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SECRETARIES OF THE AIR FORCE, THE  
ARMY, AND THE NAVY**

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70-43, OPNAVINST 3913.1A**

**1 APRIL 1998**



**Research and Development**

**SPACE TEST PROGRAM (STP) MANAGEMENT**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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The Space Test Program (STP) is a Department of Defense (DoD) activity under Air Force executive management that provides spaceflight for DoD research and development experiments. This instruction implements Air Force Policy Directive (AFPD) 10-12, *Space*, by providing the policies, procedures, and responsibilities for STP management. It guides potential sponsors and R&D experimenters in preparing and submitting spaceflight requests and defines the relationship among sponsors, experimenters, and STP managers. It also describes the procedures for ranking STP experiments, selecting experiments for a space mission, and developing and managing payloads.

This instruction applies to the STP Office, to all DoD organizations that STP supports, and to DoD organizations supporting STP. Federal agencies outside the DoD that want spaceflight support from STP must follow this instruction. Participating DoD and other agencies issue directives for STP procedures within their organizations. These directives must comply with this instruction.

**SUMMARY OF REVISIONS**

This is the initial publication of AFI 10-1202, AR 70-43, and OPNAVINST 3913.1A; substantially revising AFR 80-2, AR 70-43, and OPNAVINST 3913.1, 30 November 1984. It aligns with AFPD 10-12, updates action agencies and responsibilities, and prescribes three DoD forms.

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## Chapter 1

### ORGANIZATION AND ADMINISTRATION

#### 1.1. Authority.

1.1.1. The Office of the Assistant Secretary of the Air Force for Acquisition, Directorate of Space Programs (SAF/AQS), 1060 Air Force Pentagon, Washington DC 20330-1060, is the executive office for the DoD STP and approves requests for spaceflight and spaceflight plans. (See paragraph 2.6.5)

1.1.2. The Office of the Secretary of Defense (OSD) resolves disputes on priorities, experiment selection, or experiment duplication among departments or agencies.

1.1.3. The Air Force Space and Missile Systems Center (SMC), Air Force Materiel Command (AFMC), 3550 Aberdeen Ave, SE, Kirtland AFB NM 87117-5776, maintains a separate organizational element (SMC/TEL) known as the Space Test Programs Office (referred to in this AFI as the STP Office) to manage the planning, engineering, and operational functions necessary to execute the approved program.

1.1.3.1. Because the Air Force STP Office is a DoD support program, the Army, Navy, and DoD agencies are strongly encouraged to provide highly qualified personnel for assignment to, or on-site liaison with, the Air Force STP Office.

#### 1.2. The STP Office:

1.2.1. Provides equal opportunities for all DoD R&D experimenters to have their experiments considered for spaceflight.

1.2.2. Sets up procedures for reviewing and selecting DoD R&D payloads for spaceflight.

1.2.3. Plans spaceflights, including:

1.2.3.1. Selecting experiments.

1.2.3.2. Programming.

1.2.3.3. Budgeting.

1.2.3.4. Conducting systems, performance, and cost analyses.

1.2.3.5. Conducting trade-off and special studies.

1.2.3.6. Writing the spaceflight plans.

1.2.4. Implements spaceflight plans after approval. (See paragraph 2.6.5.)

1.2.5. Manages the DoD aspects of each spaceflight that use an STP-dedicated satellite bus and/or launch vehicle. This authority includes planning, organizing, controlling, and directing the space mission.

1.2.6. Coordinates between the experimenter and the host-vehicle office for STP payloads operating as secondary payloads on the host vehicle of another office.

1.2.7. Advises all potential experimenters about:

- 1.2.7.1. Free-flyer and Shuttle capabilities.
- 1.2.7.2. Shuttle-based testing.
- 1.2.7.3. The capability and availability of payload specialists and mission specialists.
- 1.2.8. Oversees:
  - 1.2.8.1. Payload spaceflight assignments, including those using space on launch vehicles and spacecraft of other space programs.
  - 1.2.8.2. Launch vehicle selection.
  - 1.2.8.3. Spacecraft and support equipment procurement.
  - 1.2.8.4. Payload integration.
  - 1.2.8.5. Launch scheduling and services.
  - 1.2.8.6. Orbital support.
  - 1.2.8.7. Data handling.
- 1.2.9. Acquires:
  - 1.2.9.1. Advanced spaceflight hardware to support future spaceflights.
  - 1.2.9.2. Hardware from contracts or, in an emergency, from the existing contracts of other agencies.
  - 1.2.9.3. Spacecraft and payload integration services.
  - 1.2.9.4. Mission data.
  - 1.2.9.5. Ephemeris.
  - 1.2.9.6. Spacecraft health data.
- 1.2.10. Trains payload and mission specialists for STP Shuttle operations.
- 1.2.11. Provides historical databases and results of spaceflight experiments.

### **1.3. Authority to Submit Spaceflight Requests.**

- 1.3.1. Any military department or DoD agency may propose experiments requiring STP support.
  - 1.3.1.1. DoD agencies must have a specific need to conduct their experiments in space.
  - 1.3.1.2. Within the Air Force, SMC/XRT (Suite 1467-A2, 2420 Vela Way, Los Angeles AFB, CA, 90245-4659) approves Air Force R&D STP requests and sends them to the Director of Space Programs, SAF/AQS.
  - 1.3.1.3. Within the Army, the Office of the Assistant Secretary of the Army for Research, Development, and Acquisition (Director, Advanced Concepts and Space), SARD-TC (103 Army Pentagon, Washington DC 20310-0103) approves Army R&D STP requests and sends them to the Director of Space Programs, SAF/AQS.
  - 1.3.1.4. Within the Navy, the Office of the Chief of Naval Operations (N091) (The Pentagon, Washington DC 20350-2000) approves Navy R&D STP requests and sends them to the Director of Space Programs, SAF/AQS.

1.3.2. Federal agencies other than the DoD may request spaceflight support if the experiment's potential benefits to the DoD justify granting the request.

1.3.3. Any DoD agency may sponsor experiments from foreign countries or US commercial and educational institutions if the experiment's potential benefits to the DoD justify granting the request.

**1.4. Experiment Eligibility Criteria.** To be eligible for STP support, an experiment must:

1.4.1. Explain its potential significance to satisfying DoD requirements.

1.4.2. Justify the need for spaceflight in meeting program objectives.

1.4.3. Be part of a DoD research, development, test, and evaluation activity or be sponsored by another Federal agency.

1.4.4. Lack authority to conduct its own spaceflight of the experiment in question.

1.4.5. Have funding to support experiment development, fabrication, unique orbit operations (if necessary), and data analysis and distribution.

1.4.6. Not financially burden the STP program by:

1.4.6.1. Proposing a Shuttle middeck experiment that costs more than 10 percent of the STP Shuttle budget in a given fiscal year.

1.4.6.2. Requesting support using other means of spaceflight which would require more than 25 percent of the STP budget in a given fiscal year.

1.4.6.3. Proposing experiments that extend beyond 5 years.

**NOTE:**

The 5-year limit doesn't include the time spent defining the mission, conducting orbit operations, and reducing postflight data.

**EXCEPTION:** When SAF/AQS determines the experiment has high potential DoD benefit.

**1.5. Experiment Sponsorship Eligibility.** A sponsor is responsible for the program, project, or task being supported and for the funding, development, fabrication, and qualification of the spacecraft hardware for an approved experiment.

1.5.1. Any DoD organization may sponsor STP spaceflight experiments.

1.5.1.1. DoD sponsors must send DD Forms 1721 and 1721-1, *Space Test Program Flight Request*, and *Space Test Program Flight Request (Executive Summary)*, through their departmental approval authority, to the Director of Space Programs, SAF/AQS.

1.5.2. Non-DoD Federal agencies may sponsor STP spaceflight experiments.

1.5.2.1. Non-DoD sponsors must send DD Forms 1721 and 1721-1 to the Office of the Under Secretary of Defense (Acquisition), Director Defense Research and Engineering, OUSD(A)/DDR&E, 3010 Defense Pentagon, Washington DC 20301-3010.

1.5.3. Multiple military departments, DoD, and non-DoD agencies may cosponsor experiments.

1.5.4. If the multiple departments and agencies have more than one primary sponsor, they select one DoD organization to coordinate with the STP Office.

1.5.5. This coordination includes, but is not limited to:

1.5.5.1. Sending DD Forms 1721 and 1721-1 to the Director of Space Programs, SAF/AQS.

1.5.5.2. Preparing safety requirements documentation in accordance with paragraph 1.15.

1.5.5.3. Getting departmental approval authority in accordance with paragraph 2.5.3.

1.5.5.4. Preparing spaceflight plans and memorandums of agreement (MOAs) in accordance with paragraph 2.6.

**1.6. Planning Spaceflights.** The STP Office prepares spaceflight plans based on the current list of approved and ranked experiments and program guidance that SAF/AQS issues.

1.6.1. The spaceflight plan for middecks consists of a prioritized list that the STP Office approves and sends to The NASA Office of Spaceflight (HQ NASA/Code M).

1.6.2. In developing spaceflight plans, the STP Office ensures that:

1.6.2.1. Flights of experiments will occur in a timely manner.

1.6.2.2. Funds, spacecraft, launch vehicles, and standard hardware are used cost-effectively.

**1.7. Using Secondary Payload Space.** The STP Office attempts maximum use of secondary payload space available on DoD, NASA, and other space program satellites because of the cost effectiveness of such opportunities.

1.7.1. Each DoD space system and launch vehicle program office provides the STP Office with timely information to help the Office keep a list of excess secondary payload space.

1.7.2. The STP Office may directly contact DoD or NASA space system and launch vehicle program offices to arrange accommodations for secondary payloads.

1.7.2.1. The STP Office requests primary and secondary payload space on NASA Space Shuttle flights (formerly known as the Space Transportation System [STS]) through established channels for manifesting payloads.

**1.8. Launch Vehicles.** The STP Office selects launch vehicles (either the Space Shuttle or existing expendable launch vehicles [ELVs]) to place approved experiments into orbit.

1.8.1. The STP Office may launch experiments on their own dedicated launch vehicles or as secondary payloads on the launch vehicles of DoD, NASA, or other space programs.

1.8.2. The STP Office attempts maximum use of available and compatible secondary-payload space aboard the launch vehicles of other space programs because of the cost-effectiveness of such flights.

**EXCEPTION:** The STP Office may support development of new rocket motors or vehicles when this support proves cost-effective.

1.8.3. SAF/AQS approves development of new hardware and vehicles depending on:

1.8.3.1. Need.

1.8.3.2. Cost.

1.8.3.3. Risk factors.

1.8.3.4. Overall DoD objectives.

### **1.9. Standard Hardware and Services.**

1.9.1. The STP Office uses existing free-flying spacecraft and orbital-transfer stages when possible.

1.9.2. The STP Office uses standard support equipment, such as Shuttle-attached cradles and astronaut interface equipment, for sortie flights.

1.9.3. If an experiment requires support beyond what standard hardware and services can provide, the experiment sponsors fund the additional support.

1.9.4. The STP Office may obtain surplus spacecraft from other space programs.

1.9.5. The STP Office provides experimenters with spacecraft equipped with standard subsystems, such as command and control, power, data storage, and data transmission.

1.9.5.1. The experiment sponsors fund unique spacecraft subsystem requirements.

1.9.6. To improve standard services, the STP Office, with the approval of SAF/AQS, may initiate development or acquisition programs to increase support capabilities.

1.9.7. The STP Office provides services to the experimenter, including:

1.9.7.1. Advising the experimenter.

1.9.7.2. Planning and managing the integration of the experiment with the spacecraft or support equipment.

1.9.7.3. Coordinating among sponsors, experimenters and launch vehicle managers.

1.9.7.4. Keeping documentation that identifies a standard set of hardware, capabilities, and services for both Shuttle sortie and free-flyer missions.

1.9.8. The STP Office may not fund experiment payload development.

**1.10. Managing Payload Integration.** The STP Office assigns a payload integration manager in the Space Flight Plan (SFP). The STP Office assigns responsibilities in the SFP for each launch on which the Office has a payload.

1.10.1. The STP Office manages payload integration for launches on which it has provided the means of spaceflight.

1.10.2. The required MOAs between the STP Office, DoD, or NASA program carrying STP secondary payloads assign responsibilities for payload integration.

1.10.3. STP payloads flown on NASA spaceflights must have a DoD official to coordinate with NASA.

**1.11. Accommodating Payloads.** Sponsors of non-STP programs are responsible for deciding whether or not their spaceflight mission would be harmed by accommodating an STP payload.

1.11.1. STP sponsors of a payload on another program provide flightworthy mass simulators if:

1.11.1.1. The payload proves unacceptable for flight.

1.11.1.2. Becomes unavailable for other reasons.

**1.12. Launch and Orbital Support.**

1.12.1. STP Office normally provides:

1.12.1.1. Support services and equipment on the launch vehicle.

1.12.1.2. Launch services.

1.12.1.3. Prelaunch system checkout.

1.12.1.4. Payload test and storage facilities.

1.12.2. An experiment sponsor may arrange orbital support for an experiment if the STP Office and the organization providing the orbital support both agree.

1.12.3. The responsibility for orbital support is specified in the SFP and the associated MOA(s).

1.12.4. The experiment sponsor updates the STP Office on the orbital support arrangements.

1.12.5. When the STP Office procures or arranges the launch or orbital support, it also:

1.12.5.1. Trains R&D payload specialists and support personnel as required.

1.12.5.2. Sends experimental data to the experimenter or sponsor.

1.12.5.3. Provides experimental data, ephemeris, and spacecraft attitude for up to 1 year of space operation.

**NOTE:**

"Space operation" begins with the launch, not the initialization of the experiment.

1.12.6. The experimenter or sponsor:

1.12.6.1. Provides funds for data, ephemeris, and attitude beyond 1 year.

1.12.6.2. Reduces, analyzes, interprets, and disseminates data.

1.12.7. The STP Office, with the experimenter's support, arranges for frequency allocation and spacecraft command-data handling.

1.12.7.1. As required, the experimenter helps support the experiment at the launch site during pre- and postflight operations.

1.12.8. The STP Office, the organization supporting the Office, and the experimenter or sponsor must all agree on a case-by-case basis to changes in paragraphs 1.12.2 through 1.12.7.1.

1.12.9. The STP Office, experimenters, and sponsors meet after each launch to:

1.12.9.1. Exchange data and experience.

1.12.9.2. Document lessons from the program.

1.12.9.3. Offer recommendations.

**1.13. Program Funding.** The STP Office, within its annual budget, funds for the integration, launch, and orbital support of those experiments that SAF/AQS approves.

1.13.1. The STP Office and experiment sponsors include exceptions or special funding procedures in their MOAs.

1.13.2. The STP Office funds the orbit transfer stage when cost-effectiveness and mission considerations require.

1.13.3. The STP Office funds spacecraft to support more than one experiment.

1.13.3.1. The sponsor funds a unique spacecraft to support a single experiment.

1.13.3.2. Normally, the STP Office doesn't support integration and mission support for STP dedicated spacecraft missions that accommodate only a single experiment.

**EXCEPTION:** When SAF/AQS determines the experiment has high potential DoD benefit.

1.13.3.3. The sponsor funds new hardware and service needs that are dictated by requirements unique to a particular experiment.

1.13.3.4. The sponsor funds the development of new payload components to support a single experiment.

1.13.4. Agencies outside the DoD reimburse the STP Office for its support.

1.13.4.1. The non-DoD agency and the STP Office in conjunction with OUSD(A)/DDR&E agree on payment according to the benefits that the DoD gained from the experiment. They arrange payment in accordance with an appropriate MOA.

**NOTE:**

A DoD agency that sponsors an outside experiment automatically takes responsibility for reimbursing the STP Office in accordance with this instruction.

1.13.5. The sponsor must pay the STP Office for cost increases resulting from:

1.13.5.1. Changed experiment requirements.

1.13.5.2. Damage to support hardware.

1.13.5.3. Delays caused by the experiment.

1.13.6. The sponsor must reimburse the STP Office for the cost of withdrawing from an approved spaceflight plan. This reimbursement must cover the costs of:

1.13.6.1. Mission termination.

1.13.6.2. Experiment demanifestation.

1.13.6.3. Replacing the removed experiment with another experiment or mass simulator as deemed appropriate by the STP Office.

1.13.7. The STP Office and the experiment sponsors include the reimbursement requirement in paragraph 1.13.6 in their MOAs.

1.13.8. The withdrawing sponsor must send a letter of intent to withdraw, signed by the appropriate two-letter office at the Service staff level (for example, Air Staff, Navy Staff, and so on), to the STP Office.

1.13.9. The STP Office reports to SAF/AQS any cost changes that exceed the approved spaceflight estimate by more than 10 percent in a given fiscal year.

1.13.10. If the projected overrun is 15 percent or more in a given fiscal year, the STP Office reevaluates the cost to complete the program.

1.13.11. The experimenter or sponsor notifies the STP Office of:

1.13.11.1. Projected overruns for Shuttle secondary payloads.

1.13.11.2. Cost changes for any experiment that exceeds by 10 percent the estimate provided on the DD Form 1721.

1.13.12. The STP Office reports the reevaluation, along with program options, to SAF/AQS.

1.13.13. The STP Office may request that the sponsor provide additional funds to keep the spaceflight going, or the spaceflight may be terminated.

1.13.14. The STP Office might not be able to support all experiments immediately because of varying launch and orbit requirements and funding limitations.

1.13.14.1. The STP Office will attempt to arrange for spaceflight of experiments it can't fund.

1.13.14.2. In the case of these arrangements, the participating sponsors divide the total cost of the spaceflight.

1.13.15. In accordance with agreements between SAF/AQS and the sponsor, the sponsor must pay the STP Office in a timely manner or risk having SAF/AQS remove the sponsor's experiment from the mission.

1.13.16. The STP Office uses its funds to provide spaceflights for all DoD military departments and agencies.

1.13.16.1. Because STP is a DoD-wide program for which the Air Force is the executive agency, changes to approved funding cannot be made below the SAF/AQS level.

**1.14. Program Security.** Although STP is an unclassified program and does not publish an overall security guide, it works with appropriate classified payload offices and their respective security guides when dealing with classified data or payloads.

1.14.1. When the STP Office uses secondary payload space, it must follow the security requirements of the primary space program.

1.14.2. The STP Office must implement security controls to protect classified payload or launch vehicle information, including the DoD Secure Shuttle Operations Classification Guide (available from HQ Space and Missile Systems Center, Space Test Programs Office [SMC/TEL]) when it flies payloads on the Shuttle.

1.14.3. The sponsor or experimenter marks experiment documentation, hardware, and gathered data with the proper security classification.

1.14.4. The STP Office must classify program documents according to:

1.14.4.1. Classification requirements in the experiment spaceflight request.

1.14.4.2. Security classification guides relating to the experiments and programs that the Office supports.

1.14.5. The STP Office does not classify launch dates.

**EXCEPTION:** When a specific payload requires classification.

**1.15. Safety Considerations.** The STP Office oversees program safety and ensures that the payload meets the safety requirements of the launch vehicle and the range commander.

1.15.1. Experimenters must design experiments that personnel can safely handle, integrate, maintain, launch, and operate.

1.15.2. Sponsors or experimenters:

1.15.2.1. Consult applicable Air Force and NASA safety regulations early in the experiment design phase with help from the STP Office.

1.15.2.2. Provide the technical documentation required to confirm that the experiment meets safety criteria.

**1.15.3. Launching Nuclear Material.** Launching nuclear material, such as that in radioactive calibration devices, heat sources, and radioisotope thermoelectric generators, requires the sponsor or experimenter to provide the STP Office with a safety analysis that describes the material, its application, and its effect on operating personnel and the general public.

1.15.3.1. The sponsor or experimenter provides additional nuclear device design information and certification that the STP Office requires to support a clearance request.

1.15.3.2. The STP Office sends the analysis to the Director of Nuclear Surety, Det 1, ASSA/SENR, 2221 Maxwell Dr, Kirtland AFB NM 87117, and HQ AFMC, Weapons Safety Division (SE), Ste 6, 4537 Chidlaw Rd, Wright Patterson AFB OH 45433-5006, for review and approval at least 6 months before the first scheduled launch date, as required by AFI 91-110, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*.

**1.15.4. Nuclear Regulatory Commission (NRC) License.** The experiment sponsor must get the necessary NRC byproduct, source, or special nuclear material license.

1.15.4.1. A valid NRC license does not cover radionuclides, even when the sponsor discusses their use in the license application.

**1.15.5. Special Requirements for Nuclear Devices Transported in the Space Shuttle.** In addition to the safety requirements in paragraphs 1.15.3 and 1.15.4, experimenters and sponsors must ensure that nuclear devices in the Shuttle cargo bay do not interfere with or contaminate other payloads.

1.15.5.1. Experimenters and sponsors must ensure that experiments meet all applicable NASA regulations for flying nuclear devices in the Space Shuttle.

**1.16. Releasing Information.**

1.16.1. The Space Test Program (STP) Information Plan, 75-4 (available from HQ Space and Missile Systems Center, Office of Public Affairs, [SMC/PA]), provides the policies and procedures for releasing public information about STP launches.

1.16.2. The Secretary of the Air Force, Office of Public Affairs (SAF/PA) publishes, on a case-by-case basis, information release procedures on mission-specific STP payloads aboard the Space Shuttle.

1.16.3. Personnel release information on the subjects of experiments, the program being supported, and spacecraft, launch vehicles, and combinations of these according to the STP Information Plan, 75-4, and with the approval of sponsors.

1.16.4. Experimenters, sponsors, support program offices, or launch vehicle offices release public information according to the applicable MOA in the STP Office.

**1.17. Spaceflight Priorities.** The spaceflight of any STP manifested mission having an experiment that has a high DoD importance category and precedence rating assumes that category and precedence rating.

## Chapter 2

### PROCEDURES

**2.1. Submitting Spaceflight Requests.** Departmental approval authorities are responsible for submitting spaceflight requests for consideration by the DoD Space Experiment Review Board (SERB).

2.1.1. Spaceflight requests should be prepared as early as possible before the desired launch date to help ensure that the STP Office has the opportunity to seek out launch opportunities which are optimized to the maximum extent possible to satisfy experiment requirements.

2.1.2. You don't need experiment hardware available when you send the request as long as you define the experiment well enough to complete payload integration and launch within the time requested.

**2.2. Space Test Program (STP) Flight Request Documentation.** Use DD Forms 1721 and 1721-1, with required supporting documents, for spaceflight requests. Forms are not contained in this instruction. You can get blank DD Forms 1721 and 1721-1 and instructions for completing them from SAF/AQSL, 1060 Air Force Pentagon, Washington DC 20330-1060. You may photocopy the forms.

2.2.1. For those cases in which the sponsor proposes a single spaceflight for two or more experiments, use a separate DD Form 1721 and 1721-1 for each experiment.

2.2.2. You may request more than one spaceflight to complete an experiment.

**2.3. Coordinating Experiments.** The departmental approval authorities ensure that unwarranted duplication of other experiments and investigations does not occur.

2.3.1. The departmental approval authority coordinates experiment evaluations within its agency before requesting spaceflight support from the STP Office.

2.3.2. Departments or agencies suggesting similar experiments coordinate their proposals and consider cosponsored experiments.

2.3.3. The departmental approval authorities send an information copy of proposed requests for spaceflight to the STP Office for comment early in the conceptual stage.

**2.4. Channels for Spaceflight Requests.**

2.4.1. The DoD departmental approval authorities send a copy of their request to the Director of Space Programs, SAF/AQS, 1060 Air Force Pentagon, Washington DC 20330-1060.

2.4.1.1. The DoD departmental approval authorities send an information copy to HQ Space and Missile Systems Center/Space Test Programs Office (SMC/TEL), 3550 Aberdeen Ave, SE, Kirtland AFB NM 87117-5776.

2.4.2. Sponsors outside of DoD send requests to the Under Secretary of Defense (Acquisition), Director Defense Research and Engineering, OUSD(A)/DDR&E, 3010 Defense Pentagon, Washington DC 20301-3010.

**2.5. Approving Spaceflight Requests.**

2.5.1. SAF/AQS organizes and chairs a DoD SERB yearly (normally in May) to:

- 2.5.1.1. Review all requests for spaceflight forwarded by the departmental approval authorities.
- 2.5.1.2. Create an experiment priority list.
- 2.5.2. This panel includes a combination of R&D and operations personnel.
- 2.5.3. In support of the DoD SERB meeting, departmental approval authorities submit not later than 1 April of each year:
  - 2.5.3.1. An updated request for each proposed spaceflight since the last DoD SERB meeting, including all available information on the experiment.
  - 2.5.3.2. Additional requests.
  - 2.5.3.3. Information on the validation, revision, or withdrawal of experiments that the STP Office has not yet assigned to a specific spaceflight mission.
  - 2.5.3.4. A recommended priority list for all experiments proposed for review.
- 2.5.4. In general, the DoD SERB will reject a request that:
  - 2.5.4.1. Requires more than an estimated 25 percent of the STP budget in a given fiscal year.
  - 2.5.4.2. Extends beyond 5 years.

**NOTE:**

The 5-year limit doesn't include time spent defining the mission, operating on orbit or reducing postflight data.

**EXCEPTION:** The SERB considers the request to be in the best interest of the DoD.

2.5.5. SAF/AQS lists spaceflight requests submitted between DoD SERB meetings at the bottom of the appropriate master list of approved experiments until the next one occurs.

**EXCEPTION:** SAF/AQS approves moving a request up the list under special circumstances, such as for an early flight opportunity.

2.5.6. SAF/AQS may develop separate review procedures and priority lists for different classes of experiments.

2.5.6.1. SAF/AQS may organize additional meetings to review different classes of experiments.

2.5.7. The DoD SERB forwards its recommended list of prioritized experiments to SAF/AQS for final approval. Once approved, the list is forwarded to the STP Office and serves as guidance for future spaceflight manifesting.

2.5.7.1. The STP Office later publishes the priority list in program status reports.

**2.6. Preparing Spaceflight Plans.** The STP Office develops spaceflight plans and adjusts them to its budget.

**2.6.1. Minimum Contents of a Spaceflight Plan:**

- 2.6.1.1. Launch vehicle and launch date identification.
- 2.6.1.2. Experiment complement identification.
- 2.6.1.3. Individual experiment weights and complement weight.

- 2.6.1.4. Launch window, orbital inclination, and altitude data.
- 2.6.1.5. Spacecraft and support equipment identification.
- 2.6.1.6. Payload-specialist or mission-specialist data, if applicable.
- 2.6.1.7. MOA(s) discussing experiment responsibilities and the designated payload integration manager.
- 2.6.1.8. Cost per fiscal year of spacecraft development, payload integration, the launch vehicle, and launch and orbital support.
- 2.6.1.9. STP budget by fiscal year, indicating portions for each program, including the funding for the specific program in the spaceflight plan.

**2.6.2. Selecting Experiments.** The STP Office develops spaceflight plans around key experiments, based on the approved STP experiment priority list and guidance from SAF/AQS.

2.6.2.1. The STP Office may also write spaceflight plans for single-experiment payloads (such as those that fly on a host vehicle or in the Space Shuttle payload bay).

2.6.2.2. The STP Office uses DD Forms 1721 and 1721-1 to help define the requirements of an experiment or the instruments to be used.

2.6.2.3. The STP Office must coordinate any change to the instrument complement in DD Forms 1721 and 1721-1 with the sponsor.

2.6.3. The STP Office may combine other experiments from the approved priority list to complete a payload by:

2.6.3.1. Considering the priority order of the experiments on the priority list.

2.6.3.2. Determining the spaceflight compatibility of experiments. Spaceflight compatibility involves:

2.6.3.2.1. Orbital parameters.

2.6.3.2.2. Power and telemetry requirements.

2.6.3.2.3. Electronic, magnetic, or mechanical interference.

2.6.3.2.4. Hardware delivery schedules.

2.6.4. In some instances, the STP Office may better serve DoD R&D goals by creating a payload of several lower-ranked experiments rather than one or two high-ranked experiments.

**NOTE:**

DoD goals other than R&D might influence a spaceflight plan decision.

**2.6.5. Approving Spaceflight Plans.** The STP Office sends spaceflight plans to SAF/AQS for approval.

2.6.5.1. For selected STP experiments, the STP program manager approves spaceflight plans and provides a copy of the approval to SAF/AQS.

2.6.5.2. If the STP program manager doesn't receive approval comments from SAF/AQS within 10 working days, the manager may approve the spaceflight plan and send a copy of the approval to SAF/AQS.

2.6.5.3. The STP program manager may approve a plan if it meets all of these criteria:

2.6.5.3.1. Has current DD Forms 1721 and 1721-1.

2.6.5.3.2. Has an established priority on the current DoD Experiment Priority List.

2.6.5.3.3. Has STP costs of less than \$6 million for the mission.

2.6.5.3.4. Can take place within the approved STP budget.

2.6.5.4. The STP Office begins implementing a spaceflight plan as soon as it receives approval.

**2.6.6. Spaceflight Plan Mission Designators.** The STP Mission Planning Office permanently identifies all approved missions with a PXX-Y designator for primary missions and SXX-Y designator for secondary missions. "XX" refers to the fiscal year in which the spaceflight plan received approval (for example, 94 for FY 1994). "Y" refers to the log number (for example, P94-1 for the first approved primary mission for FY 1994).

2.6.6.1. Before missions receive approval, the STP Mission Planning Office assigns temporary designation numbers. "XX" refers to the fiscal year when the STP Mission Planning Office proposed the mission. "Y" refers to an alphabetic log designator (for example, P93-A for the first planned primary mission for FY 1993).

**2.7. Spaceflight Plan Changes.** SAF/AQS must approve a change of experiment(s) on an approved spaceflight plan.

2.7.1. SAF/AQS and the STP Office coordinate such changes with the sponsors concerned.

2.7.2. The STP Office approves changes to Space Shuttle and piggyback experiments.

**2.8. Terminations and Reflights.** The STP Office handles experiments with terminated flights or reflights as new experiments and requires experimenters and sponsors to make new spaceflight requests.

**2.9. Updating Accepted Experiment Documentation .**

2.9.1. Sponsors or experimenters who want to significantly change the scope of an experiment or its STP support must:

2.9.1.1. Update DD Forms 1721 and 1721-1.

2.9.1.2. Send the forms through their departmental approval authority to SAF/AQS.

2.9.1.3. Provide the STP Office with an information copy.

2.9.2. Sponsors or experimenters may send minor and routine updating of spaceflight requests directly to the STP Office and send an information copy to SAF/AQS.

**2.10. Documentation of Detailed Experiment Requirements.** After approval of the spaceflight plan, the STP Office may require more detailed information from sponsors than that in DD Forms 1721 and 1721-1. As necessary, the STP Office sends sponsors or experimenters a questionnaire that they must complete and return to the STP Office before the master schedule meeting.

**2.11. Payload Integration Meetings.** While developing the experiments, spacecraft, and support equipment that form the payload for each spaceflight, the STP Office organizes meetings to ensure that crucial activities (such as design, fabrication, testing, spaceflight qualification, safety, and integration of the payload) are proceeding on schedule, to help resolve problems, and to get timely, detailed information from all of the participants who must cooperate to make a spaceflight successful.

2.11.1. Experimenters support the STP contractor's design reviews.

2.11.2. The STP Office supports the experiment contractor's design reviews, as required.

**2.12. Interface Design Freeze.** While the STP Office aims to accommodate experiment changes that offer better performance, it sets up an interface design freeze date that all agencies contributing to the spaceflight must recognize.

2.12.1. Agencies that cannot meet an interface design freeze date (according to the interface control document) must pay additional costs that the STP Office takes on because of delays or spacecraft design changes.

**2.13. After Action Reports.** After a spaceflight, principal investigators and sponsors must provide spaceflight results by sending DD Form 1721-2, *Space Test Program After Action Report*, to the STP Program Office according to this schedule:

2.13.1. Send preliminary report not later than 6 months after the launch.

2.13.2. Send an updated report annually thereafter.

2.13.3. Send a final report 6 months after completing an experiment.

2.13.4. Send additional reports, if necessary, as the STP Program Office and the principal investigator or sponsor require.

**NOTES:**

This schedule applies to a multiyear mission. Shorter missions adjust accordingly (for example, a 1 week mission requires only a final report, while a 1-year mission requires both preliminary and final reports.)

The STP Office completes the Mission Programmatic Data section of the DD Form 1721-2 that it receives and sends the entire report within 30 days to SAF/AQS.

Form DD 1721-2 is not contained in this instruction. Get DD Form 1721-2 and instructions from SAF/AQS, 1060 Air Force Pentagon, Washington DC 20330-1060, and HQ Space and Missile Systems Center/Space Test Programs Office (SMC/TEL), 3550 Aberdeen Ave, SE, Kirtland AFB NM 87117-5776.

## Chapter 3

### MANAGEMENT REPORTS

**3.1. STP Management Documentation.** (RCS: SAF-AQS(AR)8402). The STP Office must prepare the following reports to inform SAF/AQS of STP activities:

**3.1.1. Program Status.** The STP Office prepares STP status reports as the current PMD requires.

**3.1.2. Launch Activity.** The STP Office notifies SAF/AQS immediately of any change in launch dates and provides launch reports to SAF/AQS, as the PMD requires.

**3.1.3. Funding Status.** The STP Office provides reports to SAF/AQS on funding status for all STP missions as changes occur per the PMD.

**3.1.4. History File.** The STP Office maintains an STP history file that includes:

3.1.4.1. Copies of all approved DD Forms 1721 and 1721-1.

3.1.4.2. A list of experiments flown.

3.1.4.3. Launch history.

3.1.4.4. Costs.

3.1.4.5. Spacecraft pictures.

3.1.4.6. DD Forms 1721-2.

3.1.4.7. Additional information outlined in the STP PMD.

**3.1.5. Emergency Reporting Procedure.** Normal transmission is by mail. STP Management Documentation, RCS: SAF-AQS(AR)8402, is designated emergency status code D. Immediately discontinue reporting data requirements during emergency conditions.

1 APRIL 1998

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## Attachment 1

## GLOSSARY OF TERMS AND SUPPORTING INFORMATION

*Terms*

**Departmental Approval Authority**—The command or agency with authority to send spaceflight requests to the Directorate of Space Programs, SAF/AQS, 1060 Air Force Pentagon, Washington DC 20330-1060.

**Experiment**—A scientific, technological, or developmental investigation or test. An experiment may include several instrument packages from the same or different sponsoring agencies. A given payload may include several experiments from the same or different sponsoring agencies. They may be primary or secondary mission experiments.

**Experiment Support Equipment**—Services and equipment on the Shuttle orbiter that support an STP experiment. These include structural, mechanical, electrical, thermal, and payload interface equipment, and Shuttle and payload interface equipment that a payload specialist uses.

**Experimenter**—The person who conceives and designs the experiment (designated "experimenter" on the DD Form 1721).

**Free-Flyer Spacecraft**—A spacecraft that the Space Shuttle or an ELV deploys into orbit.

**Investigator**—The person who designs, tests, and fabricates an instrument for a multi-instrument experiment. In cases with only one instrument package, the experimenter and the investigator are the same.

**Launch Support**—All logistics and support functions associated with a launch operation through injecting a vehicle into orbit, including prelaunch installation and checkout, range tests, countdown, and launch vehicle guidance.

**Launch Vehicle**—The vehicle that places payloads in space. A launch vehicle can be expendable (for example, Pegasus) or reusable (for example, Space Shuttle).

**Mission Specialist**—The member of the Shuttle crew who is responsible for payload interaction and, during payload operations, directs the vehicle and crew to meet the combined payload objectives.

**Orbital Transfer Stage**—A propulsive system used to transfer a free-flying spacecraft from the orbit of the launch vehicle to the desired orbit.

**Payload**—The entire collection of experiment(s), satellite bus, and supporting equipment that a launch vehicle places into space.

**Payload Integration**—For the purposes of this instruction, the process of integrating instrument packages and support equipment into a payload and the integration of the payload into a launch system. The process of systems management, definition, engineering, analysis, design, manufacturing, qualification, test, installation, and checkout that combines experiment(s), spacecraft, launch vehicle, facilities, telemetry, data acquisition, and personnel into a compatible entity capable of achieving the stated objectives of each experiment.

**Payload of Opportunity**—A secondary payload of generally simple experiments that fills unused space in the orbiter or replaces a withdrawn payload.

**Payload Specialist**—That member of the Shuttle crew with specific payload-related duties and skills, usually dedicated to a single payload or discipline. NASA or a customer may supply the payload specialist.

**Primary Experiment**—The part of the total mission experiment complement representing the primary objective of the mission and with the highest priority for data acquisition.

**Primary Payload**—The part of the total launch vehicle payload that supports the primary objective of a launch and usually drives the mission requirements.

**Secondary Experiment**—The part of the total mission experiment complement flown with the primary experiment but with a lower priority for data acquisition.

**Secondary Payload**—The part of the total launch vehicle payload not associated with the primary mission.

**Shuttle Aft- or Mid-Flight Deck Experiment**—An experiment, usually simple and portable, that the Shuttle aft- or mid-flight deck houses and that a crew member or payload specialist operates.

**Sortie Spacecraft**—A spacecraft that works within the Shuttle cargo bay or attached to the Shuttle.

**Spacecraft**—A vehicle that carries out experiments in space. A spacecraft may be either a free-flyer or a sortie spacecraft.

**Spaceflight**—The flight of a payload into or through space. The payload in a spaceflight may be captive (for example, mounted in the Shuttle), tethered, or free-flying.

**Spaceflight Compatibility**—The condition of being easily and cost-effectively integrated with launch vehicle systems, facilities, and other experiments.

**Spaceflight Plan**—An overall plan for an STP space mission of one or more experiments. Some of the items found in a spaceflight plan include launch date, launch vehicle, experiment data, support equipment data, mission parameters, MOAs between participants, and estimated costs.

**Spaceflight Request (DD Forms 1721 and 1721-1)**—A request for the spaceflight of a single experiment.

**Sponsor**—The agency supporting a program, project, or task by funding, developing, fabricating, and qualifying the spaceflight hardware for an approved experiment, as described in DD Forms 1721 and 1721-1.

**STP Payload**—The part of the total launch vehicle payload that the STP Office oversees. The STP payload may be either a primary or a secondary payload.

#### ***Interservice Publication Distribution List***

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**1 APRIL 1998**

**23**

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**Attachment 2****PROGRAM AUTHORITY**

**A2.1. Program Authority.** On 6 November 1995 a memorandum and Management and Funding Policy statement was sent out from the Secretary of Defense to the Secretaries of the Military Departments and the Directors of Defense Research and Engineering, the Advanced Research Projects Agency, the Defense Mapping Agency, the Defense Nuclear Agency; and Ballistic Missile Defense Organization. The memorandum designated that the Space Test Program should be maintained as "a multi-user space program whose role is to be the primary provider of space flight for the entire DoD space research community." This statement came after a review of possible options for changing or improving the program, with the conclusion being that the current program structure with Air Force management and funding should be maintained. The Management and Funding Policy statement now serves as the STP Charter, and is presented at A2.2.

**A2.2. Space Test Program (STP): Management And Funding Policy.****OBJECTIVE**

STP advances space system technology by providing spaceflight for experiments generated within the entire Department of Defense (DoD) space Research and Development (R&D) community. The experiments STP supports are flown by priority based on relevance to existing military requirements and the availability of cost-effective means of spaceflight. The scope of the experiments flown by STP range from basic research through advanced development. The end result of these experimental space demonstrations is substantial risk mitigation at relatively low cost for new space systems or sub-systems technologies, concepts and designs before they are actually incorporated operationally.

The primary objective of STP is to fly the maximum number of Department of Defense space research experiments possible consistent with priority, opportunity and available funding. This is accomplished by considering all possible spaceflight modes, such as secondary opportunities on the Space Shuttle and operational satellites, both military and civilian, foreign and domestic. In addition, for those experiments that cannot be accommodated by secondary opportunities, STP will provide dedicated spacecraft for those experiments to be launched on Small and Medium Launch Vehicle-class boosters. It will also provide integration, launch and orbital support services.

STP will maintain a highly technical, capable management organization for providing payload integration, launch support, and orbital support. The capability of this organization will not be duplicated within DoD except by operational programs or major development programs approved by the Office of the Under Secretary of Defense (Acquisition and Technology).

STP centralized management achieves space research results at a lower overall cost to DoD by: 1) Avoiding the duplication of space experiments through the filtering process of the yearly DoD Space Experiments Review Board (SERB). 2) Avoiding duplication of spacecraft and launch vehicle procurement activities and taking advantage of the inherent contractual economy of scale provided. 3) Maintaining a resource base of manpower and equipment. 4) Combining numerous experiments to form a single mission and influencing experiment designs to achieve optimum mission capability.

## APPROACH

Since STP is a DoD-wide program, with the Air Force as the Executive Agent, the Army, Navy and other DoD Agencies are encouraged to assign qualified personnel to the program office. Additionally, personnel augmentation may be requested for the duration of special programs conducted for a Service or DoD Agency when required.

## FUNDING

STP's level of funding must be adequate to prevent stagnation of DoD's space research efforts. It is essential that STP funding include adequate management reserves and outyear escalation to cover inflation and assure timely launch of experiments accepted for flight. To determine an appropriate funding level, a yearly mission planning study will be conducted which will document the most efficient means of accommodating the STP space experiment priority list and the cost of doing so. This will serve as the basis for the program's funding requirements and will be utilized for POM inputs.

STP will define a standard set of hardware and service that will be provided to DoD experimenters using those spaceflight modes available to them, either as secondaries or STP dedicated spacecraft mission. In general, STP will not provide highly sophisticated, expensive spacecraft as a normal STP service, but will provide special spacecraft options and services if the increased costs are borne by the experimenter with the special requirements. Reimbursement from non-DoD experimenters will be negotiated on the basis of the benefits to DoD of flying the experiments.

## EXPERIMENT SELECTION

The Air Force will convene a DoD Space Experiments Review Board (SERB) annually, with Agency participation as desired, to establish the prioritized list of experiments approved for spaceflight consideration. Disputes on priorities, experiment selection, or duplication among agencies will be resolved by the Deputy Undersecretary of Defense for Space. The STP organization will provide technical support as needed in these special instances.

Only fully funded experiments may be accepted by STP for flight support. The funding must include data reduction. Plans for disseminating the experimental results must also be proposed.

STP may accept experiments from agencies outside DoD, or even foreign military organizations, where the benefits to DoD are sufficient providing these are sponsored by a DoD Agency.

STP will provide advice to the space research community regarding the design of their experiments to maximize their scientific benefit and engineering compatibility with those spaceflight modes available to the program.