedigree Review package to inform the flight worthiness decision-making process as described in paragraph 3.6.6.

The Contractor shall enable Government mission assurance activities to be implemented with a see and hear what the Contractor sees and hears philosophy, such that the applicable USG Team

member(s) can perform their mission assurance role with the same information being used by the Contractor.

The Contractor shall provide a process for review and comment adjudication and incorporation.

The Contractor shall submit proposed modifications of these procedures for applicable USG Team member(s) review no later than 21 CDs prior to their first use on a subsequent NSS mission.

The Contractor shall provide NCOP procedures to the applicable USG Team member(s) as soon as possible.

For paperless systems, the Contractor shall provide insight within one hour of data record generation to procedures and WADs as they are performed. (IDE)

3.5.7.1.7 LSS: Provision for USG Team Physical Access to All Work

The Contractor shall take all steps necessary to allow the applicable USG Team member(s) physical access to observe all work as result of WADs, including hazardous operations and NCOP work, with a see and hear what the Contractor sees and hears philosophy such that the applicable USG Team member(s) can perform their mission assurance and fleet surveillance role with the same information being used by the Contractor.

Note: These steps may require the Contractor to designate select USG Team members as mission critical and request waivers from FAA for commercial missions.

3.5.7.1.8 LSS: Landing and Recovery Site Status Meetings

The Contractor shall invite the applicable USG Team member(s) to all Landing and Recovery Site Status meetings on hardware eligible (as determined by the Contractor) for use on future NSS missions. This requirement will only apply to Contractor utilizing recoverable systems and hardware.

The Contractor shall provide all current drafts of presentation material NLT 2 business days in advance of the meeting. (IDE)

3.5.7.1.9 LSS: Transport of Reusable Flight Hardware

The Contractor shall be responsible for appropriate transportation of flight hardware subsequent to landing, recovery/refurbishment including offloading operations at the refurbishment site.

3.5.7.1.10 LSS: Mission Capable Landing and Recovery Infrastructure

The Contractor shall provide fully mission capable landing and recovery infrastructure for flight elements eligible to be reused on future NSS missions, in order to ensure the ongoing integrity of hardware eligible for future NSS reuse, and to ensure validity of the subsequent NSS mission-processing schedule.

3.5.7.1.11 LSS: 24-Hour Advance Notice

The Contractor shall provide advance notice of at least 24 hours and invite the applicable USG Team member(s) to Contractor-led facility and infrastructure meetings and working groups related to landing and recovery infrastructure employed on NSS missions.

3.5.7.1.12 LSS: Corrective Action/Repair Assessment and Status

After each landing or recovery of launch hardware eligible (as determined by the Contractor) for reuse on NSS missions, the Contractor shall provide an assessment and status of corrective actions or repairs required to return or maintain the landing and recovery infrastructure to full operational readiness for planned NSS missions. (IDE)

3.5.7.1.13 LSS: USG Virtual Access to Documentation

The Contractor shall provide the applicable USG Team member(s) virtual access to landing and recovery infrastructure documentation and implementation plans/schedules for planned design changes, sustainment actions and refurbishment planned for infrastructure critical ground systems. (IDE)

3.5.7.1.14 LSS: Provision of Performance Anomaly Findings

The Contractor shall provide the landing and recovery/refurbishment infrastructure critical ground systems performance anomaly findings NLT 4 CDs following observation of the anomaly. (IDE)

3.5.7.1.15 LSS: Identification of Infrastructure Damage

NLT 14 CDs following hardware landing or recovery, the Contractor shall identify infrastructure damage that could impact a scheduled NSS mission and provide the applicable USG Team member(s) virtual access to a quick-look damage assessment for all corrective actions or repairs required to return the launch complex back to full mission capability. (IDE)

3.5.7.1.16 LSS: Enable USG Surveillance and Analysis

The Contractor shall enable Government surveillance and analysis of mission landing and recovery operations, including telemetry data, by providing the applicable USG Team member(s) with audio/video feeds IAW Paragraphs 3.5.2.10.2 and 3.5.2.10.3 (and their subparagraphs), and with real-time insight to refurbishment schedules for all missions utilizing flight hardware that is to be eligible for reuse on future NSS missions.

3.5.7.1.17 LSS: Unescorted USG Access

The Contractor shall provide unescorted access for up to four USG Team personnel to landing zones/onshore recovery operations and associated test or refurbishment facilities during the post-flight and refurbishment phases of missions utilizing flight hardware that is to remain eligible for reuse on future NSS missions.

3.5.7.1.18 LSS: Support of USG Audits/Reviews

The Contractor shall support applicable USG Team member(s) audits and reviews of operating processes within Contractor facilities for recurring verification of adherence to approved procedures for recovery and refurbishment of reused flight hardware.

3.5.7.2 LS: Landing and Recovery Mishaps

3.5.7.2.1 LS: Mishap Investigation

In the event of a landing or recovery operational mishap, the Contractor shall lead a mishap investigation.

The investigation shall commence NLT 7 CDs after landing and include engineering analysis to determine the cause of the mishap event and the corrective action necessary to prevent future mishap recurrence.

The Contractor shall facilitate applicable USG Team member(s) participation in mishap investigations and associated meetings addressing root cause analysis or corrective actions.

[Note: This requirement may be compared by SSC/AA Program Office against those timeline requirements of reporting in the Operations Report (OPSREP) and Situational Report (SITREP) reporting up the chain of command to the PEO AATS. Reference DoDI 6055.07, AFI 91-204, AFMAN 91-222, AFMAN 10-206.]

3.5.7.2.2 LS: Mishap Investigation Data and Reports

The Contractor shall provide all data and reports applicable to the Contractor's landing or recovery mishap investigation and corrective action determination NLT L-30 days prior to a subsequent NSS mission for which the affected hardware is assigned, including revisions or updates of the information upon completion of the mishap investigation.

3.5.8 LSS: Non-NSSL Launch Mishap Investigations

3.5.8.1 LSS: Damage or Injury to the Department of the Air Force

In the event of a non-NSSL launch mishap involving damage to DAF property or injury to the Department of the Air Force personnel, the Contractor shall report pertinent facts to applicable USG Team members NLT 1 hour after the launch mishap.

3.5.8.2 LSS: Contractor-Led Investigation/Engineering Analysis

In the event of a non-NSSL launch mishap, the Contractor shall lead a launch mishap investigation and invite the USG to participate in this investigation. The Contractor shall coordinate the investigation with the applicable USG Team member(s). Investigation invitations shall include engineering analysis that is adequate to determine the cause of the launch mishap event and the corrective action necessary to prevent future-launch mishap reoccurrences. (IDE)

3.5.8.3 LSS: USG Team Participation

In the event of a non-NSSL launch mishap, the Contractor shall facilitate applicable USG Team member(s) participation in the investigation and shall present cause and corrective action data for those components relevant to current and future NSS launch services. (Ref. Appendix E) (IDE)

3.5.8.4 LSS: Safety and Protection of Launch Site Resources

In the event of a non-NSSL mishap, the Contractor shall support the USG Team in ensuring the safety and the protection of Launch Site resources used for future NSSL missions.

3.5.8.5 LSS: Flight & Processing Data Positive Control

In the event of a non-NSSL mission failure, the Contractor will place under positive control all flight and processing data (to include other agency and subcontractor data) making that data accessible to the government mishap investigation team directly or through agreements with other agencies and USG team. (IDE)

3.5.8.6 LSS: Applicable Data and Reports

The Contractor shall provide the data and reports applicable to the Contractor's launch mishap investigation and corrective action determination, including all revisions or updates of the information upon completion of the launch mishap investigation. (IDE)

3.5.8.7 LSS Provide Subject Matter Expertise to Government Led Investigation

The Contractor shall cooperate with and provide subject matter expertise to any government-led investigation associated with a launch mishap, to include providing access to all pertinent documents and personnel who may have relevant information.

3.6 LS/LSS/FS: SUPPORT TO GOVERNMENT SPACE FLIGHT WORTHINESS

In order to ensure a USG determination of low risk and high confidence in launching NSS missions, the Contractor shall support the Government's process for Space Flight Worthiness (SFW) Certification and readiness of the LV, subsystems, components, and mission design (non-recurring and recurring verification). SFW Certification process and SFW criteria are outlined in SMC-G-1202, SMC-G-1204, the LE-P-024 NSSL Program Mission Assurance Plan, and LE-P-018.

The Contractor shall submit a Government-approved Non-Recurring Design Validation (NRDV) Work Closure plan (CDRL A038) that demonstrates Government approval of all open NRDV work by L-12 of 1 October 2026 for Category B missions and by 1 October 2027 for Category C missions, unless mutually agreed by both parties for a later date.

Changes to the common flight hardware configuration shall be assessed as part of NRDV/ Non Recurring Engineering (NRE) and residual risk shall be assessed IAW the Technical Issue Resolution Process (TIRP), and LE-P-012, NSSL Program Systems Engineering Plan (SEP). The Government will make the final determination of whether the qualification requirements have been met IAW the applicable compliance documents, per tailoring instructions in CDRL A019.

NRDV shall be complete with joint handling plans for elevated risks. For a definition of NRDV, see Appendix A (Glossary of Terms).

The Contractor shall identify a technical POC (Product Line Chief Engineer or equivalent) to work with the USG Product Line Chief Engineer to manage the activities detailed in this subsection.

3.6.1 LSS: Space Flight Worthiness Working Groups

The Contractor shall lead the Space Flight Worthiness Working Groups identified in Table 3-5.

The Contractor shall provide Mission Assurance Independent Assessment Data described in CDRL A039 for the launch services specified in this contract.

The Contractor shall respond to questions from the USG Team regarding this data and provide technical rationale for the Contractor's modeling/analysis approach relative to the differences that result from the Government's independent assessments.

For each working group, the Contractor shall provide a POC and provide appropriate technical/engineering representation.

The Contractor shall schedule these working groups on a recurring basis per Table 3-5 (unless the Contractor and COR mutually agree upon an alternate schedule) and may be conducted via teleconference. Working groups may be combined with Government approval.

Table 3-5: Space Flight Worthiness Working Groups

Working Groups	Nominal Frequency	Presumed Cap (# of Meetings)
Avionics Systems	Twice a month	182
Batteries	Twice a month	182
Contamination	Monthly	84
Day of Launch Winds	Twice a month	182
Dynamic Environments	Monthly	84
Engines	Weekly	364
Flight Controls	Twice a month	182
Flight Mechanics	Twice a month	182
Flight Operations	Monthly	84
Flight Software	Twice a month	182
Ground Systems Software	Biweekly	182
Guidance Avionics Hardware	Twice a month	182
Launch Operations	Monthly	84
Loads	Twice a month	182
Pedigree Planning and Management	Twice a month	182

Working Groups	Nominal Frequency	Presumed Cap (# of Meetings)
Manufacturing and Production	Quarterly	28
Power/Control Avionics Hardware	Monthly	84
Propulsion Systems	Twice a month	182
Ordnance	Twice a month	182
Structures	Twice a month	182
Telemetry	Quarterly	28
Thermal/Aero/Fluids	Monthly	84

3.6.2 LS/LSS: USG Team Participation in Contractor Production and Engineering Forums

3.6.2.1 Discussion of Customer Concerns and Emergent Technical Challenges

LSS: The Contractor shall lead chief engineers meeting with the USG Product Line Chief Engineer, OSL Chief Engineer and MAT Chief to discuss customer concerns and emergent technical changes and issues identified by the Contractor.

The Contractor shall hold the chief engineers meeting on a weekly basis (unless the Contractor and USG Product Line Chief Engineer mutually agree upon an alternate schedule).

The Contractor shall provide the USG Product Line Chief Engineer, OSL Chief Engineering, and MAT Chief access to technical meetings to discuss or resolve key issues.

3.6.2.2 LSS: Test Failure, Non-Conformances, and Flight Issue Investigations

The Contractor shall facilitate applicable USG Team member(s) participation in all investigations associated with test failures, non-conformances, and technical issues as defined in LE-P-023 TIRP OI.

3.6.2.3 LSS: Required Reports

The Contractor shall provide to the applicable USG Team member(s) failure analysis reports, crossover assessments, and corrective actions. (IDE)

3.6.2.4 LS: Launch Vehicle Walk-Down

The Contractor's Launch System Responsible Engineers (REs) shall lead the walk-down of the vehicle and Critical GSE (including separating interfaces) prior to vehicle flight closeout.

The Contractor shall invite the applicable USG Team member(s) NLT 14 CDs in advance of the walk-down, or as soon as the schedule is established.

The Contractor shall provide the applicable USG Team member(s) the walk-down checklists prior to the walk-down.

The Contractor shall provide completed checklists and findings following review and vetting by the Contractor and summarize the findings in the Contractor's readiness reviews.

The Contractor shall provide closeout photos and non-conformances.

The Contractor shall support a final review of technical issues and non-conformances encountered between vehicle shipment to the launch site and final closeouts. (IDE)

3.6.2.5 LSS: Test Like You Fly Exceptions

The Contractor shall document and disposition Test-Like-You-Fly exceptions in a format consistent with the Contractor's command media and provide that documentation and disposition to the applicable USG Team member(s). (IDE)

3.6.3 LSS: Issue Resolution Process

3.6.3.1 LSS: Support to USG Issue Resolution Process

For non-discrete technical issues identified through the implementation of PWS Section 3.2 (Systems Engineering Functions and Tasks), 3.3 (Launch Vehicle Production), 3.4 (Mission Integration, and 3.5 (Mission Operations), the Contractor shall support the USG Technical Issue Resolution Process.

The Contractor shall support additional USG Team fact finding through access to engineering counterparts, working groups, data access, or established Request for Information (RFI) processes. (IDE)

3.6.3.2 LSS: Notification of Issues and Risks

The Contractor shall notify the applicable USG Team member(s) as soon as possible of all flight risks above baseline (as defined in the TIRP) significant first flight items, items outside of qualification, flight anomalies, significant test failures, significant OOF data or other applicable risk contained within the Contractors risk database related to the launch system applicable to this contract. (IDE)

3.6.3.3 LSS: USG Access to Engineering Investigations

The Contractor shall provide the applicable USG Team member(s) physical access to observe and participate in the engineering investigations associated with technical issues and elevated flight risks. (IDE)

3.6.3.4 LSS: Risk Mitigation: Low-Medium

For risks that result in a Low-Medium risk position per the TIRP, the Contractor shall develop a handling plan to reduce the risk to Low per the TIRP, and implement that handling plan if directed to do so by the USG Product Line Chief Engineer, at no additional cost to the USG.

3.6.3.5 LSS: Risk Mitigation: Medium and Higher

For flight risks that result in a Medium Risk position per the TIRP, the USG Team will not recommend launch to the launch certification authority, and the Contractor shall support the USG Team TIRP and conduct mitigation activity to reduce the flight risk.

The Contractor shall develop and implement a USG Product Line Chief Engineer approved handling plan to reduce the flight risk to Low per the TIRP at no additional cost to the USG.

3.6.3.6 LSS: Baseline Risk Mitigation Plan

If the USG requires a Baseline risk position for a technical issue per the TIRP, the Contractor shall develop a handling plan and implement if directed by the PCO in accordance with FAR 52.243-01 Changes Fixed-Price, Alternate I or FAR 52.243-07 Notification of Changes, as applicable.

3.6.3.7 LSS: Risk Status Reporting

The Contractor shall communicate on a monthly basis the status of all low-medium and higher risks, as determined by the USG Team that impact the fleet. (IDE)

3.6.4 LS: Orbital Debris Mitigation

The Contractor shall provide Orbital Debris Mitigation IAW the SPRD. (CDRL A039)

3.6.5 LS: Launch Safety Collision Avoidance & Radio Frequency Power Impingement Data

The Contractor shall perform analysis and provide data necessary to complete the USG Team's COLA and Radio Frequency Power Impingement analyses. (CDRL A040 and A041)

3.6.6 LS: Government Hardware Review

The Contractor shall comply with LE-S-011 per the instructions in CDRL A019. Following contract award, the Government Product Line Chief Engineer will develop the Pedigree Review Matrix (PRM) from the ADCL (CDRL A033) and FCIL (CDRL A035). The PRM defines the items to be reviewed and the level of review required. The PRM may go down below the end-item level (e.g., subassembly, supplier purchased parts).

The Contractor shall support the Pedigree Planning Working Group (PPWG) (Ref. paragraph 3.6.1) in the preparation of Government Hardware Pedigree Reviews (Pedigrees). It is the intent of the USG Team to conduct hardware reviews in conjunction with the Contractor's processes when possible, and as soon as practicable otherwise.

The Contractor shall provide all data and complete all RFI/Review Item Discrepancies (RIDs) NLT 60 days prior to ILC with the exception of the launch-site hardware review; the USG Team may consider other exceptions on a case-by-case basis so as not to delay pedigree review beyond L-60 days. (IDE)

3.6.6.1 Hardware Replacement

The Contractor shall obtain USG Product Line Chief Engineer approval to remove and replace hardware reflected on the mission PRM after L-4 months from the mission ILC, or after the USG has initiated a review of the hardware IAW LE-S-011, whichever comes first.

If the Contractor determines the hardware on the mission PRM must be removed and replaced due to a technical issue, the Contractor shall notify the USG technical POC through the Contractor's standard notification procedures, but approval is not required.

For the purposes of gaining USG Product Line Chief Engineer approval to remove and replace hardware, the Contractor may substitute a revised list of hardware in place of the mission PRM, but shall obtain USG Product Line Chief Engineer approval of the substitute list. The USG Product Line Chief Engineer may revert approval requirements back to the mission PRM, at any point during the performance of this contract.

3.6.7 LS: Launch Vehicle Production Cycle Review Support

The Contractor shall facilitate applicable USG Team member(s) participation in facility, GSE and vehicle walk-downs, and other related processes to begin and complete major activities in the LV production cycle.

The Contractor shall make related documentation available. (IDE)

3.6.7.1 LS: Pre-Ship Readiness Review (PSRR)

Pre-Ship Readiness Review (PSRR): The objective of the Contractor's PSRR is to verify readiness to ship flight hardware to the launch site. The review would include end-item product configuration status, technical issue and flight risk summary from mission design reviews, production summary including status of transferred work and remaining open work, product non-conformances and time/cycle life status, and transportation plan. A PSRR is not required when moving the LV between facilities at the launch site.

3.6.7.2 LS: Launch Site Readiness Review

The objective of the Contractor's Launch Site Readiness Review is to verify launch site readiness to receive and process flight hardware. The review will include the following: (1) verification and validation results for ground (GSE and facilities) configuration, (2) resolution of significant issues identified during refurbishment/modification, and verification and validation activities, (3) site operational readiness, and (4) a full list of accepted residual risks to date (GSE and facilities only). Contractor's Launch Site Readiness Review is to be held prior to the start of each NSS launch processing campaign. Contractor shall work with USG on appropriate timing for each review (subject to USG approval).

3.6.8 LS: Post-Flight Data Review

The Contractor shall perform post-flight data reduction, anomaly resolution, lessons learned determinations, and observation disposition.

The Contractor shall provide the applicable USG Team member(s) corrective action plans for anomalies. (CDRL A044)

3.6.8.1 LS: Quick-Look Assessment Meeting

The Contractor shall lead a Quick-Look Assessment meeting at the launch site within 2 hours after PL (IPS) separation or landing/recovery, if applicable, that covers system and sub-system performance.

For long coast missions, the Contractor shall lead the Quick-Look Assessment meeting within 2 hours of transfer orbit insertion.

System and sub-system performance shall address initial observations and all anomalies recorded during the minus/plus count.

The Contractor shall facilitate applicable USG Team member(s) participation in the Quick-Look Assessment meeting.

3.6.8.2 LS: Post-Flight Assessment Report

The Contractor shall provide an initial and final Post-Flight Assessment Report. (CDRL A044)

3.6.8.3 LS: Post-Flight Review

The Contractor shall lead a Post-Flight Review, which summarizes the Post-Flight Assessment Report, NLT 45 CDs following Contractor's receipt of all LV telemetry data.

3.6.8.4 LS: Post-Flight Recovery Data

For all recovered flight equipment to be reused on NSS missions, the Contractor shall include post-flight recovery data in the Post-Flight Assessment Report and Post-Flight Review (CDRL A044).

3.6.9 FS: Post-Flight Data for Non-NSS Missions

If the Contractor performs a post-flight data review for non-NSS missions, the Contractor shall provide a Post-Flight Assessment Report.

If issues arise from the Post-Flight Assessment Report, the Contractor shall support a Q&A with the applicable USG Team member(s).

The Contractor shall support additional USG Team post flight data review and analysis through access to engineering counterparts, working groups, data access, or established data request processes.

The Contractor shall make post-flight review data available to the applicable USG Team member(s), including recovery and inspection data. (IDE)

3.6.10 LS: Hardware- and Software-In-the-Loop

The Contractor shall support Government Hardware in the Loop (HIL) and Software in the Loop (SIL) IV&V activities. The HIL is a required tool that the Government needs to support the flight software delivery independent validation effort. The primary NRDV activity accomplished with these tools is to assemble and validate a resident Hardware-In-the-Loop (HIL) capability, which the USG then uses to execute Launch Verification Matrix (LVM) tasks in support of nonrecurring

design validation/certification, as well as recurring mission-specific Space Flight Worthiness (SFW) assessment activities.

The Contractor shall provide equipment that is the same or equivalent hardware as found in the respective launch vehicles to support Government Hardware In the Loop (HIL) and Software in the Loop (SIL) IV&V activities.

The hardware required for HIL and SIL IV&V shall be capable of supporting IV&V activities for the life of the respective effort; certification and/or Phase 3 launch services contract. The Contractor shall also provide equipment to support Government HIL and SIL activities in support of mishap investigations and anomalies. If updates are made to the Contractor's baseline configuration, the Contractor shall provide the same updates to the Government HIL and SIL, unless the USG Product Line Chief Engineer agrees it is unnecessary.

These updates include, but are not limited to, changes to software, firmware, hardware, and architecture to ensure the equipment are properly configured to support the nonrecurring design validation/certification and mission-specific space flight worthiness assessment activities. Furthermore, this includes, but is not limited to, responses to written questions, discussion during related working group meetings, separate meetings, or limited on-site support as required.

The Contractor shall report configuration changes to the HIL and SIL, unless the Government Product Line Chief Engineer agrees it is unnecessary.

3.7 LOE: LEVEL OF EFFORT ACTIVITIES

3.7.1 LOE: Quick Reaction/Anomaly Resolution

The Contractor shall perform Quick Reaction and Anomaly Resolution IAW CLIN 0005, using appropriately balanced labor skill mixes.

3.8 MU: MISSION UNIQUE SERVICES

The Contractor shall provide all mission-specific/mission-unique hardware, software, and associated engineering design/analysis necessary to deliver a LV IAW the applicable Mission IRD (or the signed mission ICD). Mission-specific/mission-unique requirements include all SV-unique analysis as well as accommodations to the standard core vehicle, upper stage, PLF, or connecting hardware; and associated adapters necessary to meet these requirements. The Contractor shall perform Mission Unique Services IAW CLIN(s) 0002 or 0003.

The Contractor shall manage the design, development, qualification, testing, and integration of all mission-unique hardware, software, and GSE to meet mission requirements.

3.8.1 MU: Mission-Unique Hardware and Software

3.8.1.1 MU: Drawings, Test Plans & Test Reports

For mission-unique changes identified in paragraph 3.3.2.1, the Contractor shall prepare and submit drawings, test plans, and test reports to facilitate applicable USG Team member(s) insight of the mission-unique hardware or software changes. (CDRL A039) (IDE)

3.8.1.2 MU: Launch Complex Environmental Protection

At the launch complex, the Contractor shall provide environmental protection, to include weather, contamination, and RF mitigation IAW the mission ICD or the IRD.

The Contractor shall provide the SVC provisions to install and use "drag on" equipment at the launch complex for the PL (IPS) as specified in the mission ICD or the IRD.

3.8.1.3 MU: Mission-Unique Hardware Kit

The Contractor shall provide a mission-unique hardware kit as defined by mission requirements.

3.8.1.4 MU: LV Hardware Test Support

The Contractor shall provide mission-unique LV hardware on timelines necessary to meet all integrated testing requirements as outlined in Paragraphs 3.4.8 (Mission Interface Control Document Requirements Verification) and 3.4.11 (Launch Range Coordination).

The Contractor shall be responsible for transportation of all LV hardware in support of these tests as well as all associated storage of hardware after testing until it is required for launch processing.

3.8.1.5 MU LV Hardware Transport & Processing

The Contractor shall be responsible for transportation of all LV mission-unique hardware to the launch base in support of launch processing.

3.8.2 MU: Multi-Manifest Mission Requirements

3.8.2.1 MU: Multi-Manifest Mission IPS/APS Integration Services

The Contractor shall act as the Integrated Payload Stack (IPS) & Aft Payload System (APS) integration lead and perform the following IPS/APS-level services for USG sponsored multi-manifest missions IAW the requirements in the IRD and Mission ICD. A multi-manifest mission can be represented by a number of configurations which conform to the definitions herein of an IPS (Ref. examples in Fig. 3-1).

This section shall not confer authority on the Contractor for any commercial (i.e., "non-USG sponsored") rideshare. Details of the additional Mission Assurance process specifically related to multi-manifest missions are outlined in the TOR-2016-02946 Rideshare Mission Assurance (RMA) and the Do No Harm (DNH) Process

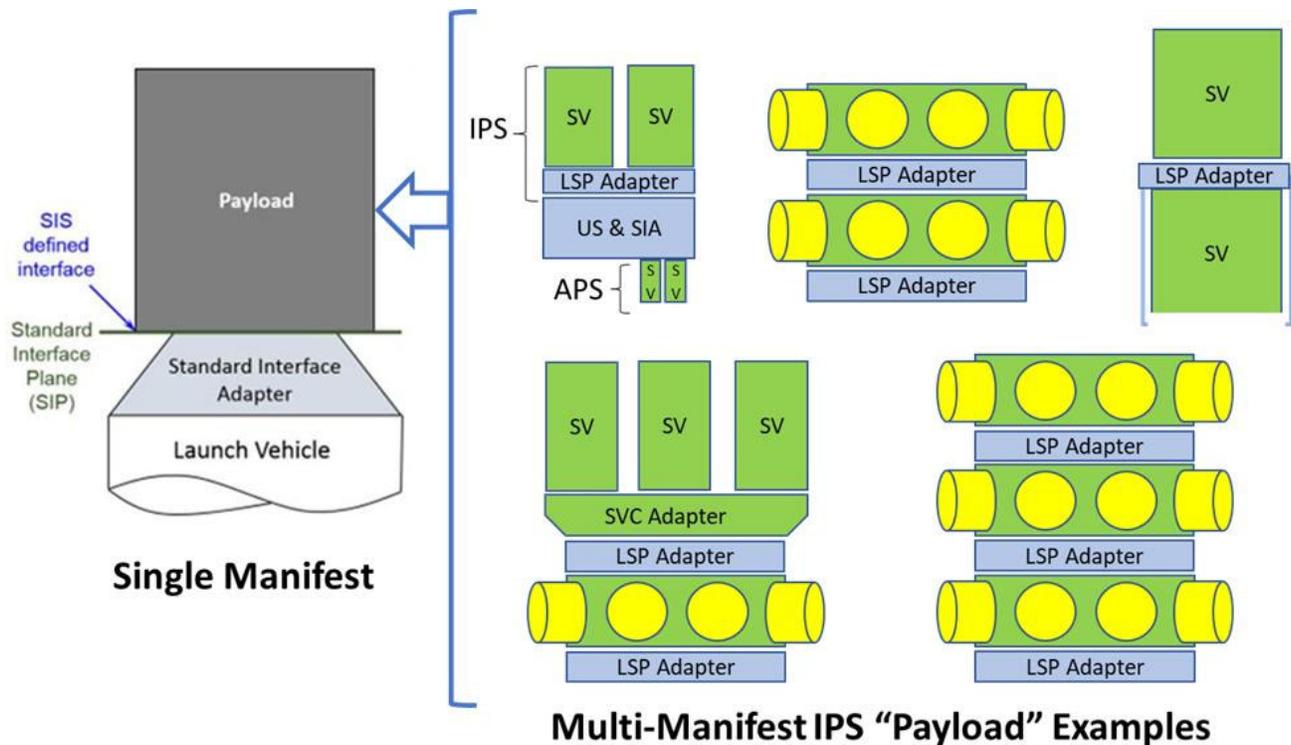


Figure 3-1: Notional Payload Manifests for SIS Defined Interface

3.8.2.1.1 MU: Single Principal Mission Manager Interface POC

For each multi-manifest mission IPS integration, the Contractor shall identify a single principal mission manager interface POC for the Integrated Flight System (IFS) provider(s).

3.8.2.1.2 MU: IPS/APS Working Group

3.8.2.1.2.1 MU: IPS/APS WG for Each Mission

For each multi-manifest mission, the Contractor shall lead an IPS/APS WG, subject to the requirements listed for working groups in Table 3-3.

3.8.2.1.2.2 MU: USG Participation in IPS/APS WG

The Contractor shall facilitate applicable USG Team member(s) participation in the IPS/APS WG on a monthly basis, for 2 hours per meeting, from L-24 months until launch.

3.8.2.1.3 MU: IPS/APS Design Reviews

The Contractor shall support up to two total IPS/APS Design Reviews.

3.8.2.1.4 MU: Routine Payload Access

In addition to any Contractor standard and/or mission specific PLF Access Doors (ref Para. 3.3.2.3), the Contractor shall provide two additional routine access doors IAW SIS (Appendix B, Section B.1).

To support Payload access, the Contractor shall provide (2) temporary GSE Doors (w/cable pass-thru provisions) and standardized Payload access GSE (for simultaneous access) accommodating the range of possible PLF Access Door positions to support Mission ICD or IRD designated locations.

The Contractor shall perform PLF Aerodynamic flow/backpressure analysis and include the results in the Contractor's Door Control Plan to address these additional PLF Access Doors.

3.8.2.1.5 MU: Dispersed Orbital Recontact Analysis

The Contractor shall perform a dispersed orbital recontact analysis to ensure no US CCAM or SV recontact occurs with or between separated SVs over 5 succeeding orbits.

This analysis shall assume no SV impulsive maneuvers have occurred post-separation and shall identify and resolve any close approach conditions that come within 5 km.

This analysis shall be performed as part of the Contractor's Preliminary Trajectory Analysis and updated during the Final Trajectory Analysis.

3.8.2.2 MU: Multi-Manifest IFS & APS Integration Services

The Contractor shall perform the following services and selected mission-specific/unique options for each IFS or APS based on the following configuration types IAW the requirements in the IRD and Mission ICD.

- A) Dual-manifested Aft-SV requiring Contractor PLA to support Fwd SV.
- B) Separable propulsive Multi-Manifest Carrier (MMC).
- C) Non-separable MMC with IFS-provided Payload Separation Sequencer.
- D) IFS w/up to 4 fwd.-facing separable SVs and a separable IFS-provided SV Adaptor.
- E) Cubesat Dispenser based Aft Payload System (APS).

3.8.2.2.1 MU: Support to Significant SV Milestone Meetings

The Contractor shall support up to three total other significant SV milestone meetings (e.g., Test Readiness Review, PSRR) for each Integrated Flight System.

3.8.2.2.2 MU: Mechanical and Electrical Accommodations

The Contractor shall provide the necessary mechanical and electrical IFS accommodations based on SIS-defined Payload interfaces IAW the requirements in the IRD and Mission ICD.

This shall include the Contractor-provided Adapters necessary to adequately space each IFS and provide for both SV and IFS stacking/mating access. The standard service shall include:

- a. separation ordnance services that support up to three separation events within the Integrated Payload Stack
- b. the existence of functionality within the Integrated Flight System that receives a signal from the LV
- c. executes a pre-planned sequence of events culminating in the dispensing of one or more multi-manifest spacecraft (MSVs)

- d. provides a positive indication to the LV that the pre-planned sequence of events has been completed

3.8.2.2.3 MU: Multi-Manifest IFS Harness routing and connectors

The Contractor shall provide the additional electrical harness length, routing, supporting bracketry/interface panel(s), and required flight quick-disconnect/fixed dis-connect connectors to secure the SV flight electrical harness(es) from the SVC-provided Connector termination point down to the SEIP.

This shall include required routing/bracketry to secure the SV harness(es) over any intermediate SV(s) within the IPS.

Additionally, the Contractor shall provide the SVC(s) with the required mating connector halves to facilitate SV harness mating terminations for the flight and ground harness interfaces.

3.8.2.2.4 MU: Routine Payload Access

In addition to any Contractor standard and/or mission specific PLF Access Doors (ref Para. 3.3.2.3), for each IFS added after the Primary IFS, the Contractor shall provide two additional routine access doors IAW SIS (Appendix B, Section B.1).

To support Payload access, the Contractor shall provide (2) temporary GSE Doors (w/cable pass-thru provisions) and standardized Payload access GSE (for simultaneous access) accommodating the range of possible PLF Access Door positions to support Mission ICD designated locations.

The Contractor shall perform PLF Aerodynamic flow/backpressure analysis and include the results in the Contractor's Door Control Plan to address these additional PLF Access Doors.

3.8.2.2.5 MU: Mission ICD

The Contractor shall generate and maintain a mission ICD(s) that correlates to IRD requirements. (CDRL A025, A026)

3.8.2.2.6 MU: Required Mission-Specific Analyses

The Contractor shall perform, document, and provide to the IFS provider(s) the mission-specific analyses outlined in Table 3-4. The specific completion dates for each analysis will be negotiated with the COR and LMSI and documented in the IMS and data exchange list as described in paragraph 3.4.2.3 (Mission Integration Management Operations Plan). (CDRL A023)

3.8.2.2.7 MU: Analyses in Support of TOR-2016-02946

The Contractor shall perform all mission analyses required to support TOR-2016-02946 Rideshare Mission Assurance (RMA) and the Do No Harm (DNH) Process including the development and execution of a mission unique DNH checklist.

3.8.2.2.8 MU: Launch Base Facility Compatibility Planning Support

The Contractor shall support IFS provider(s) planning to define launch base facility compatibility with planned mission support hardware movement, installation, and usage. (CDRL A023)

3.8.2.2.9 MU: Verification of LV Requirements in Mission ICD

3.8.2.2.9.1 MU: Verify LV ICD Requirements

The Contractor shall verify that the LV requirements documented in the mission ICD are met and facilitate IFS provider(s) participation in requirements verification.

3.8.2.2.9.2 MU: Verification Planning Matrix and Evidence Records

The Contractor shall provide a Verification Planning Matrix, and Verification Evidence Records (CDRLs A027 and A028).

3.8.2.2.9.3 MU: RMA and DNH as Part of Mission Verification

The Contractor shall apply TOR-2016-02946 Rideshare Mission Assurance (RMA) and the Do No Harm (DNH) Process as part of the mission verification process, including development and execution of a mission-unique DNH checklist (CDRLs A025, A027, and A028).

3.8.2.2.10 MU: Multi-Manifest IFS Flight Hardware Interface Checks

As an extension of Para. 3.4.9 herein, the Contractor shall perform tests to verify the compatibility of the physical/electrical interfaces, clearances, and electrical continuity between the LV and the additional multi-manifest IFS(s) to confirm compliance to mission ICD requirements.

The Contractor shall perform electrical and mechanical fit checks of the adapter harness to the electrical interface panel(s) for each IFS.

The Contractor shall typically accomplish the interface tests NLT L-12 months subject to the availability of facilities and SV hardware.

In the event of unavailability of facilities or SV hardware, the time phasing of this test shall be coordinated among the Contractor and applicable USG Team member(s).

3.8.2.2.11 MU: Multi-Manifest Mission IFS or APS Stacking, Mating, and Encapsulation

The Contractor shall stack and mate each Integrated Flight System (IFS) and associated interface hardware (now an IPS) onto the contractor-provided SIA and encapsulate it IAW PWS sections 3.4.12 and 3.5.3.

For an APS, the Contractor shall attach and integrate the APS onto the US prior to final preparations for mating to the LV.

This shall include development of the required PPF FRD requirements, providing the required Contractor-supplied Adaptors/SIA and GSE/flight fasteners, and development/performance of the integrated CONOPS per the requirements of the ICD(s).

3.8.2.3 MU: Multi-Manifest Adapter Hardware Requirements

This is a standalone set of options for the LSP acting as an LMSI to build up & integrate an MMC.

3.8.2.3.1 Procurement and Integration of an Aft End of Upper Stage Rideshare Adapter

The contractor shall utilize Section 3.8.2.3.1.1 for up to four 6U CubeSats and Section 3.8.2.3.1.2 for up to two 12U CubeSats.

3.8.2.3.1.1 MU: Ride Share Adapter - 6U Cube Sats

The Contractor shall provide and perform full SV integration of a ride share adapter for the aft end of the upper stage accommodating up to four 6U CubeSats IAW the RUG (Rideshare Users Guide (Section 5.1).

3.8.2.3.1.2 MU: Ride Share Adapter - 12U Cube Sats

The Contractor shall provide and perform full SV integration of a ride share adapter for the aft end of the upper stage accommodating up to two 12U CubeSats IAW the RUG (Rideshare Users Guide (Section 5.2).

3.8.2.3.2 MU: Procurement and Integration of Secondary Payload Adapter (ESPA)-Based Integrated Flight System (IFS)

The Contractor shall provide an ESPA to accommodate up to six Government-provided payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide Section 5.3).

The Contractor shall integrate up to six Government-provided payloads onto the ESPA-based IFS IAW the RUG (Rideshare Users Guide Section 5.3).

The Contractor shall provide the applicable Launch Site Integration and Support for an ESPA-based IFS to accommodate up to six payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide Section 4.5).

The Contractor shall provide Facilities and Processing for the integration of an ESPA-based IFS to accommodate up to six payloads with T-0 Umbilical Harness APLs IAW the RUG (Rideshare Users Guide Section 4.8).

3.8.2.3.3 MU: Procurement and Integration of ESPA Grande-Based Integrated Flight System (IFS)

The Contractor shall provide an ESPA Grande for up to four Government-provided payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide (Section 5.4).

The Contractor shall integrate up to four Government-provided payloads onto the ESPA Grande-based IFS IAW the RUG (Rideshare Users Guide Section 5.4).

The Contractor shall provide Launch Site Integration and Support for an ESPA Grande-based IFS for up to four payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide Section 4.5).

The Contractor shall provide Facilities and Processing for an ESPA Grande-based IFS for up to four payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide Section 4.8).

3.8.2.3.4 MU: Procurement and Integration of Propulsive ESPA-Based Integrated Flight System (IFS)

The Contractor shall provide a Propulsive ESPA for up to six Government-provided payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide (Section 5.4).

The Contractor shall integrate up to six Government-provided payloads onto the Propulsive ESPA-based IFS IAW the RUG (Rideshare Users Guide Section 5.4). This integration is for the extra integration requirements above those required for a standard ESPA integration. The Generic Platform Launch Vehicle Interface Requirements Document (PLVIRD) listed in Appendix D as a

Reference Document will describe the systems of the Propulsive ESPA to provide information required for the integration of this SV. This PLVIRD document is for a generic Propulsive ESPA. Actual Mission IRD's will have additional mission specific information per the actual mission specific requirements.

The Contractor shall provide Launch Site Integration and Support for a Propulsive ESPA-based IFS for up to six payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide Section 4.5).

The Contractor shall provide Facilities and Processing for a Propulsive ESPA-based IFS for up to six payloads with T-0 Umbilical Harness IAW the RUG (Rideshare Users Guide Section 4.8).

3.8.3 MU: Mission Design & Analysis Requirements

3.8.3.1 MU: Single SV and/or IFS CLA with Multi-Configuration Loads Analysis (MLA)

The Contractor shall perform expanded Final Design Load Cycle (FDLC) and Verification Load Cycle (VLC) CLA Analysis to include Multi-configuration Loads Analysis (MLA).

This expanded analysis shall address SVC-defined dynamic model variations for Single SV & IFS hardware and mission design decisions.

The analysis shall address the potential range of launch configurations of the IPS.

The MLA CLA shall be performed using SVC-supplied uncoupled SV & Adapter dynamic model elements (with coupling instructions) to represent the model variations required in the analyses.

For a Single SV MLA the CLA Model variations shall include:

- A. SV clocking alternatives
- B. Payload Instrument(s) alternate configurations include mechanical configuration/location, weight/CG, and stiffness properties
- C. SV shock/vibration attenuation solutions
- D. SV commodity and fueling options

For an MMC (including APS) MLA the CLA Model variations shall include:

- A. Alternate Port Adapter/Dispenser configurations
- B. Multi-Manifest SV (MSV) Port assignments (both between Ports and within a Port)
- C. Alternate weight/CG, and stiffness properties for each MSV
- D. SV shock/vibration attenuation solutions
- E. Potential MMC add-on elements including MU Options for In-Flight MSV Power System, Flight Sequencer (removal), and flight instrumentation

The Contractor's MLA CLA shall be used to develop an envelope of structural dynamic responses (including loads, accelerations, and clearances) for each SV and/or MMC MSV for flight hardware assessment across the range of potential configurations.

The FDLC and VLC variations will be incrementally reduced (configuration lockdown) leading to a post-VLC Govt capability for late-stage MMC swap-outs of Mass/Orbit and CLA compatible MSV(s).

3.8.3.2 MU: Additional Coupled Loads Analysis (CLA) Cycle

In addition to standard integration (FDLC & VLC) requirements, the Contractor will perform an additional CLA Loads Cycle analysis outlined below per the requirements of the IRD and the mission ICD. (CDRL A039)

3.8.3.2.1 MU: Additional CLA Loads Cycle without MLA

The Contractor shall perform an additional complete CLA Loads Cycle, consisting of the full range of cases, as a supplement to the FDLC and VLC Cycles. The additional CLA shall be performed without application of Multi-configuration Loads Analysis (MLA)

3.8.3.2.2 MU: Additional CLA Loads Cycle with MLA

The Contractor shall perform an additional complete CLA Loads Cycle, consisting of the full range of cases, as a supplement to the FDLC and VLC Cycles. The additional CLA shall be performed with application of Multi-configuration Loads Analysis (MLA).

3.8.3.2.3 MU: Guided 6-DOF Trajectory Analysis Update

In addition to standard integration analysis requirements The Contractor shall perform a Guided 6-Degree of Freedom (6-DOF) Trajectory Analysis cycle for the complete IPS IAW the requirements of the mission ICD. (CDRL A039)

3.8.4 MU: reserved

3.8.5 MU: Ground Processing Mechanical Requirements

3.8.5.1 MU: SV Instrument Component Purge Option

The Contractor shall provide a gaseous nitrogen instrument/component purge to the SV from encapsulation through liftoff.

The system shall include manual flow control regulation with the option of tying in SVC-supplied regulation control.

After EP mate to the LV, the Contractor's system shall include continuous monitor and alarming.

The GN2 supply at the SV purge connection shall have the following characteristics: dew point: -35 degrees F (max), cleanliness: Type 1, Grade B in accordance with MIL-PRF-27401, SVC-specified flow rate between 0–500 standard cubic feet per hour (scfh).

The total GN2 flowrate for all SV Instrument purge needs for an individual mission shall not exceed 500 scfh.

3.8.5.1.1 MU: SV Instrument Purge to a Single Manifest or Aft-mounted Multi-Manifest SV

The Single-Manifest SV purge installation shall route directly to the MRA or ICD designated connection point and shall include the necessary GN2 supply, regulating control, tubing, bracketry, and fixed and/or in-flight disconnect fittings.

3.8.5.1.2 MU: SV Instrument Purge to a Fwd-mounted Multi-Manifest SV

The fwd-mounted Multi-Manifest SV purge installation shall route past all SV(s) below the fwd-mounted SV up to the ICD designated connection point and shall include all necessary GN2 supply, regulating control, tubing, bracketry, and fixed and/or in-flight disconnect fittings.

3.8.5.2 MU: Additional Routine PLF Access Doors

The Contractor shall provide a scalable solution for the incremental addition of (1) or more routine PLF access doors (beyond those required in Para. 3.3.2.3 and Section 3.8.2 herein) IAW the SIS (Section 3.1.4). Contractor shall include use of a temporary GSE Doors (w/cable pass-thru provisions), and standardized Payload access GSE accommodating the range of possible PLF Access Door positions to support Mission ICD designated locations. The Contractor shall perform PLF Aerodynamic flow/backpressure analysis and include the results in the Contractor's Door Control Plan to address the additional PLF Access Doors.

3.8.6 MU: Airborne Electrical Requirements

3.8.6.1 MU: Augmented Ordnance Firing Circuits

The Contractor shall provide augmented ordnance support consisting of 8 EED firing circuits (4 Primary, 4 Redundant) IAW the SIS (Appendix A, paragraph A.1).

3.8.6.2 MU: Separation Break wire Support

The Contractor shall provide 12 additional shielded twisted pairs for detection of separation events IAW SIS (Appendix B, Section B.3.4).

3.8.6.3 MU: Video Coverage Option

The Contractor shall provide in-flight video of PLF jettison and PL separation IAW the SIS (Appendix A, paragraph A.3).

3.8.6.4 MU: Launch Vehicle to Payload Commands

The Contractor shall provide 8 redundant pairs of control commands (consisting of discrettes or switch closures as defined below) IAW SIS (Appendix A, paragraph A.9.1).

3.8.6.4.1 MU: Discrete Commands

The Contractor shall provide discrete commands with the characteristics identified in the SIS (Appendix A, paragraph A.9.1.1).

3.8.6.4.2 MU: Switch Closure Functions

The Contractor shall provide switch closure functions with the characteristics identified in the SIS (Appendix A, paragraph A.9.1.2).

3.8.6.5 MU: Serial Telemetry Interface

The LV shall accept from the PL/IFS, (two) 2 channels of differential RS-422 serial data IAW the Requirements of the SPRD, and the protocol identified in the SIS (Appendix A, paragraph A.9.2).

The Contractor shall conduct SV telemetry interleave/de-interleave data flow testing jointly with the SVC as part of the Integrated Launch System Tests per the requirements of the mission ICD.

3.8.7 MU: Ground Processing Electrical Requirements

3.8.7.1 MU: Ground Power

The Contractor shall provide, at the Space Vehicle Interface Panel (SVIP), 12 additional twisted wiring pairs IAW SIS (Appendix B, Section B.2.1).

3.8.7.2 MU: Ground Monitoring

The Contractor shall provide, at the SVIP, 60 additional shielded twisted pairs IAW SIS (Appendix B, Section B.2.2).

3.8.7.3 MU: Twin Axial Cabling

The Contractor shall provide at the SVIP 8 additional twin-axial cables IAW SIS (Appendix B, Section B.2.3).

3.8.7.4 MU: Battery Enable Relay Box Support

The Contractor shall provide a scalable solution for SV Battery Enable Relay Box (BERB, single or multiple) power, cabling, BERB/cabling positioning, and PLF GSE Access Door accommodations to support SV EGSE interface requirements during SV post-mate launch processing through final PLF Access Door closeouts.

The Contractor's design and launch processing support shall include the following:

- A. Power and grounding to the SVC provided BERB(s)
- B. Electrical cabling and mating connectors (both halves) from the SVC EGSE junction to the SV connection thru the PLF access Door.
- C. SV EGSE and BERB table(s)/support(s) to position the SV equipment for personnel access with agreed to proximity to SV and EGSE electrical connections.
- D. Personnel access to enable connection of BERB(s) to SV EGSE, Contractor J-Boxes, and the encapsulated SV BERB Cable connections.
- E. BERB cabling support(s) to ensure cabling is maintained away from personnel traffic (tripping hazards) with accompanying tie-down and strain relief to prevent cable damage.
- F. PLF GSE Door panels to accommodate BERB cabling support(s) and provide both contamination control and ECS flow closeout.

3.8.7.5 MU: Lightning Suppression Assemblies

The Contractor shall provide lightning suppression assemblies (LSAs) (typically in-line diode protection) on all Contractor provided SV EGSE to SV interface circuits (flight or ground) accessible from EA Mate through launch.

3.8.7.6 MU: PLF RF Attenuation Option

The Contractor shall perform RF radiation shielding IAW the SIS (Appendix A, paragraph A.7).

The Contractor's shielding solution shall address PLF envelope penetrations during ground processing including the operational use of flight/GSE PLF Access Doors/Panels and the connection of PLF ECS Duct(s).

3.8.7.7 MU: Radio Frequency (RF) Links during Ground Operations

The Contractor shall provide RF links IAW the SIS (Appendix A, paragraph A.4).

3.8.8 MU: Airborne Environment & Maneuvering Requirements

3.8.8.1 MU: Dipout Maneuver Option

The Contractor shall terminate US passive thermal control roll to perform dipout maneuvers IAW the SIS (Appendix A, paragraph A.5).

3.8.9 MU: Ground Processing Environment Requirements

3.8.9.1 MU: Supplemental Aft Payload Compartment Gas Conditioning Option

The Contractor shall perform supplemental aft payload compartment gas conditioning (up to 40% via secondary ECS supply ducting) IAW the SIS (Appendix A, paragraph A.10).

3.8.10 MU: Contamination Control Requirements

3.8.10.1 MU: Contamination Witness Plates

The Contractor shall provide two (2) each particle & non-volatile residue (NVR) contamination witness plates within the PLF envelope from the time of PL encapsulation through PLF access door close-out.

The two witness plates shall be collected for lab analysis and reporting just prior to final pre-launch closeout of the Payload Envelope.

3.8.10.2 MU: Enhanced LV Cleanliness using U/V inspection

The Contractor shall conduct UV inspections of all Launch Vehicle flight hardware with direct exposure to the flight-level cleaned SV (including PLF, SIA, and contractor-supplied Adaptors).

These inspections and any required re-cleaning/re-inspection shall complete before the start of SV stacking/mating operations at the PPF.

The UV inspections shall comply with visibly clean criteria defined as:

- A. Visibly clean from 0.15 to 0.4m (6 to 18in.) of distance from the surface being inspected of transferable particulate and non-volatile residue (NVR)
- B. Visible to the unaided eye (corrected to 20-20 vision) when illuminated with an ultraviolet light (wavelength within 3200 to 3800 Angstroms (320 to 380 nm) with a minimum intensity of 500 microwatts per square centimeter
- C. Light from other sources (background) should be low (nominally less than 5 ft.-candles)

The Contractor shall be responsible for all required access GSE, and the UV light source required to perform these inspections.

3.8.10.3 MU: SV Contamination contributions in Multi-Manifest Contamination Analysis

As an extension of the standard Contamination Analysis (LV contamination contributions to the SV/IFSs), the Contractor shall develop, and document predicted SV contamination levels for particulate and Non-Volatile Residue (NVR) in the IPS Contamination model based on

contributions from individual IPS sources (mission unique SV/IFS to SV contamination deposition).

This analysis shall include the timeline starting from SV encapsulation through post-SV separation Upper Stage collision avoidance sequences to support SVC compliance verification to the contamination requirements provided in the applicable Mission ICD(s).

3.8.11 MU: Pathfinder & Rehearsal Requirements

3.8.11.1 MU: Processing Pathfinder

The Contractor shall coordinate with the IFS provider and complete a mating/stacking and encapsulation pathfinder as a risk mitigation activity at NLT L-12 months. (CDRL A024)

3.8.11.1.1 MU: Virtual Processing Pathfinder

The Contractor shall obtain PPF-specific models, develop the 3D models of the LV flight hardware/GSE, integrate SVC-supplied 3D models of IFS flight hardware/GSE, and perform a virtual demonstration of the detailed processing and encapsulation process from the start of IFS stacking/mating operations to the point of transport to the Pad for EA mating.

Processing operations shall follow the procedural process outlined in the integrated CONOPS.

3.8.11.1.2 MU: Mechanical Processing Pathfinder

The Contractor shall coordinate with the IFS provider to perform a mechanical processing pathfinder in the mission-specified PPF following the procedural process outlined in the integrated CONOPS.

The pathfinder shall include use of Contractor provided LV flight hardware/GSE in conjunction with the SVC-supplied IFS Simulator/GSE.

The pathfinder shall demonstrate the detailed processing and encapsulation process from the start of IFS stacking/mating operations to the point of transport to the Pad for EA mating.

3.8.11.2 MU: Third Integrated Crew Exercise (ICE 3)

The Contractor shall lead a third ICE (ICE 3), subject to the requirements listed in paragraphs 3.4.7.4 through 3.4.7.7. The third ICE is typically tailored with focus on exercising/preparing the team in the areas which require additional training and may be a repeat of ICE 2.

3.8.11.3 MU: Additional Integrated Launch Systems Test

When an additional Integrated Launch Systems Test (IST) option is exercised by the U.S. government for schedule risk mitigation, the Contractor shall perform the IST IAW Section 3.5.3.14 with the inclusion of propellant loading operations.

The Contractor shall ensure that all test interfaces between launch vehicle ground systems, and all critical launch vehicle subsystems that would drive a launch delay if discovered DoL are functionally verified. Full functional verification and cryogenic conditions are not required so long as the launch delay risk has been mitigated by an adequate system level test.

The Contractor shall not conduct additional IST with the encapsulated assembly integrated on to the LV.

3.8.11.4 MU: Rehearsal Table-Top Exercise

The Contractor shall lead a Rehearsal Table-top Exercise to support the coordination of LV and SV launch and integration coordination activities with the USG Team for the mission if required. The scheduling of this exercise will be determined by mutual agreement between the USG Team and the Contractor.

3.8.12 MU: Launch Processing Requirements

3.8.12.1 MU: Payload Encapsulation Requirements

3.8.12.1.1 MU: LSP-Supplied Payload Encapsulation Bay (PEB)

The Contractor shall provide a Payload Encapsulation Bay (PEB) for LV hardware processing, SV mate to PAF, fairing encapsulation, preparation for transport, etc. IAW PWS sections 3.4.12 and 3.5.3. The duration for a PEB shall be no more than three weeks in support of the above LSP's activities from LV hardware arrival to EA (encapsulated assembly) transport to the launch pad.

3.8.13 MU: Classified Mission Requirements

3.8.13.1 MU: Launch Site Security Support for Classified Missions Option

For missions that include classified SVs, the Contractor shall provide additional security support for all integrated operations IAW the IRD and the Contractor's mission-unique security plan.

3.8.13.1.1 MU: Personnel Classification Levels

The Contractor shall ensure that it has sufficient personnel capable of being briefed to the IRD required classification level(s) (S/SAP, TS/SCI, or TS/SAP) to support integrated operations at the SV processing facility, encapsulation facility and launch site.

The Contractor shall complete these briefings prior to the start of integrated operations.

The Contractor shall retain sufficient security personnel capable of being briefed to the IRD required classification level to assist in entry control and alarm response for Contractor-controlled secured areas.

3.8.13.1.2 MU: Integrated Operations Security Plan

The Contractor shall lead development of a security plan that governs security CONOPS spanning from integrated operations through post-launch tasks. This plan includes accreditation and coordination of operations in facilities required for integrated operations.

3.8.13.1.3 MU: Ground Operations Working Groups

The Contractor shall provide general support to SV security planning meetings (e.g., Ground Operations Working Groups and security splinter meetings) to develop security CONOPS prior to the start of integrated operations.

3.8.13.1.4 MU: Physical Security Control of Stacking and Encapsulation Process

The Contractor shall provide physical security control of the stacking and encapsulation process, which could include accommodation of multiple classification levels (S/SAP, TS/SCI, or TS/SAP).

3.8.13.1.5 MU: Temporary Secured Areas

The Contractor shall provide areas at the launch site that can be accredited as temporary secured areas, which could include accommodation of multiple classification levels (S/SAP, TS/SCI, or TS/SAP), to house classified ground support equipment and/or to provide post-encapsulation access to the SVs.

3.8.13.1.6 MU: Physical Security for Area around Encapsulated Assembly

The Contractor shall provide physical security for the area around the encapsulated assembly throughout integrated operations in a manner approved by the Program Security team(s).

3.8.13.1.7 MU: Training and Badging for Access to Secured Areas

The Contractor shall provide required training and badging for access to secured areas the launch site for Government and SV provider(s) personnel.

3.8.13.1.8 MU: Classified Communications Support throughout Integrated Operations

The Contractor shall provide a POC to provide classified communications support in the form of issue resolution throughout integrated operations.

3.8.13.1.9 MU: Classified Communications Support on DoL

The Contractor shall provide classified communications support to troubleshoot issues on Day of Launch.

3.8.13.2 MU: Classified Mission Analysis

3.8.13.2.1 MU: Classified Computing System

The Contractor shall establish a classified computing system with software required to accomplish classified, integrated Launch Vehicle (LV) and Space Vehicle (SV) analyses at the S/SAP and TS/SAP levels.

3.8.13.2.2 MU: Classified Trajectory Analysis

The Contractor shall perform a classified trajectory analysis at the security level as specified in the IRD or required by program security.

3.8.13.2.3 MU: Classified Coupled Loads Analysis

The Contractor shall perform a classified coupled loads analysis at the security level as specified in the IRD or required by program security.

3.8.13.2.4 MU: Classified Thermal Analysis

The Contractor shall perform a classified thermal analysis at the security level as specified in the IRD or required by program security.

3.8.14 MU: Categorized Mission Options

3.8.14.1 MU: GPS Mission Unique Kit

For missions involving the GPS Space Vehicle, the contractor shall provide the following items and processes as a Mission Unique Kit. The final list of items and procedures will be listed in the

IRD for the mission. This list is solely for pricing and scope determination and may change as mission requirements mature.

The Contractor shall provide access to five Payload Fairing access points.

The five access points shall consist of: (3) for Contingency, if applicable (1) for Burst Detector Cover removal, (1) for the Battery Enable Relay Box). Only one temporary GSE Access Door will be required (for BERB cable-pass-thru) and only one access door may be open at a time.

The Contractor shall provide air-conditioning and security for the Electrical Ground Support Equipment room with Secret-COMSEC GSE.

The Contractor shall provide Re-radiating antenna system from encapsulation to liftoff with a 20 dB gain separation between aft and forward antennas.

3.8.14.2 MU: Category B Options

3.8.14.2.1 MU: Acoustic Environment (Molniya Category B) Option

The Contractor shall meet acoustic environment requirements IAW the SIS (Appendix A, paragraph A.12).

3.8.14.2.2 MU: Acoustic Environment (GEO 1 Category B) Option

The Contractor shall meet acoustic environment requirements IAW the SIS (Appendix A, paragraph A.13).

3.8.14.2.3 MU: Launch Vehicle-to-Payload Shock (GEO 1 Category B) Option

The Contractor shall meet LV-induced shock requirements IAW the SIS (Appendix A, paragraph A.14).

3.8.14.3 MU: Category C Options

3.8.14.3.1 MU: Category C Payload Fairing for non-Polar 2 or non-GEO 2 Reference Orbit Missions

The Contractor shall provide a Category C payload fairing IAW SIS paragraph 3.1.

3.8.14.3.2 MU: Category C Mission Payload Access Doors

The Contractor shall provide two additional routine access doors for Category C missions IAW the SIS (Appendix A, paragraph A.11).

3.8.14.3.3 MU: MSE Accommodations Option

The Contractor shall provide Mission Support Equipment (MSE) accommodations IAW the SIS (Appendix A, paragraph A.8).

3.9 EIS: EARLY INTEGRATION STUDIES (EIS)

The Contractor shall perform EISs for non-NRO missions IAW CLIN 4000 (Series).

The scope of EISs will vary depending upon the requirements of each mission and shall address either single or multi-manifest mission types as defined in the applicable Task Order. EISs may be

ordered as a combination of the EIS Coordination in Sec. 3.9.1 and a selection from any of the EIS Tasks listed in Section 3.9.2. (CDRL A047)

3.9.1 EIS: EIS Coordination

3.9.1.1 EIS: Support Planning

The LSP shall provide an early integration POC to the Government and the SVC (s).

The POC shall provide general mission integration planning and LSP launch site integration.

Per the applicable scope, the POC shall coordinate support to the SVC(s) to include, but not be limited to the following: developing mission schedule, design, systems engineering models, analyses, and interface tests; developing launch site integration including range requirements in support of the launch; developing the trajectory and mission design requirements; SVC planning of the integration and encapsulation of the SVs to the LV in preparation for transport to the Launch Complex; SVC planning for pad operations and definition of pad interfaces and processing for the launch vehicle; and requirements for communication between the launch site and the SVC mission control center.

3.9.1.2 EIS: Meetings and Reviews

These working group meetings will be used to define technical interfaces and resolve technical issues per EIS scope and discuss development and incorporation of systems engineering principles in SSC/AA and SV/LV interfaces.

These meetings may be conducted as teleconferences, will last approximately an hour, and will include action item status, minutes, and near-term study schedule status. These working group meetings will be used to define technical interfaces and resolve technical issues per the EIS scope and discuss development and incorporation of systems engineering principles in SSC/AA and SV/LV interfaces.

The Contractor shall provide advanced meeting notices and presentation materials to accommodate participation as required. Teleconferences may address any or all of the study projects, as defined by agendas agreed to in advance of meetings.

The LSP shall ensure that launch site personnel are available to assist on an as-needed basis.

The LSP shall schedule and host three study reviews at an LSP facility, to include:

- A. Study Kick-off Meeting NLT 15 business days after ATP
- B. Interim Review
- C. Study Wrap-up Review

The LSP, in coordination with the SVC(s), may schedule working-level TIMs on an as-needed basis for overall study status; and shall schedule focused discussions to define technical interfaces and resolve technical issues that require more time than allotted for twice a month meetings. These TIMs are in addition to the twice a month working group meetings.

Business management functions that provide sustaining support to the overall EIS are also included in this task.

3.9.2 EIS: EIS Tasks

The Contractor shall perform all EIS tasks listed in Section 3.9.1 along with a selection from the following pre-defined tasks to meet the needs of a mission-specific EIS as defined in the applicable EIS Task Order:

3.9.2.1 EIS: Trajectory and Mission Design Analysis

The Contractor shall develop a preliminary mission design trajectory IAW the SV IRDs and the need for either a 3 DOF and/or 6 DOF based analysis.

The Contractor shall define and document the required IPS and LV configuration based on mission requirements. (CDRL A047)

3.9.2.2 EIS: SV Configuration and Access Analysis

The Contractor shall perform a Configuration Analysis of the IPS configuration and associated SV/LV interfaces.

At a minimum, the analysis shall include for single and multi-manifest missions a general assessment of:

- A. SV mating/access provisions and any Adapters required in the stacking configuration.
- B. SV electrical harness routing and interface panel configurations/locations (standard SEIPs as well as Auxiliary or Secondary SEIPs) for both fixed and in-flight disconnect connectors.
- C. Any SV GN2 instrument purge requirements (ground and flight) including routing and interface panel accommodations for fixed and in-flight disconnect connections.
- D. Required PLF door sizes and locations for SV access requirements (include nominal & contingency access operations).

The Configuration analysis shall address clocking, loss of clearance, and clearance/interference between SV(s).

The Contractor shall document results of the analysis in a report/memo, which includes identification of SV(s) and LV configuration, clocking, and envelope interferences/stay-out zones.

The defined stacking configuration shall be used as the basis for performing the required EIS analyses including selected Access, Trajectory, and Coupled Loads Analyses identified in the EIS task list.

The Contractor shall perform and document Access Analyses within a report/memo to provide an assessment of nominal and contingency SV access requirements during both Payload Processing/Encapsulation of the SV(s) and after Encapsulated Payload (EP) mate to the LV.

The Access Analysis shall determine the configuration of GSE necessary to fulfill those requirements. (CDRL A047)

3.9.2.3 EIS: Mission Specific/Mission Unique Requirements Assessment

The Contractor shall perform and document a Mission Specific/Mission Unique requirements assessment of the SV(s) stacking/mating configuration, SV/LV interfaces, and SV processing/in-flight requirements.

The analysis shall segregate and provide early identification of Mission Specific and Mission Unique requirements and include at a minimum, an assessment of the need for:

- A. SV Adapters & Spacers
- B. SV Umbilical/Flight Electrical Interfaces, Panels, and Connections
- C. In-flight Power requirements
- D. SV Instrument Purges (GN2 or other)
- E. PLF Access Doors
- F. MU SV EGSE interfaces/routing and access including use of Battery Electric Relay Boxes (BERBs)

The Contractor shall document the results of this assessment in a Mission-Specific & Mission-Unique Requirements Memo for the mission.

Note: This Task would not be performed if the Draft ICD Task below is planned as part of the Mission EIS.

3.9.2.4 EIS: Draft Interface Control Document (ICD)

The Contractor shall develop a draft LV-to-PL ICD for the mission to establish the compatibility of the LV with the PL.

This effort includes the preliminary assessments needed to support mission integration activities and identification of mission specific and unique requirements.

The Contractor shall also propose alternate requirements as appropriate to meet the mission requirements.

A compatibility assessment of mission documentation will include identification and evaluation of requirements out of scope to the standard NSSL launch service and LV capability as well as technical and programmatic concerns, areas for improvement, and recommendations for modifications to ensure clear, consistent understanding of PL requirements.

For those mission-specific items outside the LV capability, the Contractor shall identify a plan for satisfying these requirements or develop a plan for further analysis or study.

The Contractor shall consider mechanical interfaces, electrical interfaces, mission design, launch environments (including EMI/EMC, shock, acoustics, random vibration, thermal, contamination, and ECS flow fields).

The Contractor shall write a draft LV-to-PL ICD by addressing areas appropriate to the above compatibility analyses as well as other CDRLs on this study to establish the preliminary compatibility of the Launch Vehicle with the PL. (CDRL A025)

3.9.2.5 Coupled-Loads Analysis (CLA)

3.9.2.5.1 EIS: Single-Manifest CLA

The Contractor shall coordinate with the SVC to perform a preliminary CLA, also known as a Preliminary Design Loads Cycle (PDLC).

The Contractor shall perform the PDLC using the SVC-supplied SV dynamic models and the Contractor-generated LV dynamic models, including any Contractor-provided hardware (e.g., spacers/adapters).

The Contractor shall provide support to the SVC to identify mitigation steps and answer questions related to the PDLC. (CDRL A047)

3.9.2.5.2 EIS: Multi-Manifest CLA

The Contractor shall perform an expanded PDLC CLA using Multi-configuration Loads Analysis (MLA) to address SVC-defined dynamic model variations for Single SV & Multi-Manifest mission design decisions.

The analysis shall address the potential range of launch configurations of the single or stacked IFS(s) that comprise the IPS as identified in the SVC-supplied instructions. The MLA CLA shall be performed using SVC-supplied uncoupled model elements (with SV clocking/coupling and variation instructions) representing the model variations required in the analyses.

For a Single SV MLA the CLA Model variations shall include:

- A. SV clocking alternatives
- B. Payload Instrument(s) alternate configurations include mechanical configuration/location, weight/CG, and stiffness properties
- C. SV commodity and fueling options

For an MMC (including APS) MLA the CLA Model variations shall include:

- A. Assessment of different MMC & APS configurations
- B. Alternate Port Adapter/Dispenser configurations
- C. Multi-Manifest SV (MSV) Port assignments (both between Ports and within a Port)
- D. Alternate weight/CG, and stiffness properties for each MSV
- E. Potential MMC add-on elements including MU Options for In-Flight MSV Power System, Flight Sequencer (removal), and flight instrumentation

The Contractor's MLA CLA shall be used to develop an envelope of structural dynamic responses (including loads, accelerations, and clearances) for each SV and/or MMC MSV for flight hardware assessment across the range of potential configurations. Additionally, the alternate MSV configurations for the MMC(s) shall be used to enable the Govt's flexibility in manifesting decisions. (CDRL A047)

3.9.2.6 EIS: Launch Site CONOPS & Security

In coordination with the SVC(s), the Contractor shall define their ground operations CONOPS for processing the PL at the launch site.

The ground operations CONOPS shall cover the timeline from stacking/encapsulation operations at the appropriate processing facility through launch.

The Contractor shall define their CONOPS for PL integration IAW the SPRD, SIS, and IRD.

The Contractor shall coordinate with the SVC(s) to develop a CONOPS that includes a recommended processing timeline.

The CONOPS shall consist of an integrated schedule and a detailed description of the processing flow, to include equipment staging in the processing facility, PL mate to Payload Attachment Fitting (PAF) and/or Multi-Launch Adaptor(s), PLF encapsulation, transport to the launch pad, PL equipment staging, access once PL is mated to the LV, and SVC(s) access at the launch pad.

The Contractor shall factor mission unique requirements including SVC Security considerations, cleanliness control, and SV Instrument Purges (pre/post encapsulation) into the CONOPS. (CDRL A010)

3.9.2.7 EIS: Integrated Thermal Analysis (ITA)

The Contractor shall perform an ITA for the LV and PL.

The Contractor shall perform the ITA for both pre-flight and in-flight conditions, using the latest models and environments definitions.

The Contractor shall use SVC-provided geometric and thermal models of the PL and/or IPS, combined with Contractor-generated geometric and thermal models of the LV, PLF, and PLA/Adapters, to determine bounding predicted temperatures for the mission. (CDRL A047)

3.9.2.8 EIS: Acoustic Analysis

The Contractor shall perform analysis of the acoustic environment of the PLF compartment(s), including the effects of any acoustic suppression and noise reduction provided by ground systems and/or the PLF/PAF flight hardware.

This analysis shall be based on Contractor developed and SVC-provided payload envelope and payload fill factors. Verification may include flight measurements and ground testing of representative PLF configurations. (CDRL A047)

3.9.2.9 EIS: Electro Magnetic Interference (EMI) Analysis/Electro Magnetic Compatibility (EMC) Analysis

The Contractor shall perform analysis to verify LV and PL transmitter and receiver frequency compatibility. (CDRL A047)

3.9.2.10 EIS: Contamination Analysis

The Contractor shall perform an analysis of SV contamination from LV sources from encapsulation through post SV separation collision avoidance sequences, to verify they can meet the contamination requirements provided in the SV IRD(s).

The Contractor shall take into consideration the contamination sensitivity of the PL in performing assessments of their ground processing flow. (CDRL A047)

3.9.2.11 EIS: Vibration/Shock Analysis

The Contractor shall perform a mission-specific vibration and shock analysis and show compatibility with the documented requirements in the SV IRD(s).

If the Contractor cannot meet the shock or random vibration requirements, the Contractor shall develop and provide plans for the attenuation and reduction of those non-compliances. (CDRL A047)

3.9.2.12 EIS: Program Security Assessment

The Contractor shall develop and present a review of their facilities, equipment, processes, and personnel readiness to receive program information/documentation and electronic models that may be classified up to TS/SCI to support mission execution. The presentation material will cover the LSP's plan for performing mission integration in compliance with the Government's program security requirements. (CDRL A047)

3.10 OTHER SPECIAL STUDIES

Contractor shall perform all work necessary to complete special studies to include studies that support Government Reviews and Mission Assurance Activities. Examples of special study activities include but are not limited to capability studies, and mission design changes on NSS missions. (CDRL A045)

Task Orders shall be used to execute such special study activities on CLIN 0006. The scope of special studies will vary depending upon NSS requirements. (CDRL A046)

DRAFT

A APPENDIX: GLOSSARY OF TERMS

This glossary defines terms used in this PWS or that may be used in support of this contract.

ACADEMICS: Academics sessions are presented to the entire integrated launch team participating in the exercise prior to each rehearsal to provide the rehearsal participants information on mission-specific requirements including, but not limited to, required and mandatory telemetry assets, lightning requirements, and video requirements. Academics also provide rehearsal specific information such as initial conditions and 24-hour Collision Avoidance for the respective rehearsal. Academics sessions nominally contain the following elements:

1. Introduction
2. Lessons Learned (if applicable)
3. Entry and Exit Criteria
4. Rehearsal Overview
5. Countdown Summary
6. Launch Vehicle (LV) Overview
7. Payload (PL) (IPS) Overview
8. Range Operations Overview
9. NOPS Overview
10. Integrated Processes
11. Rehearsal Weather
12. Initial Conditions

ACCEPTANCE: The process by which as-built hardware and software are evaluated against requirements for compliance with specification and acceptability for shipment and subsequent processing.

ACCEPTANCE DATA PACKAGE (ADP): Documentation provided by the supplier at the time of delivery of a critical component. ADP contain varying degrees of data (mentioned in the Pedigree Review definition), but typically do not include the build paper. The data is used by the Engineer to make the flight worthiness assessment of components. Documentation delivered in the Contractor s format is acceptable.

AFT END OF THE UPPER STAGE ADAPTER: An adapter mated to the NSSL Launch Vehicle Upper Stage below the Standard Interface Plane, which interfaces to APL(s). Synonymous with Aft Multi-Payload Carrier (AMPC).

AFT MULTI-PAYLOAD STACK (APS): The APS consists of all SV(s) and associated hardware (e.g., dispensers, adapters, separation system(s) sequencers including firmware and software, and other airborne support equipment) that are below the Standard Interface Plane (SIP) on the AMPC mated to the NSSL Launch Vehicle Upper Stage.

ALERT: An alert (such as a Government-Industry Data Exchange Program or equivalent notification) is a government and industry mechanism to share information on problem components or parts.

AMPC PAYLOAD DISPENSER (APD): Dispenser hardware used to adapt the ASV(s) to the AMPC and deploy ASV(s).

AMPC PAYLOAD (APL): The ASV(s) with associated APD(s) and interface hardware.

AMPC SPACE VEHICLE (ASV): The system that separates from the APD, delivered to the defined orbit around the earth.

ANOMALY: An observation that does not meet the criteria of a mishap and includes one or more of the following: it was not predicted, it cannot be explained, root cause is not understood, or it contributes to an elevated mission risk. Additionally, an observation that is a contributing factor to a mission anomaly or mission failure shall be classified as an anomaly.

ANOMALY RESOLUTION: Activities taken to identify reasons for LV performance deviations from expected baselines.

BIWEEKLY: Occurring once every two weeks.

COMMAND MEDIA: The collection of internal policies, procedures, and directives created by the Contractor that specify how the Contractor implements customer and industry standards, company business philosophy, and management goals pertaining to LV production, mission integration, mission assurance, launch operations, and business operations.

COMPLY: to meet the specific standard or requirement, as determined by as determined by the cognizant USG personnel in the PWS (e.g., Product Line Chief Engineer, GMIM, COR).

CONTRACTING OFFICER'S REPRESENTATIVE (COR): an individual designated in accordance with DFARS subsection 201.602-2 and authorized by the contracting officer to perform specific technical or administrative functions.

CONFIDENCE FACTOR (CF): A structured, repeatable and sustained process by which the Government assesses its confidence in Contractor processes in order to determine, and adjust as appropriate, the level and depth of Government mission assurance effort necessary to support space flight worthiness certification.

COST DATA: information associated with the programmatic elements of life cycle (concept, development, production, operations, and retirement) of the system/program. As defined, cost data differs from "financial" data, which is defined as information associated with the internal workings of a company or contractor that is not specific to a project or program.

CRITICAL GROUND SUPPORT EQUIPMENT (GSE): Critical GSE is GSE whose loss of function or improper performance could result in serious injury, damage to flight hardware, loss of mission, or major damage to a significant ground asset.

CROSSOVER: A piece of hardware or software at which a crossing is made with other LV configurations or launches. For example, a flight computer flown on one LV configuration is similar or identical to a flight computer flown on another LV configuration OR a software code used on a LV configuration for a launch is similar or identical to software code used on another mission with the same LV configuration.

CURRENT LAUNCH SCHEDULE REVIEW BOARD (CLSRB): A semi-annual forum chaired by HQ USSF and attended by senior officers, PMs, and commercial representatives from the launch community. The purpose of the CLSRB is to review resource, satellite, and launch assessments; prioritize launches; and approve the Current Launch Schedule.

DAY OF LAUNCH (DoL): Time period associated with execution to the launch countdown procedure. DoL may involve more than 1 calendar day.

DAY OF LAUNCH WORKING GROUP (DOLWG) MEETINGS: The objective of the DOLWG is to provide participants an overview of the established LV DoL processes and review the PL (IPS) operations plan with a focus on finalizing integrated interfaces and inputs and resolving potential conflicts or technical issues between the LV and PL (IPS) processes. Specific attention is placed on understanding recycle requirements, anomaly resolution, polling, and T-0 coordination. The DOLWG will address and resolve all Concept of Operations (CONOPS) or process issues identified in the Integrated Crew Exercises (ICE) and provide an opportunity for additional process familiarization to the team.

DIRECTORATE: The organization responsible for the acquisition and management of the respective space system.

DIGITAL ARTIFACT: Digital media produced to provide data for alternative views to visualize, communicate, and deliver data, information, and knowledge to stakeholders.

DISCREPANCIES: Discrepancies are functional failures or hardware or software anomalies that may affect mission performance or mission schedule.

DISCRETE ACTIVITIES: Those activities for which the Contractor attributes costs on an individual mission basis.

DRAFT LV/SV INTERFACE CONTROL DOCUMENT (ICD): Establish the compatibility of the Launch Vehicle with the SVs. This effort includes the preliminary analyses needed to support mission integration activities and identification of mission specific and unique requirements.

ELECTRONIC PEDIGREE REVIEW: A pedigree review held remotely in which all pedigree data is provided in electronic format through a Contractor-provided terminal or other means of data access.

ELEVATED FLIGHT RISK: Low-Medium flight risk or above

ENCAPSULATED ASSEMBLY (EA): The physical configuration comprised of the payload(s) (PL) (IPS) enclosed by the payload fairing (PLF) (including required flight adapters [e.g., payload adapter PLA] and GSE).

ENGRAINED MISSION ASSURANCE (EMA): A standalone approach in support of the transformation of USG Mission Assurance (MA) which aims to develop and implement structured and sustainable processes for assessing NSSL Program confidence in Launch Service Provider (LSP) processes, identify actions that can be taken by the LSP to improve NSSL confidence and work collaboratively with LSPs to develop and implement Gap Closure Actions to enable reduction of NSSL MA Depth of Effort where warranted while maintaining 100% mission success.

ESCAPEMENT: A nonconforming product identified in a work center that follows the work center responsible for verifying the requirement of the nonconforming condition.

FAILURE REVIEW BOARD: A board of Contractor representatives that is necessary to identify causes of test/operational failures and implement corrective actions.

FLEET SURVEILLANCE: The surveillance of non-NSS launch services across the provider's entire manifest. Fleet surveillance is essential to the Space Flight Worthiness Certification process, which requires identification of hazards, assessments of flight risks, handling measures, and acceptance of residual flight risks. USG Team analysis of fleet surveillance data is not a constraint to non-NSS

launches. The USG Team will inform the LSP and appropriate USG organizations if analysis of fleet surveillance data indicates a flight risk for any future launch.

FLIGHT-CRITICAL ITEM: A flight-critical item (hardware or software) is an item that has been determined through a systematic analysis process (e.g., Failure Modes and Effects Criticality Analysis, Fault Tree Analysis, Probabilistic Risk Assessment) whose failure can affect the system operations sufficiently to cause or a partial loss of the mission, or a hardware or software item whose performance is essential from both a range safety and SPO mission assurance standpoint.

FLIGHT READINESS REVIEW (FRR): The FRR evaluates the space flight worthiness and readiness of the entire mission, including flight hardware and software, facilities, personnel, and training. It also notes the readiness of launch and support facilities (ground systems), range and orbital operations. The review includes a safety, suitability, and effectiveness verification of the integrated system. Space Systems Command (SSC)/Engineering Directorate shall organize the FRR in coordination with the Government Mission Director (GMD) or LV PM. The GMD shall present the review to the SSC Commander (SSC/CC) or designated representative. The briefing will provide the SSC/CC with hardware and software mission status for the LV, the spacecraft, ground systems, ground processing, launch and orbit operations, PL (IPS) ground station, and associated interfaces. The review will take place after final integration of spacecraft to LV as close to launch as possible, typically 7-14 CDs prior to launch. At completion of the FRR, the SSC/CC will assess and may certify space flight worthiness of the integrated system for all missions under this contract. For USSF-managed spacecraft and LV in support of non-USSF customers, the SSC/CC will be responsible for certifying only the USSF-acquired mission-critical elements. The FRR may be tailored to meet the requirements of specific missions. An FRR is done only when the USSF is responsible for the LV or PL (IPS) on a mission.

FLIGHT RISK: Potential future event or condition that may lead to loss of mission.

GAP CLOSURE ACTION (GCA): An action item identified by the Government through Confidence Factor assessment whose successful completion will increase Government confidence in a Contractor process, and thus allow reduction in associated mission assurance effort.

GMD STATUS REVIEW: A review of flight risks and technical issues, launch system status, launch operations schedule, SVC and LSP Interface Control Document (ICD) verification status, range status, and PL (IPS) status.

GROUND OPERATIONS WORKING GROUP A Government and Contractor group organized to coordinate launch site operations requirements for the missions to include payload pathfinders, hardware fit checks, launch site processing and integration, and day of launch. Typically held quarterly.

GROUND SUPPORT EQUIPMENT (GSE): Ground Support Equipment consists of, but is not limited to, fixed, portable, or mobile equipment, components, and systems that are necessary for the processing, operations, testing, transporting, facilities, refurbishment activities and proper launch and safing of flight hardware (PL (IPS) or Booster). These support equipment, components, or systems are typically, but not limited to, locations at, or in close proximity to, flight hardware, the launch systems, launch pad, facilities, or infrastructure that support mission operations.

HARDWARE ACCEPTANCE REVIEW (HAR): Review conducted by the prime Contractor, with appropriate USG Team representative attendance, to ensure the quality and reliability of the hardware before integrating units or other configuration items into subsystems or systems at the prime Contractor, major subcontractor, or other facility.

HOLD: A command issued over channel 1 of the command network, signaling the need to stop the Launch Countdown.

HOTWASH: A Hotwash is held as soon as practical following each exercise. The Hotwash is typically conducted in person for Integrated Crew Exercise (ICE) #1 and ICE #2, and over the communications net for Mission Dress Rehearsal (MDR). During the Hotwash, LV Systems Integration Manager (SIM) will lead the review of the rehearsal and introduce each planned and unplanned anomaly, if applicable, and further discuss the anomaly description, expected reaction, and actual reactions of the team. Following anomaly discussions, the SSC/AA SIM will provide an assessment summary of the integrated launch team to the GMD based on the integrated team's achievement of the rehearsal objectives. The GMD will then make the final determinations that the exit criteria (Appendix F) have been met and of team readiness to proceed to the next milestone, be it the next rehearsal or launch. Following ICE #2 Hotwash, the GMD will determine if the team requires additional training or rehearsal activities.

INCIDENT: An unplanned event that causes (or may cause) significant interruption to scheduled manufacturing and launch operations or degraded product/service quality. This includes near-miss events that could result in high-severity discrepancies or personal injuries.

INDEPENDENT GOVERNMENT MISSION ASSURANCE: Independent Mission Assurance is the SSC/AA technical and management process that is rigorously, continuously, and iteratively employed over the life cycle of a Launch System (mission conception to upper stage disposal) to maximize mission success. Independent Mission Assurance assesses the launch Contractor's system engineering, development, qualification, flight risk and technical issue management, quality assurance, and program management to increase confidence that the mission will be successful.

INSERTION INTO THE PRESCRIBED ORBIT: This term is defined as the orbital location of the PL (IPS) at the time of the PL's (IPS) separation from the LV, within the altitude, velocity, inclination, and the appropriate approved mission ICD.

INSIGHT: Unescorted participation in activities and access that allow the USG Team to observe the Contractor's progress towards meeting the PWS requirements to include all associated data related to the program.

INTEGRATED CREW EXERCISE (ICE): A rehearsal designed to familiarize the PL (IPS) and LV team with the countdown procedures, anomaly resolution processes, and how their operations will be integrated into the LV countdown. The ICE also includes a rehearsal familiarization 1-calendar day prior to the rehearsal and Hotwash.

A. ICE #1 is typically a PL (IPS) -centric rehearsal used to introduce the PL (IPS) Team with the Launch Countdown Process, timelines, launch decision flow, and anomaly resolution. It typically includes demonstration and verification of the following:

1. Delivery of timely and accurate status to and from the PL (IPS) Team;
2. Execution of the Integrated Anomaly Resolution and Hold/Recycle/Scrub processes;
3. Timely launch decision flow and polling;
4. Identification of shortfalls and improvements in the proposed CONOPS;
5. Familiarization with the voice communication network.

B. ICE #2 is an all-inclusive PL (IPS)/LV rehearsal intended to prepare integrated Government and PL (IPS) teams for DoL CONOPS execution. It typically includes demonstration and verification of the following:

1. Delivery of timely and accurate status to and from the Integrated Government and PL (IPS) Teams;
2. Execution of the Integrated Anomaly Resolution (LV stand-alone, Integrated, and PL [IPS] only) and Hold/Recycle/Scrub processes;
3. Timely launch decision flow and polling;
4. Familiarization with PL(IPS), LV, and Range launch criteria;
5. Exchange of flight performance status and information after LV liftoff.

INTEGRATED DATA ENVIRONMENT (IDE): A data storage and information management system run by the Contractor on its own servers. The purpose of the IDE is to create an environment of connected knowledge workers, in which the USG Team's approach to performing work involves instantaneously accessing data (including work-in-process data) required to accomplish necessary tasks and then outputting the results into an instantaneously accessible form. The IDE consists of three parts: (1) the environment consisting of a web-based platform, (2) the data residing within that environment, and (3) the licenses the Contractor will grant to the USG to the environment as well as to the data that will reside within that environment.

INTEGRATED FLIGHT SYSTEM (IFS) The IFS consists of a Multi Manifest Carrier (MMC), Multi-Manifest Satellite Vehicles (MSVs), and associated interface hardware (e.g., dispenser(s), adapter(s), separation system(s), and airborne support equipment) that are delivered by the LMSI or SVC to the LSP for mating/stacking as part of the IPS.

INTEGRATED MULTI-MANIFEST CARRIER (IMMC) The IMMC is the end-item, also referred to as an IFS, consisting of a Multi-manifest Adapter with integrated Multi-manifest Space Vehicles/Dispensers as delivered to the LSP. The IMMC is subsequently attached to the Upper Stage (Aft Payload Stack) or Payload Adapter (Integrated Payload Stack) for subsequent encapsulation within the Interstage or Payload Fairing respectively.

INTEGRATED OPERATIONS: At a minimum, integrated operations planning will address installation of LSP staging of equipment at the PPF, PL (IPS) GSE at the launch pad, combined LV/PL (IPS) operations at the PPF, PLF encapsulation at the PPF, transport of the encapsulated PL (IPS) from the PPF to launch complex, mate of the encapsulated PL (IPS) to the LV, PL(IPS)/LV interface verification testing, PL (IPS) access provisions at the launch pad, and DoL operations. Integrated Operations start when PL (IPS) and LV hardware are being actively transported in a common work area such as the Payload Processing Facility (PPF) through launch.

INTEGRATED PAYLOAD STACK (IPS): An IPS consists of an integrated system with potentially multiple payloads or multiple SVs that is provided to the LV for integration as the complete payload entity with a single IRD. Where encountered throughout the document, the term "IPS," including all supporting language, is used as general reference only. The term does not constitute any additional scope unless specifically called out under Mission Unique Services (reference PWS section 3.8).

INTEGRATED PAYLOAD STACK WORKING GROUP (IPSWG): A Government and Contractor group organized to coordinate launch site operations requirements for the IPS to include payload pathfinders, hardware fit checks, launch site processing and integration, and day of launch operations.

INTEGRATED SYSTEMS TEST (IST): Test(s) on all interfaces between launch vehicle and ground systems, and all critical launch vehicle mechanical/propulsion subsystems to verify functionality. Shall include integrated mechanical/propulsion launch system testing with the IPS/APS integrated on to the LV. The integrated system test(s) shall ensure all flight software and avionics systems that are critical for launch are functionally verified. The flight software and avionics systems testing can be conducted with the IPS/APS integrated to the LV. Multiple subsystem tests are not acceptable to meet the requirements of the integrated launch system tests. The USG will provide concurrence that no re-testing is required.

ISSUE: A deviation or suspected deviation from the qualified Launch System baseline.

LAUNCH DATE: The calendar date within the Launch Slot during which the Launch is scheduled to occur.

LAUNCH INFRASTRUCTURE: The launch site(s), launch pad(s), and launch support facilities/equipment.

LAUNCH MISHAP: A launch mishap is a significant unplanned event, such as unintentional death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment, occurring after ignition.

LAUNCH OPPORTUNITY: A time period (non-zero) during which the Contractor may provide a Launch Service (including Launch Period, Launch Slot, and Launch Date).

LAUNCH PAD: A Launch Pad is defined as the on-site infrastructure contained within a Space Launch Complex required in launching a LV of a proposed configuration.

LAUNCH PERIOD: A period of 90 CDs during which the Launch is scheduled to occur.

LAUNCH READINESS REVIEW (LRR): The LRR provides the forum for final assessment of all launch system preparations and each customer's individual certifications (SSC/AA and SV Directorate) of launch readiness. The purpose of the LRR is to ensure that PL (IPS) system(s), LV systems, facilities and GSE, and all supporting organizations are ready and committed to support the final launch preparations, countdown, and launch. The Contractor conducts an LRR at the launch site to provide a final pre-launch assessment of the integrated PL (IPS) and LV system and launch facility readiness. Representatives from each key organization present a summary of their preparations and rationale for their readiness to proceed with the final launch preparations and countdown. The meeting concludes with a poll of each organization to express their readiness and commitment to launch.

LAUNCH SCHEDULE: A set of dates that include a Launch Period, Launch Slot, and Launch Date for a particular Launch Service.

LAUNCH SCHEDULE OPTIONS ASSESSMENTS: Analysis of alternatives to accommodate changes to the LV and associated spacecraft, mission schedule, and operational requirements. The analysis evaluates all launch constraints, including the following: launch throughput, LV readiness, PL (IPS) ILC, launch pad availability, ground equipment availability, all liens, resolution date, and applicable funding constraints.

LAUNCH SERVICE: The total effort required to deliver PL (IPS) to the prescribed orbit IAW the IRD, mission ICD, and target specification requirements. The launch service includes program management, systems engineering, LV production, mission integration, launch operations, independent Government mission assurance support, base and range support, and mission commodities.

LAUNCH SERVICE SUPPORT (LSS): Non-discrete, NSS-driven tasks. Tasks necessary to support a sustained NSS readiness posture.

LAUNCH SLOT: A launch slot is a 30-calendar-day window, with associated launch pad location assignment, given to a mission and integrated LV configuration for when the Launch is scheduled to occur. This is assigned in conjunction with HQ USSF's CLSRB.

LAUNCH SUPPORT CENTERS: USG Team operations facilities where they execute their operational roles during LV processing events and DoL.

LAUNCH SYSTEM: A Launch System includes the LV, launch pad, GSE, infrastructure, and commodities required to launch a LV. Launch System refers only to the family or families of systems intended for use on this contract.

LAUNCH SYSTEM DATA: Fleet-wide data, including historical data, used, and generated in the development, design, analysis, fabrication, qualification, acceptance, integration, and flight of LV and ground support hardware and software.

LAUNCH VEHICLE: An LV is the core vehicle, upper stage, additional solid or liquid boost rocket motors as required for a specific mission, PLF, associated interstage adapters, fittings, and ship loose items. This term does not include the PL (IPS).

MAJOR MAINTENANCE: Maintenance, which, if not accomplished, will impact launch infrastructure, launch capability, processing, or schedule, including upgrades and modifications to launch infrastructure.

MAJOR NON-CONFORMANCE: A non-conformance that (a) has adverse impacts on performance, reliability, effective use or operation, maintainability, interchangeability, safety, health, weight, appearance (when a factor), or contractual requirements; and (b) cannot be completely eliminated by rework or reduced to a minor non-conformance by repair.

MAJOR SUBCONTRACTOR: A supplier, distributor, vendor, or firm that furnishes supplies or services to or for the prime contractor, whose total costs are over \$10M per mission, and who conduct PMRs. Major subcontractors also include all suppliers that design and produce flight critical hardware for the prime contractor, and conduct PMRs.

MANAGEMENT WORKING GROUP (MWG): The MWG is a forum for coordination and management of the NSSL launch and mission integration. The MWG is comprised of the Government and their representatives, SV Team (for USSF missions), LSIC (for NRO missions), OSL (for NRO missions), and the Contractor representatives. The individuals that comprise the MWG are the key decision-makers in mission management from the initiation of the contract through launch and post-launch activities. A typical MWG agenda includes contract status, the mission status, LV production status, mission integration status, review and approval of the mission integration schedule and program documentation, action item status, results of TIMs, and special topics items, as deemed necessary.

MANIFEST: Manifest is used to describe multiple PL (IPS) grouped for launching over a period of time (e.g., the Fiscal Year [FY] 27-31 manifest would include all mission PL (IPS) over the time frame from FY 27-31).

MANIFEST REVIEW: A manifest meeting, chaired by the Contractor, which reviews the enterprise launch manifest and addresses manifest related issues, including but not limited to, watch-items, decision points, and courses of action.

MASTER LAUNCH OPERATION SCHEDULE: A Master Launch Operations Schedule includes, but is not limited to, major launch operation events such as flight hardware transports, LV on-stand operations, major electrical verification tests, tanking tests, PL (IPS) transport and integration, launch countdown rehearsals, and initial launch capability.

MATERIAL REVIEW BOARD: A board of Contractor representatives that is necessary to review, evaluate, and determine or recommend disposition of nonconforming material.

MAY: Denotes a non-mandatory condition, outcome, or course of action which is deemed within the allowable limits of this PWS.

MINOR NON-CONFORMANCE: A non-conformance that does not adversely affect health or safety, performance, interchangeability, reliability or maintainability, effective use or operation, weight, or appearance (when a factor), or contractual requirements.

MISHAP: An unplanned event or series of events resulting in death, injury, occupational illness, or damage to or loss of equipment or property damage or damage to the environment.

MISSION: A mission can include one or more SVs that are launched by a LV.

MISSION ASSURANCE: Continuous technical and management activity employed over the entire lifecycle of a launch system to achieve confidence in mission success.

MISSION CONTINGENCY PLAN: Describes what the plan is in the event of a launch mishap and is included in the Launch Console Handbook. It includes identification of the primary team and communication plans.

MISSION DIRECTOR STATUS REVIEW: A recurring mission status review beginning after the MRR that includes the Contractor, SV Team, and USG Team. The review topics include technical items, launch processing schedule, critical milestones and decision dates, mission integration status, and PL (IPS) processing status.

MISSION DRESS REHEARSAL (MDR): The MDR consists of an abbreviated countdown and an On-Net Hotwash. MDR is focused on validation of the integrated USG Team and SV Team DoL CONOPS, and includes the following:

- (1) Validation, to the Mission Director, of the proficiency of the integrated launch team to successfully execute the launch countdown;
- (2) Validation that the lessons learned from previous exercises are understood and demonstrated;
- (3) Validation of the DoL voice communications matrix;
- (4) Validation of the accuracy of DoL documentation.

MISSION FAILURE: The inability of a LV, after launch, to deliver the mission PL (IPS) to the prescribed orbital insertion parameters; or LV causes damage to the PL (IPS) that makes the PL (IPS) inoperable.

MISSION INTEGRATION: Mission Integration includes all activities required to successfully plan, develop, verify, and validate the technical and operational requirements for connections and interfaces between the PL (IPS) and the LV, including all launch planning, analysis, mission design, documentation, and LV/PL (IPS) compatibility assessments required. These interfaces are captured and updated in the mission ICD.

MISSION INTEGRATION SCHEDULE: A schedule that reflects all mission-specific activities required to integrate the PL (IPS) with the launch system, beginning with Launch Service Authority to Proceed through conclusion of the USG Post-Flight Review. The schedule includes ICD and verification plan development, mission-specific launch system modifications (mechanical, electrical, and software), deliverables between the LSP and SVC, mission analyses (mission design, environments, interface compatibility), PL (IPS) access assessments, interface fit checks, launch site integrated operations, and post-flight activities. The Mission Integration Schedule is now integrated into the Integrated Master Schedule (IMS).

MISSION INTERFACE CONTROL DOCUMENT: A document that provides technical requirements for launch of the spacecraft and characteristics and constraints of the LV relating to the interface with the spacecraft. The ICD defines PL (IPS) to launch system interfaces via physical, functional, environmental, operational, and performance requirements that are allocated to the LSP and SVC/LSIC. For USSF missions, the ICD is signed by LSP, LV Government Program Office, SVC, and SV Customer Program Office. For NRO missions, the ICD is signed by LSP, the OSL Contracting Officers Technical Representative, the OSL Mission Manager, and the LSIC.

MISSION KICKOFF REVIEW: The mission integration kickoff review marks the start of the standard mission integration activity between the four-party mission team. The agenda includes analyses to be conducted, interrelationships of PL (IPS) data inputs to LV analysis schedules, and LV products.

MISSION READINESS REVIEW (MRR): Review conducted incrementally throughout the vehicle manufacture, assembly, test, integration, checkout, and launch, which represent major milestones of the launch schedule.

MISSION REQUIREMENTS ANNEX: For USSF missions, a document that defines mission requirements.

MISSION-SPECIFIC: Items that are dependent on the specific mission being flown. Unlike mission-unique parameters, mission-specific items are not considered to be beyond the Mission Standard SIS.

MISSION SUCCESS: The launch system must deliver the PL (IPS) into their mission orbits IAW the performance and accuracy requirements stated in the SPRD Rev B and SIS Rev C, and further defined in the IRD and the Mission ICD.

MISSION-UNIQUE: Items that are not part of the standard Launch Service, but could be provided for a particular mission, at an additional cost.

MULTI-MANIFEST CARRIER (MMC): The MMC is a Multi-manifest Carrier, either separating (propulsive) or fixed (non-separating) used to support rideshare deployment of multiple SVs. When integrated with Multi-manifest Space Vehicles (MSVs)/Dispensers the MMC becomes an IFS as delivered to the LSP. The IFS is subsequently mated to another IFS and/or the Payload Adapter to become part of the Integrated Payload Stack for subsequent encapsulation within the Payload Fairing.

MULTI-MANIFEST MISSION: A mission that includes more than one Integrated Flight System, each with a unique IRD or more than a single IFS model. This term envelops dual-manifest, co-manifest, and rideshare missions.

NON-DISCRETE ACTIVITIES: Those activities for which the Contractor does not attribute costs on an individual mission basis (e.g., the Contractor may consider the provision of fleet-wide data to be non-discrete).

NON-RECURRING DESIGN VALIDATION (NRDV): Establishing the NSSL launch system technical and performance baseline through Government-led Independent Verification & Validation (IV&V) of the launch system's design and qualification along with its engineering, manufacturing, and integration processes. NSSL NRDV is a subset of NSSL NRE IV&V and is done once for each launch system configuration.

NRDV COMPLETE: Contractor has completed all the tasks in the Certification/NRDV plan that are applicable to the mission(s) in a specific order year. The Contractor has: Successfully flown all certification flights and provided all appropriate pre- and post-flight data.

1. Designed, qualified, and manufactured the launch vehicle and launch site(s) per NSSL standards.
2. Engineering, manufacturing, and integration processes that meet NSSL standards.
3. Launch vehicle(s) and launch site(s) that meet all NSSL requirements (i.e., SPRD/SIS, compliance docs, all cert plan requirements) applicable to the order year.
4. Developed joint mitigation plans with the USSF to reduce all technical risks to an acceptable level.
5. Supported formal USSF review board process to approve all the above.

NSS-DRIVEN ACTIVITIES: Those activities necessary to meet NSS mission requirements and maintain the required NSS readiness posture.

OBSERVATION: After an initial review of flight data, levels, trends, or visual evidence that appear unusual, unexpected, or undesirable in the Launch Event and Flight are identified and recorded as an Observation.

OPERATIONAL SAFETY, SUITABILITY & EFFECTIVENESS (OSS&E): Operational safety is the condition of having acceptable risk to life, health, property, and environment caused by a system or end item when employing that system or end item in an operational environment. Operational Suitability is the degree to which a system or end item can be placed satisfactorily in field use, with consideration given to availability, compatibility, transportability, interoperability, reliability, maintainability, wartime use rates, full-dimension protection, operational safety, human factors, architectural and infrastructure compliance, manpower supportability, logistics supportability, natural environmental effects and impacts, and documentation and training requirements. Operational Effectiveness is the overall degree of mission accomplishment of a system or end item used by representative personnel in the environment planned or expected (e.g., natural, electronic, threat) for operational employment, considering organization, doctrine, tactics, information assurance, force protection, survivability, vulnerability, and threat (including countermeasures; initial nuclear weapons effects; and nuclear, biological, and chemical contamination threats).

OSL INDEPENDENT VERIFICATION AND VALIDATION (IV&V) TEAM: the team responsible for completing the IV&V required by NRO/OSL. The OSL IV&V Team includes the Aerospace Corporation, OSL SETA contractors, and other IV&V contractors, as designated by NRO/OSL.

OSL MISSION MANAGEMENT TEAM (MMT): The OSL MMT consists of the OSL Government Mission Manager and respective team, which includes OSL SETA support Contractors, and Aerospace FFRDC.

OUT OF FAMILY (OOF): Operation or performance is OOF if it does not conform to performance requirements, does not meet specification limits, or is outside expected values from previous samples and experience.

OUT OF POSITION (OOP) WORK: OOP work is work scope that has been moved from its baseline location or sequence to another. A new location of the work scope shall not constitute a new designation for that work scope.

PAPERLESS SYSTEM: Electronic systems for real-time or archival creation, modification, storage, upload or download and display of documents, data, or telemetry.

PARTNER: commercial entity having some form of business alliance with the Contractor.

PATHFINDER: A demonstration of planned integrated operations starting with PLF encapsulation of a payload simulator in the PPF through mate of the EA to the LV upper stage.

PAYLOAD (PL): The system(s) delivered to space by the NSSL System with associated adapters and interfaces. The PL consists of the SV(s) and associated interface hardware (e.g., dispenser[s], adapter[s], separation system[s], airborne support equipment). For multi-mission manifested missions, the PL is also referred to as the IPS, and may also include an APS.

PAYLOAD ENCAPSULATION BAY (PEB): PEB is used interchangeably with PEF which is the area within the PPF in which the IFS(s) will be stacked/mated to the SIA to become the IPS. The IPS will then be encapsulated and readied for transport to the Contractor's launch pad

PAYLOAD ENCAPSULATION FACILITY (PEF): The facility in which the IFS(s) will be stacked/mated to the SIA to become the IPS. The PEF is also known as the PEB. The IPS will then be encapsulated and readied for transport to the Contractor's launch pad.

PAYLOAD FAIRING (PLF): A PLF is the top portion (shroud) of the LV that houses the SV(s) or mission PL (IPS) during ascent.

PAYLOAD PROCESSING BAY (PPB): The area within the PPF in which the SVC performs SV stand-alone processing and IFS integration prior to encapsulation.

PAYLOAD PROCESSING FACILITY (PPF): The facility comprises the Payload Processing Bay(s) (PPBs), the Payload Encapsulation Bay (PEB), and storage/support areas in which the SV/ IFS(s) will be processed, stacked/mated into an IPS, and encapsulated for launch.

PEDIGREE NOTIFICATION PACKAGE: A package consisting of the Review Notification (at a minimum), which includes the appropriate part numbers and serial numbers (if applicable) of items to be reviewed; directions to the review location, including the building and room number, and point of contact information; and required documents and instructions that relate to visitor control requirements. The package may also contain, if requested by the USG Team, a Technical Data pre-read package.

PEDIGREE REVIEW: Consists of verifying hardware and software fabrication, assembly, inspection, test data, build paperwork, departures from engineering baseline, non-conformance data, test anomalies, and storage and transportation history in order for the USG Team to make a space flight worthiness assessment.

PROCESSING OPERATION: any movement of flight critical hardware at the launch site, which can be directly attributed to a specific NSS mission.

PROCURING CONTRACTING OFFICER (PCO): the individual warranted by the USG to issue legal contracts between the USG and the Contractor. All programmatic, technical, and other contractual

requirements established by the PM for the Contractor must be issued by the PCO. The authority and requirements for the PCO are specified in FAR Subpart 1.6.

PROGRAM MANAGER (PM): the designated individual (whether for the USG Team, or the Contractor Team) with the responsibility for and authority to accomplish program objectives for the development, production, and sustainment to meet operational needs. The PM is accountable for the overall cost, schedule, and performance of the program.

PROPELLANTS: Liquids, gases, or solids required to fuel mission-specific and non-mission-specific SVs or LVs. This may also be used to describe launch pad maintenance propellants.

PHYSICAL ACCESS: USG Team members are allowed to observe the facilities, hardware, personnel, or activities firsthand and in-person whenever the USG Team members require such observation in order to perform official responsibilities. Physical access is subject to applicable safety rules and regulations.

QUICK-LOOK: An initial technical review of available data.

REFLIGHT MISSION INTEGRATION: The Mission Integration tasks and processes required for a mission that utilizes a Launch Vehicle and Space Vehicle combination that has flown on previous mission would constitute a Reflight Mission Integration.

REHEARSAL WORKING GROUPS: Face-to-face meetings of the rehearsal stakeholders for the purpose of establishing the framework and structure of the ICEs and rehearsals.

RELATED OPERATION: An operation conducted to achieve an objective not associated to, but dependent upon, a major operation for meeting planned objectives.

REPAIR: An action that reduces but does not completely eliminate a nonconformance. Repair is distinguished from rework in that the characteristic after repair still does not completely conform to the applicable drawings, specifications, or contract requirements. A repair usually requires a re-identification of the part at issue and could require a product re-test.

REQUEST FOR INFORMATION (RFI): Specific to pedigrees, an RFI is a standardized form used to document and track action items that have not received an adequate response by the end of an independent hardware review. An RFI should be written whenever an action item has not received an adequate LSP/supplier response by the end of the review, the item is not a Review Item Discrepancy (RID), and the SSC/AA Review Team Lead deems the request necessary to determine the space flight worthiness of a component (e.g., analysis dispositions a non-conformance as Use As Is, but the analysis is not attached to the non-conformance. The Reviewer asks for the analysis, but it is not supplied by the end of the review, so the RFI is written to supply the analysis).

RESPONSIBLE ENGINEER (RE): A qualified engineer responsible for a component or subsystem through design, production, test, and launch.

REVIEW ITEM DISCREPANCY (RID): Specific to pedigrees, a standardized form used to document and track hardware non-conformances discovered as a result of an independent hardware review, regardless of who discovers the non-conformance. RIDs impose a lien on the affected hardware until the non-conformance has been properly dispositioned (e.g., an out of tolerance condition/result is found during the review, whether the requirement was on an Engineering Drawing or Engineering Performance Specification. The RID should document the Is and Should Be requirement and actual result to state the mismatch for disposition. A non-conformance will have to be written and completely dispositioned, usually with corrective action).

REWORK: Action performed to convert non-flight worthy components to flightworthy status.

SECONDARY OBJECTIVES: Secondary objectives includes any Contractor-proposed use of the excess performance margin of the launch vehicle beyond the primary mission's requirement, such as: recovery of launch vehicle hardware (not booster related), technical demonstrations, or any uses of the launch vehicle capability, to include continued second stage use after payload deployment. Secondary objectives exclude commercial co-manifesting.

SENIOR MANAGEMENT REVIEW: A monthly forum chaired by SSC/AA to discuss the current launch manifest and related issues. Representatives from across the launch community meet in this forum to discuss their respective program status as it pertains to the launch schedule.

SHALL: Denotes a requirement that must be implemented, and the implementation is subject to verification by one or more contractually defined method(s) that gives rise to an auditable product (analysis, test report, etc.) that is contractually deliverable and managed as part of the product baseline.

SHIP LOOSE: Components of the LV that are predetermined to be assembled at the launch site.

SPACE FLIGHT WORTHINESS CERTIFICATION: Measures the degree to which the PL (IPS), LV, and critical ground system(s), have the capability to perform their mission with the confidence that significant flight risks are known and deemed acceptable. The SSC/CC will certify flight worthiness for NSS missions launching SSC-procured PL (IPS) on SSC-procured LV. For NRO missions launching NRO-procured PL(s) on SSC-procured LV, the SSC/CC will certify LV flight worthiness to the NRO as part of the NRO mission certification.

SPACE VEHICLE (SV): An autonomous element of the PL (IPS) that separates at the PL (IPS) - provided separation plane and is delivered to the defined orbit around the earth. It may also include an autonomous element that does not separate from the upper stage and is delivered to a defined orbit around the earth.

STANDARD LAUNCH SERVICE: The total effort required to place PL (IPS) into the prescribed orbit, excluding mission-unique launch services. The SIS, SPRD, and Competitive Launch Services PWS define the minimum set of standard launch service capabilities.

SUBCONTRACTOR: Any supplier, distributor, vendor, or firm that furnishes supplies or services to or for a prime contractor or another subcontractor

TARGET SPECIFICATION: A document that defines the target orbit parameters for a specific mission. The target specification is provided by the SVC/LSIC or SV Directorate/OSL after launch service contract award.

TECHNICAL INTERCHANGE MEETINGS (TIM): Meetings in support of conveying technical rationale, as coordinated through working groups composed of Contractor, Government, and Government Contractor SMEs.

TECHNICAL ISSUE: An event or condition that has occurred, is occurring, or is certain to occur that may lead to a Baseline or higher flight risk.

TEST-LIKE-YOU-FLY: A test philosophy that examines all applicable flight characteristics and determines the fullest practical extent to which those characteristics can be applied in testing. All applicable flight characteristics are concurrent attributes including, but not limited to, environments, automated flight sequences, commanded operations, activity order and timing, up/downlinked telemetry, data product generation, signal services, mission planning, and end-user evaluation. The fullest practical extent" identifies the physical and engineering limitations, and balances what can be

done in a flight-like manner with acceptable and understood flight risk and program resources. The test article can range from a component, through all levels of integration, up to and including all space and ground assets involved in conducting the mission.

UNITED STATES GOVERNMENT CERTIFIED/APPROVED LAUNCH VEHICLE

CONFIGURATION: A launch vehicle configuration presented to and approved by the Government through SSC/CC certification. A USG certified/approved launch vehicle configuration is documented and controlled by Government requirements documents, Government approved requirement deviations, and Contractor requirements documents. Changes to a USG certified/approved launch vehicle configuration must be reported and once approved through SSC/CC certification become the new USG certified/approved launch vehicle configuration allowed for use on NSS missions.

UNIVERSAL DOCUMENTATION SYSTEM: The formal documentation system used to communicate user support requirements at military test ranges.

UPPER STAGE: An LV Upper Stage includes all housings, components, propulsion system, and associated fittings or adapters to join to the core and to the PL (IPS).

VIRTUAL ACCESS: USG Team members are allowed to directly observe data on the IDE from USG systems or Contractor-provided workstations, as whenever the USG Team members require such data to perform official responsibilities. Virtual access is subject to applicable security rules and regulations.

WALK-DOWN: A comprehensive review of the LV and applicable Critical GSE systems prior to or following significant operations, conducted by engineering and operations personnel, both Contractor and USG Team, as appropriate. A walk-down includes the commodities supply plans and status; examines the physical state of the LV and Critical GSE; notes discrepancies from print, delivery, or last tested configurations; and examines non-conformances identified to date, with resolution summaries/plans.

WHITE CARDS: White Cards document all pertinent details of a launch rehearsal anomaly. Each RAT organization develops White Cards, based on the anomaly template provided by SSC/AA Rehearsal Simulation Lead, for their specific anomalies. The white cards include LV-only and LV-integrated anomalies. The number of white cards required for each rehearsal will vary from mission to mission and from rehearsal to rehearsal, and that number is defined by the SSC/AA SIM. The Contractor shall provide varied anomalies for each rehearsal.

WILL: Denotes a requirement that must be implemented, but the implementation is not subject to verification by one or more contractually defined method(s) that gives rise to an auditable product (analysis, test report, etc.) that is contractually deliverable and managed as part of the product baseline.

WORK AUTHORIZING DOCUMENT (WAD): A WAD is a Contractor production or launch site document that authorizes work to be performed to manufacture, build, assemble, transport, integrate, test, repair, modify and launch flight hardware and associated ground systems per configuration-controlled drawings, schematics, specifications, and ICDs. The WAD implements design intent at the factory and launch sites. WADs include, but are not limited to, out-of-launch operations procedures, position procedures, NCOP procedures and landing and recovery site operations procedures.

B APPENDIX: ACRONYMS AND ABBREVIATIONS

Table B-1: Acronyms and Abbreviations

ACRONYM	DEFINITION
3D	Three Dimensional
SLD 30	Space Launch Delta 30
SLD 45	Space Launch Delta 45
ABCL	As-Built Configuration List
ADCL	As-Designed Configuration List
ADP	Acceptance Data Package
AFI	Air Force Instruction
AFPAM	Air Force Pamphlet
AFSPC	Air Force Space Command
AFSPCI	Air Force Space Command Instruction
AFSPCMAN	Air Force Space Command Manual
AFSS	Autonomous Flight Safety System
AGO	Aerospace General Offices
AIAA	American Institute of Aeronautics and Astronautics
ANSI	American National Standards Institute
APD	Aft multi-payload carrier Payload Dispenser
API	Application Programming Interface
APS	Aft Payload Stack
ARB	Anomaly Review Board
ATP	Authority to Proceed
ASV	Aft multi-payload carrier Space Vehicle

ACRONYM	DEFINITION
CCSFS	Cape Canaveral Space Force Station
CD	Calendar Day
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CF	Confidence Factor
CLA	Coupled-Loads Analysis
CLIN	Contract Line Item Number
CLSRB	Current Launch Schedule Review Board
CNSSD	Committee on National Security Systems Directive
CNSSI	Committee on National Security Systems Instruction
CNSSP	Committee on National Security Systems Policy
COLA	Collision Avoidance
CONOPS	Concept of Operations
COPV	Composite Overwrapped Pressure Vessel
COR	Contracting Officer's Representative
DNH	Do No Harm
DoD	Department of Defense
DoDI	Department of Defense Instruction
DoL	Day of Launch
DOLWG	Day of Launch Working Group
EA	Encapsulated Assembly
ECS	Environmental Control Systems

ACRONYM	DEFINITION
EED	Electro-Explosive Device
EELV	Evolved Expendable Launch Vehicle
EIA	Electronic Industries Alliance
EIS	Early Integration Study
ELSS	Engineering Launch Support System
EMA	Engrained Mission Assurance
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
ER	Eastern Range
ERB	Engineering Review Board
FAM	Familiarization
FAR	Federal Acquisition Regulation
FCA	Functional Configuration Audit
FCIL	Flight Critical Items List
FFRDC	Federally Funded Research and Development Center
FPCON	Force Protection Condition
FRB	Failure Review Board
FRD	Facilities Requirements Document
FRR	Flight Readiness Review
FS	Fleet Surveillance
FY	Fiscal Year

ACRONYM	DEFINITION
GCA	Gap Closure Action
GMD	Government Mission Director
GMIM	Government Mission Integration Manager
GN2	Gaseous Nitrogen
GOWG	Ground Operations Working Group
GSE	Ground Support Equipment
HQ	Headquarters
IAW	In Accordance With
ICD	Interface Control Document
ICE	Integrated Crew Exercise
ICN	ICD Change Notice
IDE	Integrated Data Environment
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IFS	Integrated Flight System
ILC	Initial Launch Capability
IMS	Integrated Master Schedule
IPG	Information Protection Guide
IPS	Integrated Payload Stack
IPS/APS	Integrated Payload Stack / Aft Payload Stack
IRD	Interface Requirements Document
IRIG	Inter-Range Instrumentation Group

ACRONYM	DEFINITION
ISO	International Organization for Standardization
IT	Information Technology
ITA	Integrated Thermal Analysis
IV&V	Independent Validation and Verification
KSC	Kennedy Space Center
L-	Launch Minus
L+	Launch Plus
LC	Launch Complex
LEI	Leading Edge Integration
LIDS	Launch Information Dissemination and Simulation
LMSI	Launch Mission System Integrator
LOE	Level of Effort
LRR	Launch Readiness Review
LS	Launch Service
LSP	Launch Service Provider
LSIC	Launch System Integration Contractor
LSS	Launch Service Support
LV	Launch Vehicle
LVIC	Launch Vehicle Integration Contractor
LVTVP	Launch Vehicle Test and Verification Plan
MAT	Mission Assurance Team
MD	Mission Director
MMC	Multi-Manifest Carrier

ACRONYM	DEFINITION
MDR	Mission Dress Rehearsal
MI	Mission Integration
MIS	Mission Integration Schedule
MIL-STD	Military Standard
MIMOP	Mission Integration Management and Operations Plan
MKR	Mission Kickoff Review
MMT	Mission Management Team
MPC	Multi-Payload Carrier
MRB	Mission Review Board
MRR	Mission Readiness Review
MSE	Mission Support Equipment
MSPSP	Missile System Prelaunch Safety Package
MSV	Multi Manifest Satellite Vehicle
MU	Mission-Unique
MVR	Mission Verification Review
MWG	Management Working Group
NAS	National Aerospace Standard
NASA	National Aeronautics and Space Administration
NCOP	Non-conforming Out-of-position Procedures
NECG	New Entrant Certification Guide
NLT	No Later Than
NOPS	National Reconnaissance Office Operations Squadron
NRDV	Non-Recurring Design Validation

ACRONYM	DEFINITION
NRO	National Reconnaissance Office
NROL	National Reconnaissance Office Launch
NSS	National Security Space
NSSL	National Security Space Launch
ODMSP	Orbital Debris Mitigation Standards Practices
OI	Operating Instructions
OOF	Out of Family
OOP	Out of Position
OPA	Office of Public Affairs
OPSEC	Operations Security
OSL	Office of Space Launch
OSS&E	Operational Safety, Suitability, and Effectiveness
PCA	Physical Configuration Audit
PCO	Procuring Contracting Officer
PDLC	Preliminary Design Loads Cycle
PDR	Preliminary Design Review
PEB	Payload Encapsulation Bay
PEBF	Payload Encapsulation Bay Facility
PEF	Payload Encapsulation Facility
PoP	Period of Performance
PL	Payload
PLA	Payload Adapter
PLF	Payload Fairing

ACRONYM	DEFINITION
PLM	Payload Module
PLVIRD	Platform Launch Vehicle Interface Requirements Document
PM	Program Manager
PMPCB	Parts, Materials, and Processes Control Board
PMR	Program Management Review
POC	Point of Contact
PPB	Payload Processing Bay
PPF	Payload Processing Facility
PIIP	Program Protection Implementation Plan
PPP	Program Protection Plan
PPWG	Pedigree Planning Working Group
PRM	Pedigree Review Matrix
PRR	Production Readiness Review
PSRR	Pre-Ship Readiness Review
PWS	Performance Work Statement
RAT	Rehearsal Anomaly Team
RCC	Range Commander's Council
RE	Responsible Engineer
RF	Radio Frequency
RFI	Request for Information
RID	Review Item Discrepancy
RMA	Rideshare Mission Assurance
RMB	Risk Management Board

ACRONYM	DEFINITION
RUG	Rideshare User Guide
SAP	Special Access Program
SAPF	Special Access Program Facility
SCI	Sensitive Compartmented Information
SE&I	Systems Engineering and Integration
SEIP	Standard Electrical Interface Panel
SEP	Systems Engineering Plan
SETA	Systems Engineering and Technical Assistance
SFW	Space Flight Worthiness
SIA	Standard Interface Adapter
SIP	Standard Interface Plane
SIS	Standard Interface Specification
SLD	Space Launch Delta
SLS/CC	Space Launch Squadron Commander
SSC	Space Systems Command
SSC/AA	Space Systems Command / Assured Access to Space
SSC/PA	Space Systems Command / Public Affairs
SME	Subject Matter Expert
SPO	Systems Program Office
SPRD	System Performance Requirements Document
SRD	System Requirements Document
SRR	Shipping Readiness Review
SSG	Systems Safety Group

ACRONYM	DEFINITION
SSWG	System Safety Working Group
STARS	Space Test and Ranging System
SV	Space Vehicle
SVC	Space Vehicle Contractor
SVIP	Space Vehicle Interface Panel
SWOP	Space Wing Operating Plan
TIM	Technical Interchange Meeting
TIRP	Technical Issue Resolution Process
TLYF	Test-Like-You-Fly
TOR	Technical Operating Report
TRB	Technical Review Board
TRR	Test Readiness Review
TS	Technical Support
TSN	Trusted Systems and Networks
U.S.	United States
USAF	United States Air Force
USG	United States Government
USSF	United States Space Force
UUT	Unit Under Test
VSFB	Vandenberg Space Force Base
WAD	Work Authorizing Document
WDR	Wet Dress Rehearsal
WR	Western Range

DRAFT

C APPENDIX: COMPLIANCE DOCUMENTS

Table C-1: Program Requirements

Document Number / Abbreviation	Revision / Date	Document Title
NSSL-S-001 (2023)	Revision C / 30 Jan 2023	NSSL System Performance Requirements Document (SPRD)
NSSL -S-002 (2023)	Revision D / 30 Jan 2023	NSSL Standard Interface Specification (SIS)

Table C-2: Mission Requirements

Document Number / Abbreviation	Revision / Date	Document Title
Mission IRDs	Various	Mission Interface Requirements Document (IRD)
Mission ICDs	Various	Mission Interface Control Document (ICD)

Table C-3: Security

Document Number / Abbreviation	Revision / Date	Document Title
NSSL OPSEC Plan	25 Mar 2014	NSSL Operations Security (OPSEC) Plan
NSSL PPP	Revision E, 18 Aug 2022	NSSL Program Protection Plan, Rev E
NSSL SCG (2021)	26 Mar 2021	NSSL Security Classification Guide
ISO/IEC 27001	Oct 2013	Information technology — Security techniques — Information security management systems — Requirements
---NROL IPG	31 Jul 2017	NRO Launch Information Protection Guide
CNSSI 3006 (2018)	Feb 2018	Operational Security Doctrine for Global Positioning System (GPS) Precise Positioning Service (PPS) User Equipment (UE)

Table C-4: Day of Launch Operations

Document Number / Abbreviation	Revision / Date	Document Title
LIDS IRD	Version 2.04 23 Mar 2023	Launch Information Dissemination and Simulation (LIDS) Support Interface Requirements

Table C-5: Systems Engineering

Document Number / Abbreviation	Revision / Date	Document Title
IEEE 15288.1-2014	15 May 2015	Application of Systems Engineering on Defense Programs
ISO/IEC/IEEE 15288	May 2015	Systems and Software Engineering – System Life Cycle Processes
LE-T-009 (2017)	01 Oct 2017	SMC/LE Tailoring of ISO/IEC/IEEE 15288
SMC-T-006	28 Aug 2017	Specialty Engineering Supplement to IEEE 15288.1

Table C-6: Technical Reviews and Audits

Document Number / Abbreviation	Revision / Date	Document Title
IEEE 15288.2	15 May 2015	Technical Reviews and Audits on Defense Programs

Table C-7: Risk Management

Document Number / Abbreviation	Revision / Date	Document Title
SMC-T-005	19 May 2017	Risk Management Supplement to IEEE 15288.1

Table C-8: Configuration Management

Document Number / Abbreviation	Revision / Date	Document Title
SAE EIA 649-1A-2020	10 Aug 2020	Configuration Management Requirements For Defense Contracts

Table C-9: Manufacturing Management

Document Number / Abbreviation	Revision / Date	Document Title
SAE AS6500A	7 July 2021	Manufacturing Management Program

Table C-10: Quality Management

Document Number / Abbreviation	Revision / Date	Document Title
NSSL-S-007 (2023)	30 Jan 2023	Space Force Hardware Review Program Specifications
LE-T- 014 (2019)	27 Mar 2019	SMC/LE Launch Requirements Addendum to AS9100D Quality Management Systems
SAE AS9100D	20 Sept 2016	Quality Management Systems – Requirements for Aviation, Space and Defense Organizations

Table C-11: Reliability

Document Number / Abbreviation	Revision / Date	Document Title
SMC-S-013	13 Jun 2008	Reliability Program for Space Systems

Table C-12: Safety

Document Number / Abbreviation	Revision / Date	Document Title
SSCMAN 91-710 (Vol 1-7)	Version as tailored and approved by Range Safety	Range Safety User Requirements
MIL-STD-882E (T) (Note 1)	11 May 2012	Systems Safety Program Requirements
SMC-T-004	30 Sep 2019	Tailoring Instructions for MIL-STD-882E

Document Number / Abbreviation	Revision / Date	Document Title
RCC 319-19	Version as tailored and approved by Range Safety	Range Commander's Council (RCC) Flight Termination Systems Commonality Standard
RCC 324-11	Version as tailored and approved by Range Safety	Global Positioning and Inertial Measurements Range Safety Tracking Systems' Commonality Standard

Note 1: The following tasks are applicable in addition to the definitions in Section 3.2 and all of Section 4 in MIL-STD-882E: 101, 102, 104, 106***, 108, 109****, 202**, 205**, 206* **, 301, 304, and 401

* Existing documentation will be assessed for adequacy of operational hazard analysis

** These tasks satisfy safety data requirements specified by AFI 91-202 AFSPCSUP (Section 11.2.5.1) and for range flight safety certification in AFSPCMAN 91-710, Volume 1, A2.2.5 Task 5

*** Besides the required MIL STD-882E Task 106, SSC/LEE adds the following supplemental requirement to Task 106 from SMC-T-004, dated 30 September 2019, Section 106.2.3

**** Besides the required MIL-STD-882E Task 109, SSC/LEE adds the following supplemental requirement Task 109 from SMC-T-004, dated 30 September 2019, Sections 109.2.1, 109.2.2.2, 109.2.2.3, and 109.2.3

Table C-13: Design, Analysis, Test, and Operations--Structures and Propulsion

Document Number / Abbreviation	Revision / Date	Document Title
AIAA S-080A-2018	20 Mar 2018	Design and Test Requirements for Space Flight Pressurized Systems
AIAA S-081B-2018	20 Mar 2018	Space Systems – Composite Overwrapped Pressure Vessels (COPV)
NSSL-S-AIAA 110-(2005)-(2023)	30 Jan 2023	Space Systems - Structures, Structural Components, and Pressurized Structures
NSSL-T-080A-081B (2023)	30 Jan 2023	NSSL Tailoring of Structural Standards
NASA-STD-5020A (2019)	11 Feb 2019	Requirements for Threaded Fastening Systems in Spaceflight Hardware

Document Number / Abbreviation	Revision / Date	Document Title
NSSL-S-005 (2023)	30 Jan 2023	Design and Test Requirements for Space Flight Pressurized Systems
NSSL-S-006 (2023)	30 Jan 2023	Evaluation and Test Requirements for Solid Rocket Motors
NSSL-S-025 (2023)	30 Jan 2023	Evaluation and Test Requirements for Liquid Rocket Engines

Table C-14: Design, Analysis, Test, and Operations--Mechanisms, Explosive Systems and Devices

Document Number / Abbreviation	Revision / Date	Document Title
AIAA S-113A-2016	17 Oct 2016	Criteria for Explosive Systems and Devices Used on Space and Launch Vehicles
AIAA S-114A-2020	14 Jan 2021	Moving Mechanical Assemblies for Space and Launch Vehicles

Table C-15: Design, Analysis, Test, and Operations--Avionics

Document Number / Abbreviation	Revision / Date	Document Title
MIL-STD-461G	11 Dec 2015	Electromagnetic, Emissions, and Susceptibility, Requirements for the Control of Electromagnetic Interference
MIL-STD-1542B	15 Nov 1991	EMC Grounding Requirements for Space System Facilities
SMC-S-007	13 Jun 2008	Space Battery
AIAA S-121A-2017	11 Dec 2017	Electromagnetic Compatibility Requirements for Space Equipment and Systems
SMC-T-008	6 Mar 2019	Tailoring for AIA-S 121A -2017 Electromagnetic Compatibility Requirements for Space Equipment and Systems

Document Number / Abbreviation	Revision / Date	Document Title
SMC-S-018	13 Jun 2008	Lithium Ion Battery for Launch Vehicle Application
NSSL-T-018 (2023)	30 Jan 2023	NSSL Tailoring for SMC-S-018 Lithium Ion Battery for Launch Vehicle Application
SMC-S-020	03 Jun 2009	Technical Requirements for Wiring Harness, Space Vehicles

Table C-16: Design, Analysis, Test, and Operations--Specialty Engineering

Document Number / Abbreviation	Revision / Date	Document Title
ANSI/AIAA S-120A-2015 (2019)	23 Nov 2015	Mass Properties Control for Space Systems
NSSL-T-120A (2015) (2019)-(2023)	30 Jan 2023	NSSL Tailoring of AIAA S-120A Mass Properties Control for Space Systems
SMC-S-011	31 Jul 2015	Parts, Materials, and Processes Control Program for Expendable Launch Vehicles
NSSL-T-011 (2023)	30 Jan 2023	NSSL Tailoring of SMC-S-011 Parts, Materials, and Processes Control Program for Expendable Launch Vehicles
SMC-S-012 (2015)	16 Jan 2015	Software Development for Space Systems
NSSL-T-012 (2023)	30 Jan 2023	NSSL Tailoring of SMC-S-012 Software Development for Space Systems
NSSL-S-004 (2023)	30 Jan 2023	NSSL Integrated Structural Dynamics Launch Loads and Stability Analysis Requirements

Table C-17: Design, Analysis, Test, and Operations--Testing

Document Number / Abbreviation	Revision / Date	Document Title
NSSL-S-016 (2023)	30 Jan 2023	Test Requirements For Launch, Upper-Stage and Space Vehicles

Table C-18: Design, Analysis, Test, and Operations--Reusability

Document Number / Abbreviation	Revision / Date	Document Title
NSSL-S-003 (2023)	30 Jan 2023	Supplemental Requirements for Reusable Launch Systems

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D APPENDIX: REFERENCE DOCUMENTS

Table D-1: System Documents

Document Number / Abbreviation	Revision / Date	Document Title
LE-S-004 (2023)	Rev B / 15 Sep 2021	NSSL Engineering Launch Support System (ELSS) System Requirements Document (SRD)
Generic PLVIRD	10 Apr 2019	Platform Launch Vehicle Interface Requirements Document (PLVIRD)
NECG	26 Oct 2011	United States Air Force Launch Services New Entrant Certification Guide

Table D-2: Security

Document Number / Abbreviation	Revision / Date	Document Title
AFI 10-245	30 Mar 2017	Anti-Terrorism (AT)
AFI 10-701	8 Jun 2011	Operations Security (OPSEC)
AFI 17-220	16 Mar 2017	Spectrum Management Operations
CNSSD No. 505	26 Jul 1 Aug 2017	Supply Chain Risk Management
CNSSI No. 1253	29 Jul 2022	Security Categorization and Control Selection for National Security Systems
CNSSP No. 22	31 Aug 2016	Cybersecurity Risk Management
DoDI 5200.44	05 Nov 2012 Incorporating Change 3, October 15, 2018	Protection of Mission Critical Functions to Achieve Trusted Systems and Networks (TSN)
ISO/IEC 27002 Technical Corrigendum 1 Technical Corrigendum 2	01 Oct 2013 15 Sep 2014 15 Nov 2015	Information Technology – Security Techniques – Code of Practice for Information Security Controls
DAFI 31-101_DAFGM2021-01	27 July 2021	Department of the Air Force Guidance Memorandum to DAFI 31-101, Integrated Defense (ID)
DoDI 5200.48	6 March 2020	Controlled Unclassified Information
DOD 5220-22M	18 May 2016	National Industrial Security Program

Document Number / Abbreviation	Revision / Date	Document Title
DODI 5200.39	28 May 2015 1 Oct 2020	Critical Program Information (CPI) Protection Within DoD
AFPAM 63-113	17 Oct 2013	Program Protection Planning for Life Cycle Management
NIST SP 800-171	Dec 2016 includes updates as of 6 Jul 2018	Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations

Table D-3: Program Management

Document Number / Abbreviation	Revision / Date	Document Title
DoD 5000.04-M-1	4 Nov 2011	Cost and Software Data Reporting (CSDR) Manual

Table D-4: Systems Engineering

Document Number / Abbreviation	Revision / Date	Document Title
NSSL SEP	TBD 2022	NSSL Systems Engineering Plan (SEP)
DoD Digital Engineering Strategy	Jun 2018	DoD Digital Engineering Strategy

Table D-5: Risk Management

Document Number / Abbreviation	Revision / Date	Document Title
LE-P-005	26 Apr 2018	National Security Space Launch Risk, Issues, and Opportunity Management (RIOM) Plan

Table D-6: Spectrum Management

Document Number / Abbreviation	Revision / Date	Document Title
NTIA Manual	Sep 2017	Manual of Regulations and Procedures for Federal Radio Frequency Management - Chapter 8: Procedures and Principles for the Assignment and Coordination of Frequencies

Table D-7: Manufacturing Management

Document Number / Abbreviation	Revision / Date	Document Title
TOR-2018-02676	1 Oct 2018	Guidance for the Development and Qualification of Additive Manufacturing
NASA-STD-6030	21 Apr 2021	Additive Manufacturing Requirements for Spaceflight Systems

Table D-8: Reliability

Document Number / Abbreviation	Revision / Date	Document Title
SMC-S-014	19 Jul 2010	Survivability Program for Space Systems

Table D-9: Logistics

Document Number / Abbreviation	Revision / Date	Document Title
MIL-STD-130N	26 Aug 2019	Identification Marketing of US Military Property
MIL-STD-1366E	31 Oct 2006	Transportability Criteria

Table D-10: Safety

Document Number / Abbreviation	Revision / Date	Document Title
AFI 91-202_AFSPCSUP_IAFGM2021-01	15 Apr 2021	The US Air Force Mishap Prevention Program
AFI 91-204	17 Dec 2018 30 Sep 2020	Safety Investigation and Hazard Reporting
AFMAN 91-222	17 Jun 2019	Space Safety Investigations and Report
AFSPCI 13-610	14 May 2018	Launch & Range Operations
AFSPCI 13-613	16 Jul 2018	Launch Forecasting, Planning, and Scheduling Procedures
ODMSP	November 2019	United States Government Orbital Debris Mitigation Standards Practices (ODMSP)
RCC 501-12	July 2012	Range Commander's Council (RCC) Universal Documentation System
SMC-G-012	12 Oct 2018	System Safety Program Guidebook
AFSPCI 91-701	01 Feb 2019	Launch and Range Safety Program Policy and Requirements
NAS 411	30 Sep 2013	National Aerospace Standard (NAS) 411: Hazards Materials Management Program
NASA-STD-8739.8A	6 Jun 2020	Software Assurance And Software Safety Standard
SMCI 62-110	24 Jul 2014	Space Debris Mitigation Management
NASA-STD-8719.14B	25 Apr 2019	NASA Standard Process for Limiting Orbital Debris
SMC-T-003	19 Mar 2010	SMC Tailoring of NASA-STD-8719.14 (2009)
30SWI 91-201	5 Jan 2021	Launch Support Team Process
30 SW Plan 91-204	22 Jul 2013	30th Space Wing Plan 91-204 Investigation of Mishaps Response Plan
45 SWOP 91-204, Vol. 2	9 Feb 2018	45th Space Wing Operating Plan (SWOP) 91-204, Volume 2, Investigation of Launch and Launch Processing Mishaps

Document Number / Abbreviation	Revision / Date	Document Title
RCC 319-14	29 Apr 2014	Flight Termination Systems Commonality Standard Supplement
TOR-2023-01395	30 June 2023	Disposal Options for Selected Orbits

Table D-11: Design, Analysis, Test and Operations

Document Number / Abbreviation	Revision / Date	Document Title
AIAA-S-082G	TBD 2021	COPV Type IV Guide
SMC-S-004	13 Jun 2008	Independent Structural Loads Analysis
CMH-17 Handbook	2017-07-17	Composite Materials Handbook
NASA/SP 8007-2020/REV 2	December 2020	Buckling of Thin-Walled Circular Cylinders, National Aeronautics and Space Administration
NASA-STD-5019A	14 Aug 2020	Fracture Control Requirements for Spaceflight Hardware
NASA Handbook 5010A Vols 1 & 2	TBD	NASA Handbook 5010A Vols 1 & 2
NASA-STD-5009B	8 May 2019	Nondestructive Evaluation Requirements for Fracture-Critical Metallic Components
LE-P-018	01 Apr 2019	SMC/LE Guide for Reusable Launch Systems
SMC-S-010	12 Apr 2013	Technical Requirements for Electronic Parts, Materials, and Processes for Space and Launch Vehicles
SMC-S-009	12 Apr 2013	Parts, Materials, and Processes Control Program for Space and Launch Vehicles

Table D-12: Rideshare

Document Number / Abbreviation	Revision / Date	Document Title
EELV RUG	May 2016	EELV Rideshare User Guide (RUG
TOR 2016-02946	31 Aug 2016	Rideshare Mission Assurance and the Do No Harm Process

Document Number / Abbreviation	Revision / Date	Document Title
ATR-2022-00665	TBD	Multiconfiguration Loads Analysis for Missions with an Uncertain Rideshare Manifest

Table D-13: Miscellaneous

Document Number / Abbreviation	Revision / Date	Document Title
ASME Y14.5	1994	Dimensioning and Tolerancing
MIL-STD-1553B		Aircraft Internal Time Division Command/Response Multiplex Data Bus, 21 September 1978
32 CFR Part 117 NISPOM Rule	18 May 2016	National Industrial Security Program Manual (NISPOM), 28 February 2006
DD254	13 June 2016	Department Of Defense Contract Security Classification Specification
AFI 31-101	29 Jan 2014	Air Force Space Command Supplement (AFSPCSUP)-1 Integrated Defense Air Force Space Command Supplement
SMC-S-003 (T)	8 May 2015	Quality Space and Launch Requirements Addendum to AS9100C
Interface Control Document (ICD)-GPS-723D		NAVSTAR Military-Unique User Segment/National Security
CI-MGUE/AV-861E	13 February 2015	Global Positioning System Directorate Technical Requirements Document
American Society of Civil Engineers Standard/Structural Engineering Institute (ASCE/SEI) 7-10	2010	Minimum Design Loads for Buildings and Other Structures
Office of the Chief of Naval Operations Instruction		Office of the Chief of Naval Operations Instruction (OPNAVINST) 3913.1B

Document Number / Abbreviation	Revision / Date	Document Title
(OPNAVINST) 3913.1B		
ICD-GPS-700		ICD-GPS-700
Army Regulation (AR) 70-43		Army Regulation (AR) 70-43
CNSSI 1200	7 May 2014	Instruction for Space Systems Used to Support NSS
CJCSI 6130.01E,	1 May 2013	CJCS Master Positioning, Navigation, and Timing Plan
DISR	Current Version	DOD Information Technology Standards Registry (DISR)

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E APPENDIX: MEETINGS AND REVIEWS

Table E-1: Meetings and Reviews Per PWS Listed Section

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.1.7	Program Management Reviews	ATP+ 45 CDs	End PoP	Every two months	2 hours	In-Person	Various	Lead	Participate	40	50	60
3.1.9.1	Current Launch Schedule Review Board	ATP	End PoP	Semi-Annual	2 hours	Teleconference	Virtual	Lead	Participate	N/A	N/A	N/A
3.1.9.1	Senior Management Review	ATP+1 Month	End PoP	Monthly	1 hour	Teleconference	Virtual	Support	Lead	N/A	N/A	N/A
3.1.9.1	Launch Manifest Status Teleconference	ATP+6 Months	End PoP	Weekly	1 hour	Teleconference	Virtual	Support	Lead	N/A	N/A	N/A
3.1.9.1	Manifest Review	ATP+6 Months	End PoP	Every two months	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.1.10.2	System Safety Working Groups	ATP+6 Months	End PoP	Quarterly	Contractor-Dependent	In-Person	Contractor Site or Launch Site	Support	Lead	8	12	25
3.1.10.2	System Safety Group	ATP	End PoP	Annually	8 hours	In-Person	SMC	Support	Lead	8	12	25
3.1.13.1	Contractor-Required Safety Training	ATP	End PoP	As Needed-Per Mission	Contractor-Dependent	Contractor-Dependent	Contractor-Dependent	Lead	Participate	40	75	100
3.1.13.2	Contractor Facility Training	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	Contractor-Dependent	Contractor-Dependent	Lead	Participate	40	75	100
3.1.14	Contractor Launch System Familiarization Course	ATP	End PoP	3 Per Year	24 hours	In-Person	USG Site	Lead	Participate		100	
3.1.15.1	NSSL Program Protection Surveys	ATP	End PoP	Annual	4 hours	In-Person	Contractor Site	Support	Lead	3	5	10
3.1.15.2	NSSL System Security Working Group	ATP	End PoP	Quarterly	2 hours	In-Person	USG Site	Support	Lead	20	25	30

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.1.15.2	Security-Related Meeting	ATP	End PoP	Monthly	1 hour	In-Person	Launch Sites	Support	Lead	1	3	5
3.1.17.1	Anti-Terrorism Meeting	ATP	End PoP	Quarterly and/or Emergency per launch site	1 hour	In-Person	Launch Sites	Support	Lead	2	4	5
3.2.1	Technical Interchange Meetings	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Launch System Risk Management Boards	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Engineering Review Boards (ERB)	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Anomaly Review Boards (ARB)	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Technical Review Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Corrective Action Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Change Control Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Material Review Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Failure Review Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Parts Materials and Processes Control Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	System Verification Review	ATP	End PoP	As Needed-Per Mission	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.2.3	Production Readiness Review	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Test Readiness Review	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Shipping Readiness Review	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3	Pre-Launch Reviews	ATP	End PoP	As Needed-Per Mission	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	8	12	25
3.2.3.2	Launch System Preliminary Design Review	ATP	End PoP	Once	8 hours	In-Person	Contractor Site	Lead	Participate	8	12	25
3.2.3.2	Critical Design Review	ATP	End PoP	Contractor-Dependent	8 hours	In-Person	Contractor Site	Lead	Participate	8	12	25
3.2.3.2	Functional and Physical Configuration Audits	ATP	End PoP	As Needed-Ongoing	4 hours	In-Person	Contractor Site	Lead	Participate	8	12	25
3.2.3.4	Recurring Review Boards	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	In-Person	Contractor Site	Invite	Participate	8	12	25
3.4.2.1	Day of Launch Working Group	L-8 Months	ILC	Twice per mission	8 hours	In-Person	Contractor Site	Lead	Participate	10	12	15
3.4.2.1	Government Mission Director Teleconference	L-8 Weeks	After FRR	Weekly per mission	1 hour	Teleconference	Virtual	Lead	Participate	10	12	15
		FRR	ILC	Daily per mission								
3.4.2.1	Ground Operations Working Group	L-18 Months	ILC	Quarterly	2 hours	In-Person or virtually per USG	Launch Site	Lead	Participate	10	12	15
3.4.2.1	Mission Kickoff Review	ATP + 1 Month	N/A	Once per mission	8 hours	In-Person	Contractor Site	Lead	Participate	10	12	15

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.4.2.1	Mission Integration Working Group	L-2 Years	L-6 Months	Twice a month per mission	1 hour	Teleconference	Virtual	Lead	Participate	10	12	15
		L-6 Months	ILC	Weekly per mission								
3.4.2.1	Integrated Payload Stack Working Group (Multi-Manifest Missions only)	L - 18 Months	ILC	Monthly	2 hours	Virtual	Contractor Site	Lead	Participate	25	40	60
3.4.2.1	Management Working Groups	L-2 Years	ILC	Quarterly per mission	4 hours	In-Person	Contractor Site	Lead	Participate	24	48	64
3.4.2.2												
3.4.2.3	Other Contractor Mission Readiness Review	L-2 Years	ILC	Contractor-Dependent	Contractor-Dependent	In-Person	Contractor Site	Lead	Participate	8	12	25
3.4.2.6	Launch Security WG	L-24	SV Ship	Quarterly	0.5 day	Teleconference	Virtual	Lead	Part	8	12	25
3.4.7.1.2	RAT Kickoff Meeting	L-6 Months	N/A	Once per mission	1 hour	Teleconference	Virtual	Support	Lead	N/A	N/A	N/A
3.4.7.1.2	Recurring RAT Meetings	L-6 Months	MDR	Weekly per mission	1 hour	Teleconference	Virtual	Support	Lead	N/A	N/A	N/A
3.4.7.4	Integrated Launch Rehearsals	L- 4 Months	MDR	3 Times per mission	6 hours	In-Person	Launch Site	Lead	Participate	50	80	100
3.4.7.5	Hotwashes	Following Each Rehearsal	N/A	3 Times per mission	2 hours	In-Person	Launch Site	Lead	Participate	25	40	60
3.4.7.5	Academic Sessions	Prior to Each Rehearsal	N/A	3 Times per mission	2 hours	In-Person	Launch Site	Lead	Participate	25	40	60
3.5.2.8	Recurring Launch Site Status Meetings	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	In-Person	Launch Site	Invite	Participate	5	10	15
3.5.2.10	LV Transportation Planning Meetings	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	5	8	10

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.5.3.2	Launch Integration and Scheduling Meetings	Operational Event (OE)	ILC	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Lead	Participate	5	8	10
3.5.3.3	Contractor Readiness Review	Operational Event (OE)	ILC	Contractor-Dependent	Contractor-Dependent	In-Person	Launch Site	Lead	Participate	4	12	20
3.5.3.4.1	Transport Activities	Operational Event (OE)	ILC	Contractor-Dependent	Contractor-Dependent	In-Person	Launch Site	Lead	Participate	4	8	14
3.5.3.4.2	Pre-Route Survey	Operational Event (OE)	ILC	Contractor-Dependent	Contractor-Dependent	In-Person	Launch Site	Lead	Participate	1	2	3
3.5.3.11	Launch Operations Coordination Meeting	2 Weeks prior to Integrated Operations Start	Launch	Daily per mission	1 hour	In-Person	Launch Site	Support	Lead	10	20	30
3.5.4.1	Facility and Infrastructure Meetings and Working Groups	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Lead	Participate	4	10	15
3.5.4.7	Weekly Launch Site Walk-Downs	ATP	End PoP	Weekly	4 hours	In-Person	Launch Site	Support	Lead	4	6	8
3.5.2.2 3.5.7.1.3	Confined Space Training	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	In-Person	Contractor Site	Lead	Participate	1	5	10
3.5.2.2 3.5.7.1.3	Alternate Breathing Apparatus Training	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	In-Person	Contractor Site	Lead	Participate	1	8	15
3.5.2.2 3.5.7.1.3	Fall Hazard Training	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	In-Person	Contractor Site	Lead	Participate	1	5	10
3.5.7.1.11	Landing and Recovery Site Status Meetings	ATP	End PoP	Contractor-Dependent	Contractor-Dependent	Teleconference	Virtual	Invite	Participate	1	8	15
3.5.7.1.18	USG Team Audits and Reviews of Operating Processes	ATP	End PoP	As Needed-Ongoing	4 hours	In-Person	Contractor Site	Support	Lead	1	8	15

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.5.7.2.1	Mishap Investigation Meetings	ATP	End PoP	As Needed-Ongoing	Contractor-Dependent	In-Person	Contractor Site	Lead	Participate	15	30	50
3.6.1	Avionics Systems Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Batteries Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Contamination Working Group	ATP	End PoP	Monthly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Day of Launch Winds Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Dynamic Environments Working Group	ATP	End PoP	Monthly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Engines Working Group	ATP	End PoP	Weekly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Flight Controls Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Flight Mechanics Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Flight Operations Working Group	ATP	End PoP	Monthly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Flight Software Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Ground Systems Software Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Guidance Avionics Hardware Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Launch Operations Working Group	ATP	End PoP	Monthly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Loads Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.6.1	Pedigree Planning and Management Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Manufacturing and Production Working Group	ATP	End PoP	Quarterly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Power/Control Avionics Hardware Working Group	ATP	End PoP	Monthly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Propulsion Systems Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Ordnance Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Structures Working Group	ATP	End PoP	Twice a month	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Telemetry Working Group	ATP	End PoP	Quarterly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.1	Thermal/Aero/Fluids Working Group	ATP	End PoP	Monthly	1 hour	Teleconference	Virtual	Lead	Participate	8	12	25
3.6.2.1	Chief Engineers Meeting	ATP	End PoP	Weekly	1 hour	Teleconference	Virtual	Lead	Participate	2	5	8
3.6.2.4	Walk-Down	Prior to vehicle flight closeout (First NSS mission)	Prior to vehicle flight closeout (Final NSS mission)	Once per mission	4 hours	In-Person	Launch Site	Lead	Participate	8	12	15
3.6.7.1	Pre-Ship Readiness Review	ATP	End PoP	Contractor-Dependent	4 hours	In-Person	Launch Site	Lead	Participate	8	12	25
3.6.7.2	Launch Site Readiness Review	ATP	End PoP	Once per mission	4 hours	In-Person	Launch Site	Lead	Participate	8	12	25
3.6.9	Post-Flight Data Review Q&A	ATP	End PoP	Contractor-Dependent	4 hours	In-Person	Launch Site	Support	Lead	8	12	25
3.8.7.2.2	ICE 1, ICE 2	ATP	End PoP	Once per mission	6 hours	In-Person	Launch Site	Lead	Participate	50	80	100

Paragraph	Activity	Time				Forum		Responsibility		USG Team Participation		
		Nom. Start	Nom. End	Nom. Freq.	Nom. Length	Format	Location	Contractor	USG Team	Minimum	Expected	Maximum
3.8.7.2.3	Wet Dress Rehearsal	L-21 Days	N/A	Once per mission	8 hours	In-Person	Launch Site	Lead	Participate	50	80	100
3.8.8.2.2	IPS/APS Working Group	L-24 Months	ILC	Monthly	2 hours	In-Person	LMSI Facility	Lead	Participate	8	12	25
3.8.8.2.3	IPS/APS Design Reviews	L-24 Months	ILC	Up to three per mission	4 hours	In-Person	LMSI Facility	Support	Participate	8	12	25
3.8.8.2.4	SV Milestone Meetings	L-24 Months	ILC	Up to three per mission	2 hours	Teleconference	Virtual	Support	Participate	8	18	30
Appendix F	Mission Design Review (MDR)	L - 12 Months		Once per mission	8 hours	In-Person	Launch Site	Lead	Participate	50	80	100
Appendix F	Mission Verification Review	L - 4 Months		Once per mission	8 hours	In-Person	Launch Site	Lead	Participate	50	80	100
Appendix F	Ground Operations Readiness Review	L-3 Months	N/A	Once per mission	8 hours	In-Person	Launch Site	Lead	Participate	50	80	100
Appendix F	Component and Subsystem Readiness Review	L - 2.5 Months		Once per mission	8 hours	In-Person	Launch Site	Lead	Participate	50	80	100
Appendix F	Integrated Operations Readiness Review	L - 6 Weeks		Once per mission	8 hours	In-Person	Launch Site	Lead	Participate	50	80	100
Appendix F	Launch Readiness Review	L-2 Days	N/A	Once per mission	4 hours	In-Person	Launch Site	Lead	Participate	50	80	100

F APPENDIX: MISSION MILESTONE REVIEWS

Table F-1: Mission Milestone Review by Nominal Timeline

<u>Nominal Timeline</u>	<u>Mission Milestone Review</u>	<u>Required Contractor Support</u>
ATP + 1 month	Mission Kickoff Review (MKR)	<p>For non NRO missions:</p> <p>Support the development of mission-specific requirements and verification methods. Mission specific requirements include, but are not limited to, mission design, environmental (e.g., thermal, contamination, vibration, pressure, Electromagnetic Compatibility, shock, Radio Frequency, and lightning), and hardware.</p> <p>Identify preliminary derived requirements (contingent upon early integration information being available) to a level adequate to verify launch vehicle performance capabilities. Capture design restrictions, limitations, and known violations. Physical, mechanical, electrical, functional, avionics, and separation interface requirements shall be identified. (contingent upon early integration data being available)</p> <p>Identify mass properties, orbital requirements, launch vehicle performance, launch window injection, deployment attitudes and rates, and acquisition assistance messages requirements.</p> <p>Identify flight and ground critical items along with rationale to include an initial As Designed Configuration List (CDRL A033) shall be provided.</p> <p>Identify status of the Launch Vehicle Test and Verification Plan and Contractor’s approach for developing this plan.</p> <p>Provide Launch Vehicle Overview. Describe the vehicle baseline configuration for the mission. Identify and discuss changes to vehicle baseline and first flight items, qualification and analysis plans, new Test-Like-You-Fly (TLYF) exceptions and updated system test requirements.</p> <p>Identify analyses to be conducted, interrelationships of PL (IPS) data inputs to Launch Vehicle (LV) analysis schedules, and LV products.</p> <p>Provide status of compliance documentation.</p> <p>Provide roadmap for delivering all analysis data (CDRL A039) deliverables.</p>

<u>Nominal Timeline</u>	<u>Mission Milestone Review</u>	<u>Required Contractor Support</u>
		Identify tasks that encompass launch processing of all ground and flight hardware test, encapsulated spacecraft mate, and launch.
L-12 mo	Mission Design Review	<p>Provide mission unique trade studies to include analyses performed and results along with comparisons to similar proven designs.</p> <p>Evaluate the safety of the design and its ability to meet safety requirements. Requires U.S. Government (USG) Team approval.</p> <p>Demonstrate all mission unique requirements have been traced to the subsystem and component level and the flow down is adequate to verify system performance.</p> <p>Demonstrate overall mission architecture and all launch vehicle to payload interfaces have been identified and are verifiable.</p> <p>Provide launch vehicle-to-payload Interface Control Document (ICD) development status and verification plans.</p> <p>Demonstrate the design solution can be produced based on existing processes and techniques; if not, risk areas, which require unique and unproved processes, are identified and risk mitigation plans are established.</p> <p>Demonstrate an acceptable operations concept.</p> <p>Define preliminary launch vehicle interfaces.</p> <p>Provide preliminary personnel fairing access study.</p> <p>Provide preliminary plans for end-to-end testing methodologies.</p> <p>Release 90% mission unique drawings.</p> <p>Provide updated flight and ground critical items to include rationale and an initial As-Built Configuration List (CDRL A034).</p> <p>Provide status of the execution of the Launch Vehicle Test and Verification Plan and post-NLSS Certification NRDV Work Plan activities.</p> <p>Identify and discuss additional changes to vehicle baseline and first flight items, qualification and analysis plans, new TLYF exceptions and updated system test requirements</p>

<u>Nominal Timeline</u>	<u>Mission Milestone Review</u>	<u>Required Contractor Support</u>
		<p>Provide updated roadmap for delivering all analysis data (CDRL A039) deliverables.</p> <p>Provide updates to the tasks that encompass launch processing of all ground and flight hardware test, encapsulated spacecraft mate, and launch.</p>
L-4 mo	Mission Verification Review (MVR)	<p>Demonstrate the design, fabrication, qualification testing, and analysis are complete.</p> <p>Review all mission-specific items for the payload and mission requirements to verify qualification, compliance, and systems-level compatibility using completed analyses, test, inspection, and demonstrations results. The mission-unique system acceptance shall be subject to USG Team's approval.</p> <p>Review updates to mission analyses and methodologies/tools from mission design review.</p> <p>Provide status of Launch Vehicle-to-payload ICD requirement verification activities.</p> <p>Provide results of the mission-specific acceptance reviews of the major suppliers or major subsystems.</p> <p>Identify design changes that occurred subsequent to Mission Design Review or changes as a result of new flight data.</p> <p>Summarize applicable component tests (test setups, test cases, results, and significant anomalies), analyses, margins, or similarity assessments to include component qualification rationale (similarity, test, analysis) for all affected components that are new, changed, proposed for reuse, or subject to new environments or functional requirements.</p> <p>Demonstrate methodology and results of current analyses at 90 percent.</p> <p>Provide updated flight and ground critical items to include rationale and an updated As-Built Configuration List.</p> <p>Provide status of the execution of the Launch Vehicle Test and Verification Plan.</p> <p>Identify additional changes to vehicle baseline and first flight items, qualification and analysis plans, new TLYF exceptions, and updated system test requirements.</p>

<u>Nominal Timeline</u>	<u>Mission Milestone Review</u>	<u>Required Contractor Support</u>
		<p>Provide launch vehicle/payload compatibility test plans.</p> <p>Demonstrate all key subsystem or component engineering analyses are complete.</p> <p>Provide integrated safety analysis identifying remaining hazards and proposed resolution.</p> <p>Provide updated roadmap for delivering all analysis data (CDRL A039) deliverables.</p> <p>Identify updates to the tasks that encompass launch processing of all ground and flight hardware test, encapsulated spacecraft mate, and launch.</p>
L-3 mo	Ground Operations Readiness Review	<p>Review mission-specific launch site operations schedule, LV flight hardware/software and facility/ground support equipment (GSE) status, integrated operations procedure status, integrated operations changes from previous mission (if applicable), and lessons learned from previous mission (if applicable).</p> <p>Review integrated operations plan, to include PL (IPS) GSE installation at launch complex (LC), payload fairing (PLF) encapsulation, encapsulated assembly (EA) transport from payload processing facility (PPF) to LC, EA mate to LV, and LC operations through launch.</p> <p>Provide status of Launch Vehicle-to-payload ICD requirement verification activities at the launch site.</p>
NLT 2 business days before LV ship	Pre-Ship Readiness Review	<p>The main objective of the Contractor's PSRR is to verify readiness to ship flight hardware to the launch site. The review would include end-item product configuration status, technical risk summary from mission design reviews, production summary includes status of transfer work and remaining open work, product non-conformances and time/cycle life status, and transportation plan. Review shall document end item configuration, first flight items, significant technical issues encountered during the manufacture of the launch vehicle, all out of position work being transferred to the launch site, test or equipment waivers, non-conformance list with brief description, and liens to the hardware.</p>

<u>Nominal Timeline</u>	<u>Mission Milestone Review</u>	<u>Required Contractor Support</u>
L-2.5 mo	Component and Subsystem Readiness Review	<p>Provide the final integrated assessment of the maturity and residual risk of the mission and launch vehicle design, build, analysis, and test activities to determine acceptability to proceed into integrated operations to include:</p> <ol style="list-style-type: none"> 1. Review first flight items and their qualification. 2. Review verification and validation results summary/status for launch vehicle configuration. 3. Review significant issues identified during build and validations and verification activities. 4. Review aggregate list of accepted residual risks to date (Launch Vehicle only). 5. Review updates to mission analyses and methodologies/tools from MVR 6. Review and document fleet crossover risks identified to date. 7. Review relevant fleet crossover risks.
L-6 weeks	Integrated Operations Readiness Review	<p>Demonstrate the launch site and launch vehicle are ready for payload mechanical and electrical integration.</p> <p>Review action item status, safety status, payload mating plan, closure plan, payload integration/launch site documentation, interface verifications, checkout and launch software status, nonconformance reports, launch site status, spacecraft readiness, and review of flight profile.</p> <p>Provide a detailed schedule showing all activities remaining to achieve an on-time launch.</p>
L-14 to L-7 days	Flight Readiness Review (FRR)	<p>Provide launch vehicle configuration to include baseline configuration, first flight items, and mission-unique items.</p> <p>Provide mission profile overview from lift off through disposal.</p> <p>Provide milestone schedule and identify issues impacting initial launch capability.</p> <p>Provide summary of vehicle margins and launch availability estimates.</p>

<u>Nominal Timeline</u>	<u>Mission Milestone Review</u>	<u>Required Contractor Support</u>
		<p>Provide summary of ground facility and support equipment readiness.</p> <p>Provide summary of launch opportunities.</p> <p>Provide status of issues and anomalies identified by the USG Product Line Chief Engineer to include “Low-Medium” or higher risk, first flight items, and all open issues.</p>
L-2 days	Launch Readiness Review	<p>Review LV flight hardware/software, LC, and LV GSE status.</p> <p>Review flight operations status, to include readiness of all support elements such as LV telemetry collection assets.</p> <p>Review day of launch (terminal count) timeline and launch constraints.</p>

DRAFT

G APPENDIX: Enabling Requirements For SSC Program Contracts Requiring Interface With Aerospace FFRDC Contract Support

Overview. This contract covers part of a program which is under the general program management of the United States Space Force Space Systems Command (SSC). SSC has entered into a contract with The Aerospace Corporation, a California nonprofit corporation operating a Federally Funded Research and Development Center (FFRDC), for the services of a technical group that will support the program office by performing General Systems Engineering and Integration (GSE&I), Technical Review (TR), and/or Technical Support (TS), and informing the commander or director of the relevant organizations and programs it supports of product or process defects and other relevant information.

GGSE&I. This function involves overall system definition; integration both within the system and with associated systems; analysis of system segment and subsystem design; design compromises and tradeoffs; definition of interfaces; review of hardware and software, including manufacturing and quality control; observation, review and evaluation of tests and test data; support of launch, flight test, and orbital operations; assessment of the contractors' technical performance through meetings with contractors and subcontractors, exchange and analysis of information on progress and problems; review of plans for future work; developing solutions to problems; technical alternatives for reduced program risk; providing written comments and recommendations to the applicable Program Manager and/or Project Officer as an independent technical assessment for consideration for modifying the program or redirecting the contractor's efforts; all to the extent necessary to assure timely and economical accomplishment of program objectives consistent with mission requirements.

TTR. This function includes the process of appraising the technical performance of the contractor through meetings, exchanging information on progress and problems, reviewing reports, evaluating presentations, reviewing hardware and software, witnessing and evaluating tests, analyzing plans for future work, evaluating efforts relative to contract technical objectives, and providing comments and recommendations in writing to the applicable Program Manager and/or Project Officer as an independent technical assessment for consideration for modifying the program or redirecting the contractor's efforts to assure timely and economical accomplishment of program objectives.

TTS. This function involves broad areas of specialized needs of customers for planning, system architecting, research and development, horizontal engineering, or analytical activities for which The Aerospace Corporation is uniquely qualified by virtue of its specially qualified personnel, facilities, or corporate memory. The categories of TS tasks are: Selected Research, Development, Test and Evaluation; Plans and System Architecture; Multi-Program Systems Enhancement; International Technology Assessment; and Acquisition Support.

Prime contractor requirement. In the performance of this contract, the contractor agrees to cooperate with The Aerospace Corporation by: 1) responding to invitations from authorized U. S. Government personnel to attend meetings; 2) providing access to technical information and research, development planning data such as, but not limited to, design and development analyses, test data and results, equipment and process specifications, test and test equipment specifications and procedures, parts and quality control procedures, records and data, manufacturing and assembly procedures, and schedule and milestone data, all in their original form or reproduced form and including top-level life cycle cost* data, where available; 3) delivering data as specified in the Contract Data Requirements List; 4) discussing technical matters relating to this program; 5) providing access to contractor facilities utilized in the performance of this contract; 6) and allowing observation of technical activities by appropriate technical personnel of The Aerospace Corporation. The Aerospace Corporation personnel engaged in GSE&I, TR, and/or TS efforts: (i) are authorized access to all such technical information (including proprietary information) pertaining to this contract and may discuss and disclose it to applicable personnel in a program office; (ii) are authorized to discuss and disclose such technical information (including proprietary information) to the commander or director of the relevant organizations and programs; and (iii) Aerospace shall make the technical information (including proprietary information) available only to its Trustees, officers, employees, contract labor, consultants, and attorneys who have a need to know.

Subcontractor Requirement. The contractor further agrees to include in all subcontracts a requirement requiring compliance by subcontractor and supplier and succeeding levels of subcontractors and suppliers with the response and access and disclosure provisions of this Enabling Requirement, subject to coordination with the contractor, except for subcontracts for commercial items or commercial services. This agreement does not relieve the contractor of its responsibility to manage the subcontracts, effectively and efficiently nor is it intended to establish privity of contract between the Government or The Aerospace Corporation and such subcontractors or suppliers, except as indicated below.

Master Non-disclosure Agreement. The Aerospace Corporation shall protect the proprietary information of contractors, subcontractors, and suppliers in accordance with its Master Non-disclosure Agreement, a copy of which is available upon request. This Master Non-disclosure Agreement satisfies the Nondisclosure Agreement requirements set forth in 10 U.S.C. §2320 (f)(2)(B), and provides that such contractors, subcontractors, and suppliers are intended third-party beneficiaries under the Master Non-disclosure Agreement and shall have the full rights to enforce the terms and conditions of the Master Non-disclosure Agreement directly against The Aerospace Corporation, as if they had been signatory party hereto. Each such contractor, subcontractor, or supplier hereby waives any requirement for The Aerospace Corporation to enter into any separate company-to-company confidentiality or other non-disclosure agreements.

Aerospace shall make the technical information (including proprietary information) available only to its Trustees, officers, employees, contract labor, consultants, and attorneys who have a need to know, and Aerospace shall maintain between itself and the foregoing binding agreements of general application as may be necessary to fulfill their obligations under the Master Non-disclosure Agreement referred to herein, and Aerospace agrees that it will inform contractors, subcontractors, and suppliers if it plans to use consultants, or contract labor personnel and, upon the request of such contractor, subcontractor, or supplier, to have its consultants and contract labor personnel execute non-disclosure agreements directly therewith.

Technical Direction. The Aerospace Corporation personnel are not authorized to direct the contractor in any manner. Technical direction under this contract will be provided to the contractor solely by SSC.

*“Cost data” means information associated with the programmatic elements of life cycle (concept, development, production, operations, and retirement) of the system/program. As defined, cost data differs from “financial” data, which is defined as information associated with the internal workings of a company or contractor that is not specific to a project or program.”

H APPENDIX: GOVERNMENT PROGRAM CONTRACTS REQUIRING INTERFACE WITH PRIME AND SUPPORT CONTRACTORS

(1) The Government currently has or may enter into contracts with one or more of the following companies, the primary purpose of which is to furnish independent and impartial advice or technical assistance directly to the Government in support of the Government's management and oversight of a program or effort (rather than to directly furnish an end item or service to accomplish a program or effort) with one or more of the following companies: Tecolote Research Incorporated [SSC/AA Cost, Budget, and Administrative Support] Liona Enterprises [SSC/AA Data Management] ManTech International Corporation [SSC/AA SE&I] Millennium Engineering and Integration (MEI) [Certification Support] General Dynamics - Advanced Information Systems [My Mission Link (MML) Support] Science Applications International Corporation (SAIC) [NRO/OSL SETA/SE&I] Analex Corp. [NRO/OSL IV&V] Agile Defense [Launch Support]

(2) In the performance of this contract, the Contractor shall cooperate with the companies listed above (hereafter referred to as support contractors). Cooperation includes, but is not limited to, allowing the listed support contractors to attend meetings; observe technical activities; discuss with the Contractor technical matters related to this program at meetings or otherwise; and access Contractor integrated data environments and facilities used in the performance of the contract.

(3) The Contractor shall provide the support contractors access to data such as, but not limited to, design and development analyses; test data, procedures, and results; research, development, and planning data; parts, equipment and process specifications; testing and test equipment specifications; quality control procedures; manufacturing and assembly procedures; schedule and milestone data; and other contract data. To fulfill contractual requirements to the Government, support contractors engaged in general systems engineering and integration efforts and technical support are normally authorized access to information pertaining to this contract. Exceptions, such as when the Contractor seeks to restrict access to Contractor trade secrets, will be handled on a case-by-case basis. If the Contractor seeks to limit distribution of data to Government personnel only, the Contractor shall submit this request in writing to the Contracting Officer.

(4) The Contractor shall include in all subcontracts a clause requiring the Subcontractor and succeeding levels of Subcontractors to comply with the response and access provisions of paragraph (b) above, subject to coordination with the Contractor. This clause does not relieve the Contractor of the responsibility to manage the Subcontracts effectively and efficiently, nor is it intended to establish privity of contract between the Government or support contractors and such Subcontractors.

(5) The Contractor and its Subcontractors shall not take contractual direction from support contractors.

(6) National Reconnaissance Office (NRO) support contracts will contain clauses that require the support contractor to protect data and software related to this contract and prohibit the support contractor from using such data for any purpose other than performance of the support contract.

(7) Support contractors shall protect the proprietary information of disclosing contractors, subcontractors, suppliers, and vendors IAW any applicable existing NDAs and applicable provisions of the support contract. For any support contractor with which Contractor does not have an NDA in place, Contractor shall execute nondisclosure agreements with said support contractor within 30 days after the execution of this contract, or the award of a contract to a successor of the support contractors listed above in (1).

(8) Proprietary information furnished to support contractors shall be: (i) Disclosed in writing and clearly marked "proprietary" or with other words of similar meaning; or (ii) Disclosed orally or visually

(for instance, during a plant tour, briefing, or demonstration) and identified as proprietary information at the time of the oral or visual disclosure by the Government or a disclosing party. The support contractors will treat all such information as proprietary unless within fifteen (15) days the support contractor coordinates with the Government or disclosing party to obtain a written version of the proprietary information and determine the extent of the proprietary claims; or (iii) Disclosed by electronic transmission (e.g., facsimile, electronic mail) in either human readable form or machine readable form, and the contractor marks it electronically as proprietary within the electronic transmissions, such marking to be displayed in human readable form along with all displays of the proprietary information; or (iv) Disclosed by delivery of an electronic storage medium or memory device, and the contractor marks the storage medium or memory device itself as containing proprietary information and electronically marks the stored information as proprietary, such marking to be displayed in human readable form along with all displays of the proprietary information.

(9) The Contractor shall not hold the support contractor liable for unauthorized disclosure of proprietary information if it can be demonstrated in written documentation or other competent evidence that the information was: (i) Already known to the support contractor without restriction on its use or disclosure at the time of its disclosure by the disclosing party; (ii) In the public domain or becomes publicly known through no wrongful act of the support contractor; (iii) Proprietary information disclosed by the support contractor with the Contractor's prior written permission; (iv) Independently developed by the support contractor, subsequent to its receipt, without the use of proprietary information; (v) Disclosed to the support contractor by a third party who was legally entitled to disclose the same and who did not acquire the proprietary information from the disclosing party; or (vi) Specifically provided in writing by the U.S. Government to the support contractor with an unlimited rights license; or (vii) Disclosed by the support contractor as required by law, regulatory or legislative authority, including subpoenas, criminal or civil investigative demands, or similar processes, provided the support contractor provides the disclosing party that originated the proprietary information with prompt written notice so that the disclosing party may seek a protective order or other appropriate remedy, and provided that, in the absence of a timely protective order, the support contractor furnishes only that minimum portion of the proprietary information that is legally required.

(10) All notices to the support contractor(s) required or contemplated under the provisions of this section, shall be in writing and shall be deemed to have been given on: (i) The date received if delivered personally or by overnight courier; (ii) The third day after being deposited in the U.S. mail, postage prepaid; or (iii) The date sent if sent by facsimile transmission or e-mail with a digital copy.

(11) The Contractor shall, in the event of an unauthorized disclosure whether suspected or actual, conduct reasonable fact-finding efforts and to implement resolution actions as mutually agreed upon between the Contractor and the Contracting Officer.