NPR 7120.5F Program Plan Template

Template Instructions

The Program Plan is an agreement among the program manager, Center Director, and Mission Directorate Associate Administrator (MDAA). Other Center Directors providing a significant contribution to the program also concur with the Program Plan to document their commitment to provide required Center resources. The Program Plan defines the goals and objectives of the program, the environment within which the program operates, and the Management Agreement commitments of the program, including identifying the high-level requirements on both the program and each constituent project. These requirements on the project may be in the body of the Plan or added as appendices. The Program Plan is to be updated and approved during the program life cycle if warranted by changes in the stated Management Agreement commitments.

In this Program Plan template, all subordinate plans, collectively called control plans, are required unless they are not applicable or are marked as “Best Practice” in the applicable table in NPR 7120.5F Appendix I (i.e., I-Table). (The expectation is that products marked as “Best Practice” will be developed per the I-Table as part of normal program management activities.) They are based on requirements in NASA Policy Directives (NPDs) and NASA Procedural Requirements (NPRs) that affect program/project planning. If a control plan is not applicable to a particular program, indicate that by stating it is not applicable in the appropriate section and provide a rationale. Control plans can either be part of the Program Plan or separate stand-alone documents referenced in the appropriate part of the Program Plan. Considerations for determining if a control plan should be a stand-alone document include a requirement that the control plan be stand-alone in the NPR that requires the control plan; differences between when the control plan is baselined and when the Program Plan is baselined; how frequently the control plan will be updated; and how long the control plan is. When the control plan is a stand-alone document, the Program Plan contains a reference to the stand-alone document.

Each section of the Program Plan template is required. If a section is not applicable to a particular program, indicate in the appropriate section and provide a rationale. If a section is applicable but the program desires to omit the section or parts of a section, then a waiver needs to be obtained in accordance with the requirement tailoring process for NPR 7120.5F, NASA Space Flight Program and Project Management Requirements. Approvals are documented in Part 4.0, Waivers or Deviations Log, of the Program Plan. In addition, the program’s Compliance Matrix for NPR 7120.5F is attached to the Program Plan. If the format of the completed Program Plan differs from this template, a cross-reference table indicating where the information for each template paragraph is needs to be provided with the document when it is submitted for MDAA signature.

The approval signatures of the MDAA, the Center Director, and the program manager certify that the Program Plan implements all the Agency’s applicable institutional requirements or that the authority responsible for those requirements (e.g., Safety and Mission Assurance), have granted a deviation or waiver to the modification of those requirements.

Single-project programs may combine the Program and Project Plans into a single document if the MDAA agrees**.**

Program Plan Title Page

**[*Program Name*] Program Plan**

 **[*short title or acronym*]**

(Provide a title for the candidate program and designate a short title or proposed acronym in parenthesis, if appropriate.)

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Mission Directorate Associate Administrator Date

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Center Director (as many signature lines as needed)\* Date

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Program Manager Date

By signing this document, signatories are certifying that the content herein is acceptable as direction for managing this program and that they will ensure its implementation by those over whom they have authority.

\* Where a program is managed from HQ exclusively, the NASA Associate Administrator signs in place of the Center Director or the NASA Associate Administrator may delegate this responsibility to the NASA Chief Program Management Officer.

Figure 1 Program Plan Title Page

Program Plan Template

[*Program Name*] Program Plan[

[*short title or acronym*]

1.0 PROGRAM OVERVIEW

1.1 Introduction

Briefly describe the background of the program and its current status, including results of Formulation activities, decisions, and documentation. Specify the type of program (i.e., single-project, uncoupled, loosely coupled, or tightly coupled) and the basis for that classification. Specify if there are plans for continuing operations and production, including integration of capability upgrades, with an unspecified Phase E end point, for:

* Each project.
* Single-project programs.

1.2 Goals and Objectives

State program goals and specific objectives and provide clear traceability to the Agency’s strategic goals and to Mission Directorate strategic goals and objectives. Program performance goals and their relationship to NASA program goals set forth in NPD 1001.0, NASA Strategic Plan should be expressed in an objective, quantifiable, and measurable form. Goals and objectives should include specific commitments to safety and mission success.

1.3 Program Architecture

Briefly describe the architecture of the program, its major components, and the way they will be integrated. Describe how the major program components are intended to operate together, and with legacy systems, as applicable, to achieve program goals and objectives.

Provide a summary-level technical description of the program, including constituent projects and operations concepts. The description should also include mission description, program interfaces, facilities, logistics concepts, planned mission results, and data analysis, archiving, and reporting. Identify driving ground rules and assumptions and major constraints affecting program systems development (e.g., cost, launch window, required launch vehicle, mission planetary environment, fuel/engine design, human systems integration, and foreign partners).

For single-project programs and projects that plan continuing operations and production, including integration of capability upgrades, with an unspecified Phase E end point, define the scope of the initial capability.

Describe how the program will relate to other organizations within and outside NASA. Reference Section 3.4, Acquisition Strategy in this template (below) or provide the following information here:

For organizations within NASA, describe the roles of each in the program, including technology efforts, space communications, and launch services.

For organizations outside NASA, describe the role of each in the program, including other government agencies, academia, industry, and international partners as they are known at the start of the program.

1.4 Stakeholder Definition

Identify the main stakeholders of the program (e.g., PI, science community, technology community, public, education community, and Mission Directorate sponsor(s)) and the process to be used within the program to ensure stakeholder advocacy.

1.5 Program Authority, Management Approach, and Governance Structure

Specifically identify the Decision Authority and governing Program Management Council (PMC) for oversight of the program, and any delegated Decision Authority and delegated governing PMC, per Section 2.3 of NPR 7120.5F.

Describe the program management structure, including each participating organization’s responsibilities. Identify:

* The Center where the program manager resides.
* The Centers involved and each Center’s responsibilities, as they relate to their respective requirement allocations referenced in Section 2.1, Requirements Baseline below.

Describe the chain of accountability and decision path outlining the roles and responsibilities of the Mission Directorate sponsor(s), program manager, Center Director, and other authorities (including the Technical Authorities), as required. Provide a high-level description of the project’s organization within the program, showing the chain of accountability. Describe clear lines of authority from projects and Centers to the program, and to the Mission Directorate, and frequency of reporting for each. Illustrate the organization graphically. Describe the process by which projects are formulated, approved, and terminated.

1.6 Implementation Approach

Describe briefly the implementation approach of the program, including any applicable guidance or direction from the ASM review, the acquisition strategy (e.g., in-house, NASA Centers, and contractor primes), partners, and partner contributions, including innovative acquisition approaches such as commercial or other partners who will develop end products that are not owned by NASA but provided as services to NASA, if appropriate. Include make-or-buy decision plans and trade studies.

Identify and document concurrence for any investments, divestments, acquisition strategies, procurements, agreements, and changes to capability portfolio capability components in accordance with requirements and strategic guidance included in NPR 8600.1, NASA Capability Portfolio Management Requirements. (See NPR 7120.5F Appendix A for definitions of capability portfolio and capability component.)

Document the agreements on the use of implementation policies and practices between the program manager and participating NASA Centers in this section (or in appendices to the document), along with the program’s approach to ensuring that interfaces do not increase risk to mission success. (For tightly coupled programs, the program manager, the NASA Chief Engineer, and the Center Chief Engineers (or designees) participating in the program establish the engineering best practices for the program. These decisions are documented here.)

2.0 PROGRAM BASELINES

2.1 Requirements Baseline

**Program Requirements.** Document the high-level program requirements, including performance, safety, and programmatic requirements and correlate them to Agency and Mission Directorate strategic objectives and requirements. Describe the process by which program requirements are verified for compliance. Describe the process for controlling changes to program requirements. Document the traceability of requirements that flow down from Agency- and Center-level policy to the program and from the program to projects.

**Requirements Documentation.** For tightly coupled programs and single-project programs, decompose these high-level requirements into requirements on constituent projects or systems, specified herein or in a separate, configuration-controlled, program requirements document to be prepared by the program manager and approved by the MDAA. Additional concurrences may be required at the option of the NASA AA. There may also be subordinate project requirements documents controlled at lower levels.

For uncoupled or loosely coupled programs, apply these high-level requirements to generate the program’s requirements on each constituent project. This documentation is controlled by the Mission Directorate and may be located in the body of the Program Plan or in a subsequent appendix. Requirements thus documented, and any subsequent changes, require approval of the program manager, MDAA, and participating Center Director(s).

**Program Requirements on Projects.** For each project, provide a top-level description, including the mission’s science or exploration objectives. Document the project’s category, Decision Authority, governing PMC, and risk classification or identify where this information is documented. Describe the project’s mission, performance, and safety requirements. For science missions, include baseline science requirements, threshold science requirements, and mission data requirements. (See NPR 7120.5F Appendix A for definitions of baseline and threshold science requirements.) Identify the mission success criteria for each project based on the threshold science requirements. State each requirement in objective, quantifiable, and verifiable terms. Identify the project’s principal schedule milestones, including Preliminary Design Review (PDR), Critical Design Review (CDR), launch, mission operational-critical milestones, and the planned decommissioning date. State the development and/or total life-cycle or initial capability cost constraints on the project. Set forth any budget constraints by fiscal year. State the specific conditions under which a project Termination Review would be triggered. Describe any additional requirements on the project (e.g., international partners). If the mission characteristics indicate a greater emphasis is necessary on maintaining technical, cost, or schedule, then identify which is most important (e.g., state if the mission is cost capped; or if schedule is paramount, as for a planetary mission; or if it is critical to accomplish all of the technical objectives, as for a technology demonstration mission).

2.2 WBS Baseline

Provide the program’s Work Breakdown Structure (WBS) and WBS dictionary down to the project level developed in accordance with guidance provided by the NASA Work Breakdown Structure (WBS) Handbook, NASA/SP-2010-3404, which can be found on the OCE tab under the “Other NASA-Level Documents” menu in NODIS. The WBS will support cost and schedule allocation down to a project level that allows for unambiguous cost reporting.

2.3 Schedule Baseline

Present a summary of the program’s integrated master schedule (IMS), including all critical milestones, major events, life-cycle reviews, and KDPs throughout the program life cycle. The summary of the master schedule should include the logical relationships (interdependencies) for the various program elements and projects and critical paths, as appropriate. Identify driving ground rules, assumptions, and constraints affecting the schedule baseline.

2.4 Resource Baseline

Present the program’s funding requirements by fiscal year. State the New Obligation Authority (NOA) in real-year dollars for all years—prior, current, and remaining. The funding requirements are to be consistent with the program’s WBS and include funding for all cost elements required by the Agency’s full-cost accounting procedures. Funding requirements are to be consistent with the budget. Provide a breakdown of the program’s funding requirements to the WBS Level 2 elements. Present the program-specific (i.e., not individual project) workforce requirements by fiscal year, consistent with the program’s funding requirements and WBS. Throughout the Implementation Phase, baselines are to be based on the joint cost and schedule confidence level in accordance with NPD 1000.5, Policy for NASA Acquisition and NPR 7120.5F.

Describe the program infrastructure requirements (acquisition, renovations, and/or use of real property/facilities, aircraft, personal property, and information technology). Identify means of meeting infrastructure requirements through synergy with other existing and planned programs and projects to avoid duplication of facilities and capabilities. Identify necessary upgrades or new developments, including those needed for environmental compliance.

Identify driving ground rules, assumptions, and constraints affecting the resource baseline.

Document the constituent projects’ Commitment Baselines (i.e., ABC).

* 1. Joint Cost and Schedule Confidence Level

For single-project programs, document the joint cost and schedule confidence level approved by the Decision Authority at KDP C. For single-project programs with an estimated life-cycle or initial capability cost greater than or equal to $1B, update the joint cost and schedule confidence level at CDR and at KDP D (if applicable).

3.0 PROGRAM CONTROL PLANS

3.1 Technical, Schedule, and Cost Control Plan

This control plan will include the following:

Describe the plan to monitor and control the program requirements, technical design, schedule, and cost to achieve its high-level requirements.

Describe the program’s performance measures in objective, quantifiable, and measurable terms and document how the measures are traced from the program high-level requirements. Establish baseline and threshold values for the performance metrics to be achieved at each Key Decision Point (KDP), as appropriate. In addition, document the mission success criteria associated with the program-level requirements that, if not met, trigger consideration of a Termination Review.

Tightly coupled and single-project programs also develop and maintain the status of a set of programmatic and technical leading indicators to ensure proper progress and management of the program. Status and trends of leading indicators should be presented at LCRs and KDPs. These leading indicators include:

* Requirement Trends (percent growth, TBD/TBR closures, number of requirement changes).
* Interface Trends (percent ICD approval, TBD/TBR burn down, number of interface requirement changes).
* Verification Trends (closure burn down, number of deviations/waivers approved/open).
* Review Trends (RID/RFA/Action Item burn down per review).
* Software Unique Trends (number of requirements per build/release versus plan).
* Problem Report/Discrepancy Report Trends (number open, number closed).
* Cost Trends (Plan vs. actual, UFE, EVM).
* Schedule Trends (critical path slack/float, critical milestone dates).
* Staffing Trends (FTE/WYE plan vs. actual).
* Technical Performance Measures (Mass margin, power margin).
* Manufacturing Trends (Number of nonconformance/corrective actions (open/ closed/resolved)).
* Additional program-specific indicators, as needed.

These indicators are further explained in the NASA Space Flight Program and Project Management Handbook, NASA/SP-20220009501; the NASA Project Planning and Control Handbook, NASA/SP-2016-3424; and the NASA Common Leading Indicators Detailed Reference Guide at <https://nodis3.gsfc.nasa.gov/OCE_rep/OCE_list.cfm>.

Describe how constituent projects will periodically report performance. Describe mitigation approach if projects are exceeding their development cost documented in the ABC to enable corrective action prior to triggering the 30 percent breach threshold. Describe how projects will support a baseline review in the event the Decision Authority (DA) directs one. Describe how the program will implement the Système Internationale (SI) and other systems of measurement and the identification of units of measure in all product documentation. Where full implementation of the SI system of measurement is not practical, hybrid configurations (i.e., a controlled mix of SI and non-SI system elements) may be used to support maximum practical use of SI units for design, development, and operations. Where hybrid configurations are used, describe the specific requirements established to control interfaces between elements using different measurement systems. (See NPR 7120.5F, Section 3.7, for SI assessment timing requirement.)

Describe the program’s implementation of Technical Authority (Engineering, Safety and Mission Assurance, and Health and Medical).

For single-project programs, describe the program’s EVMS (see Appendix H, Section 3.1); For tightly coupled programs, describe the program’s EVMS, if EVM requirements are to be levied at the program level. For loosely coupled or uncoupled programs, describe the EVM requirements flowed down to the projects. Include plan for flow down of EVM requirements and reporting to support project EVM.

Describe any additional specific tools the program will use to implement the program control processes (e.g., the requirements management system, the program scheduling system, or the program information management systems).

Describe how the program will monitor and control the integrated master schedule (IMS).

Describe how the program will utilize its technical and schedule margins and Unallocated Future Expense (UFE) to control the Management Agreement.

Describe how the program plans to report technical, schedule, and cost status to the MDAA, including frequency and the level of detail.

Describe how the program will address technical waivers and deviations and how Formal Dissents will be handled.

3.2 Safety and Mission Assurance Plan

Develop a program Safety and Mission Assurance (SMA) Plan as required by NPR 8705.2, Human-Rating Requirements for Space Systems for crewed missions and NPR 8705.4, Risk Classification for NASA Payloads for un-crewed missions and payloads.

The SMA Plan reflects a program life-cycle SMA process perspective, addressing areas including: SMA domain management and integration (e.g., for safety, reliability, maintainability, quality, planetary protection, etc.) with other engineering and management functions (e.g., concept and design trade-studies; risk analysis and risk assessments; risk-informed decision making; fault tolerance and contingency planning; knowledge capture; hardware and software design assurance; supply chain risk management and procurement; hardware and software design verification, and test; manufacturing process design and control; manufacturing and product quality assurance; system verification and test; pre-flight verification and test; operations; maintenance; logistics planning; maintainability and sustainability; operational reliability and availability; decommissioning; and disposal).

Describe how the program will develop and manage a Closed-Loop Problem Reporting and Resolution System. Describe how the program develops, tracks, and resolves problems. The process should include a well-defined data collection system and process for hardware and software problems and anomaly reports, problem analysis, and corrective action.

Identify the program’s approach to flow down requirements as appropriate to external developers and suppliers in acquisitions (e.g., contracts and purchase orders).

Describe how the program will develop, evaluate, and report indications of SMA program maturity and effectiveness at life cycle or other executive reviews, including through the use of metrics and indicators that are not otherwise included in formal life cycle review deliverables or are not elements of the certification of flight readiness (COFR) process (e.g., satisfactory progress towards human rating).

3.3 Risk Management Plan

Develop a Risk Management Plan that includes the content required by NPR 8000.4, Agency Risk Management Procedural Requirements. Summarize how the program will implement the NASA risk management process (including risk-informed decision making (RIDM) and continuous risk management (CRM) in accordance with NPR 8000.4, Agency Risk Management Procedural Requirements. Include the initial Significant Risk List and appropriate actions to mitigate each risk. Programs with international or other U.S. Government agency contributions need to plan for, assess, and report on risks due to international or other government partners and plan for contingencies.

3.4 Acquisition Strategy

The program Acquisition Strategy is developed by the program manager, supported by the Office of Procurement, and needs to be consistent with NPD 1000.5, Policy for NASA Acquisition, the results of the Agency strategic acquisition process, and the ASM. The elements of the program Acquisition Strategy should be reflected in any resulting Procurement Strategy Meeting (PSM) for individual procurement activity supporting the program Acquisition Strategy. It documents an integrated acquisition strategy that enables the program to meet its mission objectives and provides the best value to NASA. The Acquisition Strategy should include, but is not limited to, the following:

Identify all major proposed acquisitions (such as engineering design study, hardware and software development, mission and data operations support, and sustainment) in relation to the program WBS. Provide summary information on each such proposed acquisition, including a Contract WBS; major deliverable items; recommended type of procurement (competitive, AO for instruments); type of contract (cost-reimbursable, fixed-price); source (institutional, contractor, other U.S. Government agency, or international organization); procuring activity; and surveillance approach. Identify those major procurements that require a PSM.

Describe completed or planned studies supporting make-or-buy decisions, considering NASA’s in-house capabilities and the maintenance of NASA’s core competencies, as well as cost and best overall value to NASA.

Describe the state of the industrial base capability and identify potential critical and single-source suppliers needed to design, develop, produce, support, and, if appropriate, restart an acquisition program or project. The acquisition strategy should promote sufficient program/project stability to encourage industry to invest, plan, and bear their share of risk. Describe the internal and external mechanisms and procedures used to identify, monitor, and mitigate industrial base and supply chain risks. Include data reporting relationships to allow continuous surveillance of the entire supply chain that provides for timely notification and mitigation of potential risks associated with the industrial base or supply chain. Describe the process for reporting industrial base and supply chain risks to the MDAA.

Identify the program’s approach to strengthen safety and mission assurance in the contract.

Describe all agreements, memoranda of understanding, barters, in-kind contributions, and other arrangements for collaborative and/or cooperative relationships. Include partnerships created through mechanisms other than those prescribed in the FAR and the NFS. List all such agreements (the configuration control numbers, the date signed or projected dates of approval, and associated record requirements) necessary for program success. Include or reference all agreements concluded with the authority of the program manager and reference agreements concluded with the authority of the MDAA and above. Include the following:

(1) NASA agreements (e.g., space communications, launch services, and inter-Center memoranda of agreement).

(2) Non-NASA agreements:

(a) Domestic (e.g., U.S. Government agencies).

(b) International (e.g., memoranda of understanding).

Describe intellectual property considerations and goals for advanced technologies to protect core NASA interests during the program life cycle; the process for respecting and protecting privately developed intellectual property; the process for ensuring acquisition strategies, proposals, and contract awards reflect intellectual property considerations established for the program; the approach for ensuring that the intellectual property strategy promotes competition for post-production sustainment/modernization contracts; the approach for seeking flexible and creative solutions to intellectual property issues that meet the desires of the parties and reflect NASA’s investment; the approach for ensuring procurement contracts specify both (1) the delivery of necessary technical data and computer software and (2) the license rights necessary for technical data and computer software; and the approach for ensuring the delivery of technical data and computer software under procurement contracts is marked in accordance with the contract at the time of delivery.

3.5 Technology Development Plan

Describe the technology assessment, development, management, and acquisition strategies (including intellectual property considerations) needed to achieve the program’s mission objectives.

Describe how the program will assess its technology development requirements, including how the program will evaluate the feasibility, availability, readiness, cost, risk, and benefit of the new technologies. The approach should include timely reporting of new technologies to the Center Technology Transfer Office and supporting technology transfer activities as described in NPR 7500.2, NASA Technology Transfer Requirements.

Describe how the program will identify opportunities for leveraging on-going technology efforts.

Describe how the program will transition technologies from the development stage to the manufacturing and production phases. Identify the supply chain needed to manufacture the technology and any costs and risks associated with the transition to the manufacturing and production phases. Develop and document appropriate mitigation plans for the identified risks.

Describe the program’s strategy for ensuring that there are alternative development paths available if/when technologies do not mature as expected. (Refer to NPR 7123.1 for TRL definitions andSP-20205003605, Technology Readiness Assessment Best Practices Guide for technology readiness assessment best practices. The Technology Readiness Assessment Best Practices Guide can be found in NODIS on the OCE tab under the “Other NASA-Level Documents” menu.)

Describe how the program will remove technology gaps, including maturation, validation, and insertion plans, performance measurement at quantifiable milestones, off-ramp decision gates, and resources required.

Describe briefly how the program will ensure that all planned technology exchanges, contracts, and partnership agreements comply with all laws and regulations regarding export control and the transfer of sensitive and proprietary information.

Describe how the program will transition technologies from the development stage to manufacturing, production, and insertion into the end system. Identify any potential costs and risks associated with the transition to manufacturing, production, and insertion. Develop and document appropriate mitigation plans for the identified risks.

3.6 Systems Engineering Management Plan

Develop a SEMP that includes the content required by NPR 7123.1, NASA Systems Engineering Processes and Requirements. Include descriptions of the program’s overall approach for systems engineering, to include system design and product realization processes (implementation and/or integration, verification and validation, and transition), as well as the technical management processes.

**3.7 Verification and Validation Plan**

Summarize the approach for performing verification and validation of the program products. Indicate the methodology to be used in the verification/validation (test, analysis, inspection, or demonstration) as defined in NPR 7123.1, NASA Systems Engineering Processes and Requirements.

3.8 System Security Plan

Identify and prepare a System Security Plan for each information system. The System Security Plan is a formal document that provides an overview of the security requirements for an information system and describes the security controls in place or planned for meeting those requirements.

System Security Plans are generated and stored within the NASA Risk Information and Security Compliance System (RISCS) at https://riscs-info.nasa.gov/. Multiple systems may be covered under a single System Security Plan. Controls selected within the System Security Plan are included as system requirements for the system or systems covered by the plan.

Document the program’s approach to implementing cybersecurity requirements in accordance with NPR 2810.1, Security of Information and Information Systems, if there are requirements outside the scope of the System Security Plan(s)*.*

3.9 Review Plan

Summarize the program’s approach for conducting a series of reviews, including internal reviews and program life-cycle reviews. In accordance with Center best practices, Mission Directorate review requirements, and the requirements in NPR 7123.1, NASA Systems Engineering Processes and Requirements and NPR 7120.5F, NASA Space Flight Program and Project Management Requirements, provide the names, purposes, content, and timing of the life-cycle reviews.

Identify any deviations from these documents that the program is planning or waivers that have been granted, including tailoring to accommodate aspects of innovative acquisition approaches. Specify the considerations that will be used to trigger a discussion on the need for a PIR with the NASA AA. (See NPR 7120.5F Section 2.2.4.2 and the NASA Space Flight Program and Project Management Handbook, Section 5.11.3.) Provide the technical, scientific, schedule, cost, and other criteria that will be utilized in the consideration of a Termination Review.

For single-project programs that plan continuing operations and production, including integration of capability upgrades, with an unspecified Phase E end point, define the initial capability in the Review Plan for KDP B if the initial capability is not the first operational mission flight.

For tightly coupled programs that involve multiple Centers, document the program life-cycle review requirements on the supporting projects that represent an integrated review process for the various projects and take into consideration the participating Centers’ review process best practices. For each program life-cycle review and KDP, document the sequencing of the associated project life-cycle reviews and KDPs, i.e., whether the associated project life-cycle reviews and KDPs precede or follow the program life-cycle review and KDP. In addition, document which projects should proceed to their KDPs together, which projects should proceed to their KDPs simultaneously with the program KDP, and which projects may proceed to their KDPs as individual projects.

The sequencing of project life-cycle reviews and KDPs with respect to program life-cycle reviews and KDPs is especially important for project PDR life-cycle reviews that precede KDP Cs. At KDP C, the Agency makes project technical, cost, and schedule commitments to its external stakeholders at the established JCL in accordance with NPR 7120.5F requirements. Since changes to one project can easily impact other projects’ technical, cost, schedule, and risk baselines, projects and their program may need to proceed to KDP C/KDP I together.

3.10 Mission Operations Plan

Describe the activities required to perform the mission. Describe how the program will implement the associated facilities, hardware, software, and procedures required to complete the mission. Describe mission operations plans, rules, and constraints. Describe the Mission Operations System (MOS) and Ground Data System (GDS) in the following terms:

* MOS and GDS human resources and training requirements.
* Procedures to ensure that operations are conducted in a reliable, consistent, and controlled manner using lessons learned during the program and from previous programs.
* Facilities requirements (offices, conference rooms, operations areas, simulators, and test beds).
* Hardware (ground-based communications and computing hardware and associated documentation).
* Software (ground-based software and associated documentation).

3.11 NEPA Compliance Plan

Describe the level of NEPA analysis planned to comply with NPR 8580.1, Implementing the National Environmental Policy Act, and Executive Order 12114. The NEPA Compliance Plan should be prepared based on consultation with the appropriate NEPA manager (Center NEPA Manager or Mission Direction NEPA Liaison) and describe the program's NEPA strategy at all affected Centers, including decisions regarding programmatic NEPA documents. Insert into the program schedule the critical NEPA milestones if preparation of an Environmental Assessment or Environmental Impact Statement is planned.

3.12 Integrated Logistics Support Plan

Describe how the program will implement NPD 7500.1, Program and Project Life-Cycle Logistics Support Policy, including a maintenance and support concept; participation in the design process to enhance supportability; supply support; maintenance and maintenance planning; packaging, handling, and transportation; technical data and documentation; support and test equipment; training; manpower and personnel for Integrated Logistics Support (ILS) functions; facilities required for ILS functions; and logistics information systems for the life of the program.

3.13 Science Data Management Plan

Describe how the program will manage the scientific data generated and captured by the operational mission(s) and any samples collected and returned for analysis. Include descriptions of how data will be generated, processed, distributed, analyzed, and archived, as well as how any samples will be collected, stored during the mission, and managed when returned to Earth. The Plan should include definitions of data rights and services and access to samples, as appropriate. Identify where the preliminary science data requirements will be documented (these requirements should be documented by SRR). The Plan should be developed in consultation with the Mission Directorate data leads and the Office of the Chief Information Officer (OCIO) early in the program life-cycle to ensure that metadata standards and data formats are appropriately considered and that infrastructure and security requirements are addressed.

Explain how the program will accomplish the information management and disposition in NPD 2200.1*,* Management of NASA Scientific and Technical Information; NPR 2200.2, Requirements for Documentation, Approval and Dissemination of Scientific and Technical Information; and NPR 1441.1, NASA Records Management Program Requirements, as applicable to program science data.

Explain how the program will implement NASA sample handling, curation, and planetary protection directives and rules, including NPR 8715.24, Planetary Protection Provisions for Robotic Extraterrestrial Missions.

3.14 Configuration Management Plan

Describe the configuration management (CM) approach that the program team will implement. Describe the CM planning and management function including the CM organization and tools to be used. Describe the methods and procedures to be used for configuration identification, configuration control, interface management, configuration change management, configuration verification and audit, and configuration status accounting and communications. Describe how CM will be audited and how contractor CM processes will be integrated with the program. Configuration Management should address hardware, software, and firmware. Additional information on configuration management is provided in NPR 7123.1 and SAE/EIA 649, Standard for Configuration Management.

3.15 Security Plan

Describe the program’s plans for ensuring security, including:

Security Requirements: Describe the program’s approach for planning and implementing the requirements for physical, personnel, and industrial security, and for security awareness/education requirements in accordance with NPR 1600.1, NASA Security Program Procedural Requirements.

Emergency Response Requirements: Describe the program’s emergency response plan in accordance with NPR 1040.1, NASA Continuity of Operations (COOP) Planning Procedural Requirements and define the range and scope of potential crises and specific response actions, timing of notifications and actions, and responsibilities of key individuals.

3.16 Technology Transfer (formerly Export) Control Plan

Describe how the program will implement the export control requirements specified in
NPR 2190.1, NASA Export Control Program.

**3.17 Communications Plan**

Develop a Communications Plan in collaboration with the Associate Administrator for the Office of Communications or their designee that identifies key program milestones that will be of interest to the general public, the media, and other key stakeholders and plans to engage these audiences via audio and real and/or near real-time high resolution video and/or imagery for each milestone including during full mission operations. Summarize how these efforts will promote understanding of and engagement with program objectives, elements, benefits, and contributions to overarching NASA goals. In collaboration with the Associate Administrator for the Office of Communications or their designee, identify resources and technical requirements for implementation of communications for the general public, media, and other key stakeholders. (See the Communications Plan Template (on the Web site for the Office of Communications, http://communications.nasa.gov/content/nasa-comm-guidelines.))

3.18 Knowledge Management Plan

Describe the program’s approach to creating the program’s knowledge management strategy and processes. Strategy should include practices for examining the lessons learned database for relevant lessons that can be reflected in the program early in the planning process to avoid known issues; identifying, capturing, and transferring knowledge; and continuously capturing and documenting lessons learned throughout the program life cycle in accordance with NPD 7120.4, NASA Engineering and Program/Project Management Policy and as described in NPD 7120.6, Knowledge Policy for Programs and Projects and other appropriate requirements and standards documentation.

3.19 Human-Rating Certification Package

For human space flight missions, develop a Human-Rating Certification Package per
NPR 8705.2, Human-Rating Requirements for Space Systems. Human-rating certification focuses on the integration of the human into the system, preventing catastrophic events during the mission, and protecting the health and safety of humans involved in or exposed to space activities, specifically the public, crew, passengers, and ground personnel.

**3.20 Quality Assurance Surveillance Plan**

Develop a consolidated set of detailed instructions for the performance of Government contract quality assurance review and evaluation for the program. The plan might include contractor documents, data, and records; products and product attributes; processes; quality system elements/attributes; and requirements related to quality data analysis, nonconformance reporting and corrective action tracking/resolution, and final product acceptance. (See NASA-STD-8709.22, Safety and Mission Assurance Acronyms, Abbreviations, and Definitions.)

**3.21 Orbital Collision Avoidance Plan**

Describe how the program implements the design considerations and preparation for operations to avoid in-space collisions. The plan ensures the space flight mission meets the requirements of NID 7120.132, Collision Avoidance for Space Environment Protection. Include in the plan a project overview including a concept of operation, how orbit selection was performed, the spacecraft’s ascent and descent plan, how the spacecraft’s location tracking data will be generated, and whether there will be any autonomous flight control. Discuss how the spacecraft’s design will enable it to be acquired and tracked by the Space Surveillance Network and be cataloged by the U.S. Space Command. Describe the process to routinely coordinate with other operator(s) for maneuvering. Appendix C of the NID provides a template for this plan. (See NID 7120.132, Collision Avoidance for Space Environment Protection for more detail and plan template.)

**3.22 Human Systems Integration Approach**

Tightly coupled and single-project programs develop a Human Systems Integration (HSI) approach in accordance with NPR 7123.1. (See the NASA Human Systems Integration (HSI) Handbook, NASA/SP-20210010952, for additional information.)

4.0 WAIVERS OR DEVIATIONS LOG

Identify NPR 7120.5F requirements for which a waiver or deviation has been requested and approved consistent with program characteristics such as scope, complexity, visibility, cost, safety, and acceptable risk, and provide rationale and approvals.

5.0 CHANGE LOG

Record changes in the Program Plan.

6.0 APPENDICES

Appendix A. Acronyms

Appendix B . Definitions

Appendix C. Compliance Matrix for NPR 7120.5F