

STP-PLAN-0005, Revision [B]

**SOLAR TERRESTRIAL PROBES (STP)
PROGRAM PLAN**

**SOLAR TERRESTRIAL PROBES
PROGRAM
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**Goddard Space Flight Center
Greenbelt, Maryland**

CONFIGURATION MANAGEMENT FOREWORD

This document is a Solar Terrestrial Probes (STP) Program controlled document. Changes to this document require prior approval of the STP Program Configuration Control Board (CCB) Chairperson. Proposed changes are to be submitted to the STP Program Configuration Management Office (CMO), along with supportive material justifying the proposed change.

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DOCUMENT CHANGE RECORD

Sheet: 1 of 1

| REV/ VERSION LEVEL | DESCRIPTION OF CHANGE | APPROVED BY | DATE APPROVED |
|--------------------------|--|----------------|------------------|
| B | Update the Solar Terrestrial Probes Program Plan to conform to National Aeronautics and Space Administration (NASA) Procedural Requirement (NPR) 7120.5 and other current documentation. | STP-CCR-0010 | 4/19/2016 |

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1.0. PROGRAM OVERVIEW

1.1. Introduction

The Earth, sun, and heliosphere are linked together to form a system. The Solar Terrestrial Probes (STP) missions will study the Earth-sun-heliosphere system for insights into questions concerning its evolution. These STP program objectives flow down from NASA Strategic Objective 1.4, “understand the sun and its interactions with Earth and the solar system, including space weather” in the *2014 NASA Strategic Plan* and the *2014 Science Plan for NASA’s Science Mission Directorate (SMD)*. The most recent Heliophysics National Research Council (NRC) decadal survey, *“Solar and Space Physics: A Science for a Technological Society, 2013”* is a reference document.

1.2. Goals and Objectives

The goal of the STP program is to understand the physical processes that determine the mass, momentum, and energy flow in the solar system from the Sun to planetary bodies including Earth. This includes understanding the interstellar boundary and its interaction with the local interstellar medium. STP missions study the fundamental processes leading to evolutionary and future changes. Successive missions will focus on critical science targets that systematically advance understanding of the coupled solar-heliosphere-terrestrial system. The missions use a creative blend of *in situ* and remote sensing observations, often from multiple platforms, to understand these fundamental physical processes, such as magnetic reconnection.

The STP program develops missions and technology to address fundamental science questions about the physics of space plasmas and the flow of mass and energy through the solar system. STP program objectives are:

1. To describe the system behavior of the magnetic variable star, our sun, and its interaction with the entire solar system;
2. To understand the critical physics that link the sun, Earth, heliosphere, and the interstellar medium;
3. To understand the processes and dynamics of the magnetosphere-ionosphere-upper atmosphere system, the near space electromagnetic plasma environment surrounding the Earth; and,
4. To develop and mature instrumentation and mission technologies with the potential of advancing STP science.

The *2014 Science Plan for NASA’s Science Mission Directorate*, the Heliophysics Decadal Survey, the Heliophysics roadmap (*Our Dynamic Space Environment: Heliophysics Science and Technology Roadmap for 2014-2033, 2014*) and the STP Program Commitment Agreement (PCA) provide the linkages between STP program components and the Heliophysics research objectives listed in Table 1.

Table 1: Major and Supporting Contributions to the STP Program Components to achieving the research objectives for the Heliophysics science goal in the *2014 Science Plan for NASA's Science Mission Directorate*.

| | | | |
|--|--|---|---|
| NASA Strategic Goal 1: Expand the frontiers of knowledge, capability, and opportunity in space. | | | |
| NASA Strategic Objective 1.4 and Heliophysics Science Goal: Understand the Sun and its interactions with the Earth and the solar system, including space weather. | | | |
| Heliophysics Goals | Applicability of Research Objectives for Heliophysics Science Goal to STP Program Components | | |
| | Explore the physical processes in the space environment from the Sun to the Earth and throughout the solar system. | Advance our understanding of the connections that link the Sun, the Earth, planetary space environments, and the outer reaches of our solar system. | Develop the knowledge and capability to detect and predict extreme conditions in space to protect life and society and to safeguard human and robotic explorers beyond Earth. |
| STP Science Missions | | | |
| TIMED | M | M | S |
| Hinode | M | S | S |
| STEREO | M | S | M |
| MMS | M | M | S |

M=Major contribution; S=Supporting contribution
 TIMED – Thermosphere Ionosphere Mesosphere Energetics and Dynamics
 STEREO - Solar Terrestrial Relations Observatory
 MMS - Magnetospheric Multiscale

NASA's strategic goal, strategic objective, research objectives, and research focus areas align with the missions identified in Table 1 and provide the basis for NASA's SMD determination of the sequence and content of additional missions in the STP program.

1.3. Program Architecture

The science and exploration objectives, the research focus areas, investigations, and achievements in the *2013 NRC Decadal Survey* and the *2014 NASA SMD Science Plan* provide the basis for NASA's SMD determination of the sequence and content of additional missions in the STP program. These additional missions are identified in the budget cycle and expressed in an objective, quantifiable, and measurable form through updates to the STP PCA, program plan, and individual project plans.

The STP program utilizes a set of strategically defined, loosely coupled, missions as the major components to address strategic research focus areas pertaining to the fundamental science questions about the physics of space plasmas and the flow of mass and energy through the solar

system. The loosely coupled missions in the STP program provide a good match for the spatial-temporal requirements of Heliophysics investigations, which require an understanding of the connections between processes, utilizing a variety of vantage points to characterize the phenomena.

The STP program presently contains four missions in operations: TIMED (2001), Hinode/Solar-B (2006), STEREO (2006), and MMS (2015). Operationally, TIMED and STEREO are operated by the Johns Hopkins University/Applied Physics Laboratory (JHU/APL) and Hinode is operated by the Japanese Aerospace Exploration Agency. MMS is operated by the Goddard Space Flight Center (GSFC). TIMED, Hinode/Solar-B, and STEREO have completed their prime missions.

The STP missions are managed in accordance with NASA Policy Directive (NPD) 7120.4 and the current revision of NASA Procedural Requirements (NPR) 7120.5.

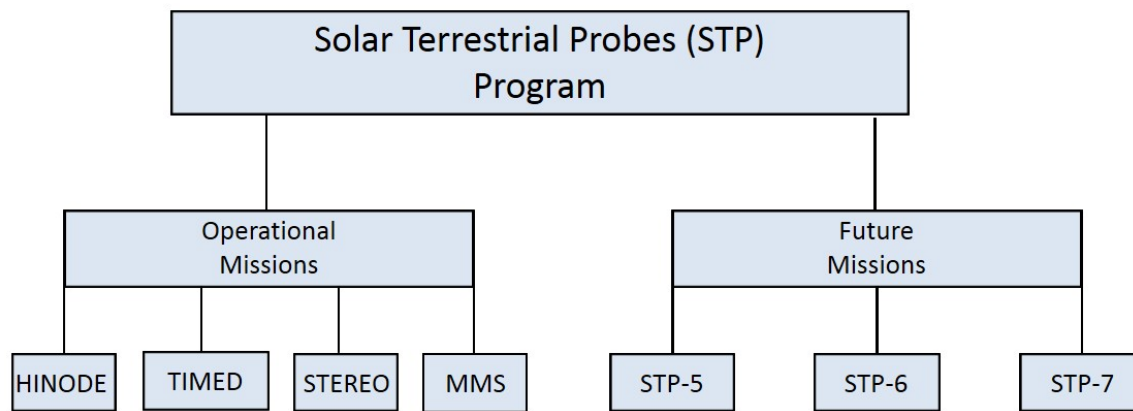


Figure 1: Elements of the STP Program

The STP program relates to other organizations both inside and outside of NASA through its projects. These may include other NASA offices, government agencies, academic institutions, and industry providers.

The project-specific requirements appendices, i.e., program-level requirements appendices (PLRA) attached to this STP Program Plan, define relationships with external organizations.

1.4. Stakeholder Definition

The science community and NASA SMD are the immediate stakeholders of the STP program. NASA's SMD Heliophysics Division provides the program with its operating budget, programmatic guidelines, and identification of the scientific goals and objectives. The Heliophysics science community is the principal user of the data resulting from the selected mission and provides the intellectual advice and rationale for the measurements.

Customers benefitting from the STP program include the following: the Heliophysics science community, NASA mission operations, the national operational space weather community (led by the National Oceanic and Atmospheric Administration and the Department of Defense), other operational agencies of the U.S. government, and other commercial or government agencies that operate spacecraft.

The SMD Heliophysics Division engages stakeholder communities to ensure advocacy through a variety of venues, such as the Heliophysics Subcommittee of NASA's Advisory Council, the American Geophysical Union, the National Academies of Science and its Space Studies Board, the Committee for Solar and Space Physics, and the Committee for Space Weather.

1.5. Program Authority, Management Approach, and Governance Structure

The STP program is a loosely coupled multi-project program. The STP program manager resides at GSFC, reporting to the Center Director and, programmatically, through the Heliophysics Division Director (DD) to the Associate Administrator (AA) for the SMD at Headquarters. The governing Program Management Council (PMC) for the STP program is the Agency PMC. The Agency PMC is also the approving PMC for Category 1 projects, including MMS. The SMD PMC is the governing PMC for Category 2 and 3 projects.

There is one exception, in the STP program, to GSFC program management; the Hinode operational mission is managed solely by the Marshall Space Flight Center (MSFC). All references in this STP Program Plan to the STP program management function exclude the Hinode mission. Any reference to Hinode is understood to go through MSFC's program office to the SMD Heliophysics DD.

GSFC's Center Management Council (CMC) evaluates cost, schedule, and technical content to ensure that the project is receiving the necessary Center resources to accomplish its tasks, and from a technical authority (TA) viewpoint, to ensure compliance with the PCA, program plan, formulation agreements, project plan, Center procedures and processes, as well as applicable NASA technical standards. The CMC does not make programmatic decisions without the approval of SMD.

The SMD/AA delegates responsibilities for managing the program and projects, under NPR 7120.5, *NASA Space Flight Program and Project Management Requirements*, and NPR 7123.1, *NASA Systems Engineering Processes and Requirements*, to the deputy DD who serves as the program director. The program director acts as the primary interface for the DD with the program and project managers at GSFC or other implementing organizations.

The STP program has a NASA Headquarters (HQ) program executive (PE). Each project has a lead NASA HQ PE. The PE reports to the program director and serves as the program director's technical arm. The PE maintains insight into all programmatic activities and ensures the program or project is initiated and executed according to approved processes. The PE does not issue formal direction unless specifically delegated this authority from the program director or Deputy Associate Administrator (DAA) for Programs in SMD.

The STP program has a NASA HQ lead program scientist (PS) and a NASA HQ program scientist assigned to each project. The lead PS administers the Science segment of the STP program and, in support of the Heliophysics DD, provides a science interface and integrating function between the Heliophysics science community, the Heliophysics advisory subcommittees, the international science community, and the space weather community.

For each project, its PS is the senior NASA scientist responsible for a flight project's science content as defined for that SMD science investigation. The PS is SMD's interface with the project scientist or the principal investigator (PI) for an announcement of opportunity (AO)-selected or a directed mission. The PS monitors science management and NASA Headquarters program execution and ensures the science of the mission remains viable and true to strategic objectives during development of the mission. The PS is the steward of the Level-1 science requirements and maintains regular communications with the PE. Both participate fully in decisions and meetings relevant to mission planning and implementation.

The Heliophysics Division resources program analyst (PA) maintains each project's new obligation authority (NOA) and budget plan. The PA oversees the annual planning, programming, and budgeting execution (PPBE) process. The PA serves as the budget expert for the PE and the PS on project budget matters. The PA distributes project funding to appropriate field centers; reviews center obligation and cost plans for the current fiscal year (FY); generates an internal SMD cost phasing plan; and monitors actual costs and obligations.

The SMD PE, PS, and PA management team maintains close contact with program office and project personnel to keep abreast of project status. PEs, PSs, and PAs are not in the direct line of authority. The Heliophysics DD, deputy DD, or the SMD/AA sign letters of direction to the program office. The program office may send letters of direction to the projects.

STP Program Organization Chart

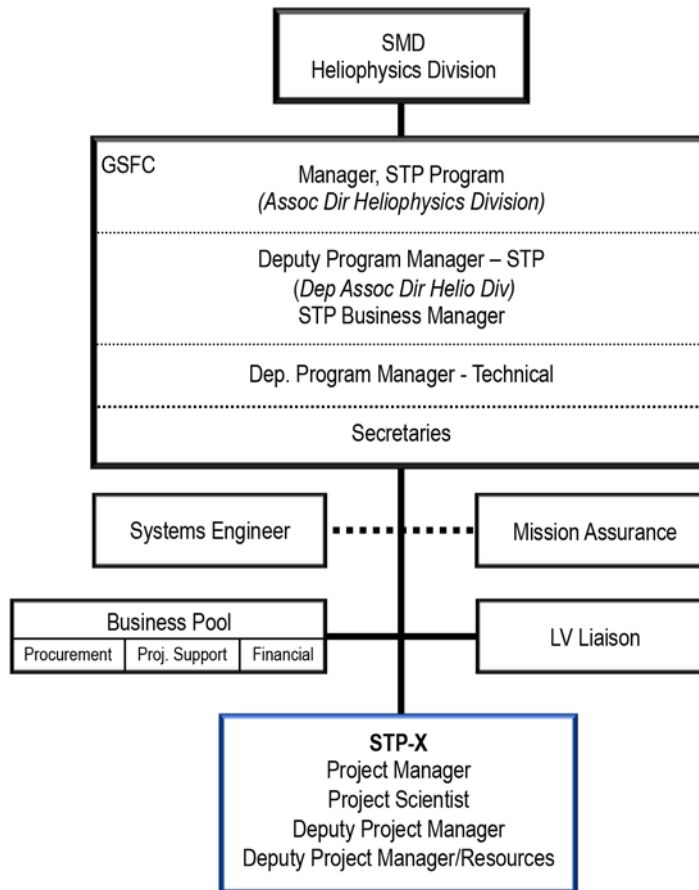


Figure 2: STP Program Organization Chart

LV – Launch Vehicle

Program-level requirements for the multi-project STP program are documented in the body of the program plan. For STP projects, the project requirements are attached to the STP Program Plan as project-specific requirement appendices, referred to as either PLRAs or Level-I Requirements. For each project, the PE leads the development of a baseline version of the PLRA to the program plan, ensuring all required content is addressed in clearly stated, unambiguous, and verifiable language. The PE generates each appendix through coordination with the PS, the program manager, the mission manager, mission scientist, project manager, the principle investigator and/or project scientist. The DD places the PLRA under configuration control after the system requirements review but before Key Decision Point (KDP)-B, satisfying the KDP-B requirement from NPR 7120.5 for strategic missions to establish a “baseline.”

The PLRA or Level-I Requirements are approved by the same signatories who approve the program plan, since the PLRA is an extension of that plan. These signatories are the AA/SMD,

the Center Director, and the program manager. In addition, the Heliophysics DD, PE, PS, project manager, project scientist, and SMD chief engineer must concur.

The STP program office at GSFC is the prime interface to SMD and has all of the authorities, responsibilities, and accountabilities defined in NPR 7120.5 (see Fig.2). It is also the prime interface with the project office. The program office reports to GSFC's CMC, the Heliophysics DD (program director), the SMD PMC, and the Agency PMC, as required.

The STP program manager is the senior official for the program and, according to NPD 1000.0, *NASA Governance and Strategic Management Handbook*, reports to the SMD/AA for all program-related activity. The SMD/AA delegates day-to-day oversight to the Heliophysics DD. Therefore, the program manager reports to the Heliophysics DD. The program manager manages the program office. The program manager implements SMD policy and guidelines via interfacing with the PE, the program director, or DAA for Programs, on program cost, schedule, and technical scope. The program manager monitors and provides direction and guidance for the projects in the STP program. More than one project manager may report to a program manager depending on the structure of a program. The program office controls its own budget (a separate line item from that of the projects), which, excluding project overruns, is used to fund studies or other activities in support of the program and its projects. The program office does not have direct control of project funds or project reserves, but can make recommendations to SMD for their use.

The STP program manager is responsible for oversight of all STP missions. The program office develops the integrated budget requirements and recommendations for the STP program based on SMD budget guidelines that are prepared coincident with the release of the President's budget request for the upcoming fiscal year (FY). The program office establishes operational policies for the STP program, assures appropriate independent review of the projects under NPR 7120.5 and NPR 7123, monitors the progress of each project, reports project and program status to GSFC and SMD management, recommends necessary corrective and preventative actions, and facilitates access to GSFC and other NASA expertise in support of project requests. The technical staff will generally be matrixed to the program office. Risk driven identification of technical areas may require deeper insight and closer tracking by the program office. Additional resources may be applied if necessary.

The STP program manager is responsible for tracking program metrics and reporting status to NASA HQ. Program management oversight and TA responsibilities will include regular communications with the appropriate project manager. Program staff will attend periodic and lower-level reviews at the implementing organizations as appropriate. Program and project office monthly status reviews (MSRs) will be presented to the CMC and SMD.

SMD has established a Standing Review Board (SRB) for the STP program in accordance with the requirements of NPR 7120.5. For NASA-led missions, the implementing center makes the initial recommendation of the SRB chair and suggested key members to NASA HQ. For non-NASA-led missions, the implementing organization and the program host center makes a combined initial recommendation of the SRB chair and the suggested key members to NASA HQ. The implementing organization, with the TA, leads the reviews below the SRB level. The

review chair will report out results, significant actions, and coordinate with the SRB per the comprehensive review plan. All STP SRBs will be conducted under the *NASA Standing Review Board Handbook (NASA/SP-2013-02-026-HQ)*. For each mission a Terms of Reference (“TOR”) is established which describes the agreed upon terms for SRB Life-Cycle Reviews. The TOR is prepared by the PE with inputs from the project and program office. It is approved by the SMD AA and the GSFC Center Director.

The STP program and projects follow the TA process established in section 3.3. of NPR 7120.5. NASA established this process as part of its system of checks and balances to provide independent oversight of programs and projects in support of safety and mission success through the selection of specific individuals with delegated levels of authority. For all GSFC-led and non-NASA center-led NASA missions, the TA resides at the Goddard Space Flight Center. For center-led missions other than GSFC the TA typically resides with the host center. Further, this office is responsible to SMD for recommending the launch readiness of the mission.

The project office is responsible for developing and delivering the mission within cost and schedule commitments while meeting all Level-I Requirements. Typical responsibilities include project and business management, science implementation, engineering, and safety and mission assurance. The project office has all of the authorities, responsibilities, and accountabilities defined in NPR 7120.5 to execute the mission, subject to limitations resulting from NASA’s fiduciary obligations under the Federal Acquisition Regulation (FAR) and any applicable mission unique requirements or restrictions defined in the FAR. Requirements flow from this STP Program Plan to the project offices. The baseline implementation approach for executing a project, including any mission specific tailoring, will be explicitly defined in the individual mission’s project plan which is subject to SMD approval. The project office contingencies (reserves) for cost and schedule, technical descope options, and technical resource margins will be the responsibility of and managed by the project office. The project office will report to their organization CMC, the program office, the SMD PMC, and the Agency PMC as required.

1.6. Implementation Approach

The STP program office implements the program consistent with the latest PCA, NPR 7120.5 and Agency requirements. Individual projects will be implemented per NPR 7120.5 or NPR 7120.8, as applicable. The SMD AA approves the program plan, which describes how the program office proposes to manage and implement the program, and holds the program manager accountable. NASA projects use the PLRA to generate lower-level requirements for implementation. SMD uses the PLRA to evaluate the project’s performance during implementation and for decision on mission accomplishment.

Individual mission implementation is defined by each project in the project plan and approved by the program office and the SMD AA. Major project element make-or-buy and trade studies are conducted at the project level to support an SMD decision. Each project develops its acquisition strategy in accordance with NASA and Center procurement processes to ensure cost, schedule, technical, and risk performance are assessed and the optimal contractual vehicles are used including cost plus incentive fee, cost plus award fee, et cetera. Provisions for partners

contributing elements to a project are controlled by project or NASA Office of Interagency and International Relations (OIIR) agreements.

2.0. PROGRAM BASELINE

2.1. Requirements Baseline

2.1.1. Program Requirements

1. The STP program implements missions selected by SMD.
2. A Formulation Authorization Document (FAD) issued by SMD for each selected project constitutes the authorization to begin formulation.
3. SMD uses the AO process to select science investigations that include science instruments, sensors, instrument suites, and/or an entire (PI-led) mission.
4. The selected science investigations and the mission requirements for a project defines the project science and technical performance requirements.
5. Launch vehicles used for STP missions are certified vehicles consistent with the payload class defined in NPR 8705.4, *Risk Classification for NASA Payloads*.
6. International partnerships for space flight hardware and software are defined using international agreements arranged by OIIR.
7. Each science investigation team maintains a data archive of its instrument science and science data products for the life of the prime mission.
8. Each science investigation team provides the data obtained as part of the mission, including the engineering data and ancillary information and analysis software necessary to validate and calibrate the science data, to the public as defined in the PLRA.
9. Each science investigation team delivers the data archive from the prime mission to NASA for a deep data archive within 1 year of the completion of the prime mission.
10. Each science investigation team performs scientific analyses to meet the science requirements for the mission as defined in the PLRA.

2.1.2. Requirements Documentation

STP program requirements for specific STP projects are documented in the PLRA to this program plan.

2.1.3. Program Requirements on Projects

1. The technical performance requirements for the missions and projects are detailed in the appendices to the STP Program Plan and are baselined when each mission or project begins implementation.
2. Program requirements that flow down to the projects are identified in Center processes and directives in safety and mission assurance (SMA), risk management, schedule management, resources management and information, and configuration management as well as SMD and NASA strategic objectives and requirements.
3. Compliance verification and traceability of the requirements that flow down from the program to the projects are conducted as part of the review and signature of the project plan and during the life-cycle through regular Monthly Status Reviews (MSR), project reviews and assessments.
4. Changes to program requirements require approval of the program manager, Center Director, and the AA/SMD.
5. Changes to key project personnel (PI, project manager) require approval of the program manager and concurrence from Heliophysics Division Director.
6. Missions have no exclusive use data analysis periods and release mission data as soon as possible after a brief validation period.
7. A requirements traceability and verification matrix, as defined in the safety mission assurance plan (SMAP), is used to confirm that the mission system has met all requirements and is ready for launch.

2.1.4. Mission Classification and Life-Cycle Costs

Table 2 below defines the STP mission categorization, the governing PMC, and the risk classification. The program level requirements including cost limits and launch dates for the missions are set forth by SMD in the PLRA.

Table 2: Program/Project Categorization, Governing Program Management Council, Risk Classification for Projects in Development or operations.

| Program or Project/TA | Category | Governing Program Management Council | Risk Classification |
|------------------------------|-----------------|---|----------------------------|
| MMS/GSFC | 1 | Agency | C |

Table 3 defines the key dates and time frames for the phase transitions for each project based upon the latest STP program master schedule as of November 2015. Dates and costs for projects in formulation are guidelines for planning purposes and are subject to change as the STP program matures.

Table 3: Key Milestones and Life-Cycle Cost

| Project | Start Formulation | MDR* | Start Implementation | Ready for Launch | Start Prime Operations | End Prime Operations | Life Cycle Cost for Prime Mission (\$M) |
|--|--------------------------|-------------|-----------------------------|-------------------------|-------------------------------|-----------------------------|--|
| <i>Projects in Implementation</i> | | | | | | | |
| MMS | 5/2002 | 9/2007 | 7/2010 | 3/2015 | 9/2015 | 9/2017 | 1,121 |

*Mission Definition Review (MDR)

Life cycle-cost constraints for STP projects are identified in appendices. The Agency budget database (N2) identifies budget constraints by FY for the STP program and each project, as described in Section 2.4. Constraints are validated during the yearly budget cycle and as required throughout the FY. See Section 2.4, Table 3, for yearly budget constraints for projects in the implementation phase and yearly estimates for all other STP program/project elements.

2.2. WBS Baseline

The typical STP program work breakdown structure (WBS) is depicted in Figure 3. As a loosely coupled program, each major program element or project is funded by a unique project structure number. The STP program management and future mission element is depicted at level 2 and is executed by the STP program office. All other elements or projects are shown at level 1 only, as the detailed WBS and WBS dictionaries are developed and controlled at the project level.

Example of Solar Terrestrial Probes (STP) Program WBS Structure

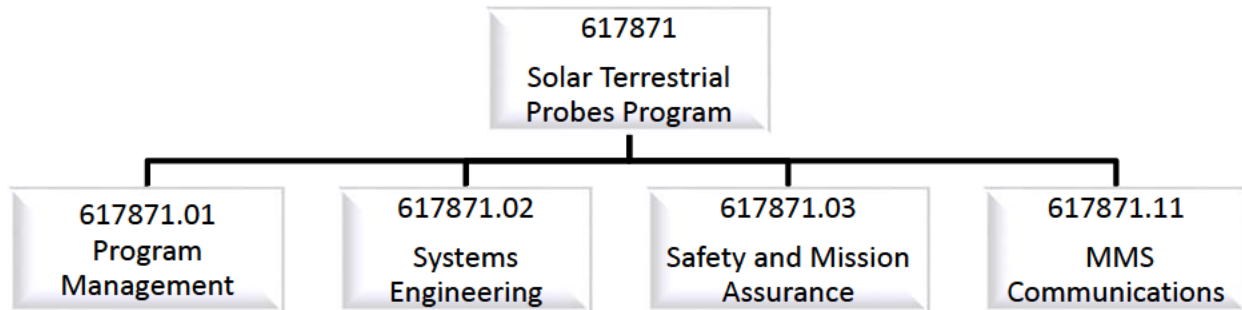


Figure 3: STP Program Work Breakdown Structure

The level 1/2 WBS dictionary for STP program management and future missions is shown below. Project WBS's are established and maintained by the project office.

617871.01 Program Management: The business and administrative planning, organizing, directing, coordinating, analyzing, controlling, and approving processes used to accomplish overall program objectives, and program level reviews, and reports to the center and agency management. The effort includes STP program management, program office general support, configuration management (CM), documentation management (DM), risk management, scheduling, information technology (IT) services, housing costs, center assessments, future mission planning and independent review funding for the STP program and its projects.

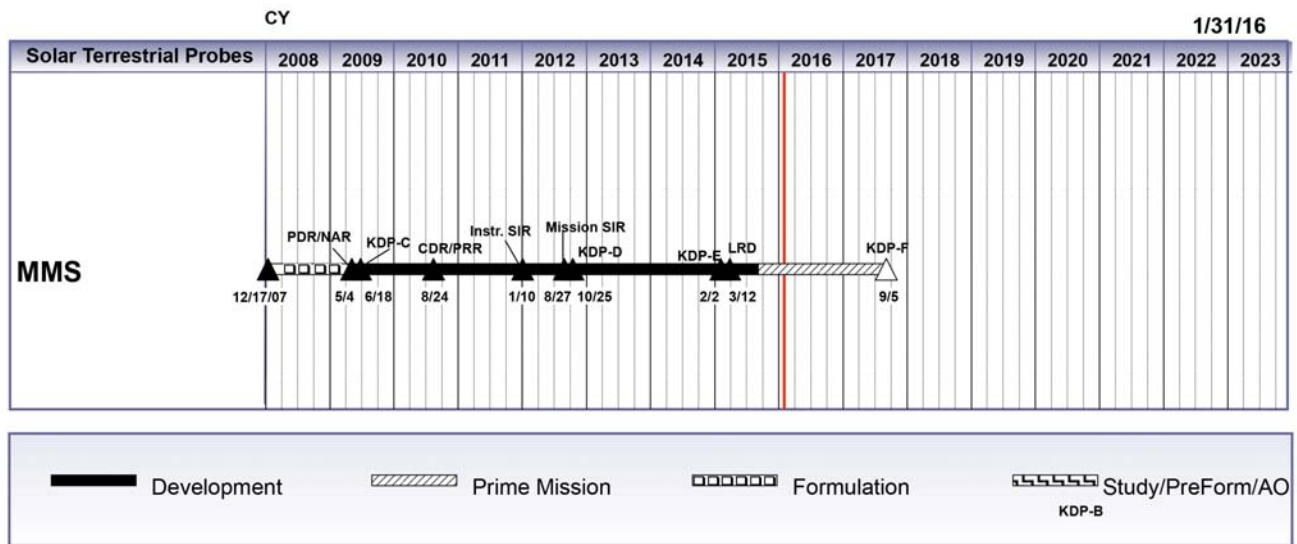
617871.02 Systems Engineering: Program provided systems engineering support to maximize the successful definition, implementation, integration and operation of space flight missions.

617871.03 Safety and Mission Assurance: Program provided safety and mission assurance support to improve the ability of safe operations, enable proactive issue avoidance and resolution, and identify, communicate, and mitigate risk more effectively to assure mission success.

617871.11.01 MMS Communications: Includes the NASA HQ directed supplemental funding for MMS communications.

2.3. Schedule Baseline

As a loosely coupled program, the STP master schedule provides a summary of major project milestones only; the mission order is specified by SMD and driven primarily by the availability of funds. Individual project schedules are integrated and controlled by the respective projects under the project schedule management plan, as flowed down through the STP program schedule management plan. The STP program master schedule, as of November 2015, is depicted in Figure 4.



This is maintained by the Explorers and Heliophysics Projects Division (EHPD) CMO.

Figure 4: STP Program Master Schedule as of November 2015

2.4. Resource Baseline

Table 4 identifies the current STP program NOA requirement. Table 5 identifies the current STP program workforce requirements. These requirements were generated in May 2015 as part of the President’s FY 2016 budget submission. STP program office requirements are based on the shared infrastructure approach identified below.

The STP program utilizes a shared infrastructure to accomplish program level requirements. The Explorers and Heliophysics Projects Division (EHPD) at GSFC encompasses the Living with a Star (LWS), Solar Terrestrial Probes, and Explorers programs. Staff, information technology (IT) infrastructure, and other routine resources are shared across the programs to any extent possible, to maintain efficiency and consistency across EHPD. Other than routine office space, there are no facilities requirements at the program level. Infrastructure requirements for STP

projects, including acquisition, renovations, property/facilities, personal property, and IT resources are identified in the individual project plans.

Table 4: STP Program Office Budget. This chart will not be maintained. The budget is updated annually per the PPBE process.

| Solar Terrestrial Probes (STP) Program Management | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|
| <i>FY 2016 President's Budget Request</i> | | | | | |
| (\$ in millions) | | | | | |
| | FY 2016 | FY 2017 | FY 2018 | FY 2019 | FY 2020 |
| | <u>NOA</u> | <u>NOA</u> | <u>NOA</u> | <u>NOA</u> | <u>NOA</u> |
| Program Management | 0.7 | 0.7 | 0.7 | 0.8 | 0.8 |
| Future Missions | - | - | 11.0 | 113.6 | 169.3 |
| Standing Review Board (SRB) | - | - | - | - | 0.1 |
| MMS Communications | 0.3 | 0.3 | 0.3 | - | - |
| Total Budget Request | 1.0 | 1.0 | 12.0 | 114.4 | 170.2 |

Table 5: STP Program/Project Office Work Force. This chart will not be maintained..

| Solar Terrestrial Probes (STP) Program Management | | | | | | |
|--|------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>FY 2016 President's Workforce Request</i> | | | | | | |
| | | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> | <u>FY 2019</u> | <u>FY 2020</u> |
| Program Management | | | | | | |
| | FTE | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| | WYE | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Standing Review Board (SRB) | | | | | | |
| | FTE | - | - | - | - | 0.1 |
| | WYE | - | - | - | - | - |
| MMS Communications | | | | | | |
| | FTE | - | - | - | - | - |
| | WYE | 1.0 | 1.0 | 1.0 | | - |
| Total | | | | | | |
| | FTE | 2.0 | 2.0 | 2.0 | 2.0 | 2.1 |
| | WYE | 1.3 | 1.3 | 1.3 | 0.3 | 0.3 |

2.5. Joint Cost and Schedule Confidence Level

A range of cost and a range for schedule are provided at KDP-B. Each range (with confidence levels identified for the low and high values of the range) is to be established by a probabilistic analysis and based on identified resources and associated uncertainties by fiscal year.

A resource-loaded schedule is developed and a risk-informed probabilistic analysis that produces a joint confidence level (JCL) is performed for the budget baseline at KDP-C. This is documented in the KDP-C decision memorandum.

3.0. PROGRAM CONTROL PLANS

3.1. Technical, Schedule, and Cost Control Plan

Monthly technical, schedule, and cost information is collected, analyzed, acted upon, and reported to GSFC's CMC, SMD, and Agency budget and performance report to assure that all project and program requirements are being met with adequate reserves. The STP program and/or project manager and their team conduct project reviews, failure review boards, configuration control boards (CCB), and schedule and cost reviews. Risk management will be applied following the guidelines of Goddard Procedural Requirement (GPR) 7120.4, *Risk Management Procedural Requirements*. The minimum set of risk management tools that must be used are schedule, technical, and financial reserves, risk mitigation starting early in the program, probabilistic risk assessment, failure modes and effects analysis, fault tree analysis, engineering models, and use of descope options.

Technical status for each mission is tracked via requirements shown in the Level 1 through Level 4 requirements traceability and test verification matrices. Tracking follows processes and requirements specified in the project SMA requirements document as well as the project's systems engineering management plan and risk management plan. Design margins are established and the reserves tracked and reported.

Schedule management for the STP program and projects will be implemented under the *STP Schedule Management Plan* (461-PLAN-0002). Integrated master schedules will be generated for all projects of the STP program using automated scheduling tools and appropriate schedule management methodology that show both baseline and current schedule data. They identify the project critical path for management and control and ensure that schedules contain all critical milestones for internal and external activities, time durations for activities, schedule reserves or slack, and interdependencies.

Cost control incorporates monthly tracking metrics such as reserve status, liens and encumbrances, reserve percentage of cost-to-go, obligations and cost (plan vs. actual) forecast, and labor (plan vs. actual) forecast. The project is responsible for implementing a system that meets NASA requirements as stated in NPR 7120.5 for a cost, schedule and milestone tracking system that provides sufficiently detailed data to adequately and quantitatively assess the current progress of the mission on a monthly basis, and provide a forecast for accomplishing work to be completed within the remaining established cost and schedule parameters. Schedule and cost status must be provided as part of the monthly project review process.

Earned Value Management (EVM) is not implemented at the program level. Each project implements an EVM process under current NASA policies, NPR 7120.5 requirements, and consistent with Center/organization EVM practices. For contracts, EVM policy is defined in NFS 1834.201 and requirements outlined in the NFS 1852.234-2.

Costs and schedules are tracked against baseline projections and be reviewed monthly to ensure that performance is closely monitored and appropriate actions are taken, if necessary. The program office will use the project EVM data to perform independent cost and schedule analysis.

3.2. Safety and Mission Assurance Plan

The STP program office is responsible for ensuring that STP projects develop approved SMA plans and implement those plans. The SMA standards of the project host organization will be used when the project office resides in that organization. The project office will address the SMA requirements included in NASA's procurement vehicle (e.g., AO, etc.) and obtain concurrence with the STP program office for any waivers to these requirements.

Project requirements flow from NASA and GSFC SMA requirements and may be tailored and/or expanded for the specific mission. Each project develops SMA plans that meet current requirements and reflect a project life-cycle process perspective, addressing areas including: procurement, management, design and engineering, design verification and test, software design, software verification and test, manufacturing, manufacturing verification and test, operations, and pre-flight verification and test.

For GSFC-managed projects, the program will utilize the existing nonconformance report (NCS)/corrective action system database and the problem report/problem failure report database for the closed loop problem reporting and resolution system. Projects that are not hosted at GSFC will utilize their existing problem reporting system, which will feed into GSFC's system.

3.3. Risk Management Plan

The STP program does not have a program level risk management plan. Each STP project must establish a project risk management plan that identifies the cost, schedule, and technical risks within the project and methods to accommodate or mitigate them. Details of each project's risk management approach will be described in its risk management plan under the requirements of NPR 7120.5, NPR 8000.4 and GPR 7120.4 risk management procedures.

The project risk management plans govern how technical, cost, schedule, and other forms of risk will be identified, analyzed, tracked, controlled, communicated, and documented to increase the likelihood of achieving program/project goals. The goal of risk management in the STP projects is to identify risks and mitigations necessary to avoid occurrence or negative effects from these risks.

On a monthly basis, the program office holds an internal review with each project to focus on the risks, issues and status. The program office reviews risks for proper classification per GPR 7120.4, *Risk Management Procedures*. The mitigations for risks are discussed and potential new risks are suggested. Crosscutting risks are identified and shared with the appropriate projects within EHPD. The program office presents the project risks to the center and HQ at the center monthly status review (MSR). The program also evaluates the top risks and develops a program level top risk list, which is presented at the HQ Heliophysics Division (HPD) Flight Program Review.

3.4. Acquisition Plan

There are no major acquisitions at the program level. The program office supports SMD in the identification of new missions and the conduct of the acquisitions strategy meeting (ASM). All major acquisitions are performed at the project level. Each project's acquisition strategy and processes are fully described in its Acquisition Plan per NPR 7120.5. Science investigations will be provided by SMD-selected PI's through AO's or an international or interagency partner under an approved agreement. In the acquisition of scientific instruments, spacecraft, and science investigations (including research and analysis), NASA will use full and open competitions to the greatest extent possible. Certain instruments, missions, or mission systems may be acquired without competition (e.g., through international partnerships or in-house builds) provided that there is a clear scientific, technological, or programmatic benefit to NASA to do so. Such arrangements must be approved by SMD/AA. The project manages the implementation of these investigations. Spacecraft may be provided through industry, in-house by a NASA field center, or an international partner under an approved agreement. SMD retains make-or-buy decision authority for all spacecraft. Launch vehicles will be acquired through existing contracts managed by the Launch Services Program in the Human Exploration and Operations Mission Directorate (HEOMD). The exception is when it is provided by an international partner or another organization under an approved agreement, or when the STP mission is not a primary payload on the launch vehicle. In the latter case, arrangements for access to space will be made on a case-by-case basis and documented using agreements. Acquisitions for operations services must be consistent with NASA policy. The project will utilize established host organization processes and procedures under NPR 7120.5.

For GSFC-managed projects, the project acquisition plan (PAP) is developed by the project manager, supported by GSFC's Office of Procurement and is consistent with the results of the acquisition strategy planning meeting and the ASM. The PAP documents an integrated acquisition strategy that enables the project to meet its mission objectives, provides the best value to NASA, and complies with the FAR and NASA's FAR Supplement (NFS). The acquisition plan addresses all the required topics listed in FAR Part 1807.105 and 1807.106 and NFS Part 1807.105.

Projects describe completed or planned studies supporting project level 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. For each science mission, the Heliophysics DD may charter a science and technology definition team before the start of formulation to provide advice including prioritized science requirements and to identify a pre-concept that satisfies the science requirements constraints and technology development requirements for the project. These requirements may form the basis for an AO for the acquisition of scientific investigations that include science instruments.

If there are no program level agreements in place, projects will describe all agreements, memoranda of understanding, barter, contributions, and other arrangements for collaborative and/or cooperative relationships in the project plans. Partnerships created through mechanisms

other than those prescribed in the FAR will be identified in the Level-I requirements for each project. All such agreements (the configuration control numbers and the date signed, or projected dates of approval) necessary for project success will be listed. All agreements concluded with the concurrence of the program manager will be included and referenced.

Contractor incentives for strengthening SMA and risk-based acquisition management are addressed in individual project plans.

When external (non-STP) agreements are needed and made, their documentation is part of the project-specific requirements appendix to the STP Program Plan.

3.5. Technology Development Plan

Each project provides a technology development plan that includes the content tailored for the project as specified in Appendix H, paragraph 3.5, in NPR 7120.5.

3.6. Systems Engineering Management Plan

STP is a loosely coupled program and, therefore, each project within STP develops and maintains a project system engineering management plan (SEMP). The STP program systems engineer ensures that the project SEMP meets the requirements defined in NPR 7123.1.

The test, validation, and verification requirements for hardware and software are mission unique and are addressed separately in the SEMP and/or project plan for each project. The individual plans must also address software independent verification and validation.

The STP program systems engineer monitors the technical progress of all STP projects and conducts periodic meetings with all of the project systems engineers to facilitate and encourage dialogue and knowledge sharing across the projects. He or she identifies or conducts trade studies for areas that span multiple projects to encourage risk or cost reduction for the program.

3.7. Product Data and Life-Cycle Management Plan

As a loosely coupled program, STP does not require this plan at the program level. Each project within the program is required to be compliant with NPR 7120.9, *NASA Product Data and Life-Cycle Management for Flight Programs and Projects* and the *NASA Heliophysics Science Data Management Policy*. Product Data and Life-Cycle Management is a set of processes and associated information used to manage the entire life cycle of product data from the project's conception through design, test and manufacturing to service and disposal. This information should be contained in the project plan for each STP project.

3.8. Verification and Validation Plan

STP projects and program will follow processes defined in NPR 7123.1 *NASA Systems Engineering Processes and Requirements*.

3.9. Information Technology Plan

1. Each STP project develops an approach to knowledge capture and dissemination including compliance with NPD 2200.1, *Management of NASA Scientific and Technological Information* and NPR 2200.2, *Requirements for Documentation, Approval and Dissemination of NASA Scientific and Technological Information*.
2. Each STP project manages information throughout its life cycle through the use of the EHPD management information system (MIS). The EHPD MIS is an electronic library/configuration management system used to identify, control, and disposition program and project records under NPD 1440.6, NASA Records Management and 1441.1 *NASA Records Retention Schedules*. The MIS allows control of records, including documents and drawings from inception through disposition.

The MIS assigns document numbers to all STP program and project documents. The document number consists of the organization acronym (STP), project name, configured item (CI) category, and a four-digit number assigned sequentially. The MIS serves as a central hub to track and update all revisions and relay information to all approved users.

A STP organizational file plan is generated annually to serve as an inventory of all records maintained by STP. All records are identified by their Agency filing scheme (AFS), record title, record custodian, file location and retention period. The retention period is established by the type of record it is. Temporary records are records that the National Archives and Records Administration (NARA) has approved for either immediate disposal or for disposal after a specified time or event. Permanent records are those that NARA appraises as having sufficient value to warrant continued preservation by the Federal Government as part of the National Archives of the United States.

3. The STP Program implements IT security requirements under NPR 2810.1, *Security of Information Technology* through compliance with the (ACES) Security Plan, *OA-999-M-NSS-1015-ACES Services*.

3.10. Review Plan

3.10.1. Program Reviews

The STP program office (PO) supports reviews consistent with NPR 7120.5. A program level status review and program implementation review will be conducted by an SRB, or as determined by SMD, on a schedule requested by the Agency AA, the SMD AA or the DD. The review entrance and success criteria will be established by the project with concurrence from the STP PO and HQ HPD early in the phase. This review will consider all aspects of the STP program and the flow down to individual projects.

3.10.2. Program Review of Projects

The STP program conducts reviews on a periodic and as-required basis to assess project progress, evaluate risk, ensure compliance, and address issues. These reviews may include, but are not limited to, monthly project reviews, independent reviews, and weekly informal tag-ups. Monthly project reviews will assess technical, schedule, and cost status, and include accomplishments, issues, risks, resources status (e.g., mass, power, schedule reserve, cost reserve), schedule changes, and cost variance analysis.

3.10.3. Review Processes for the Project Office(s)

The project office will ensure that the review process, as specified in the review plan and applicable project host organization directives, is followed and supported. GPR 8700.4F, Integrated Independent Reviews, defines the purpose of each review. The following sets of reviews are included in the project's review plan:

1. Project Gate Reviews leading to each KDP, as defined by NPR 7120.5, will be conducted by the SRB and defined in the project plan. These formal reviews will be convened by the applicable technical and programmatic authorities. The review entrance and success criteria will be established by the project with concurrence from the STP program office and HPD early in the phase. The SRB will report out to the project office, STP program office, GSFC's CMC, and the SMD and Agency PMC's consistent with the mission project classification per NPR 7120.5.
2. Engineering Peer Reviews – A comprehensive set of engineering peer reviews will be established by the organization that is the provider of the engineering product. Participants will be selected by the project office host organization and are independent of the development activity under review. Every effort will be made to include technical experts from, or recommended by, GSFC. The results of the review will be reported to the STP program office.
3. Anomaly Reviews – Review Boards for anomalies that have an unknown cause and represent significant programmatic or technical risk, will be held and will be independent of the project and established by the project office host organization's SMA Office and chief engineer with applicable membership from the STP program office's supporting TA.
4. Management Reviews – The project office host organization will conduct regular status reviews and provide reports to the SMD weekly reporting system (as required by SMD), monthly and/or quarterly status reviews. The project office will provide/present an overall project assessment to include the following: technical, schedule, cost and management including significant progress; concerns/issues (including resolution plans/expected outcomes); contingency/reserves and liens status; and all significant risk threats to the implementation or mission success. The STP program office will have a standing seat in the project office host organization's monthly senior status review process. A summary of the project's status must be provided to the STP program office

in support of the program's monthly review process. The project office will present to GSFC's CMC on a monthly basis.

5. Assessment Reviews – The project office host organization will convene, when necessary, assessment reviews to evaluate the readiness of the project to execute a mission critical event, (e.g., launch, encounter, etc.) or to assess the design risk of a pending implementation. Representatives of the STP program office and NASA HQ can also participate in these reviews.

3.10.4. Cancellation Review Criteria

During implementation, each project will develop the mission within the established performance, schedule, and cost requirements identified in the PLRA (Level 1 document). If at any time during development, it is determined that the project is unable to achieve the PLRA (Level 1) requirements or that the project is anticipated to exceed the Agency baseline commitment in terms of cost or schedule, the project is subject to a cancellation review.

A cancellation review is not required if the SMD/AA agrees to change the requirements or if the project is able to demonstrate that cost growth is above and beyond their control or if they can descope the mission concept or design in order to stay within the technical, cost, and schedule commitments. If none of these occurs, then it is appropriate to recommend a cancellation review. The recommendation for a cancellation review may come from the program office or the HPD.

3.10.5. Mission Termination Review

Within SMD, mission termination refers to the decommissioning of a mission. It is the process for ending a project that has conducted part of or its entire prime mission and which may have completed one or more extended missions. This is different than mission cancellation which refers to ending project activity before the mission is launched.

There are two paths within SMD that can lead to mission termination:

1. The first is through a programmatic path, such as the outcome of a Senior Review or a significant budget reduction.
2. The second is as a result of a condition on the spacecraft, which may be an unexpected on-orbit anomaly, or the exhausting of consumable resources.

3.11. Mission Operations Plan

There is no STP mission operations plan since the program is a set of fairly loosely coupled missions, each of which have dedicated mission operations plans.

3.12. Environmental Management Plan

The STP program and projects comply with NPR 8580.1, *NASA National Environmental Policy Act Management Requirements*. There is no program-specific environmental management plan as the requirement is flowed to the STP project offices. Each STP project office prepares an environmental management plan utilizing Goddard Policy Directive (GPD)-8500.1, *Environmental Policy and Program Management* or equivalent institutional requirements.

The STP program office supports the project offices in the development of this plan. Products and processes having environmental issues will be identified at the earliest possible time during formulation to ensure that planning and decisions reflect environmental values, to avoid delays later in the process, and to head off potential conflicts. Project environmental data management plans must be submitted to the STP program office for approval.

3.13. Integrated Logistics Support Plan

The logistics requirements are identified by each project in their individual project plans. There is no program level logistics plan. The STP project offices prepare logistics plans utilizing established Center/Institutional processes and procedures in accordance with the project plan requirements in NPR 7120.5 and NPD 7500.1, *Program and Project Logistics Policy*.

3.14. Science Data Management Plan

There is no STP program-level science data management plan as the requirement is flowed down to the STP projects. STP project offices develop a draft project data management plan by Preliminary Design Review under NASA Heliophysics Science Data Management Policy (Version 1.1, dated 2009) to address the total activity associated with the flow of science data, from acquisition, through processing, data product generation and validation, to archiving and preservation. The data management plan will be formally approved no later than the project office's Critical Design Review. Science analysis software development, utilization, and ownership must be covered in the data management plan.

It is NASA policy that all data taken by NASA's space flight mission programs is made publicly available as soon as they can be properly validated and calibrated. NASA's science AOs require that this activity be budgeted in proposals. All data collected through the STP program are to be placed in the public domain in the standard formats specified in the Heliophysics Science Data Management Policy at the earliest possible time following their validation and calibration in either of the two designated active archives for Heliophysics data: the Solar Data Analysis Center (SDAC), or the Space Physics Data Facility (SPDF). Exceptions are on a mission-by-mission basis. Data preparation will be accomplished within a few months from the time that NASA delivers the data to the investigation team. One exception is data that may be released almost immediately for outreach purposes, after the appropriate review process.

The STP program adherence to all NASA sample handling, curation, and planetary protection directives and rules, including NPR 8020.12, *Planetary Protection Provisions for Robotic*

Extraterrestrial Missions, is not required as there are no STP missions currently envisioned requiring planetary protection.

3.15. Configuration Management Plan

The STP program has a stand-alone CM process, 460-PG-1410.2.2, *STP Configuration Management Procedure*. This procedure defines the CM requirements for the STP program and projects to meet the requirements of NPR 7123.1 and GPR 1410.2, *Configuration Management*.

The STP CM procedure describes the structure of the CM organization and tools used. It describes the methods and procedures to be used for configuration identification, configuration control, interface management, configuration traceability, and configuration status accounting, and communications. It also describes how CM will be audited.

The CM procedure addresses CM requirements for document configuration control only. Configuration control for products is not required at the program office level but is addressed as necessary in project office CM procedures.

The STP CM system uses Configuration Control Boards (CCBs) at both the program and project levels. This allows for CM to be handled at the most appropriate level within the organization. For each organization level, types of Configuration Items (CIs) have been assigned for CM. The STP program CCB is chaired by the STP program manager or designee who has overall responsibility for all STP program and project office activities.

The STP CM procedure does not apply to STP directives posted in Goddard's Directives Management System. These directives are controlled using the procedures described in GPR 1410.1, *Directives Management*.

The STP program follows the information management and knowledge capture requirements in NPD 2200.1, *Management of NASA Scientific and Technical Information*, NPR 2200.2, *Requirements for Documentation, Approval, and Dissemination of NASA Scientific and Technical Information*, NPD 1440.6, *NASA Records Management*, and NPR 1441.1, *NASA Records Retention Schedules*.

3.16. Security Plan

3.16.1. Security Requirements

The STP program methodology for ensuring security and technology protection will use established procedures in the GPR documents with the assistance of the GSFC Facilities Division and GSFC Security Division. GSFC maintains building emergency plans (700-SFTY-0001). The program's approach to implementing IT security requirements are in accordance with NPR 2810.1. The content of these plans addresses the Emergency Notification System, Types of Emergency Situations, Occupant Response Procedures, and Incident Management Responsibilities. The program office identifies an individual who works with the facilities operations managers (FOMs) to maintain and communicate building emergency plans.

3.16.2. Information Technology Security Requirements

Projects hosted at other centers or organizations will use their own institutional requirements and applicable NPRs (NPR 2810.1, etc.).

The STP program's IT system is covered under the OA-999-M-1015–ACES Services. This IT security plan covers all of the areas specified in National Institute of Standards and Technology 800-53, "Recommended Security Controls for Federal Information Systems and Federal Information Processing Standards 199, *“Standards for Security Categorization of Federal Information and Information Systems.”*

The IT plan covers the following: access, control, and authentication; training; auditing; certification, accreditation and assessment; CM, contingency planning; incident response; maintenance; media protection; physical and environmental protection; personnel security; risk assessment; system and services acquisition; system and communication protection; and system and information integrity.

3.16.3. Emergency Response Requirements for Facilities

The STP program complies with NPR 1040.1, *NASA Continuity of Operations Planning and Procedural Requirements* and GPR 8710.2, *Emergency Preparedness Plan for Greenbelt*. The program office identifies an individual (nominally the program support manager) who works with the FOM to maintain and communicate building emergency plans.

3.17. Threat Summary

Threat summaries attempt to document the threat environment that a NASA space system/constellation or aircraft is most likely to encounter as it reaches operational capability. These documents contain Top Secret/Sensitive Compartmented Information on the valid threats to U.S. space systems and are the basis for establishing threat levels that the program office will use to develop survivability strategies. Threat summaries are completed by an Agency team with proper clearances at the request of the program manager through the Office of the Chief Engineer. This team discusses with the program manager risk mitigation strategies, which are incorporated into the program threat summary. Secret information is handled appropriately and not included in the program plan.

STP program managers will provide program and project documentation to aid in the preparation of threat summaries, such as, mission overviews/requirements and operations concepts to either crewed or robotic space protection program personnel to draft these documents. High-risk threat information will be extracted from the threat summary at the Secret level and transferred to the hostile threat section of the project protection plan to develop mission survivability strategies and protection measures.

Currently NASA is prioritizing NASA critical space systems. The STP program manager will provide program and project/mission documentation to adhere to this process at the appropriate level.

3.18. Technology Transfer Control Plan

Each project prepares and implements an export control plan as required. There will be no STP program-level export control plan as the deliverables subject to export control are provided at the project office level. Individual STP project office export control plans will be prepared and implemented at the project office level working with GSFC's Export Control Office.

STP project offices will comply with the export control requirements specified in NPR 2190.1, *NASA Export Control Program*.

Agreements between NASA and other governments or foreign entities are established through agreements, memoranda, and arrangements such as letters of agreement (LOA), memorandum of understanding (MOU), and implementing agreements (IA). Headquarters Office of International and Interagency Relations (OIIR) leads the establishment of LOAs, MOUs, and IAs with the support of the program and project offices. The LOAs can either be exclusively for formulation, if the dollar value of the contribution is high and then followed by an MOU (or equivalent) during implementation, or an LOA can cover both formulation and implementation, if the dollar value is low as determined by the OIIR. MOUs and LOAs are only established for hardware and software contributions and not for science contributions. The MOUs and LOAs go through the State Department via OIIR so they can be used to obtain technology assistance agreements. When there is no contribution to NASA (for example, when a project contractor wants to purchase components from Europe), the contractor is responsible for getting approval through the State Department for the import. Applications for licenses and technology assistance agreements (TAAs) to the State Department for STP missions are routinely routed through the STP PEs for concurrence. U.S. International Traffic in Arms Regulations (ITAR) and Export administration regulation laws still apply.

STP program and project office personnel will receive ITAR training per NPR 2190.1. All international technical exchanges will be approved by GSFC's Export Control Office.

3.19. Education Plan

There is no budget for STP program-level education activities. The project-level education plans will follow the current guidance provided by the SMD in a separate memorandum. All education activities will follow the established SMD policy.

3.20. Communications Plan

There is no STP program-level communications plan. The requirement is flowed down to the STP projects. The STP projects will follow the current guidance provided by the SMD in a separate memorandum.

3.21. Lessons Learned Plan

To ensure that the Agency's knowledge is captured and accessible across all NASA Centers, with appropriate measures to safeguard Sensitive but Unclassified (SBU) knowledge and comply with Federal laws and regulations, the mission manager is responsible for determining lessons learned and entering them into the NASA's database after launch under NPR 7120.6, *Knowledge Policy on Programs and Projects*.

The STP project or mission manager is responsible for determining lessons learned and entering them into NASA's database after launch under NPR 7120.6, *Knowledge Policy on Programs and Projects*.

4.0. WAIVERS LOG

5.0. CHANGE LOG

| Revision Ltr/Change No. | Date Submitted | Submitted By | Description/Pages Effected | Date Approved |
|-------------------------------|-------------------|-----------------|----------------------------|------------------|
| | | | | |

6.0. APPENDICES

Appendix A. Acronyms

| | |
|-------|--|
| AA | Associate Administrator |
| AO | Announcement of Opportunity |
| ASM | Acquisitions Strategy Meeting |
| CCB | Configuration Control Board |
| CI | Configuration Item |
| CM | Configuration Management |
| CMC | Center Management Council |
| CR | Confirmation Review |
| DD | Division Director |
| DOD | Department of Defense |
| FAD | Formulation Authorization Document |
| FAR | Federal Acquisition Regulation |
| FIPS | Federal Information Processing Standards |
| FOM | Facilities Operations Manager |
| FPR | Flight Program Review |
| FY | Fiscal Year |
| GPR | Goddard Procedural Requirement |
| GPRA | Government Performance and Results Act |
| GSFC | Goddard Space Flight Center |
| HDP | Heliophysics Division |
| HQ | Headquarters |
| HEOMD | Human Exploration and Operations Mission Directorate |
| IBPD | Integrated Budget and Performance Document |
| IT | Information Technology |
| ITAR | (US) International Traffic in Arms Regulations |
| JAXA | Japanese Aerospace Exploration Agency |
| KDP | Key Decision Point |
| LCC | Life-Cycle Cost |
| LV | Launch Vehicle |

| | |
|--------|--|
| MC | Magnetospheric Constellation |
| MMS | Magnetospheric Multiscale |
| MSFC | Marshall Space Flight Center |
| MSR | Monthly Status Review |
| NAC | NASA Advisory Council |
| NASA | National Aeronautics and Space Administration |
| NIST | National Institute of Standards and Technology |
| NPD | NASA Policy Directive |
| NPR | NASA Procedural Requirements |
| OIIR | Office of International and Interagency Relations |
| PA | Program Analyst |
| PCA | Program Commitment Agreement |
| PE | Program Executive |
| PI | Principal Investigator |
| PLRA | Program Level Requirements Appendices |
| PMC | Program Management Council |
| PS | Program or Project Scientist |
| SEMP | System Engineering Management Plan |
| SMA | Safety and Mission Assurance |
| SMD | Science Mission Directorate |
| SRB | Standing Review Board |
| STEREO | Solar Terrestrial Relations Observatory |
| STP | Solar Terrestrial Probes |
| TA | Technical Authority |
| TAA | Technology Assistance Agreements |
| TOR | Terms of Reference |
| TIMED | Thermosphere Ionosphere Mesosphere Energetics and Dynamics |
| U.S. | United States |
| WBS | Work Breakdown Structure |

Appendix B. Definitions

These are supplied in the project plans only.

Appendix C. Compliance Matrix for this NPR

None.