



NASA Procedural Requirements

COMPLIANCE IS MANDATORY

NPR 7120.5E

Effective Date: August 14,
2012

Expiration Date: August 14,
2017

[Printable Format \(PDF\)](#)

Request Notification of Change (NASA Only)

Subject: NASA Space Flight Program and Project Management Requirements w/Changes 1-15

Responsible Office: Office of the Chief Engineer

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Chapter 3. Program and Project Management Roles and Responsibilities

3.1 Governance

3.1.1 The fundamental principles of NASA governance are defined in NPD 1000.0, NASA Governance and Strategic Management Handbook. The governance model prescribes a management structure that employs checks and balances among key organizations to ensure that decisions have the benefit of different points of view and are not made in isolation. This structure is made up of two authorities: Programmatic and Institutional. Programmatic Authority consists of the Mission Directorates and their respective programs and projects. The Institutional Authority consists of those organizations not in the Programmatic Authority. As part of Institutional Authority, NASA established the Technical Authority process as a 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. Individuals with these formal delegations are Technical Authorities. The requirements related to Technical Authority are contained in Section 3.3.

3.2 Roles and Responsibilities

3.2.1 The roles and responsibilities of NASA management are defined in NPD 1000.0, NASA Governance and Strategic Management Handbook, and further outlined in NPD 1000.3, The NASA Organization. The key roles and responsibilities specific to programs and projects can be summarized as follows:

- a. The Administrator leads the Agency and is accountable to the President for all aspects of the Agency's mission, including establishing and articulating the Agency's vision and strategic priorities and ensuring successful implementation of supporting policies, programs, and performance assessments. The Administrator performs all necessary functions to govern NASA operations and exercises the powers vested in NASA by law.
- b. The NASA Associate Administrator is responsible for the technical and programmatic integration of programs at the Agency level and serves as the Decision Authority for programs and Category 1 projects with the advice of the APMC. He or she monitors the status and performance of the programs and projects via reports from the MDA; Center Director; and through Agency-level review, such as the APMC and the Baseline Performance Review (BPR) process. The NASA AA may delegate Decision Authority to MDAs.
- c. MDAs are responsible for Programmatic Authority in managing programs and projects within their Mission Directorate. They establish directorate policies applicable to programs, projects, and supporting elements; support the Agency's strategic acquisition process; initiate new programs and projects; recommend assignment of programs and Category 1 projects to Centers; assign Category 2 and 3 projects to Centers; serve as the KDP Decision Authority for Category 2 and 3 projects; are responsible for all program-level requirements; establish program and project budgets; approve Formulation Agreements and Program and Project Plans; oversee program and project performance via the MDPMC; and approve launch readiness. The MDAs may delegate some of their Programmatic Authority to deputy associate administrators, division directors, or their equivalent, such as program directors, and Center Directors. The MDAs proactively work with Center Directors to develop constructive solutions

for the formulation and implementation of programs and projects conducted at their Centers and to resolve issues as they arise.

d. Center Directors are responsible and accountable for all activities assigned to their Center. They are responsible for the institutional activities and for ensuring the proper planning for and assuring the proper execution of programs and projects assigned to the Center. This includes:

- (1) Performing their delegated Technical Authority duties in accordance with Section 3.3;
- (2) Ensuring the Center is capable of accomplishing the programs, projects, and other activities assigned to it in accordance with Agency policy and the Center's best practices and institutional policies by establishing, developing, and maintaining institutional capabilities (processes and procedures, human capital including trained/certified program/project personnel, facilities, and infrastructure) required for the execution of programs and projects;
- (3) Establishing and maintaining ongoing processes and forums, including the CMC, to monitor the status and progress of programs and projects at their Center;
- (4) Performing periodic program and project reviews to assess technical and programmatic progress to ensure performance in accordance with their Center's and the Agency's requirements, procedures, processes, etc.;
- (5) Reporting the executability of all aspects of their programs and projects (programmatic, technical, and all others) along with major risks, mitigation strategies, and significant concerns to the Decision Authority and other appropriate forums;
- (6) Working with the Mission Directorate and the programs and project managers, once assigned, to assemble the program/project team(s) and to provide needed Center resources;
- (7) Providing support and guidance to programs and projects in resolving technical and programmatic issues and risks;
- (8) Concurring on the adequacy of cost/schedule estimates and the consistency of these estimates with Agency requirements, workforce, and other resources stipulated in proposed Program and Project Plans;
- (9) Working proactively with the Mission Directorates, programs, projects, and other Institutional Authorities to find constructive solutions to problems to benefit both the programs and projects and the overall Agency long-term health; and
- (10) Certifying that programs and/or projects have been accomplished properly as part of the launch approval process.

e. The program manager is responsible for the formulation and implementation of the program as described in this document and NPR 7123.1. This includes responsibility and accountability for the program safety; technical integrity; technical, cost, and schedule performance; and mission success. (Refer to the NASA Space Flight Program and Project Management Handbook for additional information.)

f. The project manager is responsible for the formulation and implementation of the project as described in this document and NPR 7123.1. This includes responsibility and accountability for the project safety; technical integrity; technical, cost, and schedule performance; and mission success. (Refer to the NASA Space Flight Program and Project Management Handbook for additional information)

g. The Director, Office of Evaluation, supports the Administrator, Deputy Administrator, Associate Administrator, and Chief of Staff to provide objective, transparent, and multidisciplinary assessment and evaluation of all aspects of NASA programs, projects, and institutions. The Office of Evaluation serves as an independent assessment organization, providing objective reviews to the Mission Directorates and APMC of newly proposed and ongoing programs, projects, and institutions for cost effectiveness, quality, and performance in achieving strategic Agency objectives.

h. The NASA Chief Engineer establishes policy, oversight, and assessment of the NASA engineering and program/project management processes; implements the Engineering Technical Authority process; and serves as principal advisor to the Administrator and other senior officials on matters pertaining to the technical capability and readiness of NASA programs and projects to execute according to plans. The Chief Engineer directs the NASA Engineering and Safety Center (NESC) and ensures that programs/projects respond to requests from the NESC for data and information needed to make independent technical assessments and then respond to NESC assessments. The Chief Engineer leads the mission and program/project performance assessment for the BPR; ensures that space asset protection functional support is provided to NASA missions and management, including at a minimum, preparation of program threat summaries and project protection plans; and co-chairs the SMSR with the Office of Safety and Mission Assurance (OSMA).

i. The Chief, Safety and Mission Assurance ensures the existence of robust safety and mission assurance processes and activities through the development, implementation, assessment, and functional oversight of Agency-wide safety, reliability, maintainability, quality, and risk management policies and procedures. The Chief, SMA serves as

principal advisor to the Administrator and other senior officials on Agency-wide safety, reliability, maintainability, and quality; performs independent program and project compliance verification audits; implements the SMA Technical Authority process; monitors, collects, and assesses Agency-wide safety and mission assurance financial and performance results; oversees the prompt investigation of NASA mishaps and assures the appropriate closure; and co-chairs the Safety and Mission Success Review (SMSR) with the OCE.

j. The Chief Health and Medical Officer establishes policy, oversight, and assessment on all health and medical matters associated with NASA missions, is responsible for implementation of the Health and Medical Technical Authority process, and serves as principal advisor to the Administrator and other senior officials on health and medical issues related to the Agency workforce.

k. The Mission Support Directorate (MSD) Associate Administrator establishes policy and procedures for institutional oversight for mission support functional areas (e.g., procurement).

l. Roles and responsibilities for other NASA organizations can be found in NPD 1000.3.

3.3 Technical Authority

3.3.1 Programs and projects shall follow the Technical Authority (TA) process established in this Section 3.3. 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. These individuals are the Technical Authorities. In this document, the term TA is used to refer to such an individual, but is also used to refer to elements of the TA process. The responsibilities of a program or project manager are not diminished by the implementation of TA. The program or project manager is ultimately responsible for the safe conduct and successful outcome of the program or project in conformance with governing requirements. This includes meeting programmatic, institutional, technical, safety, cost, and schedule commitments.

3.3.1.1 TA originates with the Administrator and is formally delegated to the NASA AA and then to the NASA Chief Engineer for Engineering Technical Authority; the Chief, Safety and Mission Assurance for SMA Technical Authority; and then to the Center Directors. The Administrator delegates Health and Medical Technical Authority (HMTA) to the NASA Chief Health and Medical Officer. HMTA may then be delegated to the Center Chief Medical Officer with the concurrence of the Center Director. Subsequent TA delegations are made to selected individuals who are funded independent of the Programmatic Authority. Such delegations are formal and traceable to the Administrator. TAs located at Centers remain part of their Center organization, and their personnel performance appraisal is signed by the management of that Center organization. The Center Director (or designee) is responsible for establishing and maintaining Center TA policies and practices, consistent with Agency policies and standards.

3.3.2 Other Technical Authority Roles

3.3.2.1 Top-level documents developed by a program detailing Agency-level requirements for human-rated systems are signed by the Administrator or his/her formally delegated designee.

3.3.2.2 On decisions related to technical and operational matters involving safety and mission success residual risk, formal concurrence by the responsible TAs (Engineering, Safety and Mission Assurance, and/or Health and Medical) is required. This concurrence is to be based on the technical merits of the case. For residual risks to personnel or high-value hardware, the cognizant safety organization needs to agree that the risk is acceptable. For matters involving human safety risk, the actual risk taker(s) (or official spokesperson(s) and their supervisory chain) need to formally consent to taking the risk and the responsible program, project, or operations manager needs to formally accept the risk.

3.3.3 At the program or project level, the responsibilities common to each of the individuals with delegated TA (Engineering Technical Authority (ETA), SMA TA, and HMTA) are delineated below. (See paragraphs 3.3.6 to 3.3.9 for unique aspects of each of the TAs.) These individuals:

- a. Serve as members of program or project control boards, change boards, and internal review boards.
- b. Work with the Center management and other TA personnel, as necessary, to ensure that the quality and integrity of program or project processes, products, and standards of performance related to engineering, SMA, and health and medical reflect the level of excellence expected by the Center or, where appropriate, by the NASA TA community.
- c. Ensure that requests for waivers or deviations from TA requirements are submitted to and acted on by the appropriate level of TA. ("Technical Authority requirements" is defined in Appendix A.)
- d. Assist the program or project in making risk-informed decisions that properly balance technical merit, cost, schedule, and safety across the system.
- e. Provide the program or project with the TA view of matters based on their knowledge and experience and raise a Dissenting Opinion (see Section 3.4) on a decision or action, when appropriate.

f. Serve as an effective part of NASA's overall system of checks and balances.

3.3.3.1 At all Centers (except Johnson Space Center, where the chief medical officer serves this function), the program/project-level ETA and SMA TA are responsible to serve as the awareness and communication links for potential HMTA issues and to inform the appropriate level of HMTA, the program/project manager, and Center management of potential HMTA issues. (See NPR 7120.11, NASA Health and Medical Technical Authority (HMTA) Implementation.)

3.3.4 The day-to-day involvement of the TAs in program/project activities ensures that significant views from the TAs will be available to the program/project in a timely manner and should be handled during the normal program/project processes. TAs are expected to keep their discipline chain of authority informed of issues as they arise, including direct communication between the Center's engineering director, SMA director (or equivalent), and chief medical officer with their counterparts at NASA Headquarters.

3.3.5 Infrequent circumstances may arise when a TA and the program or project manager disagree on a proposed programmatic or technical action and judge that the issue rises to a level of significance that should be brought to the attention of the next higher level of management (i.e., a Dissenting Opinion exists). In such circumstances:

- a. Resolution occurs prior to Implementation whenever possible. However, if considered to be in the best interest of the program/project, the program/project manager has the authority to proceed at risk in parallel with the pursuit of a resolution. In such circumstances, the next higher level of Programmatic and TA is informed of the decision to proceed at risk.
- b. Resolution is jointly attempted at successively higher levels of Programmatic Authority and TA until resolved. Final appeals are made to the NASA Administrator.

3.3.6 **The Engineering Technical Authority (ETA)** establishes and is responsible for the engineering design processes, specifications, rules, best practices, etc., necessary to fulfill programmatic mission performance requirements.

3.3.6.1 The NASA Chief Engineer provides overall leadership for the ETA process for programs and projects, including Agency engineering policy direction, requirements, and standards. The NASA Chief Engineer approves the appointment of the Center engineering directors (or equivalent) and of ETAs on programs and Category 1 projects and is notified of the appointment of other Engineering TAs. The NASA Chief Engineer hears appeals of engineering decisions when they cannot be resolved at lower levels.

3.3.6.2 The Center Director (or designee) develops the Center's ETA policies and practices, consistent with Agency policies and standards. The following individuals are responsible for implementing ETA at the Center:

- a. Center Director - The Center Director (or the Center engineering director or designee) is the Center ETA responsible for Center engineering design processes, specifications, rules, best practices, etc., necessary to fulfill mission performance requirements for programs, projects, and/or major systems implemented by the Center. The Center Director delegates Center ETA implementation responsibility to an individual in the Center's engineering leadership. The Center ETA supports the TAs in processing changes to and waivers or deviations from requirements that are the responsibility of the ETA. This includes all applicable Agency and Center engineering directives, requirements, procedures, and standards. The Center Director appoints, with the approval of the NASA Chief Engineer, individuals for the position of Center engineering director (or equivalent) and for the ETA positions down to and including program chief engineers and Category 1 project chief engineers (or equivalents).⁷ The Center Director appoints Category 2 and 3 project chief engineers and lead discipline engineers.

⁷ Centers may use an equivalent term for these positions, such as Program/Project Systems Engineer.

- b. Program/Project Chief Engineer (PCE) – The PCE is the position to which the program/project-level ETA has been delegated. Different Centers use different titles for this position.

- c. Lead Discipline Engineer (LDE) – The LDE is a senior technical engineer in a specific discipline at the Center. Different Centers use different titles for this position. The LDE assists the program/project through direct involvement with working-level engineers to identify engineering requirements in accordance with NPR 7120.10, Technical Standards for NASA Programs and Projects and other documents, and develop solutions that comply with the requirements. The LDE works through and with the PCE to ensure the proper application and management of discipline-specific engineering requirements and Agency standards.

3.3.6.3 The ETA for the program or project leads and manages the engineering activities, including systems engineering, design, development, sustaining engineering, and operations. A Center may have more than one engineering organization and delegates ETA to different areas as needed. To support the program/project and maintain ETA independence and an effective check and balance system:

- a. The program/project manager concurs in the appointment of the program/project-level ETAs.

b. The ETA cannot approve a request for relief from a non-technical derived requirement established by a Programmatic Authority.

c. An ETA may approve a request for relief from a technical derived requirement if he/she ensures that the appropriate independent Institutional Authority subject matter expert who is the steward for the involved technology has concurred in the decision to approve the requirement relief.

3.3.7 Although a limited number of individuals make up the ETAs, their work is enabled by the contributions of the program's or project's working-level engineers and other supporting personnel (e.g., contracting officers). The working-level engineers do not have formally delegated TA and consequently may not serve in an ETA capacity. These engineers perform the detailed engineering and analysis for the program/project with guidance from their Center management and/or LDEs and support from the Center engineering infrastructure. They deliver the program/project products (e.g., hardware, software, designs, analysis, and technical alternatives) that conform to applicable programmatic, Agency, and Center requirements. They are responsible for raising issues to the program/project manager, Center engineering management, and/or the PCE, as appropriate, and are a key resource for resolving these issues.

3.3.8 The Safety and Mission Assurance (SMA) TA establishes and is responsible for the SMA processes, specifications, rules, best practices, etc., necessary to fulfill safety and programmatic mission performance requirements. (Refer to NASA-STD-8709.20, Management of Safety and Mission Assurance Technical Authority (SMA TA) Requirements. The following individuals are responsible for implementing SMA TA at the Center:

3.3.8.1 The Chief, SMA hears appeals of SMA decisions when issues cannot be resolved below the Agency level.

3.3.8.2 The Center Director (or the Center SMA director or designee) is the Center SMA TA responsible for Center safety and mission assurance processes, specifications, rules, best practices, etc., necessary to fulfill mission performance requirements for programs, projects, and/or major systems implemented by the Center. The Center Director (or designee) also monitors, collects, and assesses institutional, program, and project SMA financial metrics and performance results. The Center Director delegates Center SMA TA implementation responsibility to an individual in the Center's safety and mission assurance leadership. The Center SMA TA supports the lower level SMA TAs in processing changes to and waivers or deviations from requirements that are the responsibility of the SMA TA. This includes all applicable Agency and Center SMA directives, requirements, procedures, and standards. The Center Director appoints, with the approval of the NASA Chief, SMA, individuals for the position of Center SMA director (or equivalent). The Center SMA director, in consultation with the NASA Chief, SMA, appoints program- and project-level chief safety and mission assurance officers (CSOs) to exercise the TA role within programs and projects.

3.3.9 The Health and Medical Technical Authority (HMTA) is the NASA Chief Health and Medical Officer (CHMO). The CHMO establishes and is responsible for the health and medical Agency-level requirements, specifications, rules, best practices, etc., necessary to fulfill programmatic mission performance requirements.

3.3.9.1 Due to Center infrastructure differences, the flow down of HMTA processes and responsibilities from the CHMO varies between Centers. Additionally, the CHMO entered into an agreement with SMA and OCE to have engineering and safety TA personnel serve as awareness and communication links for HMTA. The HMTA flow down and communication processes, including roles and responsibilities, are specified in NPR 7120.11, Health and Medical Technical Authority Implementation, and further described in the Center HMTA implementation plan. This NPR recognizes that medical staff have a special obligation to protect the handling and dissemination of an individual's medical information and the necessity of respecting these restrictions.

3.3.9.2 When applicable, the Program Plan or Project Plan will describe how the program or project will comply with HMTA requirements and processes as described in NPR 7120.11. The CHMO hears appeals of HMTA decisions when issues cannot be resolved below the Agency level.

3.4 Process for Handling Dissenting Opinions

3.4.1 Programs and projects shall follow the Dissenting Opinion process in this Section 3.4. NASA teams have full and open discussions, with all facts made available, to understand and assess issues. Diverse views are to be fostered and respected in an environment of integrity and trust with no suppression or retribution. In the team environment in which NASA operates, team members often have to determine where they stand on a decision. In assessing a decision or action, a member has three choices: agree, disagree but be willing to fully support the decision, or disagree and raise a Dissenting Opinion. Unresolved issues of any nature (e.g., programmatic, safety, engineering, health and medical, acquisition, accounting) within a team should be quickly elevated to achieve resolution at the appropriate level.

3.4.2 When time permits, the disagreeing parties jointly document the issue, including agreed-to facts, discussion of the differing positions with rationale and impacts, and the parties' recommendations. The joint documentation needs to be approved by the representative of each view, concurred with by affected parties, and provided to the next higher level of the involved authorities with notification to the second higher level of management. This may involve

a single authority (e.g., the Programmatic Authority) or multiple authorities (e.g., Programmatic and TAs). In cases of urgency, the disagreeing parties may jointly present the information stated above orally with all affected organizations represented, advance notification to the second-higher level of management, and documentation follow up.

3.4.3 Management's decision on the dissent memorandum (or oral presentation) is documented and provided to the dissenter and to the notified managers and becomes part of the program or project record. If the dissenter is not satisfied with the process or outcome, the dissenter may appeal to the next higher level of management. The dissenter has the right to take the issue upward in the organization, even to the NASA Administrator, if necessary.

3.5 Principles Related to Tailoring Requirements

3.5.1 Programs and projects shall follow the tailoring process in this Section.

3.5.2 It is NASA policy that all prescribed requirements (requirements levied on a lower organizational level by a higher organizational level) are complied with unless relief is formally granted. Policy also recognizes that each program or project has unique aspects that must be accommodated to achieve mission success in an efficient and economical manner. Tailoring is the process used to adjust or seek relief from a prescribed requirement to meet the needs of a specific program or project. Tailoring is both an expected and accepted part of establishing proper requirements. For requests for relief from requirements that are the responsibility of the Chief, SMA, NASA-STD-8709.20 contains the SMA-specific process. Refer to the NASA Space Flight Program and Project Management Handbook for additional explanation and guidance related to the tailoring process.

3.5.3 The evaluation and disposition of requests for tailoring (including Agency-level requirements and standards) comply with the following:

- a. The request for relief from a requirement includes the rationale, a risk evaluation, and reference to all material that provides the justification supporting acceptance. The request for requirement relief is referred to as a "deviation" or "waiver" depending on the timing of the request. Deviations apply before a requirement is put under configuration control at the level the requirement will be implemented, and waivers apply after.
- b. The organization submitting the tailoring request informs the next higher level of involved management in a timely manner of the tailoring request.
- c. The organization at the level that established the requirement disposes the request for tailoring of that requirement unless this authority has been formally delegated elsewhere. Such delegations will maintain the separation of Programmatic and Institutional Authorities required by governance.
- d. The dispositioning organization consults with the other organizations that were involved in the establishment of the specific requirement and obtains the concurrence of those organizations having a substantive interest.
- e. Approved tailoring requests become part of the retrievable program or project records.

3.5.4 A prescribed requirement that is not relevant and/or not capable of being applied to a specific program, project, system, or component can be approved as Non-Applicable by the individual who has been delegated oversight authority by the organization that established the requirement. This approval can be granted at the level where the requirement was specified for implementation (e.g., the project-level ETA could approve a Non-Applicable designation for an engineering requirement). The request and approval documentation become part of the retrievable program or project records. No other formal deviation or waiver process is required.

3.5.5 A request for a permanent change to a prescribed requirement in an Agency or Center document that is applicable to all programs and projects shall be submitted as a "change request" to the office responsible for the requirement policy document unless formally delegated elsewhere.

3.5.6 Tailoring NPR 7120.5

3.5.6.1 Tailoring of NPR 7120.5 requirements is dispositioned by the designated officials shown in Table 3-1, unless formally delegated elsewhere. Requests for tailoring may be submitted in the form of the Compliance Matrix (Appendix C) or by using a waiver request (see the NASA Space Flight Program and Project Management Handbook) individually or in groups. Regardless of whether the waiver is documented as a stand-alone document or as part of the Compliance Matrix, the required signatures from the responsible organizations are to be obtained.

Table 3-1 Waiver Approval Authority for NPR 7120.5 Requirements

	Project Manager	Program Manager	Center Director	MDAA	Chief Engineer	NASA AA	Approval Authority for Waivers or Deviations with Dissent
Programs		R	C**	R	A	I	NASA AA
Category 1, 2, and 3 Projects	R	R	C**	R	A	I	NASA AA
Reimbursable Space Flight Projects	R		C**	R*	A	I	NASA AA

R = Recommends; C = Concur; A = Approves; I = Informed

* As applicable

**Unless otherwise delegated

3.6 Reimbursable Space Flight Work

3.6.1 A Center negotiating reimbursable space flight work with another agency shall propose NPR 7120.5 as the basis by which it will perform the space flight work. If the sponsoring agency does not want NPR 7120.5 requirements (or a subset of those requirements) to be followed, then the interagency Memorandum of Understanding/Memorandum of Agreement (MOU/MOA) or the contract needs to explicitly identify those requirements that will not be followed, along with the substitute requirements for equivalent processes and any additional program/project management requirements the sponsoring agency wants. The Center obtains a formal waiver by the NASA Chief Engineer for those NPR 7120.5 requirements that are not to be followed or the Center cannot accept the work.

3.7 Use of the Metric System

3.7.1 The International System of Units (commonly known as the Syst me Internationale (SI) or metric system of measurement) is to be used for all new space flight projects and programs, especially in cooperative efforts with International Partners. Public Laws 94-168 and 100-418 and Executive Order 12770 provide relief from this preferential use of SI if it is found that obtaining components in SI units would result in a substantial increase in cost or unacceptable delays in schedule. Each program and project shall perform and document an assessment to determine an approach that maximizes the use of SI. This assessment will document an integration strategy if both SI and U.S. customary units are used in a project or program. The assessment is to be completed and documented in the Program Plan or Project Plan no later than the SDR.

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