National Aeronautics and Space Administration

Headquarters
Washington, DC 20546-0001

May 6, 2008

Reply to Attn of: Safety and Assurance Requirements Division

TO: Associate Administrator for Exploration Systems Mission Directorate

FROM: Chief, Safety and Mission Assurance

SUBJECT: Granting Exceptions to NASA Safety and Mission Assurance Requirements for the Constellation Program

During the past year, a team from the Constellation Program (CxP) Level II Safety, Reliability, and Quality Assurance Office (JSC/ZG), the Constellation Chief Safety and Mission Assurance Officer, and my office identified and traced the NASA-level Safety and Mission Assurance (SMA) requirements which are applicable to the CxP Level II. Applicability was determined at the document, chapter, and requirement levels. The granting of exceptions and waivers is being done per NPR 8715.3C, paragraph 1.13. Enclosure 1 shows the set of documents which the team reviewed. The following are the results of the review:

1. CxP is granted exceptions to the following requirements which are contained in documents for which the Office of Safety and Mission Assurance (OSMA) is the Office of Primary Responsibility:

- Exception granted for the entire document:
  - NASA Safety Standard 1740.14, Guidelines and Assessment Procedures for Limiting Orbital Debris
  - NASA-STD 8709.2, NASA Safety and Mission Assurance Roles and Responsibilities for Expendable Launch Vehicle (ELV) Services
  - NASA-STD 8719. 8, ELV Payload Safety Review Process
  - NASA-STD 8729.1, Planning, Developing and Managing an Effective Reliability and Maintainability Program
  - NPD 8700.3A, SMA Policy for NASA Spacecraft, Instruments, and Launch Services
  - OSMA Functional Leadership Plan (2001), OSMA Document.

  Note: Exception to NASA-Safety Standard 1740.14 is granted because CxP is using NASA-STD 8719.14, Process for Limiting Orbital Debris, exclusively.

- Exception granted for specific chapters within a document:
  - NPR 8715.3C, NASA General Safety Program Requirements: Chapter 4, Aviation Safety, and Chapter 10, Process/Requirements for the SMA portion of Request for Liability Insurance or Indemnification of Experimental Aerospace Vehicle Developers

Note: Should indemnification be requested by a CxP contractor, the request will processed per NPR 8715.3C, Chapter 10.

- Exceptions granted for individual requirements:
  - As listed in Enclosure 2.

2. The following documents and requirements were identified as not directly applied from OSMA documents to CxP, but rather applied via the host Centers to CxP.

- Entire documents:
  - NASA Safety Standard 1740.12, Safety Standard for Explosives, Propellants, and Pyrotechnics
  - NASA-STD 8719.7, Facility System Safety Guidebook
  - NASA-STD 8719.9, Standard for Lifting Devices and Equipment
  - NASA-STD 8719.10, Standard for Underwater Facility and Non-Open Water Operations
  - NASA-STD 8719.11, Safety Standard for Fire Protection
  - NASA-STD 8719.17, NASA Requirements for Ground-Based Pressure Vessels and Pressurized Systems (PV/S)
  - NPD 8710.2D, NASA Safety and Health Program Policy
  - NPD 8710.5C, NASA Safety Policy for Pressure Vessels and Pressurized Systems
  - NPR 8715.1, NASA Occupational Safety and Health Programs

  Note: If CxP "directly owns" a pressure vessel, then NPD 8710.5 will apply directly.

- Specific chapters within a document:
  - NPR 8715.3C, NASA General Safety Program Requirements: Chapter 5, Fire Safety, and Chapter 8, Safety for Facility Acquisition, Construction, Activation, and Disposal.

- Individual requirements:
  - As listed in Enclosure 3.

3. The study determined that the following documents and requirements are directly applicable to the CxP and are being implemented within the CxP documentation as meeting or exceeding the source requirements. Additionally, no increase in risks were identified with the meet/exceed review. Therefore, no waivers are needed at this time.

- Entire document is directly applicable:
  - NASA-STD 2202-93, Software Formal Inspections Standard
  - NASA-STD 8719.14, Process for Limiting Orbital Debris
  - NASA-STD 8739.1, Workmanship Standard for Staking and Conformal Coating of Printed Wiring Boards and Electronic Assemblies
  - NASA-STD 8739.2, Workmanship Standard for Surface Mount Technology
  - NASA-STD 8739.3, Soldered Electrical Connections
  - NASA-STD 8739.4, Crimping, Interconnecting Cables, Harnesses, and Wiring
  - NASA-STD 8739.5, Fiber Optic Terminations, Cable Assemblies, and Installation

- NPR 8621.1B, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping
- NPR 8705.2A, Human-Rating Requirements for Space Systems (With post-NODIS version of rev. B)
- NPR 8715.5, Range Safety Program
- NPR 8715.6A, NASA Procedural Requirements for Limiting Orbital Debris.

- Directly applicable individual requirements:
  - As listed in Enclosure 4.

4. The following documents and requirements were identified as 'forward work' and will need to be examined in the future as the CxP develops for applicability.

- For entire documents:
  - NPR 8705.4, Risk Classification for NASA Payloads

- For individual requirements: none.

Thank you for your support in tracing NASA-level requirements to the CxP. I believe that this effort will make a difference in improving the safety and success of the CxP in the years to come.

Bryan O'Connor

4 Enclosures

cc:
Associate Administrator/Mr. Scolese
Chief Engineer/Dr. Ryschkewitsch
Chief Health and Medical Officer/Dr. Williams

Enclosure 1: Documents reviewed during the traceability study of NASA-Level Safety and Mission Assurance requirements for applicability to the Constellation Program

Note: Version used was version current on April 1, 2008, or as noted below.

Document Number	Document Title	Document Owner/POC
29 CFR 1960	OSHA Requirements	US Congress
Exec Order 13043	Increasing Seat Belt Use in the United States	OSTP
NASA FAR Supplement 1852.223-70	NASA FAR Supplement	US Congress
NASA Safety STD-1740.12	Safety Standard for Explosives, Propellants, and Pyrotechnics	OSMA
NASA Safety STD-1740.14	Guidelines and Assessment Procedures for Limiting Orbital Debris	OSMA
NASA-STD 2202-93	Software Formal Inspections Standard	OSMA
NASA-STD 8709.2	NASA Safety and Mission Assurance Roles and Responsibilities for Expendable Launch Vehicle Services	OSMA
NASA-STD 8719. 7	Facility System Safety Guidebook	OSMA
NASA-STD 8719. 8	Expendable Launch Vehicle Payload Safety Review Process Standard	OSMA
NASA-STD 8719. 9	Standard for Lifting Devices and Equipment	OSMA
NASA-STD 8719.10	Standard for Underwater Facility and Non-Open Water Operations	OSMA
NASA-STD 8719.11	Safety Standard for Fire Protection	OSMA
NASA-STD 8719.13B	Software Safety Standard	OSMA
NASA-STD 8719.14	Process for Limiting Orbital Debris	OSMA
NASA-STD 8719.17	NASA Requirements for Ground-Based Pressure Vessels and Pressurized Systems (PV/S)	OSMA
NASA-STD 8729.1	Planning, Developing and Managing an Effective Reliability and Maintainability (R&M) Program	OSMA
NASA-STD 8739.1	Workmanship Standard for Staking and Conformal Coating of Printed Wiring Boards and Electronic Assemblies	OSMA
NASA-STD 8739.2	Workmanship Standard for Surface Mount Technology	OSMA
NASA-STD 8739.3	Soldered Electrical Connections	OSMA
NASA-STD 8739.4	Crimping, Interconnecting Cables, Harnesses, and Wiring	OSMA
NASA-STD 8739.5	Fiber Optic Terminations, Cable Assemblies and Installation	OSMA
NASA-STD 8739.8	Software Assurance Standard	OSMA
US National Space Policy (NSP) (Aug 2006)	National Space Policy	OSTP
NPD 1000.0	Strategic Management & Governance Handbook	Office of the Administrator
NPD 1000.3C (w/ Chg 11)	The NASA Organization	Office of the Administrator
NPD 1040.4A	NASA Continuity of Operations	OSPP

Document Number	Document Title	Document Owner/POC
NPD 1280.1	NASA Management Systems Policy	OIM
NPD 1800.2B	NASA Occupational Health Program	OCHMO
NPD 2820.1C	NASA Software Policy	OCE
NPD 7120.4C	Program/Project Management	OCE
NPD 8010.2E	Use of the SI (Metric) System of Measurement in NAS Programs	OCE
NPD 8010.3A	Notification of Intent to Decommission or Terminate Operating Space Systems and Terminate Missions	SMD
NPD 8020.7F	Biological Contamination Control for Outbound and Inbound Planetary Spacecraft	SMD
NPD 8070.6C	Technical Standards	OCE
NPD 8610.23C	Launch Vehicle Technical Oversight Policy	SOMD
NPD 8610.24B	Launch Services Program Pre-launch Reviews	SOMD
NPD 8700.1C	NASA Policy for Safety and Mission Success	OSMA
NPD 8700.3A	Safety and Mission Assurance (SMA) Policy for NASA Spacecraft, Instruments, and Launch Vehicles	OSMA
NPD 8710.1D	Emergency Preparedness Program	OSPP
NPD 8710.2D	NASA Safety and Health Program Policy	OSMA
NPD 8710.5C	Policy for Pressure Vessels and Pressurized Systems	OSMA
NPD 8720.1B	NASA Reliability and Maintainability (R&M) Program Policy	OSMA
NPD 8730.1B	Metrology and Calibration	OSMA
NPD 8730.2B	NASA Parts Policy	OSMA
NPD 8730.5	NASA Quality Assurance Program Policy	OSMA
NPD 8831.1D	Maintenance of Institutional and Program Facilities and Related Equipment	OIM
NPR 1040.1 (w/ Chg 1)	NASA Continuity of Operations (COOP) Planning Procedural Requirements	OSPP
NPR 1800.1B	NASA Occupational Health Program Procedures	OCHMO
NPR 7120.5C	NASA Program and Project Management Procedural Requirements	OCE
NPR 7120.5D	NASA Space Flight Program and Project Management Requirements	OCE
NPR 7120.6	Lessons Learned Process	OCE
NPR 7123.1A	Systems Engineering processes and Requirements	OCE
NPR 7150.2	NASA Software Engineering Requirements	OCE
NPR 7900.3B	Aircraft Operations Management	OIM
NPR 8000.4	Risk Management Procedural Requirements	OSMA
NPR 8621.1B	NASA Procedural Requirements for Mishap, and Close Call Reporting, Investigating, and Recordkeeping	OSMA
NPR 8705.2A (With post-NODIS draft version of Revision B as of 4/1/20008)	Human-Rating Requirements for Space Systems	OSMA

Document Number	Document Title	Document Owner/POC
NPR 8705.4	Risk Classification for NASA Payloads	OSMA
NPR 8705.5	Probabilistic Risk Assessment (PRA) Procedures for NASA Programs and Projects	OSMA
NPR 8705.6	Safety and Mission Assurance Audits, Reviews, and Assessments	OSMA
NPR 8715.1	NASA Occupational Safety and Health Programs	OSMA
NPR 8715.2	NASA Emergency Preparedness Plan Procedural Requirements	OSMA
NPR 8715.5	Range Safety Program	OSMA
NPR 8715.6A	NASA Procedural Requirements for Limiting Orbital Debris	OSMA
NPR 8735.1B	Procedures for Exchanging Parts, Materials, and Safety Problem Data Utilizing the Government-Industry Data Exchange Program and NASA Advisories	OSMA
NPR 8735.2A	Management of Government Quality Assurance Functions for NASA Contracts	OSMA
NPR 8831.2D	Facilities Maintenance Management	OIM
OSMA Functional Leadership Plan (2001)	OSMA Document	OSMA
PD/NSC-25	Presidential Directive on Radiological Materials	OSTP
PDD/NSC-49	National Space Policy	OSTP
PDD/NSC-60	Nuclear Weapons Employment Policy Guidance (U)	OSTP
PDD/NSC-62	Combating Terrorism (U)	OSTP
PDD/NSC-67	Enduring Constitutional Government and Continuity of Government Operations (U)	OSTP

Enclosure 2: Exceptions granted for individual requirements of NASA-Level Safety and Mission Assurance Documents for Constellation Program

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NASA STD 8719.13B	5.01.1(01)	33407	Center Safety and Mission Assurance (SMA) organizations have the responsibility to develop the necessary infrastructure to support the activities required by this Standard, to provide software safety experts to evaluate individual project/program/facility software safety programs, and to assure that the requirements of this Standard are implemented. They create the atmosphere within which individual programs, projects, or facilities operate. (Requirement 33407)
NASA STD 8719.13B	5.01.1(02)	33408	Center SMA organizations are the focal point for assuring a healthy software safety program. Whether the bulk of the analyses is done in-house by the program/project/facility or by the contracting organization, the ultimate responsibility for seeing that an adequate safety program is in place, is the Center SMA organization. They have the responsibility to tell the project if their system is unsafe. They are responsible for representing any problems or concerns to NASA's Office of Safety and Mission Assurance (OSMA) prior to flight or operations. How each Center organizes to fulfill this responsibility is not intended to be implied in this document, only that the additional responsibilities to ensure software safety is adequately addressed. (Requirement 33408)
NASA STD 8719.13B	5.01.1(03)	33409	It is assumed that the Center SMA organization will perform the following actions. The requirements for Center SMA organizations are imposed through NPD and NPR documents. They are included here as a reminder of the expected activities and their interaction with programs, projects, and facilities. (Requirement 33409)
NASA STD 8719.13B	5.01.1(04)	33410	It is assumed that the Center SMA organization will perform the following actions: Establish and maintain a Center software safety program as part of either their systems safety or software assurance program. (Requirement 33410)
NASA STD 8719.13B	5.01.1(05)	33411	It is assumed that the Center SMA organization will perform the following actions: Provide adequate resources, including: personnel trained in software safety, tools, and budget, for the software safety program. (Requirement 33411)
NASA STD 8719.13B	5.01.1(06)	33412	It is assumed that the Center SMA organization will perform the following actions: Assure that software safety is an integral part of the overall system safety and software development/acquisition efforts at their Center. (Requirement 33412)
NASA STD 8719.13B	5.01.1(07)	33413	It is assumed that the Center SMA organization will perform the following actions: Establish and maintain software safety processes, procedures, guidelines and tools which incorporate the requirements of this Standard. (Requirement 33413)
NASA STD 8719.13B	5.01.1(08)	33414	It is assumed that the Center SMA organization will perform the following actions: Ensure that all programs, projects, and facilities at their Center are periodically evaluated for the presence of safety-critical software. Maintain a record of these evaluations and the results at each Center which are made available to the NASA OSMA upon request. (Requirement 33414)
NASA STD 8719.13B	5.01.1(09)	33415	It is assumed that the Center SMA organization will perform the following actions: Gather and maintain a list of all safety-critical software within the Center. The list of safety-critical systems with software are sent to NASA OSMA upon request to help focus Code Q review of programs, projects, and facilities. (Requirement 33415)
NASA STD 8719.13B	5.01.1(10)	33416	It is assumed that the Center SMA organization will perform the following actions: Provide a means to resolve or elevate conflicts or concerns related to software safety requirements or processes. (Requirement 33416)
NASA STD 8719.13B	5.01.1(11)	33417	It is assumed that the Center SMA organization will perform the following actions: Establish a process for the certification of safety-critical software [reference section 5.14]. (Requirement 33417)
NASA STD 8719.13B	5.01.1(12)	33418	It is assumed that the Center SMA organization will perform the following actions: Assure that project/program/facility software is evaluated for its role in safety and assure proper inclusion of safety-critical processes and products needed to acquire, develop, verify, certify and maintain safety-critical software. Starting with systems concepts and acquisition and continuing through retirement, the use of software experts will assure the proper balance of software safety planning and execution. (Requirement 33418)

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NASA STD 8719.13B	5.01.1(13)	33419	It is assumed that the Center SMA organization will perform the following actions: Ensure software safety coverage is provided and active through the entire program, project, or facility life. (Requirement 33419)
NASA STD 8719.13B	5.01.1(14)	33420	It is assumed that the Center SMA organization will perform the following actions: Assure software safety personnel have evaluated, analyzed and provided input to program, project, and/or facility management on the selection of off-the-shelf or previously created (reused) software for incorporation into safety-critical systems. (Requirement 33420)
NASA STD 8719.13B	5.01.1(15)	33421	It is assumed that the Center SMA organization will perform the following actions: Assure that if IV&V is required on a program, project, or facility, project risk and software criticality determinations are shared between the safety personnel and IV&V. (Requirement 33421)
NASA STD 8719.13B	5.01.1(16)	33422	It is assumed that the Center SMA organization will perform the following actions: Provide monitoring and oversight of contractor software safety activities through the entire program, project, or facility life. (Requirement 33422)
NASA STD 8719.13B	5.01.2	33423	Program/Project/Facility Management Responsibilities. Program, project, or facility managers are responsible for making sure that their system is evaluated for the presence of safety-critical software. They are responsible for implementing a software safety program, providing adequate resources for the program and bear the risks if software safety activities are inadequate. Software safety should be considered as a part of the continuous risk management process adopted by the programs, projects or facilities. (Requirement 33423)
NASA STD 8719.13B	5.01.4.2	33452	The project/program/facility person responsible for Software Configuration Management shall assure that software safety elements are properly controlled. This includes performing the software configuration management functions of configuration control, change control, status accounting, and change verification of safety-critical software requirements and software elements. (Requirement 33452)
NASA STD 8719.13B	5.13(1)	33539	The requirements for software safety apply to software developed or acquired by NASA. When safety-critical software is acquired by a program/project/facility, this Standard must be imposed on those who perform the software development. Safety-critical software may be acquired from contractors, subcontractors, non-NASA government agencies, universities, and other NASA Centers. (Requirement 33539)
NASA STD 8719.13B	5.13(2)	33540	This Standard is levied on all parties who develop safety-critical software, including NASA or other government agencies, contractors, and subcontractors. If the software is being acquired without specific software safety clauses or this Standard invoked in the contract or agreement (e.g., MOA/MOU), then the contract or agreement should be either renegotiated for inclusion of these software safety requirements or the NASA program/project/facility must implement and adhere to this Standard. (Requirement 33540)
NASA STD 8719.13B	5.14.2	33548	Center Safety and Mission Assurance software safety personnel shall participate in the certification process. (Requirement 33548)
NASA STD 8719.13B	5.15.3	33562	The Center SMA organization shall maintain a copy of all variances to safety requirements contained in this Standard, and provide these variances to the NASA Headquarters Office of Safety and Mission Assurance upon request. (Requirement 33562)
NASA STD 8719.13B	7(4)	33654	Note: When a safety-critical error is found during operations or if something goes awry, it is recommended that a root cause analysis be performed on how this error occurred. (Requirement 33654) This should include an examination of the operational environment and its intended usage.
NASA-STD-8739.8	5.1(1)	33171	The first step once a project, program or facility is conceived and initially approved is to perform an evaluation of the intended software portion of the system(s). Once the NASA project/program/facility office informs the software assurance manager of any intended systems with software, it is evaluated using the criteria in Appendix A to (1) determine the classification of the software, (2) determine the safety criticality, (3) to help determine if it will be considered for IV&V, and (4) further determine the prioritization and level of software assurance effort. This is an initial classification and ranking of the software and needs to be updated as the contract, design, and delivery of the software progresses. The results of the evaluation/assessment of the potential software for a project are coordinated with project management, recorded, maintained, and reported to the SMA Directors and Systems Management Offices (SMO).

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NASA-STD-8739.8	7.5.1	33319	All software projects that are identified as safety-critical or software Class A by using NPR 7150.2, Software Engineering Software Assurance Classification Assessment shall be candidates for IV&V with safety criticality as the highest criterion. (Requirement 33319)
NASA-STD-8739.8	7.5.2	33320	IV&V work shall be performed by the contractors selected and managed by the NASA IV&V Facility. (Requirement 33320)
NASA-STD-8739.8	7.5.4	33322	The NASA IV&V Facility shall initially conduct a planning and scoping exercise to determine the specific software components to be analyzed and the tasks to be performed. (Requirement 33322) The IV&V approach will be documented in an IV&V plan.
NASA-STD-8739.8	7.5.5	33323	The IV&V team shall provide input to the appropriate software assurance personnel, as well as provide feedback to the project manager as agreed in the IV&V Plan. (Requirement 33323)
NPD 8700.1C	1.b	1061	POLICY: It is NASA policy to-- Hold NASA leaders, managers, supervisors, and employees accountable for safety and mission success within their functional areas of responsibility. (Requirement 1061)
NPD 8700.1C	1.h	1066	POLICY: It is NASA policy to-- Implement structured RM processes and use qualitative and quantitative risk-assessment techniques to make decisions regarding safety and the likelihood of mission success. (Requirement 1066)
NPD 8700.1C	5.b.1	1068	RESPONSIBILITY: The Mission Directorate Associate Administrators are responsible for the safety and mission success of their programs, projects, and activities. To accomplish this, each Mission Directorate Associate Administrator shall-- Provide executive leadership in implementing Agency Safety, Reliability, Maintainability, and Quality (SRM&Q) and RM policies, plans, techniques, procedures, and standards throughout all programs, projects, and activities. (Requirement 1068)
NPD 8700.1C	5.b.2	1069	RESPONSIBILITY: The Mission Directorate Associate Administrators are responsible for the safety and mission success of their programs, projects, and activities. To accomplish this, each Mission Directorate Associate Administrator shall-- Ensure that safety and mission-success requirements are defined for all programs and projects and that a process for recurrence control of problems is accomplished through a closed-loop corrective and preventive action system. (Requirement 1069)
NPD 8700.1C	5.b.3	1070	RESPONSIBILITY: The Mission Directorate Associate Administrators are responsible for the safety and mission success of their programs, projects, and activities. To accomplish this, each Mission Directorate Associate Administrator shall-- Establish policies and procedures for formal reviews for the certification of programs, projects, and activities as detailed in paragraph 1.f. (Requirement 1070)
NPD 8700.1C	5.b.4	1071	RESPONSIBILITY: The Mission Directorate Associate Administrators are responsible for the safety and mission success of their programs, projects, and activities. To accomplish this, each Mission Directorate Associate Administrator shall-- Coordinate with the responsible Mission Support Offices, Functional Support Offices, and Administrative Staff Offices to ensure that domains of potential risk (information management, environment, security, legal) are properly included in Risk Management plans. (Requirement 1071)
NPD 8700.1C	5.b.5	1072	RESPONSIBILITY: The Mission Directorate Associate Administrators are responsible for the safety and mission success of their programs, projects, and activities. To accomplish this, each Mission Directorate Associate Administrator shall-- Serve as the ultimate risk acceptance/disposition official for programs, projects, and activities. (Requirement 1072)
NPD 8700.1C	5.c.02	1017	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Provide SRM&Q and RM expectations and evaluations at Program Management Committee activities and other major program milestone reviews. (Requirement 1017)
NPD 8700.1C	5.c.03	1020	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall--
NPD 8700.1C	5.c.03.b	44004	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Review and concur with each Center's SMA Annual Operating Agreement. (Requirement 44004)
NPD 8700.1C	5.c.03.d	44006	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Ensure that each Center has designated an SMA functional manager. (Requirement 44006)

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NPD 8700.1C	5.c.03.e	44007	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- provide SMA input to performance planning and annual performance evaluations for Mission Directorate Associate Administrators, Center Directors, and Center SMA functional managers. (Requirement 44007)
NPD 8700.1C	5.c.04	1018	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Direct the suspension of any activity that presents either a present hazard (imminent danger) or future hazard to personnel, property, or mission operations due to unsafe acts or conditions that might be identified by either inspection or analysis. (Requirement 1018)
NPD 8700.1C	5.c.06	1075	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Establish review processes to certify the safety and operational readiness of flight hardware/software, mission-critical support equipment, hazardous facilities/operations, and high-energy ground-based systems. (Requirement 1075)
NPD 8700.1C	5.c.07	1076	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Participate in selected certification reviews established by the Mission Directorate Associate Administrators. (Requirement 1076)
NPD 8700.1C	5.c.09	1024	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Direct and oversee (in coordination with the appropriate Mission Directorate Associate Administrators) the prompt and accurate reporting, investigating, and analyzing of all NASA mishaps and close calls, including closure of problems, nonconformances, and anomalies, and assure the collection, retention, and communication of their lessons learned as one means of recurrence control. (Requirement 1024)
NPD 8700.1C	5.c.10	1078	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Formulate and direct SRM&Q education, training, and career development programs to enable SMA staff, program/project management, senior Agency management, and the NASA workforce to obtain the understanding of SRM&Q principles, tools, methods, and standards necessary to successfully perform their functions. (Requirement 1078)
NPD 8700.1C	5.c.15	1025	RESPONSIBILITY: The Chief Safety and Mission Assurance Officer shall-- Support the development and rapid transfer of new SMA technologies, processes, and methodologies to various market sectors and Government agencies. (Requirement 1025)
NPD 8700.1C	5.d.1	1083	RESPONSIBILITY: The Center Directors are responsible for the safety and mission success of their activities and operations. To accomplish this, each Center Director shall-- Maintain the safe and successful functioning of facilities and operations, use lessons learned to improve operations and activities, and prevent recurrence of undesired events through a closed-loop corrective action process. (Requirement 1083)
NPD 8700.1C	5.d.2	1033	RESPONSIBILITY: The Center Directors are responsible for the safety and mission success of their activities and operations. To accomplish this, each Center Director shall-- Implement Agency SRM&Q policies, plans, techniques, procedures, and standards and ensure that safety and mission-success requirements are established for Center operations and activities. (Requirement 1033)
NPD 8700.1C	5.d.3(1)	1084	RESPONSIBILITY: The Center Directors are responsible for the safety and mission success of their activities and operations. To accomplish this, each Center Director shall-- Serve as the final risk acceptance/disposition official for Center activities. (Requirement 1084)
NPD 8700.1C	5.d.3(2)	30885	RESPONSIBILITY: The Center Directors are responsible for the safety and mission success of their activities and operations. To accomplish this, each Center Director shall-- Assure that any delegation of this authority is performed based on an assessment of the frequency of occurrence and the severity of the risk. (Requirement 30885)
NPD 8700.1C	5.d.5	1036	RESPONSIBILITY: The Center Directors are responsible for the safety and mission success of their activities and operations. To accomplish this, each Center Director shall-- Staff Center SMA organizations with qualified SRM&Q and RM professionals. (Requirement 1036)
NPD 8700.1C	5.d.6	1035	RESPONSIBILITY: The Center Directors are responsible for the safety and mission success of their activities and operations. To accomplish this, each Center Director shall-- Develop and approve the Center's SMA Annual Operating Agreement. (Requirement 1035)
NPD 8700.1C	5.f.01	1087	RESPONSIBILITY: The Center SMA functional managers shall-- Provide local SMA executive leadership and policy implementation direction for Center-level projects and operations. (Requirement 1087)

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NPD 8700.1C	5.f.02	1044	RESPONSIBILITY: The Center SMA functional managers shall-- Serve as the Center focal point for the alternative, independent SMA line of communication. (Requirement 1044)
NPD 8700.1C	5.f.03	1047	RESPONSIBILITY: The Center SMA functional managers shall-- Assure that effective and efficient SMA processes are in place to enhance the potential for success of NASA programs, projects, and activities at the Center level. (Requirement 1047)
NPD 8700.1C	5.f.04	1048	RESPONSIBILITY: The Center SMA functional managers shall-- Conduct surveillance and independent assessments to enhance (a) the success of programs, projects, and activities; and (b) the effectiveness of SMA activities. This includes overseeing any SMA activities managed by other organizations, such as aviation safety, lifting safety, pressure-systems safety, firefighting, and emergency response. (For a list of typical SMA activities and program elements, see Attachment A.) (Requirement 1048)
NPD 8700.1C	5.f.05	1088	RESPONSIBILITY: The Center SMA functional managers shall-- Direct the suspension of any activity that presents either a present hazard (imminent danger) or future hazard to personnel, property, or mission operations due to unsafe acts or conditions that might be identified by either inspection or analysis. (Requirement 1088)
NPD 8700.1C	5.f.06	1089	RESPONSIBILITY: The Center SMA functional managers shall-- Review, in coordination with their Center's program and project personnel, SMA, and RM plans for the programs and projects at the Center. (Requirement 1089)
NPD 8700.1C	5.f.07	1090	RESPONSIBILITY: The Center SMA functional managers shall-- Provide support to projects and programs by performing hazards analyses and SMA assessments in support of project and program needs. (Requirement 1090)
NPD 8700.1C	5.f.08	1091	RESPONSIBILITY: The Center SMA functional managers shall-- Provide SMA expectations and evaluations to local Governing Program Management Comittee activities. (Requirement 1091)
NPD 8700.1C	5.f.09	1045	RESPONSIBILITY: The Center SMA functional managers shall-- Assist the Center Director in formulating the Center SMA Annual Operating Agreement (see paragraph 5.d(6)). (Requirement 1045)
NPD 8700.1C	5.f.10	1046	RESPONSIBILITY: The Center SMA functional managers shall-- Provide the SMA products and services agreed to in the applicable SMA Annual Operating Agreement. (Requirement 1046)
NPD 8700.1C	5.f.11	1092	RESPONSIBILITY: The Center SMA functional managers shall-- Assure the prompt and accurate reporting, investigating, tracking, and closure of all mishaps, close calls, problems, nonconformances, and anomalies within the Center's jurisdiction. This includes collection and retention of lessons learned as one means of recurrence control. (Requirement 1092)
NPD 8700.1C	5.f.12	1093	RESPONSIBILITY: The Center SMA functional managers shall-- Identify the need for and support the development of new SRM&Q and RM tools, techniques, and processes. (Requirement 1093)
NPD 8700.1C	5.g.1	1095	RESPONSIBILITY: The Director, Office of Headquarters Operations, is responsible for the operational safety program at Headquarters. The Director shall-- Maintain the safe and successful functioning of facilities and operations, use lessons learned to improve operations and activities, and prevent recurrence of undesired events through a closed-loop corrective action system. (Requirement 1095)
NPD 8700.1C	5.g.2	1096	RESPONSIBILITY: The Director, Office of Headquarters Operations, is responsible for the operational safety program at Headquarters. The Director shall-- Implement Agency safety policies, plans, techniques, procedures, and standards and ensure that safety requirements are established for Headquarters operations. (Requirement 1096)
NPD 8700.1C	5.g.3	1097	RESPONSIBILITY: The Director, Office of Headquarters Operations, is responsible for the operational safety program at Headquarters. The Director shall-- Direct the suspension of any activity that presents either a present hazard (imminent danger) or future hazard to personnel, property, or mission operations due to unsafe acts or conditions that might be indentified by either inspection or analysis. (Requriement 1097)
NPD 8700.1C	5.g.4	1098	RESPONSIBILITY: The Director, Office of Headquarters Operations, is responsible for the operational safety program at Headquarters. The Director shall-- Serve as the final safety risk acceptance/disposition official for Headquarters activities. (Requirement 1098)

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NPD 8700.1C	5.g.5	1099	RESPONSIBILITY: The Director, Office of Headquarters Operations, is responsible for the operational safety program at Headquarters. The Director shall-- Designate a safety manager to serve as the leader and focal point for the Headquarters safety activities. (Requirement 1099)
NPD 8720.1B	5.b	13005	Enterprise Associate Administrators are responsible for sharing Reliability and Maintainability data across programs and for using metrics for cost-effective management and evaluation of Reliability and Maintainability performance of programs and projects under their cognizance. (Requirement 13005)
NPD 8730.1B	5.b.(1)	11004	The Associate Administrator for Safety and Mission Assurance is responsible for the following activities: Designating a responsible Center for developing and implementing the Metrology and Calibration Program Plan. (Requirement 11004)
NPD 8730.1B	5.b.(2)	11005	The Associate Administrator for Safety and Mission Assurance is responsible for the following activities: Approving the Metrology and Calibration Program Plan and metrology and calibration operating plans and authorizing such specific policy and requirements as identified therein. (Requirement 11005)
NPD 8730.1B	5.b.(3)	11006	The Associate Administrator for Safety and Mission Assurance is responsible for the following activities: Authorizing the charter and resources for the NASA Metrology and Calibration Working Group (MCWG). (Requirement 11006) The group will act as a technical forum to discuss Agency policy and issues common to all standards and calibration operations and to recommend research projects that meet the present needs and future strategic goals of the Agency.
NPD 8730.1B	5.c.(1)	11007	Center Directors are responsible for the following activities: Implementing and monitoring use of this NPD at their respective NASA Centers and Component Facilities. (Requirement 11007)
NPD 8730.1B	5.c.(2)	11008	Center Directors are responsible for the following activities: Designating a representative to the NASA MCWG and ensuring representation at the annual MCWG workshops as well as representation at other appropriate industry-related symposia and other government agency metrology and calibration meetings. (Requirement 11008)
NPD 8730.2B	1.d	10017	To carry out this policy, NASA shall accomplish the following: Coordinate procurement of parts among programs/Centers whenever feasible. (Requirement 10017)
NPD 8730.2B	1.e	10018	To carry out this policy, NASA shall accomplish the following: Maintain a NASA Parts Selection List (NPSL) to provide candidate selections for program use. (Requirement 10018)
NPD 8730.2B	1.f	10019	To carry out this policy, NASA shall accomplish the following: Participate in the Defense Standardization Program and appropriate voluntary consensus standards programs for the EEE and Mechanical Parts commodities. (Requirement 10019)
NPD 8730.2B	5.a.(2)	10005	The Associate Administrator for Safety and Mission Assurance is responsible for the following: Assuring that effective processes and controls are in place for EEE and Mechanical Parts within the NASA Enterprises and at the Centers. (Requirement 10005)
NPD 8730.2B	5.b.(1)	10006	Enterprise Associate Administrators and Center Directors are responsible for the following: Assuring that the results of supplier audits/surveys, qualification testing, risk assessments, experience data, parts data, use of the NASA Parts Selection List (NPSL), and production line certifications are provided to other Centers and to the Government-Industry Data Exchange Program as appropriate. (Requirement 10006)
NPD 8730.2B	5.b.(2)	10007	Enterprise Associate Administrators and Center Directors are responsible for the following: Assuring that Center parts management procedures are developed, documented, and implemented. (Requirement 10007)
NPD 8730.2B	5.b.(3)	10008	Enterprise Associate Administrators and Center Directors are responsible for the following: Assuring that appropriate EEE parts and electronic packaging and mechanical parts requirements are applied on NASA contracts. (Requirement 10008)
NPD 8730.5	5.a.1	42178	Responsibility: The Chief Safety and Mission Assurance Officer Shall: Establish NASA quality assurance program policies related to NASA work. (Requirement 42178)
NPD 8730.5	5.a.2	42179	Responsibility: The Chief Safety and Mission Assurance Officer Shall: Provide technical guidance on the type and extent of quality assurance program requirements that are required and appropriate for NASA work. (Requirement 42179)
NPD 8730.5	5.a.3	42180	Responsibility: The Chief Safety and Mission Assurance Officer Shall: Facilitate implementation of quality assurance program requirements. (Requirement 42180)

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NPD 8730.5	5.a.4	42181	Responsibility: The Chief Safety and Mission Assurance Officer Shall: Oversee Center implementation of quality assurance program requirements, including: review and approval of Center Quality Assurance Program implementation, verification of compliance with the requirements of this NPD, adequacy of quality assurance professional and technical staffing, and adequacy of quality assurance training. (Requirement 42181)
NPD 8730.5	5.a.5	42182	Responsibility: The Chief Safety and Mission Assurance Officer Shall: Facilitate continual improvement of the Agency's quality assurance program through: advocacy; awareness training; integration of quality assurance processes; dissemination of lessons learned and best practices; teaming; and sharing of quality assurance tools, techniques, and data. (Requirement 42182)
NPD 8730.5	5.b.1	42184	Responsibility: NASA Center Directors shall: Delegate authority for managing the quality assurance program to an organization not responsible for the cost or schedule of performing NASA work. This will typically be the Safety and Mission Assurance (SMA) organization. (Requirement 42184)
NPD 8730.5	5.b.2	42185	Responsibility: NASA Center Directors shall: Assure that the Center SMA Director is provided the needed staffing and skills to implement a quality assurance program that complies with the requirements of this NPD, including Center program/project activities conducted at remote locations. (Requirement 42185)
NPD 8730.5	5.b.3	42186	Responsibility: NASA Center Directors shall: Obtain approval from the Chief Safety and Mission Assurance Officer for use of any alternative quality system model that does not conform to the quality system requirements identified in Attachment A of this NPD. (Requirement 42186)
NPD 8730.5	5.c.1	42188	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Support program/project offices in the determination of quality assurance requirements to be invoked/applied to the program/project, including identification of the applicable quality system (see Appendix A), quality risks, and associated risk mitigation actions. (Requirement 42188)
NPD 8730.5	5.c.2	42189	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Support procurement offices in identifying applicable quality assurance requirements to be incorporated into procurements contracts, in verifying contractor satisfaction of contract qualification requirements (quality system, product, process, personnel), and by providing/analyzing contractor quality performance data. (Requirement 42189)
NPD 8730.5	5.c.3	42190	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Assure NASA contractor compliance with invoked technical/quality requirements, including the performance of GMIPs. (Requirement 42190)
NPD 8730.5	5.c.4	42191	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Assure NASA Center compliance with prescribed technical/quality requirements. (Requirement 42191)
NPD 8730.5	5.c.5	42192	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Assure tenant NASA program/project compliance with prescribed technical/quality requirements as delegated by the program/project responsible NASA Center. (Requirement 42192)
NPD 8730.5	5.c.6	42193	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Assure delegated agency and support contractor compliance with prescribed direction concerning performance of quality assurance support services. (Requirement 42193)
NPD 8730.5	5.c.7	42194	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Support NASA initiatives related to improving quality assurance practices, resolving quality problems, analyzing quality risks, and sharing lessons learned and best practices. (Requirement 42194)
NPD 8730.5	5.c.8	42195	Responsibility: NASA Center SMA Directors (or other delegated quality assurance organization) shall: Maintain adequately trained civil service personnel necessary to satisfy the requirements of this NPD and NPR 8735.2, including performance of safety/mission critical GMIPs, assuring that delegated agencies and support contractors effectively perform quality assurance functions in accordance with prescribed direction, and accepting delivery of contractor products. (Requirement 42195)

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NPR 8000.4	1.3.3.a	26008	The PMC or Governing PMC is responsible for the following: a.) Evaluating the program/projects risk status and ensuring that the formal acceptance/closure of program/project risks is consistent with NASAs goals and requirements. (Requirement 26008)
NPR 8000.4	1.3.3.b	30906	The PMC or Governing PMC is responsible for the following: a.) Evaluating the program/projects risk status and ensuring that the formal acceptance/closure of program/project risks is consistent with NASAs goals and requirements. b.) Concurrence on the acceptance of all primary risks. (Requirement 30906)
NPR 8000.4	1.3.4	26009	The Safety and Mission Assurance (SMA) organizations at the NASA Centers are responsible for providing ongoing risk management consultation, facilitation, and training to program/project organizations. (Requirement 26009)
NPR 8000.4	1.3.5	26010	The Systems Management Offices (SMO) at Centers and the Independent Program Assessment Office (IPAO) are responsible for assessing risk management as an element of their Independent Assessments (IA), Independent Annual Reviews (IAR), Non-Advocate Reviews (NAR), other independent reviews, or in their participation within regular program/project reviews. (Requirement 26010) Appendix C provides a checklist for use in such assessments.
NPR 8000.4	1.3.6.a	26011	Headquarters Functional Offices (see Appendix A, Glossary) are responsible for the following: a.) Providing guidance concerning the identification, analysis, and mitigation of risks within their respective functional areas including support to their equivalents at the NASA Centers. (Requirement 26011)
NPR 8000.4	1.3.6.b	30907	Headquarters Functional Offices (see Appendix A, Glossary) are responsible for the following: b.) Supporting the PMC in the evaluation and assessment of programs/projects with respect to their risk management status within their respective functional areas. (Requirement 30907)
NPR 8000.4	1.3.7.a	26012	Center Functional Offices are responsible for the following: a.) Providing support to programs/projects to assist in their identification, analysis, and mitigation of risks within their respective functional areas. (Requirement 26012)
NPR 8000.4	1.3.7.b	30908	Center Functional Offices are responsible for the following: b.) Supporting the Governing PMC in their evaluation and assessment of programs/projects with respect to their risk management status within their respective functional areas. (Requirement 30908)
NPR 8705.5	0.P.2.d(1)	32947	Decisions concerning applicability for projects/programs in progress will be made on a case-by-case basis involving program/project manager recommendations to the Governing Program Management Committee, which shall have approval authority (Requirement 32947).
NPR 8705.5	1.4.1.2.a	32991	EAAs shall: Ensure that appropriate resources (funding, personnel, methods, and software applications) are made available for PRA (Requirement 32991).
NPR 8705.5	1.4.1.2.b	32992	EAAs shall: Ensure that technical quality is maintained throughout the PRA effort (Requirement 32992).
NPR 8705.5	1.4.1.2.c	32993	EAAs shall: Ensure that PRA methodology and results are effectively transferred to appropriate NASA personnel who are not directly involved in conducting the PRA (Requirement 32993).
NPR 8705.5	1.4.1.2.d	32994	EAAs shall: Ensure that formal PRA awareness training and methodology training are provided periodically to managers and practitioners (Requirement 32994).
NPR 8705.5	1.4.1.2.e	32995	EAAs shall: Ensure that PRA requirements are appropriately implemented on contracts (Requirement 32995).
NPR 8705.5	1.4.2.2.a	32999	The AA/SMA shall: Develop, coordinate, publish, disseminate, explain, interpret, and maintain NASA PRA policy and procedures and assure their correct implementation at Headquarters and at the Centers (Requirement 32999).
NPR 8705.5	1.4.2.2.b	33000	The AA/SMA shall: Have primary responsibility for developing criteria and guidelines for the use of PRA results in management decision-making (Requirement 33000).
NPR 8705.5	1.4.2.2.c	33001	The AA/SMA shall: Provide PRA functional leadership, mentoring, technical direction, and consultation on methodology (on how to conduct a PRA), tools, and oversight Agencywide (Requirement 33001).

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NPR 8705.5	1.4.2.2.d	33002	The AA/SMA shall: Provide corporate leadership and establish a community of practice for the exchange of PRA-related information, best practices, and lessons learned across programs/projects, Centers, government agencies, and international partners (Requirement 33002).
NPR 8705.5	1.4.2.2.e	33003	The AA/SMA shall: Assess and assure that PRAs are correctly initiated, conducted, and utilized within Enterprises and programs/projects (Requirement 33003).
NPR 8705.5	1.4.2.2.f	33004	The AA/SMA shall: Enable, facilitate, and organize the development of a PRA corporate memory (Requirement 33004). This includes:
NPR 8705.5	1.4.2.2.f.(1)	33005	The AA/SMA shall: Assist in the maintenance of PRAs and their updating, as necessary (Requirement 33005).
NPR 8705.5	1.4.2.2.f.(2)	33006	The AA/SMA shall: Collect, from NASA programs/projects, documentation of all PRAs conducted, including their scope, PRA models developed and data used, preliminary and final reports issued, and the results of independent or peer reviews (Requirement 33006).
NPR 8705.5	1.4.2.2.f.(3)	33007	The AA/SMA shall: Assure the availability of all approved PRA documentation for present and future programs/projects (Requirement 33007).
NPR 8705.5	1.4.2.2.g	33008	The AA/SMA shall: Designate and provide or assist in acquiring state-of-the-art and verified PRA methods, computer applications, and training for NASA personnel (Requirement 33008).
NPR 8705.5	1.4.2.2.h	33009	The AA/SMA shall: Organize and coordinate peer reviews of PRA work performed, if deemed appropriate, and assure the implementation of peer review recommendations and the overall credibility of PRA efforts and results (Requirement 33009).
NPR 8705.5	1.4.2.2.i	33010	The AA/SMA shall: Contribute to and approve program/project Level 1 (NASA Headquarters-level program management) probabilistic risk assessment requirements; and provide oversight and advice on Level 2 (NASA Center-level program management) and lower-level probabilistic risk assessment requirements (Requirement 33010).
NPR 8705.5	1.4.2.2.j	33011	The AA/SMA shall: Assure that PRA results are provided in an acceptable, useable form (e.g., medians, means, lower and upper uncertainty bounds, and risk drivers) and are accurately represented and communicated to NASA management (Requirement 33011).
NPR 8705.5	1.4.2.2.k	33012	The AA/SMA shall: Guide and direct the use of PRA during the system development life cycle to improve design, operation, and upgrade (Requirement 33012).
NPR 8705.5	1.4.2.2.l	33013	The AA/SMA shall: Enable, facilitate, and organize a central resource and repository of PRA tools, methods, and data, and the transfer of PRA technology to NASA Civil Service personnel (Requirement 33013).
NPR 8705.5	1.4.2.2.m	33014	The AA/SMA shall: Assist in the acquisition and verify the credentials of PRA practitioners, both for Civil Service personnel and for supporting contractors or consultants (Requirement 33014).
NPR 8705.5	1.4.3	33015	Center Directors shall ensure that their Safety and Mission Assurance (SMA) and Engineering organizations acquire and maintain expertise in PRA necessary to support Center-based programs/projects (Requirement 33015).
NPR 8705.5	1.4.6	33025	NASA shall, through prudent hiring, professional development, and mentoring, increase and maintain its capability to conduct, understand, and use PRA in support of a program/project life cycle (Requirement 33025).
NPR 8705.6	2.2.1.1	42275	The Agency Associate Administrator shall: Ensure that Centers comply with and implement institutional, facility, and operational-related SMA and technical requirements. (Requirement 42275)
NPR 8705.6	2.2.1.2	42276	The Agency Associate Administrator shall: Ensure that Centers have adequate resources to perform IFO SMA Audits and to support Headquarters-led IFO SMA Audits. (Requirement 42276)
NPR 8705.6	2.2.2.01	42278	The Chief Safety and Mission Assurance Officer shall: Implement the Headquarters-led IFO SMA Audit process. (Requirement 42278)
NPR 8705.6	2.2.2.02	42279	The Chief Safety and Mission Assurance Officer shall: Develop annual integrated audit plans for OSMA. (Requirement 42279)
NPR 8705.6	2.2.2.03	42280	The Chief Safety and Mission Assurance Officer shall: Work with the NASA Chief Engineer and Associate Administrator for Institutions and Management to define the applicable IFO BRS. (Requirement 42280)

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NPR 8705.6	2.2.2.04	42281	The Chief Safety and Mission Assurance Officer shall: Provide an auditor selection and screening process to ensure that potential audit team members have the requisite institutional, facility, and/or operational safety experience and competency to participate in the Headquarters IFO SMA Audit process. (Requirement 42281)
NPR 8705.6	2.2.2.05	42282	The Chief Safety and Mission Assurance Officer shall: Conduct Headquarters IFO SMA Audits on a biennial basis at all NASA Centers, Component Facilities, and the JPL NASA Management Office and include all focus areas applicable to each organization. (Requirement 42282)
NPR 8705.6	2.2.2.06	42283	The Chief Safety and Mission Assurance Officer shall: Provide NASA Centers access to current Headquarters IFO SMA Audit schedule. (Requirement 42283)
NPR 8705.6	2.2.2.07	42284	The Chief Safety and Mission Assurance Officer shall: Select the IFO SMA Audit requirement set for review from the applicable IFO BRS with concurrence from the responsible center SMA organization. (Requirement 42284)
NPR 8705.6	2.2.2.08	42285	The Chief Safety and Mission Assurance Officer shall: Request the Center to identify participants to act as audit liaisons and to facilitate assistance from the Center SMA organization. (Requirement 42285)
NPR 8705.6	2.2.2.09	42286	The Chief Safety and Mission Assurance Officer shall: Conduct follow-up activities to verify implementation of effective corrective and preventive actions for Headquarters IFO SMA Audit findings. (Requirement 42286)
NPR 8705.6	2.2.2.10	42287	The Chief Safety and Mission Assurance Officer shall: Provide feedback of IFO SMA Audit results and corrective actions to affected/applicable institutional offices within Headquarters organizations.
NPR 8705.6	2.2.3.1	42289	The NASA Chief Engineer shall: Ensure that relevant program Chief Engineer(s) supports the OSMA Review and Assessment Division by explicitly defining and documenting the applicable IFO BRS and the associated OQE. (Requirement 42289)
NPR 8705.6	2.2.3.2	42290	The NASA Chief Engineer shall: Assist the Chief Safety and Mission Assurance Officer in defining the applicable IFO BRS. (Requirement 42290)
NPR 8705.6	2.2.4.1	42292	The Associate Administrator for Institutions and Management shall: Assist the Chief Safety and Mission Assurance Officer in selecting the pertinent set of requirements for audit from the IFO BRS. (Requirement 42292)
NPR 8705.6	2.2.5.1	42294	Center Directors shall: Provide the necessary review materials to facilitate the audit planning stage of the IFO SMA Audit. (Requirement 42294)
NPR 8705.6	2.2.5.2	42295	Center Directors shall: Identify and provide subject matter experts to the OSMA as requested for Headquarters-led IFO SMA Audit activities. (Requirement 42295)
NPR 8705.6	2.2.5.3	42296	Center Directors shall: Provide the logistic and resource support required for successful execution of Center-led IFO SMA Audit activities. (Requirement 42296)
NPR 8705.6	2.2.5.4	42297	Center Directors shall: In concert with the Center SMA Director and applicable facility or project manager, provide a Corrective Action Plan to the OSMA for resolution of Headquarters-led IFO SMA Audit findings within 60 calendar days of the audit. (Requirement 42297)
NPR 8705.6	2.2.5.5	42298	Center Directors shall: Present periodic status of IFO SMA Audit corrective actions to the Chief Safety and Mission Assurance Officer or designee every 60 calendar days thereafter until all findings have been closed. (Requirement 42298)
NPR 8705.6	2.2.6.1	42300	Center SMA Directors shall: Support and participate in the IFO SMA Audit process. (Requirement 42300)
NPR 8705.6	2.2.6.1.1	42301	Center SMA Directors shall: Incorporate IFO SMA Audit activities into Center SMA plans. (Requirement 42301)
NPR 8705.6	2.2.6.1.2	42302	Center SMA Directors shall: Provide to the IFO SMA Audit Team Leader all necessary review materials to facilitate the planning and execution of the IFO SMA Audit. (Requirement 42302)
NPR 8705.6	2.2.6.1.3	42303	Center SMA Directors shall: Identify to the IFO SMA Audit Team Leader other relevant IFO audits, reviews, or assessments that may have previously verified compliance with requirements. (Requirement 42303)
NPR 8705.6	2.2.6.1.4	42304	Center SMA Directors shall: Provide logistic and resource support required for the execution of the IFO SMA Audit Plan. (Requirement 42304)

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NPR 8705.6	2.2.6.1.5	42305	Center SMA Directors shall: Coordinate with Center procurement and Center institutions, facilities, and/or operations personnel to ensure that contracts provide for adequate contractor support of Headquarters-led and Center-led IFO SMA Audit activities. (Requirement 42305)
NPR 8705.6	2.2.6.1.6	42306	Center SMA Directors shall: Prepare and present a Closed-loop Corrective Action Plan to the Chief Safety and Mission Assurance Officer or designee for resolution of Headquarters-led IFO SMA Audit findings. (Requirement 42306)
NPR 8705.6	2.2.6.1.7	42307	Center SMA Directors shall: Submit a Closed-loop Corrective Action Plan to the Center Director for resolution of Center-led IFO SMA Audit findings. (Requirement 42307)
NPR 8705.6	2.2.6.2	42308	Center SMA Directors shall: Establish a Center-led IFO SMA Audit process by planning, obtaining Center funds, and executing Center-based IFO SMA Audits to verify organizational compliance with institutional, facility, operational, and SMA process and technical requirements. (Requirement 42308)
NPR 8705.6	2.2.6.3	42309	Center SMA Directors shall: Present status of Headquarters-led IFO SMA Audit corrective actions to the Chief Safety and Mission Assurance Officer or designee every 60 calendar days thereafter until all findings have been closed. (Requirement 42309)
NPR 8705.6	2.2.7.1	42311	Center Organizations with responsibility for institutions, facilities, or operations shall: Incorporate IFO SMA Audit activities into program/project plans. (Requirement 42311)
NPR 8705.6	2.2.7.2	42312	Center Organizations with responsibility for institutions, facilities, or operations shall: Support the audit plan by providing program/project logistic and resource support required for successful execution of and response to the IFO SMA Audit. (Requirement 42312)
NPR 8705.6	2.2.7.3	42313	Center Organizations with responsibility for institutions, facilities, or operations shall: Coordinate with Center SMA and Center procurement to ensure that contracts provide for adequate contractor support of Headquarters-led and Center-led IFO SMA Audit activities. (Requirement 42313)
NPR 8705.6	2.2.7.4	42314	Center Organizations with responsibility for institutions, facilities, or operations shall: Provide a Closed-loop Corrective Action Plan to the OSMA for resolution of Headquarters-led IFO SMA Audit findings within 60 calendar days of the audit. (Requirement 42314)
NPR 8705.6	2.2.8.1	42316	SMA Managers (matrixed/assigned to the Program/Project Manager) shall: Support the IFO SMA Audit by providing the IFO SMA Audit Team Leader the necessary review materials to facilitate the audit planning stage. (Requirement 42316)
NPR 8705.6	2.2.8.2	42317	SMA Managers (matrixed/assigned to the Program/Project Manager) shall: Identify to the IFO SMA Audit Team Leader any other relevant audits, reviews, or assessments that may have previously verified compliance with requirements. (Requirement 42317)
NPR 8705.6	2.2.8.3	42318	SMA Managers (matrixed/assigned to the Program/Project Manager) shall: In concert with the Center Director, Center SMA Director, and Program/Project Manager, provide a Closed-loop Corrective Action Plan to the OSMA within 60 calendar days for resolution of Headquarters-led IFO SMA Audit findings. (Requirement 42318)
NPR 8705.6	2.2.9.1	42320	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Develop and execute the IFO SMA Audit Plan, including: (Requirement 42320)
NPR 8705.6	2.2.9.1.1	42321	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Develop and execute the IFO SMA Audit Plan, including: Coordinate the audit with the organization to be audited by identifying the general scope of the audit and the expected start and finish dates. (Requirement 42321)
NPR 8705.6	2.2.9.1.2	42322	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Develop and execute the IFO SMA Audit Plan, including: Recruit subject matter experts to be audit team members. (Requirement 42322)
NPR 8705.6	2.2.9.1.2.1	42323	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Develop and execute the IFO SMA Audit Plan, including: Audit team members shall be independent of the organization or program/project being audited. (Requirement 42323)
NPR 8705.6	2.2.9.1.2.2	42324	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Develop and execute the IFO SMA Audit Plan, including: Subject matter experts will be recruited from NASA Headquarters and Center organizations with IFO SMA policy/procedures responsibilities and may also include other government agency experts.

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NPR 8705.6	2.2.9.1.3	42325	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Develop and execute the IFO SMA Audit Plan, including: Ensure that each team member is qualified to conduct the IFO SMA Audit; i.e., has requisite institutional, facility, and operational SMA experience and training. (Requirement 42325)
NPR 8705.6	2.2.9.2	42326	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Provide findings in a formal report to the appropriate Center Director, SMA Director, Program Manager, and affected institutional organization. (Requirement 42326)
NPR 8705.6	2.2.9.3	42327	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Ensure that appropriate records of audit activities are maintained. (Requirement 42327)
NPR 8705.6	2.2.9.4	42328	Headquarters- or Center-led IFO SMA Audit Team Leader shall: Ensure that each auditor collects and documents the OQE verifying the Center meets the IFO BRS appropriate to the audit objective(s). Note: Information derived from IFO SMA Audits often contains lessons learned and best practices. Headquarters- or Center-led IFO SMA Audit Team Leaders may share this information via appropriate Web-based resources; e.g., Lessons Learned Information System (LLIS), Process Based Mission Assurance-Knowledge Management System (PBMA-KMS). (Requirement 42328)
NPR 8705.6	3.2.01.1	42346	The Agency Associate Administrator shall: Ensure that Centers implement the applicable programmatic BRS. (Requirement 42346)
NPR 8705.6	3.2.01.2	42347	The Agency Associate Administrator shall: Ensure that Centers support the PA&R processes described in this document. (Requirement 42347)
NPR 8705.6	3.2.02.1	42349	Associate Administrators for Mission Directorates shall: Ensure that programs/projects under the Mission Directorate implement the applicable programmatic BRS. (Requirement 42349)
NPR 8705.6	3.2.02.2	42350	Associate Administrators for Mission Directorates shall: Ensure that programs/projects under the Mission Directorate are prepared to support the PA&R process described in this document. (Requirement 42350)
NPR 8705.6	3.2.03.1	42352	The Chief Safety and Mission Assurance Officer shall: Identify programs/projects requiring a Headquarters-led PA&R. The determination will be based on general criteria including such factors as size, complexity, visibility, cost, risk, and human rating. (Requirement 42352)
NPR 8705.6	3.2.03.2	42353	The Chief Safety and Mission Assurance Officer shall: Assist in defining the applicable programmatic BRS and associated OQE. (Requirement 42353)
NPR 8705.6	3.2.03.3	42354	The Chief Safety and Mission Assurance Officer shall: Implement and execute the Headquarters-led PA&R process for selected programs/projects in concert with the appropriate Center SMA organization(s) to provide assurance that the program/project has complied with the applicable programamatic BRS. (Requirement 42354)
NPR 8705.6	3.2.03.4	42355	The Chief Safety and Mission Assurance Officer shall: For multi-Center programs/projects, identify the lead SMA organization for coordination of Headquarters-led PA&R process activities and implementation of Center-led PA&R process activities. (Requirement 42355)
NPR 8705.6	3.2.03.5	42356	The Chief Safety and Mission Assurance Officer shall: Employ Center-based SMA independent assessment groups as a resource to conduct Headquarters-led programmatic audits, reviews, and assessments in accordance with the PA&R process defined herein. (Requirement 42356)
NPR 8705.6	3.2.03.6	42357	The Chief Safety and Mission Assurance Officer shall: Coordinate the direct supply chain audits/reviews conducted by the Agency Supplier Assurance Contract in support of the PA&R process. (Requirement 42357)
NPR 8705.6	3.2.03.7	42358	The Chief Safety and Mission Assurance Officer shall: Provide appropriate Mission Directorates, Program/Project Managers, and other independent assessment organizations with current PA&R implementation plans and schedules. (Requirement 42358)
NPR 8705.6	3.2.03.8	42359	The Chief Safety and Mission Assurance Officer shall: Provide an auditor selection and screening process to ensure that potential audit/review team members have the requisite program/project, subject matter, and auditor experience and competency to participate in PA&R onsite audits and reviews. (Requirement 42359)
NPR 8705.6	3.2.03.9	42360	The Chief Safety and Mission Assurance Officer shall: Establish a PA&R records management system compliant with NPD 1440.6, NASA Records Management. (Requirement 42360)

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NPR 8705.6	3.2.04.1	42362	The NASA Chief Engineer shall: Ensure that program Chief Engineers support the OSMA in defining and documenting the applicable programmatic BRS and associated OQE. (Requirement 42362)
NPR 8705.6	3.2.05.1	42364	Center Directors shall: Provide the necessary Center support to the PA&R process. (Requirement 42364)
NPR 8705.6	3.2.05.2	42365	Center Directors shall: Identify and provide Center subject matter experts to the OSMA, as requested, to support Headquarters-led PA&R process activities. (Requirement 42365)
NPR 8705.6	3.2.05.3	42366	Center Directors shall: Establish and support Center-led PA&R process activities by providing the logistic and resource support required for successful planning and execution of the PA&R process at the Center. (Requirement 42366)
NPR 8705.6	3.2.05.4	42367	Center Directors shall: In concert with the Center SMA Director, Program/Project Manager, and Program/Project SMA Manager, provide a Closed-loop Corrective Action Plan to the OSMA for resolution of Headquarters-led PA&R findings within 60 calendar days of the completion of the audit/review. (Requirement 42367)
NPR 8705.6	3.2.05.5	42368	Center Directors shall: Present periodic status of all PA&R process corrective actions to the Chief Safety and Mission Assurance Officer or designee every 60 calendar days thereafter until all findings have been close. (Requirement 42368)
NPR 8705.6	3.2.06.1	42370	Center SMA Directors shall: Support and participate in Headquarters-led PA&R process activites. (Requirement 42370)
NPR 8705.6	3.2.06.1.1	42371	Center SMA Directors shall: Incorporate Headquarters-led PA&R process activities into Center SMA plans. (Requirement 42371)
NPR 8705.6	3.2.06.1.2	42372	Center SMA Directors shall: Provide to the PA&R Audit/Review Lead all necessary review materials to facilitate the planning and execution of the Headquarters-led audit/review. (Requirement 42372)
NPR 8705.6	3.2.06.1.3	42373	Center SMA Directors shall: Submit a copy of the most recent applicable Center-led PA&R report(s) to the OSMA sufficiently in advance of Headquarters-led PA&R process activities to facilitate review, planning, and execution of such activities. (Requirement 42373)
NPR 8705.6	3.2.06.1.4	42374	Center SMA Directors shall: In concert with the Center Director, Program/Project Manager, and Program/Project SMA Manager, prepare and present a Closed-loop Corrective Action Plan to the Chief Safety and Mission Assurance Officer or designee for resolution of Headquarters-led PA&R findings within 60 calendar days of the completion of the audit/review. (Requirement 42374)
NPR 8705.6	3.2.06.1.5	42375	Center SMA Directors shall: In concert with the Center Director, present periodic status of Headquarters-led PA&R corrective actions to the Chief Safety and Mission Assurance Officer or designee every 60 calendar days thereafter until the findings are closed. (Requirement 42375)
NPR 8705.6	3.2.06.2	42376	Center SMA Directors shall: Implement a Center-led PA&R process, consistent with the elements outlined in paragraph 3.1.5, by planning and executing Center-managed and/or Center-located activities to provide: 1) requirements flow-down verficiation; 2) assessment of program/project SMA process capability; 3) independent verification of in-process work discipline and compliance with requirements based on OQE; and 4) communication of attendant SMA residual risk to the program/project and to OSMA. (Requirement 42376)
NPR 8705.6	3.2.06.2.1	42377	Center SMA Directors shall: Incorporate Center-led PA&R process activities into Center SMA plans. (Requirement 42377)
NPR 8705.6	3.2.06.2.2	42378	Center SMA Directors shall: Support the Center-led PA&R process with the appropriate logistic and resource support required for successful execution of required audits/reviews. (Requirement 42378)
NPR 8705.6	3.2.06.2.3	42379	Center SMA Directors shall: Provide to the PA&R Audit/Review Lead all necessary review materials to facilitate the planning and execution of the Center-led audit/review. (Requirement 42379)
NPR 8705.6	3.2.06.2.4	42380	Center SMA Directors shall: In concert with the Program/Project Manager and Program/Project SMA Manager, prepare and present a Closed-loop Corrective Action Plan to the Center Director for resolution of Center-led PA&R findings within 60 calendar days of the audit/review. (Requirement 42380)
NPR 8705.6	3.2.06.2.5	42381	Center SMA Directors shall: Present periodic status of Center-led PA&R corrective actions to the Center Director and provide periodic status to the Chief Safety and Mission Assurance Officer or designee. (Requirement 42381)

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NPR 8705.6	3.2.06.3	42382	Center SMA Directors shall: Coordinate with program/project management and Center procurement to ensure that contracts provide for adequate contractor support of Headquarters-led and Center-led PA&R process activities.
NPR 8705.6	3.2.09.1	42396	Other Independent Assessment organizations shall: Communicate and coordinate their program or project audit/review plans, schedules, and findings with OSMA Review and Assessment Division to minimize duplication and overlap among the various independent assessment activities. Note: This includes, but is not limited to, the Office of Program Analysis and Evaluation, Independent Verification and Validation (IV&V) Facility, and NASA Engineering and Safety Center (NESC). (Requirement 42396)
NPR 8705.6	3.2.10.1	42398	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Develop and execute the PA&R audit/review plan. (Requirement 42398)
NPR 8705.6	3.2.10.2	42399	Headquarters-led or Center-led PA&R Audit/Review Lead shall: For each PA&R audit/review, coordinate with the specific Program/Project Manager by supplying notification of the general scope of the audit/review and the expected start and finish dates. (Requirement 42399)
NPR 8705.6	3.2.10.3	42400	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Recruit appropriate subject matter experts to be audit/review team members. (Requirement 42400)
NPR 8705.6	3.2.10.4	42401	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Ensure audit/review team members are independent of the program/project being audited. (Requirement 42401)
NPR 8705.6	3.2.10.5	42402	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Ensure that all team members are qualified to conduct programmatic audits, reviews, and assessments; i.e., have the requisite program/project, subject matter, and auditor experience and competency. (Requirement 42402)
NPR 8705.6	3.2.10.6	42403	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Develop a program/project-specific audit/review guide to support the onsite audit/review. (Requirement 42403)
NPR 8705.6	3.2.10.7	42404	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Conduct the onsite audit/review and ensure that records of all audit/review activities are maintained; specifically, ensure that each auditor collects/documents evidence that the program/project meets the applicable programmatic BRS relevant to the audit/review objectives. Acceptable OQE includes the following: (Requirement 42404)
NPR 8705.6	3.2.10.8	42409	Headquarters-led or Center-led PA&R Audit/Review Lead shall: Provide findings in a formal report to the participating Mission Directorate, Center Director, SMA Director, Program Manager, and Program Risk Management Officer for disposition of findings. Note: Information derived from PA&R activities often contains lessons learned and best practices. Headquarters- or Center-led PA&R Audit/Review Lead may share this information via appropriate Web-bsed resources; e.g., LLIS, PBMA-KMS. (Requirement 42409)
NPR 8705.6	4.1.6	42422	Objective: A record of each Headquarters SMARR shall be prepared and maintained by the OSMA Review and Assessment Division for six years after mission completion. (Requirement 42422)
NPR 8705.6	4.2.1.1	42425	The Agency Associate Administrator shall: Ensure that Centers support the SMARR processes described in this document. (Requirement 42425)
NPR 8705.6	4.2.2.1	42427	Associate Administrators for Mission Directorates shall: Ensure that programs and projects within the Mission Directorate support the SMARR requirements described in this document. (Requirement 42427)
NPR 8705.6	4.2.3.1	42429	The Chief Safety and Mission Assurance Officer shall: Direct the conduct of a SMARR for any high-risk program or project activity requiring Mission Directorate-level or higher decision to proceed, and, as necessary, to ensure the safety and mission success of program or project activities. (Requirement 42429)
NPR 8705.6	4.2.3.2	42430	The Chief Safety and Mission Assurance Officer shall: Chair each Headquarters-led SMARR and conduct a poll of selected SMARR participants for a recommendation to proceed. (Requirement 42430)
NPR 8705.6	4.2.4.1	42432	Center Directors shall: Provide the logistic and resource support required for successful execution of the Headquarters- and Center-led SMARR activities. (Requirement 42432)
NPR 8705.6	4.2.5.1	42434	Center SMA Directors shall: Participate in the Headquarters-led SMARR process for each program/project applicable to their Center. (Requirement 42434)

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NPR 8705.6	4.2.5.2	42435	Center SMA Directors shall: Direct the implementation of a Center-led SMARR process for any major milestone event or program line management operational review chaired below the Agency Directorate level in which the Center SMA organization is asked to concur/nonconcur and capitalize on a Headquarters-led SMARR to meet the intent of the Center-led SMARR, if applicable. (Requirement 42435)
NPR 8705.6	4.2.5.3	42436	Center SMA Directors shall: Chair each Center-led SMARR and conduct a poll of selected SMARR participants for a recommendation to proceed. (Requirement 42436)
NPR 8705.6	4.2.5.4	42437	Center SMA Directors shall: Include an assurance process analysis and an SMA residual risk-centric approach to assessing program/project readiness prior to a critical milestone in Center-led SMARRs. (Requirement 42437)
NPR 8705.6	4.2.5.5	42438	Center SMA Directors shall: Ensure that the basic elements of a Center-led SMARR, at a minimum, address the Headquarters-led SMARR elements and, to the extent possible, parallel Headquarters-led SMARR residual risk reporting formats. (Requirement 42438)
NPR 8705.6	4.2.5.6	42439	Center SMA Directors shall: Coordinate with program/project management and Center procurement to ensure that contracts provide for adequate contractor support of Headquarters-led and Center-led SMARR activities. (Requirement 42439)
NPR 8705.6	4.2.8.1	42450	Other Independent Assessment organizations shall: Identify program/project assessments conducted by their respective organizations, summarize, and provide them to the OSMA Review and Assessment Division to ensure that the Chief Safety and Mission Assurance Officer has all relevant data at the SMARR and to avoid duplication of effort on the part of other independent assessment organizations. (Requirement 42450)
NPR 8705.6	4.2.8.2	42451	Other Independent Assessment organizations shall: Identify any issues or SMA residual risks related to their respective assessments. (Requirement 42451)
NPR 8705.6	4.2.8.3	42452	Other Independent Assessment organizations shall: Identify any areas where the findings of the independent assessments differ from the program/project assessment. (Requirement 42452)
NPR 8705.6	4.2.8.4	42453	Other Independent Assessment organizations shall: Participate, as applicable, in SMARR polling described in paragraph 4.2.3.2. (Requirement 42453)
NPR 8705.6	4.2.8.5	42454	Other Independent Assessment organizations shall: Complete SMARR action items as assigned. (Requirement 42454)
NPR 8705.6	4.2.9.1	42456	The OSMA Review and Assessment Division SMARR Manager shall: Coordinate with the OSMA Mission Manager, Center-based SMA managers, and independent assessment organizations (e.g., IV&V Facility, NESC) to identify participants for the review. (Requirement 42456)
NPR 8705.6	4.2.9.2	42457	The OSMA Review and Assessment Division SMARR Manager shall: Coordinate with the OSMA Mission Manager, Center-based SMA managers, and independent assessment organizations (e.g., IV&V Facility, NESC) to establish an appropriate schedule and agenda for the upcoming SMARR. (Requirement 42457)
NPR 8705.6	4.2.9.3	42458	The OSMA Review and Assessment Division SMARR Manager shall: Coordinate with the program/project SMA Managers to establish the team members for the SMARR polling group in coordination with the Chief Safety and Mission Assurance Officer. (Requirement 42458)
NPR 8705.6	4.2.9.4	42459	The OSMA Review and Assessment Division SMARR Manager shall: Maintain and update, based on operational experience, detailed SMARR process documentation and work instructions. (Requirement 42459)
NPR 8715.3C	0.P.04.bi	45467	PREFACE: REFERENCES: Air Force AFOSH Standard 48-12, Health Hazard Control for Laser Operations.
NPR 8715.3C	01.02.1	45565	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Per NPD 1000.3, The NASA Organization, Mission Directorate Associate Administrators, through their project managers, and Center Directors, through their line managers, are responsible for the safety of their assigned personnel, facilities, and mission sytems. Toward that end, they shall establish a safety program that adheres to the following principles: (Requirement 45565)

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NPR 8715.3C	01.02.1.j	45576	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that an interagency review and approval process is implemented for the use of radioactive materials in spacecraft to avoid unacceptable radiation exposure for normal or abnormal conditions, including launch aborts with uncontrolled return to Earth (See Chapter 6). (Requirement 45576)
NPR 8715.3C	01.03.1.b	45583	Institutional and Programmatic Safety Requirements: Public Safety: Center Directors, project managers, supervisors and NASA employees shall: Disallow non-NASA (either by contractors or visitors) research and development operations (under grants or cooperative agreements) that interfere with or damage NASA facilities or operations or threaten the health and safety of NASA personnel. (Requirement 45583)
NPR 8715.3C	01.03.2.a	45585	Institutional and Programmatic Safety Requirements: Public Safety: Center SMA Directors Shall: Require non-NASA research and development personnel and operations exposed to hazardous operations on NASA property to follow all Federal, NASA, and Center safety precautions and to procure needed protective clothing and equipment at their own expense. (Requirement 45585)
NPR 8715.3C	01.03.2.b	45586	Institutional and Programmatic Safety Requirements: Public Safety: Center SMA Directors shall: Assure non-NASA research and develoment personnel operating or using potentially hazardous NASA equipment have received required training and are certified as qualified operators in accordance with Chapter 7 of this NPR. (Requirement 45586)
NPR 8715.3C	01.04.1.a	45591	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: The Chief Health and Medical Officer shall: Terminate any NASA operation considered an immediate health hazard. (Requirement 45591)
NPR 8715.3C	01.04.1.b	45592	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: The Chief Health and Medical Officer shall: When termination occurs, immediately notify affected Center offices (Requirement 45592).
NPR 8715.3C	01.04.2.a	45594	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: The Director, Safety and Assurance Requirements Division, OSMA, shall: Establish and develop the overall NASA safety program policy and priorities. (Requirement 45594)
NPR 8715.3C	01.04.2.b	45595	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: The Director, Safety and Assurance Requirements Division, OSMA, shall: Serve as the senior safety official for the Agency and exercise functional management authority over all NASA safety and risk management activities. (Requirement 45595)
NPR 8715.3C	01.04.2.c	45596	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: The Director, Safety and Assurance Requirements Division, OSMA, shall: Terminate any operation that presents an immediate and unacceptable risk to personnel, property, or mission operations. (Requirement 45596)
NPR 8715.3C	01.04.2.d	45597	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: The Director, Safety and Assurance Requirements Division, OSMA, shall: When termination occurs, immediately notify affected Center and Mission Directorate officials. (Requirement 45597)
NPR 8715.3C	01.04.3.a	45599	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center directors shall: Be responsible for safety at NASA facilities. (Requirement 45599)
NPR 8715.3C	01.04.3.b	45600	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Place their safety organizaion at a level that ensures the safety review function can be conducted independently. (Requirement 45600)
NPR 8715.3C	01.04.3.c(1)	45601	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Designate a senior manager as the Center safety and health officer and the safety program implementation authority. (Requirement 45601)
NPR 8715.3C	01.04.3.d.1	45604	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that: Adequte resources (personnel and budget) are provided to support mishap prevention efforts (Requirement 45604).

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NPR 8715.3C	01.04.3.d.2	45605	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center directors shall: Ensure that: Resource control is independent from any influence that would affect the independence of the advice, counsel, and services provided (Requirement 45605).
NPR 8715.3C	01.04.3.e(1)	45606	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center directors shall: Ensure that the policies, plans, procedures, and standards that define the characteristics of their safety program are established, documented, maintained, communicated, and implemented (Requirement 45606).
NPR 8715.3C	01.04.3.f	45608	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that the develpoment, implementation, and maintenance of an effective safety and health program are in compliance with NASA, Federal, State, and local requirements. (Requirement 45608)
NPR 8715.3C	01.04.3.g	45609	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure the establishment of an effective system safety program based on a continuous risk assessment process to include the development of safety requirements early in the planning phase, the implementation of those requirements during the acquisition, development, and operational phases, and the use of a scenario-based risk assessment and tracking system to maintain the status of risks during the process. See Chapter 2. (Requirement 45609)
NPR 8715.3C	01.04.3.h	45610	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that all NASA operations and operations performed on NASA property are performed in accordance with existing safety standards, consensus national standards (e.g., ANSI, NFPA), or special supplemental or alternative standards when there are no known applicable standards. (Requirement 45610)
NPR 8715.3C	01.04.3.i.1	45611	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that for hazardous NASA operations, procedures are developed for the following circumstances: to provide an organized and systematic approach to identify and control risks (Requirement 45611).
NPR 8715.3C	01.04.3.i.2	45612	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that for hazardous NASA operations, procedures are developed for the following circumstances: when equipment operations, planned or unplanned, are hazardous or constitute a potential launch, test, vehicle, or payload processing constraint (Requirement 45612).
NPR 8715.3C	01.04.3.i.3	45613	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that for hazardous NASA operations, procedures are developed for the following circumstances: when an operation is detailed or complicated and there is reasonable doubt that it can be performed correctly without written procedures (Requirement 45613). (See Chapter 3 of this NPR for requirmenets for hazardous operating procedures.)
NPR 8715.3C	01.04.3.j	45614	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that an aviation safety program that meets the specific operational needs of their Center is established and maintained to comply with national standards and NASA directives and requirements. (Requirement 45614) (See Chapter 4.)
NPR 8715.3C	01.04.3.k(1)	45615	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that safety lessons learned are disseminated and included in Center communication media to improve the understanding of hazards and risks, the prevention of mishaps, and to suggest better ways of implementing system safety programs (Requirement 45615).
NPR 8715.3C	01.04.3.L(1)	45617	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Inform personnel of the availability of the NASA Safety Reporting System (NSRS) at their Center. (Requirement 45617)
NPR 8715.3C	01.04.3.m	45621	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Assist with the investigation of NSRS reports. (Requirement 45621)

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NPR 8715.3C	01.04.3.n	45622	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that all facilities are designed, constructed, and operated in accordance with applicable/approved codes, standards, procedures, and requirements. (Requirement 45622) (See Chapters 8 and 9.)
NPR 8715.3C	01.04.3.o	45623	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that the safety responsibilities of each organizational element are defined and accomplished. (Requirement 45623)
NPR 8715.3C	01.04.3.p	45624	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that line managers incorporate safety and health requirements into the planning, support and oversight of hosted programs, projects, and operations as part of their management function. (Requirement 45624)
NPR 8715.3C	01.04.3.q	45625	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Evaluate and document the incorporation of safety and health requirements into the planning and support of hosted programs, projects, and operations in senior managers' peformance evaluations. (Requirement 45625)
NPR 8715.3C	01.04.3.r	45626	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure a qualified safety workforce is available to perform the safety function. (Requirement 45626)
NPR 8715.3C	01.04.3.s(1)	45627	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that properly equipped and trained personnel are provided to perform or support potentially hazardous or critical technical operations. (Requirement 45627)
NPR 8715.3C	01.04.3.t	45629	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center directors shall: Ensure that SMA risk-based acquisition management requirements are included in procurement, design, development, fabrication, test, or operations of equipment and facilities (Requirement 45629).
NPR 8715.3C	01.04.3.u(1)	45630	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Analyze and utilize nonconformance and process control data as feedback in the assessment and management of technical risk. (Requirement 45630)
NPR 8715.3C	01.04.3.v(1)	45632	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that qualitative and quantitative risk assessment results, hazard controls, and risk mitigation strategies are not negated when accounting for the analysis of nonconformance and process control data in the assessment and management of technical risk (Requirement 45632).
NPR 8715.3C	01.04.3.v(2)	45633	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: center Directors shall: Note: Quality assurance requirements are provided in NPD 8730.5, NASA Quality Assurance Program Policy.
NPR 8715.3C	01.04.3.w	45634	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure the results of contractor safety and health provision evaluations are provided to the award fee boards for use in fee determination. (Requirement 45634)
NPR 8715.3C	01.04.3.x(1)	45635	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure that the Governance Model is being implemented in the procurement process for the acquisition of hardware, software, services, materials, and equipment. (Requirement 45635) (See Chapter 9.)
NPR 8715.3C	01.04.3.y(1)	45637	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Pursue and obtain, within two years, certification under the Occupational Safety and Health Administration (OSHA) Voluntary Protection Program (VPP) or through an equivalent recognized occupational safety certification program. (Requirement 45637)

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NPR 8715.3C	01.04.3.y(2)	45638	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Note: The OSHA VPP is established by 5 U.S.C. section 7902; 29 U.S.C. section 651 et seq.; 49 U.S.C. section 1421, the Occupational Safety and Health Act of 1970, as amended, to assure every working man and woman in the Nation safe and healthful working conditions and to preserve our human resources by encouraging employers and employees to reduce the number of occupational safety and health hazards at their work places and to institute new (and to perfect existing) programs for providing safe and healthful working conditions.
NPR 8715.3C	01.04.3.z	45639	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors shall: Ensure their safety organization (or its support contractors) has access to certified safety professionals meeting the requirements of the OSHA VPP. (Requirement 45639)
NPR 8715.3C	01.04.4(1)	45640	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Center Directors and line managers shall ensure that up-to-date configuration control is maintained on all assigned equipment and systems. (Requirement 45640)
NPR 8715.3C	01.04.5.a	45643	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Line Managers and supervisors are accountable for the safety and health of their assigned personnel. To that end, they shall: Ensure employee safety and health training is completed by employees pursuant to the requirements of the job to be performed. (Requirement 45643)
NPR 8715.3C	01.04.5.b	45644	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Line Managers and supervisors are accountable for the safety and health of their assigned personnel. To that end, they shall: Ensure that safety is included in the employee's performance plan objectives. (Requirement 45644)
NPR 8715.3C	01.04.5.c	45645	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Line Managers and supervisors are accountable for the safety and health of their assigned personnel. To that end, they shall: Encourage safe performance through safety and health incentive awards programs or other instiutional programs establishing the safety organization. (Requirement 45645)
NPR 8715.3C	01.04.6.a	45647	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Supervisors shall: Incorporate measurable leading safety and health performance criteria in line managers' performance plans. (Requirement 45647)
NPR 8715.3C	01.04.6.b	45648	Institutional and Programmatic Safety Requirements: Institutional Roles and Responsibilities in the NASA Safety Program: Supervisors shall: Evaluate and document achievement of the measureable safety and health performance criteria in the line manager's performance evaluations. (Requirement 45648)
NPR 8715.3C	01.05.2	45651	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: (Requirement 45651)
NPR 8715.3C	01.05.2.f	45657	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project Managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: (Requirement 45657)
NPR 8715.3C	01.06.1.1.a(2)	45673	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Assessment: Project managers for flight systems and line managers for institutional systems shall: Note: Requirements for risk management are provided per NPR 8000.4, Risk Management Procedural Requirements; requirements for probabilistic risk assessments are provided per NPR 8705.5, Probabilistic Risk Assessment (PRA) Procedures for NASA Programs and Projects.
NPR 8715.3C	01.07.1.1	45688	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Risk Reduction Protocol: Project managers shall ensure that hazards are mitigated according to the following stated order of precedence: (Requirement 45688)
NPR 8715.3C	01.08.2.a	45728	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that: The Center's safety program is formally assessed annually. (Requirement 45728)

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NPR 8715.3C	01.08.2.b(1)	45729	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that: The Center's annual safety program assessment is conducted by competent and qualified personnel. (Requirement 45729)
NPR 8715.3C	01.08.3.a	45732	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shalll ensure that the Center's formal annual assessment has the following elements: A formal assessment report that inlcudes a discussion of the safety posture of the Center and each program reviewed. (Requirement 45732)
NPR 8715.3C	01.08.3.b	45733	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shalll ensure that the Center's formal annual assessment has the following elements: An assessment of the effectiveness of safety program management. (Requirement 45733)
NPR 8715.3C	01.08.3.c	45734	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shalll ensure that the Center's formal annual assessment has the following elements: A safety culture survey that includes at least the management and communications functions of the Performance Evaluation Profile (PEP) survey. (Requirement 45734)
NPR 8715.3C	01.08.3.d	45735	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: An assessment of safety program documentation (e.g., plans, procedures, monitoring data). (Requirement 45735)
NPR 8715.3C	01.08.3.e	45736	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: An assessment of the adequacy of safety standards and procedures. (Requirement 45736)
NPR 8715.3C	01.08.3.f	45737	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: Interviews of key facility and/or program personnel. (Requirement 45737)
NPR 8715.3C	01.08.3.g	45738	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: Observations and inspections of workplace compliance with safety practices. (Requirement 45738)
NPR 8715.3C	01.08.3.h	45739	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: Identification of deficiencies in the safety program. (Requirement 45739)
NPR 8715.3C	01.08.3.i	45740	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: The development of formal plans of actions and milestones to correct all open deficiencies that shall be tracked to completion including interim controls that will be implemented if the hazard cannot be immediately corrected. (Requirement 45740)
NPR 8715.3C	01.08.3.j	45741	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: Assessment and verification of corrective actions from previous assessments. (Requirement 45741)
NPR 8715.3C	01.08.3.k	45742	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that the Center's formal annual assessment has the following elements: Evaluation of the implemention of 5 U.S.C. section 7902; 29 U.S.C. section 651 et seq.; 49 U.S. C. section 1421, the Occupational Safety and Health Act of 1970, as amended; E.O. 12196, Occupational Safety and Health Programs for Federal Employees dated February 26, 1980, as amended; OSHA regulations at 29 CFR Part 1910, Occupational Safety and Health Standards; and other pertinent Federally-mandated requirements. (Requirement 45742)
NPR 8715.3C	01.08.4	45743	Institutional and Programmatic Safety Requirements: SMA Program Reviews: Center Directors shall ensure that periodic training is conducted for Center safety personnel on safety program assessments covering prereview, review, and postreview procedures and requirements. (Requirement 45743)
NPR 8715.3C	01.09.3.1(1)	45750	Institutional and Programmatic Safety Requirements: Advisory Panels, Committees, and Boards: OEP: The Chief, Safety and Mission Assurance, shall establish and maintain an OEP. (Requirement 45750)

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NPR 8715.3C	01.09.3.2(1)	45752	Institutional and Programmatic Safety Requirements: Advisory Panels, Committees, and Boards: OEP: The OEP shall evaluate processes and systems for assuring the continuing operational integrity of NASA test facilities, operations, and engineering technical support systems, address problems and issues at Centers, and provide recommendations to the Chief, Safety and Mission Assurance. (Requirement 45752)
NPR 8715.3C	01.09.6	45757	Institutional and Programmatic Safety Requirements: Advisory Panels, Committees, and Boards: Center Directors and the Chief, Safety and Mission Assurance, shall have the authority to establish ad hoc committees to provide safety oversight review of programs, projects, and other activities. (Requirement 45757)
NPR 8715.3C	01.10.1(1)	45759	Institutional and Programmatic Safety Requirements: Coordination with Organizations External to NASA: The Chief, Safety and Mission Assurance, in coordination with the Office of External Relations (for exchanges with the Department of Defense (DoD), intelligence agencies, and foreign entities) and in consultation with the NASA Office of the General Counsel, shall establish guidelines for exchanging safety information with organizations external to NASA. (Requirement 45759)
NPR 8715.3C	01.10.2(1)	45761	Institutional and Programmatic Safety Requirements: Coordination with Organizations External to NASA: NASA shall encourage participation by NASA safety professionals in outside safety-related professional organizations. (Requirement 45761)
NPR 8715.3C	01.11.1(1)	45764	Institutional and Programmatic Safety Requirements: Safety Motivation and Awards Program: The Chief, Safety and Mission Assurance shall establish a Safety Motivation and Awards Program that recognizes the safety achievements of NASA and other Federal Government employees supporting NASA objectives in all occupational categories and grade levels. (Requirement 45764)
NPR 8715.3C	01.12.1.a	45772	Institutional and Programmatic Safety Requirements: Safety Management Information: Center Directors shall provide or make accessible to the OSMA (through an Internet Web site): Center executive safety committee or board documentation (e.g., minutes and reports). (Requirement 45772)
NPR 8715.3C	01.12.1.b	45773	Institutional and Programmatic Safety Requirements: Safety Management Information: Center Directors shall provide or make accessible to the OSMA (through an Internet Web site): Results of external (such as OSHA) safety program management reviews. (Requirement 45773)
NPR 8715.3C	01.12.1.c(1)	45774	Institutional and Programmatic Safety Requirements: Safety Management Information: Center Directors shall provide or make accessible to the OSMA (through an Internet Web site): Top-level center or program safety procedure documents that implement Headquarters requirements. (Requirement 45774)
NPR 8715.3C	01.12.1.c(2)	45775	Institutional and Programmatic Safety Requirements: Safety Management Information: Center Directors shall provide or make accessible to the OSMA (through an Internet Web site): Note: Electronic versions or Web addresses are acceptable and should be forwarded in conjunction with the data. (Requirement 45775)
NPR 8715.3C	01.12.1.d	45776	Institutional and Programmatic Safety Requirements: Safety Management Information: Center Directors shall provide or make accessible to the OSMA (through an Internet Web site): Copies of safety variances granted at the Center (see paragraph 1.13). (Requirement 45776)
NPR 8715.3C	01.12.2	45777	Institutional and Programmatic Safety Requirements: Safety Management Information: The Chief of Strategic Communications shall provide or make accessible (through Internet Web site), to the OSMA, copies of comments sent to outside regulatory agencies (e.g., OSHA, Department of Transportation (DOT), Environmental Protection Agnecy (EPA)) concerning proposed rule-making that could affect the NASA Safety Program. (Requirement 45777)
NPR 8715.3C	01.12.3	45778	Institutional and Programmatic Safety Requirements: Safety Management Information: Center SMA Directors shall maintain a census of Government and contract employees performing safety, reliability, maintainability and quality functions (engineering, operations, and assurance) by organization or contractor company at their sites. (Requirement 45778)
NPR 8715.3C	01.12.4	45779	Institutional and Programmatic Safety Requirements: Safety Management Information: Cos and COTRs shall ensure that the census of employees performing safety, reliabilty, maintainability, and quality functions (engineering, operations, and assurance) by organization is a requirement under contracts. (Requirement 45779)

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NPR 8715.3C	1.13	45780	Institutional and Programmatic Safety Requirements: Safety Variances
NPR 8715.3C	01.13.5.a	45801	Institutional and Programmatic Safety Requirements: Safety Variances: Center SMA Directors shall: Assist programs/projects in the preparation of variance requests. (Requirement 45801)
NPR 8715.3C	01.13.5.b	45802	Institutional and Programmatic Safety Requirements: Safety Variances: Center SMA Directors shall: Assure that the risk associated with a variance request is properly characterized (quantitatively or qualitatively) and that any increase in overall risk (as compared to a system or operation designed to meet the requirement in question) is properly indentified. (Requirement 45802)
NPR 8715.3C	01.13.5.c	45803	Institutional and Programmatic Safety Requirements: Safety Variances: Center SMA Directors shall: Assure that the variance process is carried out in accordance with this NPR. (Requirement 45803)
NPR 8715.3C	01.13.5.d(1)	45804	Institutional and Programmatic Safety Requirements: Safety Variances: Center SMA Directors shall: Concur (or nonconcur) with variance requests based on paragraphs 1.13.5.b and 1.13.5.c. above. (Requirement 45804)
NPR 8715.3C	01.13.6.a	45807	Institutional and Programmatic Safety Requirements: Safety Variances: The Chief, Safety and Mission Assurance, shall: Serve as the approving official for variances to program-level safety, reliability, and quality requirements under SMA cognizance (ownership). (Requirement 45807)
NPR 8715.3C	01.13.6.b	45808	Institutional and Programmatic Safety Requirements: Safety Variances: The Chief, Safety and Mission Assurance, shall: Oversee Center/project/program implementation of the variance policy and associated requirements provided in this NPR. (Requirement 45808)
NPR 8715.3C	01.13.6.c	45809	Institutional and Programmatic Safety Requirements: Safety Variances: The Chief, Safety and Mission Assurance, shall: Review all requests for variance to Federal, State, or local regulations before submittal to the Federal/State/local agency for approval. (Requirement 45809)
NPR 8715.3C	01.13.7	45810	Institutional and Programmatic Safety Requirements: Safety Variances: The Chief Engineer shall serve as the approving official for variances to program level technical requirements under OCE cognizance (ownership). (Requirement 45810)
NPR 8715.3C	01.13.8	45811	Institutional and Programmatic Safety Requirements: Safety Variances: The Chief Health and Medical Officer shall serve as the approving official for variances to program level requirements under Chief Health and Medical Officer cognizance (ownership). (Requirement 45811)
NPR 8715.3C	02.2.2	45819	System Safety: Institutional Roles and Responsibilities: Center Directors, through their Center SMA Directors, shall ensure that knowledgeable system safety and technical risk analysts are made available to program/project managers and Center engineering directors to define and conduct system safety activities, including assurance of prime contractor system safety activities. (Requirement 45819)
NPR 8715.3C	02.5.1.2.a	45897	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The Center SMA Director shall: In coordination with the program/project manager, assign a System Safety Manager to have specific responsibility for the development and implementation of the SSTP. (Requirement 45897)
NPR 8715.3C	02.5.1.2.b	45898	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The Center SMA Director shall: Ensure that the assigned System Safety Manager has demonstrated expertise in safety analysis including, in the case of Category I and II projects, the application of probabilistic risk assessment techniques. (Requirement 45898)
NPR 8715.3C	02.5.1.2.c	45899	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The Center SMA Director shall: Ensure that all personnel with project safety oversight responsibilities are funded by other than direct project funding sources. (Requirement 45899)
NPR 8715.3C	03.01.1	45981	Operational Safety: Purpose and Objectives: Center Directors shall conduct safety inspections of all facilities, occupied or unoccupied, at least annually to ensure compliance with safety, fire protection, and building codes and standards. (Requirement 45981)

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NPR 8715.3C	03.02.1	45983	Operational Safety: Motor Vehicle Safety: Center Directors shall ensure that motor vehicle operating procedures comply with Federal, State, and local motor vehicle safety regulations. (Requirement 45983)
NPR 8715.3C	03.02.2.1.a	45986	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Operators of motor vehicles on NASA property or operating a NASA vehicle both on and off NASA property shall: Not drive a motor vehicle for a continuous period of more than 10 hours, including a combination of personal driving and driving for official NASA business. (Requirement 45986)
NPR 8715.3C	03.02.2.1.b	45987	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Operators of motor vehicles on NASA property or operating a NASA vehicle both on and off NASA property shall: Not drive a motor vehicle for a combined duty period that exceeds 12 hours in any 24-hour period, without at least 8 consecutive hours of rest. (Requirement 45987)
NPR 8715.3C	03.02.2.1.c	45988	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Operators of motor vehicles on NASA property or operating a NASA vehicle both on and off NASA property shall: Not use hand-held communication devices while the vehicle is motion except for emergency, security, and fire vehicles during official operations. (Requirement 45988) Note: This includes cell phones, UHF radios, or other hand-held wireless communication devices. When there are two individuals traveling in an emergency, security, or fire vehicle during official operations, the passenger should be the person to use the hand-held communication device.
NPR 8715.3C	03.02.2.1.d	45989	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Operators of motor vehicles on NASA property or operating a NASA vehicle both on and off NASA property shall: Ensure that children unable to use sealt belts while in Federal vehicles are secured in DOT-approved child safety seats that are properly installed. (Requirement 45989)
NPR 8715.3C	03.02.2.1.e	45990	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Operators of motor vehicles on NASA property or operating a NASA vehicle both on and off NASA property shall: Have formal training, as required in paragraph 7.3.1 of this NPR, if operation of the vehicle involves skills beyond those associated with normal, everyday operation of private motor vehicles. (Requirement 45990)
NPR 8715.3C	03.02.2.2	45991	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Center Directors shall ensure that any variation from the above policy safety office approval. (Requirement 45991)
NPR 8715.3C	03.02.2.3	45992	Operational Safety: Motor Vehicle Safety: Motor Vehicle Operation: Center Directors shall ensure that all NASA motor vehicles used off NASA Centers are inspected to the standards of the State or other jurisdiction's vehicle safety inspection requirements. (Requirement 45992)
NPR 8715.3C	03.02.3.1.a	45995	Operational Safety: Motor Vehicle Safety: Seat Belts: Center Directors shall ensure that: Center policy requires passengers not be carried in the cargo area of pickup trucks, flatbeds, or special purpose equipment such as fire trucks or escape trucks unless designated occupant positions with seat belts are provided (see 49 CFR Part 571, Federal Motor Vehicle Safety Standards) (Requirement 45995)
NPR 8715.3C	03.02.3.1.b	45996	Operational Safety: Motor Vehicle Safety: Seat Belts: Center Directors shall ensure that: Center policy requires the use of seat belts for all occupants of motor vehicles operated on NASA property, including delivery vans and trucks of all sizes, at all times the vehicle is in motion. (Requirement 45996)
NPR 8715.3C	03.02.4.1.a	45999	Operational Safety: Motor Vehicle Safety: Annual Seat Belt Report: Director, Safety and Assurance Requirements Division, shall: Prepare and submit an annual status report to the Secretary of Transportaiton on NASA-wide seat belt use. (Requirement 45999) Note: Required by EO 13043, Increasing Seat Belt Use in the United States, dated April 16, 1997, as amended. The annual report includes seat belt usage rates and statistics of crashes, injuries, and related costs involving Federal employees on official business. DOT consolidates this data into an annual status report to the President for all Federal agencies.
NPR 8715.3C	03.02.4.1.b	46000	Operational Safety: Motor Vehicle Safety: Annual Seat Belt Report: Director, Safety and Assurance Requirements Division, shall: Coordinate data for the annual report with the Office of Institutions and Management and the OCHMO. (Requirement 46000) Note: The format and submittal date for the report will be directed each year by the Secretary of Transportation.

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NPR 8715.3C	03.02.5.1	46002	Operational Safety: Motor Vehicle Safety: Traffic Control Devices and Markings: Center Directors shall use the ANSI D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways, for guidance when setting traffic control devices or marking roads for motor vehicle operations on NASA property. (Requirement 46002)
NPR 8715.3C	03.03.5.a	46018	Operational Safety: Personal Protective Equipment (PPE): Center Directors shall: Issue PPE to NASA employees at Government expense in those situations where engineering controls, management controls, or other corrective actions have not reduced the hazard to an acceptable level or where use of engineering controls, management controls, or other techniques is not feasible. (Requirement 46018)
NPR 8715.3C	03.03.5.c	46020	Operational Safety: Personal Protective Equipment (PPE): Center Directors shall: Ensure that only clothing and equipment meeting Federal regulations, industrial standards, or NASA special testing requirements are used for PPE. (Requirement 46020) Note: Transients or visitors may be furnished PPE on a temporary basis if they are on site for NASA-related business purposes or at NASA's invitation.
NPR 8715.3C	03.03.5.d	46021	Operational Safety: Personal Protective Equipment (PPE): Center Directors shall: Ensure that non-NASA, contractor, and noncontractor personnel at their Center procure their own PPE to provide an equivalent level of safety. (Requirement 46021)
NPR 8715.3C	03.03.5.e	46022	Operational Safety: Personal Protective Equipment (PPE): Center Directors shall: Ensure that non-NASA, contractor, and noncontractor personnel at their Center provide the appropriate training, fit testing, and compliance with other Federal, State, Local and NASA PPE requirements. (Requirement 46022)
NPR 8715.3C	03.03.5.f	46023	Operational Safety: Personal Protective Equipment (PPE): Center Directors shall: Have a formal Respiratory Protection Program if respirators are used at their Center. (Requirement 46023) Note: The OCHMO at NASA Headquarters provides guidance for purchasing, training, selection, and qualification for use of respiratory protective devices and other health-related PPE.
NPR 8715.3C	03.03.7	46025	Operational Safety: Personal Protective Equipment (PPE): NASA hosts, guides, or area supervisors shall be responsible for obtaining, issuing, and recovering PPE issued to transients or visitors onsite for NASA-related business purposes or at NASA's invitation. (Requirement 46025)
NPR 8715.3C	03.04.2	46028	Operational Safety: Control of Hazardous Energy (Lockout/Tagout Program): Center Directors shall establish a program for controlling hazardous energy during service and maintenance operations where unexpected energizing or startup of equipment could cause injury to employees or equipment damage. (Requirement 46028)
NPR 8715.3C	03.06.1.a	46035	Operational Safety: Electrical Safety: Center Directors shall ensure that: Electrical systems are designed in accordance with NFPA 70, National Electric Code, MIL-454, Standard General Requirements for Electronic Equipment, or Center-specific requirements if more specific. (Requirement 46035)
NPR 8715.3C	03.06.1.b	46036	Operational Safety: Electrical Safety: Center Directors shall ensure that: Electrical systems are operated and maintained to adequately control hazards likely to cause death or serious physical harm or severe system damage. (Requirement 46036)
NPR 8715.3C	03.06.1.c	46037	Operational Safety: Electrical Safety: Center Directors shall ensure that: All electrical systems are reviewed by the Center's safety office for appropriate location and proximity to ignitable or combustible material such as gas, vapor, dust, or fiber (Requirement 46037)
NPR 8715.3C	03.06.1.d	46038	Operational Safety: Electrical Safety: Center Directors shall ensure that: All electrical work deemed hazardous by job safety analysis is performed by personnel familiar with electrical code requirements in accordance with NFPA 70E, Standard for Elecrtical Safety in the Workplace, and qualified/certified for the class of work to be performed. (Requirement 46038)
NPR 8715.3C	03.06.1.e	46039	Operational Safety: Electrical Safety: Center Directors shall ensure that: Transformer banks or high-voltage equipment (600+ volts) are protected by an enclosure to prevent unauthorized access with metallic enclosures being grounded. (Requirement 46039)
NPR 8715.3C	03.06.1.f	46040	Operational Safety: Electrical Safety: Center Directors shall ensure that: Entrances to enclosed transformer banks or high-voltage equipment (600+ volts) not under constant observation are kept locked. (Requirement 46040)

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NPR 8715.3C	03.06.1.g	46041	Operational Safety: Electrical Safety: Center Directors shall ensure that: Signs warning of high voltage and prohibiting unauthorized entrance are posted at entrances and on the perimeter of enclosed transformer banks or high-voltage equipment (600+ volts). (Requirement 46041)
NPR 8715.3C	03.06.1.h	46042	Operational Safety: Electrical Safety: Center Directors shall ensure that: An authorized access list of qualified personnel is maintained for enclosed transformer banks and high-voltage equipment (600+ volts). (Requirement 46042)
NPR 8715.3C	03.06.1.i	46043	Operational Safety: Electrical Safety: Center Directors shall ensure that: Inductive floors or others methods are used where electrostatic discharge is a significant hazard to personnel or hardware. (Requirement 46043)
NPR 8715.3C	03.06.2.a	46045	Operational Safety: Electrical Safety: Supervisors shall ensure that: No person works alone with high-voltage electricity. (Requirement 46045)
NPR 8715.3C	03.06.2.b	46046	Operational Safety: Electrical Safety: Supervisors shall ensure that: One person, trained to recognize electrical hazards, is delegated to watch the movements of other personnel working electrical equipment to warn them if they get dangerously close to live conductors or perform unsafe acts and to assist in the event of a mishap. (Requirement 46046)
NPR 8715.3C	03.07.5.1.a	46054	Operational Safety: Hazardous Material Transportation, Storage, and Use: Transporting Hazardous Material: Center Directors shall ensure: That the mode of transportation is inspected to the standards of the Federal Highway Administration, U.S. Coast Guard, Department of Transportation, and Federal Railroad Administration. (Requirement 46054)
NPR 8715.3C	03.07.5.1.b	46055	Operational Safety: Hazardous Material Transportation, Storage, and Use: Transporting Hazardous Material: Center Directors shall ensure: That all contractor motor vehicles, rail cars, boats, ships covered by NASA Bill of Lading and used for the transportation of hazardous material have passed an inspection prior to loading to assure that the vehicle or vessel is in safe mechanical condition. (Requirement 46055)
NPR 8715.3C	03.07.5.1.c	46056	Operational Safety: Hazardous Material Transportation, Storage, and Use: Transporting Hazardous Material: Center Directors shall ensure: That all vehicles transporting hazardous materials on NASA and public roadways display all DOT-required placards, lettering, or numbering. (Requirement 46056)
NPR 8715.3C	03.07.5.1.d	46057	Operational Safety: Hazardous Material Transportation, Storage, and Use: Transporting Hazardous Material: Center Directors shall ensure: That hazardous material defined in 49 CFR Part 171.8, Hazardous Material Regulations, Definitions, and Abbreviations, is not transported in NASA administrative aircraft. (Requirement 46057) NOTE: To ensure hazardous material is not inadvertently loaded on administrative aircraft, all cargo for shipment should be routed through the Center's transportation office or, if en route, cargo should be accepted only from a certified shipper or freight forwarding agency.
NPR 8715.3C	03.07.6.1.a	46060	Operational Safety: Hazardous Material Transportation, Storage, and Use: Hazardous Material Storage, Use, and Disposal Inventories: Center Directors shall ensure: That hazardous material storage, use, and disposal inventories are conducted at least annually. (Requirement 46060)
NPR 8715.3C	03.07.6.1.b	46061	Operational Safety: Hazardous Material Transportation, Storage, and Use: Hazardous Material Storage, Use, and Disposal Inventories: Center Directors shall ensure: That the conditions of materials in storage are assessed at least quarterly, and those determined to be unsuitable for use are removed from active inventory. (Requirement 46061)
NPR 8715.3C	03.07.6.1.d	46063	Operational Safety: Hazardous Material Transportation, Storage, and Use: Hazardous Material Storage, Use, and Disposal Inventories: Center Directors shall ensure: That NASA procurement activities reference 29 CFR Part 1910.1200, Hazard Communication, and Federal Standard 313, Material Safety Data, Transportation Data and Disposal Data for Hazardous Materials Furnished to Government Activities, as revised, in commodity specifications, purchase descriptions, purchase orders, contracts, and other purchase documents. (Requirement 46063)
NPR 8715.3C	03.07.6.1.e	46064	Operational Safety: Hazardous Material Transportation, Storage, and Use: Hazardous Material Storage, Use, and Disposal Inventories: Center Directors shall ensure: That electronic, magnetic, optical, or paper copies of all Material Safety Data Sheets (MSDS) are maintained in the work area where the material is being used or stored. (Requirement 46064)

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NPR 8715.3C	03.07.6.1.f	46065	Operational Safety: Hazardous Material Transportation, Storage, and Use: Hazardous Material Storage, Use, and Disposal Inventories: Center Directors shall ensure: The employees in work areas where hazardous materials are being used or stored are permitted to view any MSDS sheet maintained on file. (Requirement 46065) Note: The NASA MSDS Inventory is accessible at: http://msds.ksc.nasa.gov.
NPR 8715.3C	03.07.6.2	46066	Operational Safety: Hazardous Material Transportation, Storage, and Use: Hazardous Material Storage, Use, and Disposal Inventories: Receiving offices at each Center shall provide copies of the MSDS for receipt of such commodities to the central office responsible for maintaining the MSDS records. (Requirement 46066) Note: Safety forms and reports are retained per NPR 1441.1, NASA Records Retention Schedules.
NPR 8715.3C	03.08.2.j	46079	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that personnel other than certified operators are excluded from exposure to hazardous operations that depend on adherence to specific standards, guidelines, and training. (Requirement 46079)
NPR 8715.3C	03.08.3	46081	Operational Safety: Hazardous Operations: Center SMA Directors or their designee shall review and approve HOPs. (Requirement 46081)
NPR 8715.3C	03.09.2.a	46085	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: The design of laboratories incorporates the requirements of State and Federal codes required for the individual Center (e.g., building, electrical, and fire protection for laboratory facilities). (Requirement 46085)
NPR 8715.3C	03.09.2.b	46086	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: Escape routes are provided, designed, and marked in accordance with the NFPA 101, Life Safety Code. (Requirement 46086)
NPR 8715.3C	03.09.2.c	46087	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: Occupational safety and health considerations such as ventilation, shower stalls, and eyewash stations are included in the design of laboratories. (Requirement 46087) Note: For facility acquisition and construction safety requirements, see Chapter 8.
NPR 8715.3C	03.09.2.e	46089	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: Laboratory facilities and areas with significant quantities of flammable, combustible, corrosive, and toxic liquids, solids, or gases are protected in accordance with provisions of NFPA 45, Standard on Fire Protection for Laboratories Using Chemicals, as modified below. (Requirement 46089)
NPR 8715.3C	03.09.2.f	46090	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: Laboratories not using or fitting the above chemical classification, yet housing unique, mission-critical, or high-value research equipment, conform to the provisions of NASA-STD 8719.11, Safety Standard for Fire Protection. (Requirement 46090) Note: In the design of laboratories, special facilities should be considered to ensure the integrity of the terrestrial environment as well as the integrity of biological and physical samples returned from space.
NPR 8715.3C	03.09.2.g	46091	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: Laboratory designs include additional considerations for biohazards resulting from use or handling of biological materials such as infectious microorganisms, viruses, medical waste, or genetically engineered organisms. (Requirement 46091) Note: See 29 Part CFR 1910.1030, Blood Borne Pathogens, and NPR 1800.1, NASA Occupational Health Program Procedures, for additional details.
NPR 8715.3C	03.09.2.h	46092	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: Laboratory designs include additional considerations to protect physical samples returned from space against terrestrial contamination and to protect the terrestrial environment against potential biological or toxic hazards due to these samples. (Requirement 46092)
NPR 8715.3C	03.09.3.1.a	46096	Operational Safety: Laboratory Hazards: Chemical and Hazardous Materials: Center Directors and project managers shall ensure that: Laboratories meeting the definition as described in 29 CFR Part 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, are in operated in accordance with chemical hygiene plans. (Requirement 46096)

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NPR 8715.3C	03.09.3.1.b	46097	Operational Safety: Laboratory Hazards: Chemical and Hazardous Materials: Center Directors and project managers shall ensure that: Suitable facilities for quick drenching or flushing of the eyes and body of any person exposed to injurious corrosive materials are provided within the work area for immediate emergency use. (Requirement 46097)
NPR 8715.3C	03.09.3.1.c	46098	Operational Safety: Laboratory Hazards: Chemical and Hazardous Materials: Center Directors and project managers shall ensure that: Installation, maintenance, and access to facilities for quick drenching and flushing of the eyes and safety showers are in accordance with ANSI 358.1, Emergency Eyewash and Shower Equipment, latest edition. (Requirement 46098)
NPR 8715.3C	03.09.3.1.d	46099	Operational Safety: Laboratory Hazards: Chemical and Hazardous Materials: Center Directors and project managers shall ensure that: Eyewashes and/or safety showers are located no more that 10 seconds or 50 feet distance away from the hazard source. (Requirement 46099)
NPR 8715.3C	03.09.4.1	46101	Operational Safety: Laboratory Hazards: Solar Simulators: Center Directors and project managers shall ensure that all personnel wear skin and eye protection while in direct view of a bare pressurized arc lamp, whether energized or not, unless the system is locked out or tagged out for maintenance or repair. (Requirement 46101)
NPR 8715.3C	03.09.5.2	46104	Operational Safety: Laboratory Hazards: Ventilation: Center Directors shall ensure that their occupational health programs assure proper ventilation. (Requirement 46104)
NPR 8715.3C	03.11.3	46111	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: Center Directors shall designate, in writing, an Explosive Safety Officer (ESO) for explosives, propellant, and pyrotechnic operations at their Center. (Requirement 46111) Note: The Center SMA Director may recommend a candidate for Center ESO, if requested by the Center Director. For specific responsibilities of the ESO, refer to NSS 1740.12, Safety Standard for Explosives, Propellants, and Pyrotechnics.
NPR 8715.3C	03.11.4.a	46113	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Manage the Center Explosives, Propellants and Pyrotechnic Safety Program to assure a robust mishap prevention program is in place. (Requirement 46113)
NPR 8715.3C	03.11.4.b	46114	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Ensure that the Explosives, Propellants, and Pyrotechnic Safety Program meets all Federal, NASA, State, and local requirements. (Requirement 46114)
NPR 8715.3C	03.11.4.c	46115	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Represent the Center Director in this program to help assure that minimum number of required personnel and critical resources are exposed to the minimum amount of explosives for the minimal amount of time for all explosive operations. (Requirement 46115)
NPR 8715.3C	03.11.4.d	46116	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Advise the Center Director on the programmatic health of the Explosives, Propellants, and Pyrotechnic Safety Program. (Requirement 46116)
NPR 8715.3C	03.11.4.e	46117	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Represent the Center Director for all explosives, propellants, and pyrotechnic safety matters. (Requirement 46117)
NPR 8715.3C	03.11.4.f	46118	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Assure oversight of all processes required by NSS 1740.12, Safety Standard for Explosives, Propelllants, and Pyrotehcnics. (Requirement 46118)
NPR 8715.3C	03.11.4.g	46119	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Review all operating procedures for handling explosives, propellants, and pyrotechnics. (Requirement 46119)
NPR 8715.3C	03.11.4.h	46120	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Review and participate in the development of construction and/or modification plans for facilities or structures containing explosives, propellants, and pyrotechnics. (Requirement 46120)
NPR 8715.3C	03.11.4.i	46121	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Review all locations and routes that provide for the transportation, storage and handling of explosives, propellants, and pyrotechnic materials. (Requirement 46121)
NPR 8715.3C	03.11.4.j	46122	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Provide oversight for staff training and records and participate in the evaluation of selected training programs for explosive, propellant, and pyrotechnic saftety. (Requirement 46122) Note: Safety forms and reports are retained per NPR 1441.1, NASA Records Retention Schedules.

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NPR 8715.3C	03.11.4.k	46123	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Process and provide inputs for the approval of all explosive-related site plans and review current explosive site plans on an annual basis. (Requirement 46123)
NPR 8715.3C	03.11.4.L	46124	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Manage deviations and waivers in accordance with Chapter 1 of this NPR. (Requirement 46124)
NPR 8715.3C	03.11.4.m	46125	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Validate, approve, and sign all explosive licenses. (Requirement 46125) Note: As defined in NSS 1740.12, Safety Standard for Explosives, Propellants, and Pyrotechnics: Licensed Explosive Locations - Ammunition and explosive storage locations (not for explosive operations and excluding Hazard Division 1.1 & 1.2), which are normally outside the Center's explosive storage area but within NASA's area of control.
NPR 8715.3C	03.11.4.n	46126	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Review all Memorandums of Agreement associated with explosives, propellant, and pyrotechnic operations. (Requirement 46126) Note: If the ESO represents NASA as a tenant organization, the ESO assures compliance with the host requirements though formal negotiations and documentation of those agreements. If the ESO represents NASA as the Host, the ESO assures compliance with all appropriate elements of this NPR. In all cases, the ESO assures that agreements are formalized to maximize the health and safety of NASA employees and facilities.
NPR 8715.3C	03.11.4.o	46127	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: The ESO shall: Perform an independent hazard assessment of all laboratories and test facilities having activities that involve the mixing, blending, extruding, synthesizing, assembling, disassembling and other activities involved in the making of a chemical compound, mixture, or device which is intended to explode. (Requirement 46127)
NPR 8715.3C	03.13.2.a	46134	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Establish and oversee the Agency Safety Operations Program elements needed to assure successful implementation of operations safety requirements and assure related concerns are evaluated and resolved. (Requirement 46134)
NPR 8715.3C	03.13.2.b	46135	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Approve and promulgate Agency-level operations safety policy and requirements, including the provisions of this NPR abd associated implementation documents. (Requirement 46135)
NPR 8715.3C	03.13.2.c.1	46137	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Designate Agency safety representatives needed to: Monitor preparations for operations to determine compliance with Agency safety policies, processes, and requirements. (Requirement 46137)
NPR 8715.3C	03.13.2.c.2	46138	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Designate Agency safety representatives needed to: Support programs/projects to provide advice and technical support and act as a link to independent engineering, safety, and assessment capabilities. (Requirement 46138)
NPR 8715.3C	03.13.2.c.3	46139	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Designate Agency safety representatives needed to: Maintain cognizance over safety issues that have the potential to be evaluated to NASA Headquarters for resolution. (Requirement 46139)
NPR 8715.3C	03.13.2.c.4	46140	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Designate Agency safety representatives needed to: Provide a concurrence or nonconcurrence on the safety readiness to begin operations when the decision is elevated to NASA Headquarters. (Requirement 46140)
NPR 8715.3C	03.13.2.c.5	46141	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: The Chief, Safety and Mission Assurance, shall: Designate Agency safety representatives needed to: Participate prior to and during operations to communicate the Agency safety position to appropriate program/project officials. (Requirement 46141)

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NPR 8715.3C	03.13.4.1.a	46146	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: To accomplish this policy NASA shall: Establish and maintain technical and procedural safety requirements applicable to the design, production, flight-area processing and testing, vehicle integration, flight, and planned recovery of NASA payloads. (Requirement 46146)
NPR 8715.3C	03.13.4.1.b	46147	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: To accomplish this policy NASA shall: Coordinate with U.S. or foreign entities that participate in NASA payload projects as needed to ensure compliance with all safety requirements that apply to each payload. (Requirement 46147)
NPR 8715.3C	03.13.4.1.c	46148	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: To accomplish this policy NASA shall: Incorporate all applicable safety requirements into the overall requirements for each NASA payload, the contracts for any related procurements, and any related cooperative or grant agreements. (Requirement 46148)
NPR 8715.3C	03.13.4.1.d	46149	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: To accomplish this policy NASA shall: Maintain an independent payload safety review and approval process designed to ensure that each NASA payload project implements all applicable safety requirements and to facilitate safety risk management appropriate to each payload. (Requirement 46149)
NPR 8715.3C	03.13.4.2	46150	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: Manned Space Flight Payloads. For payloads that will fly on, or interface with, a manned space launch vehicle, spacecraft or entry vehicle controlled by NASA, Center Directors and program/project managers shall establish the processes and requirements needed to satisfy Paragraph 3.13.4.1 of this NPR. (Requirement 46150) For example: Space Shuttle payloads are subject to NSTS 1700.7, Safety Policy and Requirements for Payloads Using the Space Transportation System; NSTS/ISS 13830, Payload Safety Review and Data Submittal Requirements for Payloads Using the Space Shuttle and International Space Station; and KHB 1700.7, Space Shuttle Payload Ground Safety Handbook.
NPR 8715.3C	03.13.4.3	46151	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: Unmanned Suborbital Payloads. For a payload that will fly on an unmanned suborbital vehicle controlled by NASA (such as a sounding rocket, balloon, or experimental aeronautical vehicle), Center Directors and program/project managers shall establish the processes and requirements needed to satisfy Paragraph 3.13.4.1 of this NPR. (Requirement 46151) For example: The Wallops Flight Facility Range Safety Manual applies to Wallops-controlled suborbital payloads.
NPR 8715.3C	03.13.4.4	46152	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: Return-to-Earth Payloads. For a payload that will be launched into space and will return to Earth for recovery or purposes other than disposal, Center Directors and program/project managers shall establish the processes and requirements needed to satisfy Paragraph 3.13.4.1 of this NPR for the recovery aspects of the mission. (Requirement 46152) Note: Disposal of space flight hardware is covered by the NASA Orbital Debris Program. See paragraph 3.13.6 of this NPR.
NPR 8715.3C	03.13.4.5.1.a	46155	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The Chief, Safety and Mission Assurance, (or designee) shall: Oversee the NASA ELV Payload Safety Program. (Requirement 46155)
NPR 8715.3C	03.13.4.5.1.b	46156	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The Chief, Safety and Mission Assurance, (or designee) shall: Approve and promulgate Agency-level ELV payload safety policy and requirements, including the provisions of this NPR and associated implementation documents. (Requirement 46156)
NPR 8715.3C	03.13.4.5.1.c	46157	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The Chief, Safety and Mission Assurance, (or designee) shall: Designate in writing, fund, and provide input to the performance evaluation of the NASA ELV Payload Safety Manager (see paragraph 3.13.4.5.2 of this NPR). (Requirement 46157)

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NPR 8715.3C	03.13.4.5.1.d	46158	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The Chief, Safety and Mission Assurance, (or designee) shall: Designate in writing the members of the NASA ELV Payload Safety Executive Team (see paragraph 3.13.4.5.3 of this NPR). (Requirement 46158)
NPR 8715.3C	03.13.4.5.2.a	46160	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Lead the NASA ELV Payload Safety Program and serve as the Agency focal point for all matters involving ELV payload safety, to include managing ELV Payload Safety Program funds and participating in panels, joint working groups, and safety policy initiation or change activites affecting NASA ELV payloads. (Requirement 46160)
NPR 8715.3C	03.13.4.5.2.b	46161	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Develop and maintain Agency-level ELV payload safety policy, processes, and requirements in accordance with the applicable Agency directives development processes. (Requirement 46161)
NPR 8715.3C	03.13.4.5.2.c	46162	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Develop and administer the safety review and approval process for NASA ELV payloads in coordination with the NASA ELV Payload Safety Executive Team. (Requirement 46162)
NPR 8715.3C	03.13.4.5.2.d	46163	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Provide NASA ELV payload projects with guidance on the implementation of the safety policy, processes, and requirements. (Requirement 46163)
NPR 8715.3C	03.13.4.5.2.e	46164	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Provide input and guidance to NASA officials responsible for development of ELV payload-related contracts, grants, and cooperative agreements with entities internal and external to NASA, including foreign entities. (Requirement 46164).
NPR 8715.3C	03.13.4.5.2.f	46165	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Report on ELV payload safety concerns to the NASA Headquarters OSMA. (Requirement 46165)
NPR 8715.3C	03.13.4.5.2.g	46166	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Perform an audit as an element of the NASA Headquarters SMA Audits, Reviews, and Assessments program defined by NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments, for the area of ELV payload safety. (Requirement 46166)
NPR 8715.3C	03.13.4.5.2.h	46167	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Participate in independent assessments of payload safety processes at NASA Centers, component and range facilities, payload processing facilities (including commercial or contractor facilities used to process NASA ELV payloads), and launch sites. (Requirement 46167)
NPR 8715.3C	03.13.4.5.2.i	46168	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Coordinate independent assessment of payload safety processes with audits, reviews, and assessments performed by the OSMA to ensure an effective and efficient overall safety assessment process. (Requirement 46168)
NPR 8715.3C	03.13.4.5.2.j	46169	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Open or further enhance communication with U.S. and foreign entities that support NASA ELV payload projects and document partnerships, joint activities, and special arrangements through formal agreements. (Requirement 46169)

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NPR 8715.3C	03.13.4.5.2. k	46170	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Coordinate safety review activities and actions with the NASA ELV Payload Safety Executive Team, NASA Centers, ELV payload projects, launch vehicle contractors, appropriate Technical Authority official, range safety and other launch site safety organizations, and other U.S. and foreign entities as needed to resolve payload safety concerns and support approval for flight. (Requirement 46170)
NPR 8715.3C	03.13.4.5.2. L	46171	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Establish and maintain an ELV payload safety training program to ensure that project and other personnel, as appropriate, are knowledgeable of the NASA ELV payload safety requirements and safety review and approval processes and related activities. (Requirement 46171)
NPR 8715.3C	03.13.4.5.2. m	46172	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Provide a forum for technical interchange and lessons learned to include educational conferences and workshops for the benefit of the ELV payload community. (Requirement 46172)
NPR 8715.3C	03.13.4.5.2. n	46173	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Manager shall: Track and implement lessons learned for continuous improvement and update policy, processes, and requirements as needed. (Requirement 46173)
NPR 8715.3C	03.13.4.5.3. a	46175	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Participate in the ELV payload safety review process and approve the safety readiness of NASA ELV payloads, facilities, and related GSE for launch-area processing and launch in coordination with all authorities for each mission. (Requirement 46175)
NPR 8715.3C	03.13.4.5.3. b	46176	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Support the NASA Safety and Mission Success Review (or equivalent) for each NASA ELV payload mission. (Requirement 46176)
NPR 8715.3C	03.13.4.5.3. c	46177	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Interpret safety requirements, if requested, and support each payload project as needed to ensure proper implementation. (Requirement 46177)
NPR 8715.3C	03.13.4.5.3. d	46178	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Approve alternative approaches to satisfying a safety requirement in coordination with the appropriate technical authority (or equivalent) responsible for the requirement. (Requirement 46178)
NPR 8715.3C	03.13.4.5.3. e	46179	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Assess proposed variances to safety requirements and assure that any residual risk associated with a variance is properly characterized. (Requirement 46179)
NPR 8715.3C	03.13.4.5.3. f	46180	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Coordinate with all variance approval authorities, including the technical authority (or equivalent) reaponsible for the requirement and the Center Director(s) or other NASA official(s) responsible for people or property exposed to any risk associated with the variance (see the safety variance policy in paragraph 1.13 of this NPR). (Requirement 46180).
NPR 8715.3C	03.13.4.5.3. g	46181	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: The NASA ELV Payload Safety Executive Team shall: Coordinate with each range safety and launch site safety organization that shares responsibilities for a NASA ELV payload mission to ensure that any mission-specific decision made by the Executive Team is consistent with NASA's safety requirements and the safety requirements of the other organizations. (Requirement 46181)

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NPR 8715.3C	03.13.4.5.4	46182	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each Center Director Responsible for a Payload, Payload Processing Facility, or Launch Site (or designee) shall:
NPR 8715.3C	03.13.4.5.4. a	46183	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each Center Director Responsible for a Payload, Payload Processing Facility, or Launch Site (or designee) shall: Establish the Center-level processes and associated requirements needed to ensure Paragraph 3.13.4.1 of this NPR is satisfied for each ELV payload project that uses the Center's resources. (Requirement 46183)
NPR 8715.3C	03.13.4.5.4. b	46184	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each Center Director Responsible for a Payload, Payload Processing Facility, or Launch Site (or designee) shall: Support independent safety assessments of ELV payload activities and respond to all findings and recommendations for which the Center is responsible. (Requirement 46184)
NPR 8715.3C	03.13.4.5.4. c	46185	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each Center Director Responsible for a Payload, Payload Processing Facility, or Launch Site (or designee) shall: Ensure that training defined in 3.13.4.5.2.1 is completed. (Requirement 46185)
NPR 8715.3C	03.13.4.5.5. a	46187	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each ELV Payload Project Manager (or designee) shall: Ensure that funding and other resources are allocated for payload projects to satisfy all aspects of the NASA ELV Payload Safety Program, including proper implementation of the applicable safety requirements and successful completion of the payload safety review and approval process. (Requirement 46187)
NPR 8715.3C	03.13.4.5.5. b	46188	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each ELV Payload Project Manager (or designee) shall: Ensure that the payload project's timeline provides for compliance with thte established payload safety review and approval process. (Requirement 46188)
NPR 8715.3C	03.13.4.5.5. c	46189	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each ELV Payload Project Manager (or designee) shall: Establish and implement any project-level processes and requirements needed to satisfy safety requirements and successfully complete the payload safety review and approval process. (Requirement 46189)
NPR 8715.3C	03.13.4.5.6	46190	Operational Safety: Launch, Entry, and Experimental Aeronautical Vehicle Operations Safety: Payload Safety: ELV payloads: Each NASA Contract, Grant, Cooperative Agreement, or Other Agreement Officer shall coordinate with the NASA ELV Payload Safety Manager to ensure that all applicable safety requirements are incorporated into the agreement(s) governing each payload, including compliance with Federal, State, and local requirements relating to safety as specified in NPR 5800.1, Grant and Cooperative Agreement Handbook, and safety requirements pertaining to the use of NASA facilities and equipment. (Requirement 46190)
NPR 8715.3C	03.14.3.1	46197	Operational Safety: Test Operations Safety: Safety Documentation: Safety documentaion establishes the basis for safe test conduct by means of engineering analyses (including hazard analyses).
NPR 8715.3C	03.14.7.1	46216	Operational Safety: Test Operations Safety: Human Research Subjects: The requirements for the protection of human research subjects are contained in NPD 7100.8, Protection of Human Research Subjects, and 45 CFR Part 46, Protection of Human Subjects.
NPR 8715.3C	03.15.5.1	46240	Operational Safety: Non-Ionizing Radiation: Laser Radiation Safety Officer: The Center SMA Director shall designate a qualified Laser Radiation Safety Officer for their site. (Requirement 46240)
NPR 8715.3C	03.15.5.2.a	46242	Operational Safety: Non-Ionizing Radiation: Laser Radiation Safety Officer: The Laser Radiation Safety Officer shall: Contact the laser safety clearing house to obtain a "Site Window" clearance where a planned laser operation has the potential for the beam to strike an orbiting craft. (Requirement 46242) Note: Clearance is obtained from the Orbital Safety Officer, U.S. Space Command/J3SOO, 1 NORAD Road, Suite 9-101, Cheyenne Mountain AFB, CO 80914-6020, Stop 4, Phone: (719) 474-3056/4404/4444.

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NPR 8715.3C	03.15.5.2.b	46243	Operational Safety: Non-Ionizing Radiation: Laser Radiation Safety Officer: The Laser Radiation Safety Officer shall: Review procedures for all tests that use lasers. (Requirement 46243)
NPR 8715.3C	03.15.5.2.c	46244	Operational Safety: Non-Ionizing Radiation: Laser Radiation Safety Officer: The Laser Radiation Safety Officer shall: Be onsite to monitor all laser tests. (Requirement 46244)
NPR 8715.3C	03.15.6.1.a	46247	Operational Safety: Non-Ionizing Radiation: Ground Operations Using Class III-B and IV Lasers: Class III-B and IV laser users shall: Operate III-B and IV lasers only in controlled environments or designated areas that have no unintended reflective or transmitting surfaces. (Requirement 46247)
NPR 8715.3C	03.15.6.1.b	46248	Operational Safety: Non-Ionizing Radiation: Ground Operations Using Class III-B and IV Lasers: Class III-B and IV laser users shall: Post laser operations areas with standard warning placards as set forth in ANSI Z136.1, American National Standard for Safe Use of Lasers. (Requirement 46248)
NPR 8715.3C	03.15.6.1.c	46249	Operational Safety: Non-Ionizing Radiation: Ground Operations Using Class III-B and IV Lasers: Class III-B and IV laser users shall: Ensure that the posted area is isolated to prevent inadvertent entry. (Requirement 46249)
NPR 8715.3C	03.15.6.1.d	46250	Operational Safety: Non-Ionizing Radiation: Ground Operations Using Class III-B and IV Lasers: Class III-B and IV laser users shall: Wear laser goggles or other approved methods of eye protection in accordance with requirements of ANSI Z136.1, American National Standard for Safe Use of Lasers. (Requirement 46250)
NPR 8715.3C	03.15.6.1.e	46251	Operational Safety: Non-Ionizing Radiation: Ground Operations Using Class III-B and IV Lasers: Class III-B and IV laser users shall: Keep all flammable materials/vapors away from any laser during operation unless specifically authorized by the operation/test plan.
NPR 8715.3C	03.15.7.2	46263	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: The Pilot-in-Command shall ensure that the laser system is used in accordance with the test plan. (Requirement 46263)
NPR 8715.3C	03.17.3	46275	Operational Safety: Confined Spaces: Center Directors shall develop and document a confined space operations plan that, at a minimum, establishes a confined space working group, outlines the confined space permit process, and identifies all confined spaces on their Center. (Requirement 46275)
NPR 8715.3C	03.17.4.a	46277	Operational Safety: Confined Spaces: Center Directors and project managers shall ensure that: Entry into permit-required confined spaces is performed with written procedures and authorizations. (Requirement 46277)
NPR 8715.3C	03.17.4.b	46278	Operational Safety: Confined Spaces: Center Directors and project managers shall ensure that: No entry into confined spaces is made until an assessment of that space has been made and a permit or operating procedures posted. (Requirement 46278)
NPR 8715.3C	03.17.4.c	46279	Operational Safety: Confined Spaces: Center Directors and project managers shall ensure that: All contractors or persons performing work on the Center are notified of all confined spaces. (Requirement 46279)
NPR 8715.3C	04.2.1	46285	Aviation Safety: Aviation Safety Program Responsibilities: Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall ensure that adequate resources are applied to aviation operations to meet aviation safety objectives. (Requirement 46285)
NPR 8715.3C	04.2.2.a	46287	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: Establish NASA Aviation Safety Program requirements and provide support and functional oversight of NASA aviation safety. (Requirement 46287)
NPR 8715.3C	04.2.2.b	46288	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: When required, provide the NASA Administrator with an independent assessment of NASA's aviation safety status and provide immediate information on critical safety issues. (Requirement 46288) Note: The Aviation Safety Panel (refer to Appendix G) is chartered by the Chief, Safety and Mission Assurance, to assist in the independent oversight of NASA's aviation safety.
NPR 8715.3C	04.2.2.c	46289	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: Conduct reviews (staff assistance visits, safety inspections, and process verifications) to provide insight and to monitor management's effectiveness in aviation safety. (Requirement 46289)

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NPR 8715.3C	04.2.2.d	46290	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: Provide technical and operational assistance to improve the overall aviation safety program. (Requirement 46290)
NPR 8715.3C	04.2.2.e	46291	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: Assure that the highly diversified aviation activities within NASA have an Aviation Safety Program at Headquarters that covers each flight activity. (Requirement 46291)
NPR 8715.3C	04.2.2.f	46292	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: Assure Aviation Safety Program requirements are comprehensive and proactive in covering all aspects of flight. (Requirement 46292)
NPR 8715.3C	04.2.2.g	46293	Aviation Safety: Aviation Safety Program Responsibilities: The Chief, Safety and Mission Assurance, shall: Assure that NASA Aviation Safety Program requirements cover each level of aviation management. (Requirement 46293)
NPR 8715.3C	04.2.3	46294	Aviation Safety: Aviation Safety Program Responsibilities: The Director, Safety and Assurance Requirements Division, shall designate the NASA Aviation Safety Manager. (Requirement 46294)
NPR 8715.3C	04.2.4.a	46296	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Coordinate all OSMA requirements affecting aviation safety or reporting. (Requirement 46296)
NPR 8715.3C	04.2.4.b	46297	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Identify aviation safety issues through mishap investigation and analysis. (Requirement 46297)
NPR 8715.3C	04.2.4.c	46298	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Participate in the annual NASA Aviation Safety Officer meeting. (Requirement 46298)
NPR 8715.3C	04.2.4.d	46299	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Monitor the implementation of the Agency's Aviation Safety Program requirements. (Requirement 46299)
NPR 8715.3C	04.2.4.e	46300	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Attend selected program flight readiness and safety reviews. (Requirement 46300)
NPR 8715.3C	04.2.4.f	46301	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Serve as an advisor to the Inter-Center Aircraft Operations Panel (AOP) and participate in IAOP activities, including meetings, reviews, and subpanel activities. (Requirement 46301)
NPR 8715.3C	04.2.4.g	46302	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Develop the NASA Aviation Safety Reference Manual and ensure that it is current and meets the needs of NASA. (Requirement 46302)
NPR 8715.3C	04.2.4.h	46303	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Conduct aviation safety staff assistance visits and reviews. (Requirement 46303)
NPR 8715.3C	04.2.4.i	46304	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Coordinate recommendations from mishap investigations that require corrective action from sources or agencies outside of NASA. (Requirement 46304)
NPR 8715.3C	04.2.4.j	46305	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Participate in selected aircraft flight operations. (Requirement 46305)
NPR 8715.3C	04.2.4.k	46306	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Serve as ex officio board member to major aircraft mishap investigations and provide independent oversight and expert guidance in investigation procedures and techniques. (Requirement 46306)
NPR 8715.3C	04.2.4.L	46307	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Provide aviation safety oversight to ensure Headquarters and Center aircraft operations comply with NASA safety policy. (Requirement 46307)
NPR 8715.3C	04.2.4.m	46308	Aviation Safety: Aviation Safety Program Responsibilities: The NASA Aviation Safety Manager shall: Interface with other safety organizations involving aviation safety. (Requirement 46308)

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NPR 8715.3C	04.3.1	46310	Aviation Safety: Interfaces with Other Agencies: Center Chiefs of Flight Operations shall have a process in place for communicating with outside organizations to exchange flight information that affects their assigned aircraft. (Requirement 46310)
NPR 8715.3C	04.3.2.1.a	46313	Aviation Safety: Interfaces with Other Agencies: DoD: Because NASA uses many military airfields and aircraft common to the military services, Center Chiefs of Flight Operations shall: Ensure coordination with the United States Air Force, Army, Navy, and Marine Corps where applicable. (Requirement 46313)
NPR 8715.3C	04.3.2.1.b	46314	Aviation Safety: Interfaces with Other Agencies: DoD: Because NASA uses many military airfields and aircraft common to the military services, Center Chiefs of Flight Operations shall: Ensure the use of the various military safety publications, cross-exchange of accident preventions data, and participate in joint safety efforts. (Requirement 46314)
NPR 8715.3C	05.2.1.a	46322	Fire Safety: Responsibilities: Director, Safety and Assurance Requirements Division, shall: Provide advocacy for fire protection for Construction of Facilities (CoF) projects. (Requirement 46322)
NPR 8715.3C	05.2.1.b	46323	Fire Safety: Responsibilities: Director, Safety and Assurance Requirements Division, shall: Support NASA Center budget submittals for fire protection, fire suppression, and fire research. (Requirement 46323)
NPR 8715.3C	05.2.1.c	46324	Fire Safety: Responsibilities: Director, Safety and Assurance Requirements Division, shall: Review NASA Center fire safety programs. (Requirement 46324)
NPR 8715.3C	05.2.2.a	46326	Fire Safety: Responsibilities: Center Directors shall: Be responsible for identifying and reducing fire risks, ensuring fire safety of Center operations, and implementing the requirements of this chapter. (Requirement 46326)
NPR 8715.3C	05.2.2.b	46327	Fire Safety: Responsibilities: Center Directors shall: Implement a comprehensive fire safety program at their Center and facilities in accordance with specific program requirements and procedures given in NASA-STD-8719.11, Safety Standard for Fire Protection. (Requirement 46327)
NPR 8715.3C	05.2.2.c	46328	Fire Safety: Responsibilities: Center Directors shall: Ensure that the fire safety program complies with National Fire Protection Association standards including their appendices, unless the requirements of local codes are more stringent; nationally recognized builiding and fire safety codes and requirements; and local building and fire codes and requirements. (Requirement 46328)
NPR 8715.3C	05.2.2.d	46329	Fire Safety: Responsibilities: Center Directors shall: Ensure implementation of NASA operational fire safety procedures. (Requirement 46329)
NPR 8715.3C	05.2.2.e	46330	Fire Safety: Responsibilities: Center Directors shall: Ensure each Center adopts, implements, and trains in the use of the Incident Management System in accordance with the NFPA 1561, Standard on Emergency Services Incident Management System and the National Incident Management System, when responding to and manageing any emergency or disaster. (Requirement 46330)
NPR 8715.3C	05.2.2.f	46331	Fire Safety: Responsibilities: Center Directors shall: Ensure the the Center Security Office is notified of all fires that are suspicious in nature. (Requirement 46331)
NPR 8715.3C	05.2.2.g	46332	Fire Safety: Responsibilities: Center Directors shall: Ensure that employees, other than trained professional firefighters, trained volunteers, or emergency response personnel, do not fight fires except in cases where the fire is incipient in nature. (Requirement 46332)
NPR 8715.3C	05.2.2.h	46333	Fire Safety: Responsibilities: Center Directors shall: Ensure that complianse with NASA-STD- 8719.11, Safety Standard for Fire Protection, is made part of the contractual requirements at NASA Centers with contractors performing work as deemed necessary by the CO and the responsible NASA Center fire safety program office. (Requirement 46333)
NPR 8715.3C	05.2.2.i	46334	Fire Safety: Responsibilities: Center Directors shall: Appoint, in writing, an Authority Having Jurisdiction (AHJ) for NASA fire protection. (Requirement 46334) Note; The Center SMA Director should interface directly with the Center Director concerning Fire Safety Officer activities.
NPR 8715.3C	05.2.3.a	46336	Fire Safety: Responsibilities: The AHJ shall: Be a safety of fire protection professional with requisite skills and knowledge. (Requirement 46336) Note: For specific responsibilities of the AHJ, refer to NASA-STD-8719.11, Safety Standard for Fire Protection.
NPR 8715.3C	05.2.3.b	46337	Fire Safety: Responsibilities: The AHJ shall: Designate personnel responsible for the investigation of all fires at their Center and facilities. (Requirement 46337)

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NPR 8715.3C	05.2.3.c	46338	Fire Safety: Responsibilities: The AHJ shall: Perform a risk assessment and determine on a case-by-case basis the need to incorportate newer requirements and standards into existing facility and equipment operating procedures when standards are updated and superseded by newer, more stringent requirements. (Requirement 46338)
NPR 8715.3C	05.3.1.a	46341	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Requirements are established for a reasonable level of fire safety and property protection from the hazards created by fire and explosions in accordance with NFPA 1, Uniform Fire Code. (Requirement 46341)
NPR 8715.3C	05.3.1.b	46342	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: An appropriate level of fire service operations is provided to protect lives and property based on the size and mission of the Center.
NPR 8715.3C	05.3.1.c	46343	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Risk management processes are applied in order to assess individual programs and adopt additional fire safety requirements. (Requirement 46343)
NPR 8715.3C	05.3.1.e	46344	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Fire safety discrepencies are documented and abatement plans are prepared for corrective action(s) and tracking. (Requirement 46344)
NPR 8715.3C	05.3.1.f	46345	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Fire safety discrepancies that cannot be corrected or funded locally are forwarded to Headquarters for resolution. (Requirement 46345)
NPR 8715.3C	05.3.1.g	46346	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Fire safety violations are reviewed and corrected (e.g., work orders for repair, construction, follow-up, and acceptance). (Requirement 46346)
NPR 8715.3C	05.3.1.h	46347	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: All project design criteria, conceptual plans, and design documents with life safety and/or fire protection/prevention implications are reviewed and approved. (Requirement 46347)
NPR 8715.3C	05.3.1.i	46348	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: CoF projects are reviewed for fire safety and protection. (Requirement 46348)
NPR 8715.3C	05.3.1.j	46349	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Procedures are in place for control of flammable materials and hazardous operations. (Requirement 46349)
NPR 8715.3C	05.3.1.k	46350	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Automatic fire detection and suppression systems for all facilities containing significant hazards, mission essential equipment, or permanently housed personnel are in place. (Requirement 46350)
NPR 8715.3C	05.3.1.L	46351	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Requirements are established for life-cycle review and replacement for fire suppression and protection equipment. (Requirement 46351)
NPR 8715.3C	05.3.1.m	46352	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Requirements are established for proper functioning of the Center Fire Department and/or coordination with the responsible local fire department. (Requirement 46352)

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NPR 8715.3C	05.3.1.n	46353	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Procedures are in place and reviewed for reporting and investigating fires. (Requirement 46353)
NPR 8715.3C	05.3.1.o	46354	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Emergency action plans and a Center fire safety program plan are developed and reviewed. (Requirement 46354)
NPR 8715.3C	05.3.1.p	46355	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Assistance is available for assuring the adequacy of fire design and code compliance from a contractural and cost benefit standpoint for major construction projects. (Requirement 46355)
NPR 8715.3C	05.3.1.q	46356	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: Facility design drawings are reviewed for inclusion of adequate fire protection features and systems and for compliance with applicable codes and criteria. (Requirement 46356)
NPR 8715.3C	05.3.1.r	46357	Fire Safety: Fire Safety Program: Center Directors shall ensure that the implementaton of an effective fire safety program at their Center complies with the following minimum requirements: All contract documents are reviewed for fire protection specifications. (Requirement 46357)
NPR 8715.3C	05.4.2.1.a	46362	Fire Safety: Fire Protection Systems: Extinguishing Systems: Center Directors shall ensure that: Extinguishing systems and fire extinguishers comply, as a minimum, with the NFPA codes and standards. (Requirement 46362)
NPR 8715.3C	05.4.2.1.b	46363	Fire Safety: Fire Protection Systems: Extinguishing Systems: Center Directors shall ensure that: All fire protection equipment are Underwriter Laboratories (UL) listed, Factory Mutual (FM), or Canadian Safety approved. (Requirement 46363)
NPR 8715.3C	05.5.2.a	46367	Fire Safety: Firefighting: Center Directors shall ensure that: NFPA recommendations and OSHA regulations are used for determining type, size, and training of firefighting organizations. (Requirement 46367)
NPR 8715.3C	05.5.2.b	46368	Fire Safety: Firefighting: Center Directors shall ensure that: Firefighting organizations are equipped with a sufficient amount of firefightinf vehicles and equipment to combact anticipated fires. (Requirement 46368)
NPR 8715.3C	05.5.2.c	46369	Fire Safety: Firefighting: Center Directors shall ensure that: Agreed-upon arrangements with external agencies to provide NASA with fire protection services are documented and retained on file. (Requirement 46369)
NPR 8715.3C	05.7.1	46372	Fire Safety: Fire Safety Training: Center Directors shall ensure that fire safety trainig for NASA employees is conducted in accordance with the requirements contained in Chapter 7 of this NPR. (Requirement 46372)
NPR 8715.3C	05.8.1.a	46375	Fire Safety: Reporting: Center Directors shall ensure that: Reporting is an integral part of the fire safety program. (Requirement 46375) Note: Effective reporting procedures disseminate the knowledge and experience gained by one Center to the rest of NASA and the Federal Government.
NPR 8715.3C	05.8.1.b	46376	Fire Safety: Reporting: Center Directors shall ensure that: Investigation of fire-related mishaps is in accordance wwith NFPA 921, Guide for Fire and Explosive Investigations, in addition to NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping. (Requirement 46376) Note: Requirements for mishap investigation, reporting, and recordkeeping are provided in NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recording.
NPR 8715.3C	05.9.1	46378	Fire Safety: Current Regulations, Codes, and Standards and Variances: With the goal of protecting life and property, Center Directors shall comply with the most current fire requirements in the design, construction, and operation of all NASA buildings and structures. (Requirement 46378) Note: Existing buildings and facilities do not automatically need to implement all code upgrades.

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NPR 8715.3C	06.1.3	46383	Nuclear Safety for Launching of Radioactive Materials: Purpose: Mission Directorate Associate Administrators, Center Directors, and program executives shall ensure that NASA missions involving the launch of radioactive materials comply with the provisions of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), and follow the policy and procedures contained in 14 CFR Part 1216, Subpart 1216.3, Procedures for Implementing the National Environmental Policy Act and Executive Order 12114. (Requirement 46383)
NPR 8715.3C	06.2.1.a	46386	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA Administrator or designee shall: Determine, for NASA, the acceptability of the potential risk of launching and using nuclear materials in space as described in Table 6.1. (Requirement 46386)
NPR 8715.3C	06.2.1.b	46387	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA Administrator or designee shall: Request emplanelment of an Interagency Nuclear Safety Review Panel (INSRP) with membership and responsibilities in accordance with PD/NSC-25 after receiving a request from the Program Executive (in coordination with SMA). (Requirement 46387)
NPR 8715.3C	06.2.1.c	46388	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA Administrator or designee shall: Appoint a NASA member to the empanelled INSTP with consideration of the recommendations(s) by the Chief, Safety and Mission Assurance. (Requirement 46388)
NPR 8715.3C	06.2.2.a	46390	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: Compliance with space nuclear launch safety requirements and processes provided in this NPR. (Requirement 46390)
NPR 8715.3C	06.2.2.b	46391	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: Basic design of vehicles, spacecraft, and systems utilizing radioactive materials provide protection to the public, the environment, and users such that radiation risk resulting from exposures to radioactive sources are as low as reasonably achiveable. (Requirement 46391)
NPR 8715.3C	06.2.2.c	46392	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: Nuclear safety considerations are incorporated from the initial design stages throughout all project stages to ensure that overall mission radiological risk is acceptable. (Requirement 46392)
NPR 8715.3C	06.2.2.d	46393	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: All space flight equipment (including medical and other experimental devices) that contain or use radioactive materials are identified and analyzed (per paragraph 6.3 of this NPR) for radiological risk. (Requirement 46393)
NPR 8715.3C	06.2.2.e	46394	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: Development of site-specific ground operations and radiological contingency plans commensurate with the risk represented by the planned launch of nuclear materials. (Requirement 46394)
NPR 8715.3C	06.2.2.f	46395	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: Contingency planning, as required by the National Response Plan, includes provisions for emergency response and support for source recovery efforts. (Requirement 46395) Note: NPD 8710.1, Emergency Preparedness Program, and NPR 8715.2, NASA Emergency Preparedness Plan Procedural Requirements, address the NASA emergency preparedness policy and program requirements. (Requirement 46395)

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NPR 8715.3C	06.2.2.g	46396	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors and program executives involved with the control and processing of radioactive materials for launch into space shall ensure: Involve the OCHMO in the Federal Radiological Emergency Response planning process. (Requirement 46396)
NPR 8715.3C	06.2.3.a	46398	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Assure that NASA missions involving the launch of radioactive materials comply with paragraph 9 of PD/NSC-25, as appropriate. (Requirement 46398)
NPR 8715.3C	06.2.3.b	46399	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Assist in the review and evaluation of nuclear safety risk. (Requirement 46399)
NPR 8715.3C	06.2.3.c	46400	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Per Table 6.1, prepare, coordinate, and provide the required notification of planned launches of radioactive materials to the Executive Office of the President, Office of Science and Technology Policy (OSTP). (Requirement 46400)
NPR 8715.3C	06.2.3.d	46401	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Designate a Nuclear Flight Safety Assurance Manager (NFSAM). (Requirement 46401)
NPR 8715.3C	06.2.3.e	46402	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Designate a NASA INSRP Coordinator. (Requirement 46402)
NPR 8715.3C	06.2.3.f	46403	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Nominate a NASA member for each empanelled ad hoc INSRP following a request by the program or mission office to the NASA Administrator. (Requirement 46403) Note: The NFSAM and NASA INSRP Coordinator may be separate individuals.
NPR 8715.3C	06.2.3.g	46404	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Provide assistance to the cognizant NASA Mission Directorate and project office(s) in meeting nuclear launch safety analysis/evaluation requirements. (Requirment)
NPR 8715.3C	06.2.3.h	46405	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Review all radiological contingency and emergency planning as part of the SMA audits, reviews and assessments process. (Requirement 46405) Note: The requirements for conducting and supporting these reviews are provided in NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments.
NPR 8715.3C	06.2.3.i	46406	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Ensure that the OCHMO is notified of the intent to launch radioactive materials. (Requirement 46406)
NPR 8715.3C	06.2.3.j	46407	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Chief, Safety and Mission Assurance, shall: Coordinate health physics aspects with the OCHMO periodically and in the event of any related rediological emergencies during the mission. (Requirement 46407)
NPR 8715.3C	06.2.4.c	46411	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators and program executives shall: Identify the amount of radioactive material and the process for documenting the risk represented by the use of the radioactive materials to the NFSAM in accordance with paragraph 6.4 of this NPR. (Requirement 46411)
NPR 8715.3C	06.2.4.d	46412	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators and program executives shall: Provide required reports to the NFSAM in accordance with paragraphs 6.3 and 6.4 of this NPR. (Requirement 46412)
NPR 8715.3C	06.2.4.e	46413	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators and program executives shall: Prepare or have prepared the nuclear safety analyses. (Requirement 46413)
NPR 8715.3C	06.2.4.f	46414	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators and program executives shall: Obtain nuclear launch safety approval or launch concurrence in accordance with paragraph 6.3 of this NPR. (Requirement 46414)

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NPR 8715.3C	06.2.5.a	46416	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors, and line managers shall: Ensure, to the extent of responsibility applicable under defined licensing/permitting documentation or agreements, compliance with all pertinent directives, licenses, agreements, and requirements promulgated by regulatory agencies relative to the use of radioactive materials planned for a space launch. (Requirement 46416)
NPR 8715.3C	06.2.5.b	46417	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators, Center Directors, and line managers shall: Coordinate with appropriate project office(s) to ensure radioactive material source reports that are submitted per paragraph 6.4 of this NPR accurately reflect all known radioactive material sources intended for flight. (Requirement 46417)
NPR 8715.3C	06.2.6.a	46419	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Apply range safety requirements, with regard to the safe launch of radioactive materials, specified in range safety standards. (Requirement 46419) Note: Requirements for range safety concerning the launch of radioactive material are given in the Air Force Space Command Manual 91-710, Volume 2, Safety, Range Safety User Requirements Manual Volume 2 - Flight Safety Requirements (1 July 2004).
NPR 8715.3C	06.2.6.b	46420	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Develop and implement site-specific ground operations and radiological contingency plans to address potential ground handling accidents and potential launch/landing accident scenarios and to support source recovery operations commensurate with the radioactive materials present. (Requirement 46420) Note: Requirements for contingency plans are provided in NPR 8715.2, NASA Emergency Preparedness Plan Procedural Requirements.
NPR 8715.3C	06.2.6.c	46421	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Coordinate radiological contingency plans and exercises with the OCHMO. (Requirement 46421)
NPR 8715.3C	06.2.6.d	46422	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Exercise contingency response capabilities as deemed necessary to ensure adequate readiness of participants and adequacy of planning to protect the public, site personnel, and facilities. (Requirement 46422)
NPR 8715.3C	06.2.6.e	46423	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Ensure appropriate and timely coordination with regional Federal, State, territorial, and local emergency management authorities to provide for support to, and coordination with, offsite emergency response elements. (Requirement 46423)
NPR 8715.3C	06.2.6.f	46424	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Make provisions for special offsite monitoring and assistance in recovery of radioactive materials that could spread into areas outside the geographical boundaries of the launch site. (Requirement 46424)
NPR 8715.3C	06.2.6.g	46425	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Establish a radiological control center (RADCC) for launches and landings with radioactive sources possessing a significant health or environmental risk, of having an activity of A2 mission multiple greater than 1,000 as determined per paragraph 6.3 of this NPR, or as specified in applicable interagency agreements. (Requirement 46425)
NPR 8715.3C	06.2.6.i	46426	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Ensure, when required, that the RADCC is operational during launch and landing phases any time there is a potential for an accident that could release radioactive material. (Requirement 46426)
NPR 8715.3C	06.2.6.j	46427	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: NASA launch and landing site managers shall: Ensure, when required, that the RADCC is staffed commensurate with the risk associated with the radioactive materials present. (Requirement 46427)
NPR 8715.3C	06.2.7.a	46429	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA INSRP Coordinator shall: Coordinate NASA's participation in activities supporting empanelled INSRP(s) to ensure adequate information is available to the INSRP(s). (Requirement 46429)

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NPR 8715.3C	06.2.7.b	46430	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA INSRP Coordinator shall: Make arrangements for NASA personnel to provide assistance to empanelled INSRP(s). (Requirement 46430)
NPR 8715.3C	06.2.7.c	46431	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA INSRP Coordinator shall: Coordinate the support needs of those selected to provide assistance to empanelled INSRP(s) as may be appropriate (i.e.; travel, funding, technical). (Requirement 46431)
NPR 8715.3C	06.2.7.d	46432	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA INSRP Coordinator shall: Coordinate health physics aspects with the OCHMO. (Requirement 46432)
NPR 8715.3C	06.2.8.a	46434	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA member of an empanelled INSRP shall: Represent NASA in accordance with PD/NSC-25. (Requirement 46434)
NPR 8715.3C	06.2.8.b	46435	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The NASA member of an empanelled INSRP shall: Provide technical liaison between the empanelled INSRP and NASA management. (Requirement 46435)
NPR 8715.3C	06.2.9.a	46437	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Office of Security and Program Protection shall: Ensure appropriate coordination with the Department of Homeland Security (Federal Emergency Management Agency) to provide adequate emergency and recovery planning for all NASA missions above a threshold of 1,000 for A2 mission multiple as defined in paragraph 6.3 of this NPR. (Requirement 46437)
NPR 8715.3C	06.2.9.b	46438	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Office of Security and Program Protection shall: Ensure that radiological emergency and recovery plans are developed and implemented where NASA is the Lead Federal Agency as defined by the National Response Plan - Nuclear/Radiological Incident Annex. (Requirement 46438)
NPR 8715.3C	06.2.9.c	46439	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: The Office of Security and Program Protection shall: Upon request, provide the program executive and OSMA with mission-specific information recommended for consideration during launch or potential accident site emergency response and clean-up planning as part of the nuclear launch approval process. (Requirement 46439)
NPR 8715.3C	06.3.1.a	46442	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For all planned launches of radioactive materials, program executives shall: Use the A2 mission multiple value to determine the level of assessment required. (Requirement 46442)
NPR 8715.3C	06.3.1.b	46443	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For all planned launches of radioactive materials, program executives shall: Use total mission radioactive material inventory contained on the launch to calculate the total A2 mission multiple per Appendix D, Activity and Radioactivity Limits - Basic A1/A2 Values. (Requirement 46443)
NPR 8715.3C	06.3.1.c	46444	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For all planned launches of radioactive materials, program executives shall: Use the highest of the algebraic sum of the isotopes' A2 multiples at launch, any time the spacecraft will be in Earth orbit or during near-Earth interplanetary flight (e.g., Earth Gravity Assists) to determine the level of assessment required. (Requirement 46444)

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NPR 8715.3C	06.3.1.d	46445	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For all planned launches of radioactive materials, program executives shall: Consult with the NFSAM and the NASA Office of the General Counsel to determine what provisions, if any, of this chapter apply when NASA participates in the launch of a vehicle or spacecraft from other countries or territories, and these vehicles or spacecraft contain a radioactive source. (Requirement 46445)
NPR 8715.3C	06.3.3.1.a	46454	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples less than 0.001: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Request nuclear launch safety concurrence, in writing, from the NFSAM. (Requirement 46454)
NPR 8715.3C	06.3.3.1.b	46455	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples less than 0.001: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Submit the request to the NFSAM a minimum of 4 months prior to launch. (Requirement 46455) Note: The request should be accompanied by the Radioactive Materials On-Board Report defined in paragraph 6.4.1 of this NPR.
NPR 8715.3C	06.3.3.2	46456	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples less than 0.001: The NFSAM shall review the report and inform the program executive, in writing, of concurrence (or nonconcurrence) and any safety concerns not less that two months prior to launch. (Requirement 46456)
NPR 8715.3C	06.3.4.1	46458	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples between 0.001 and 10: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: (Requirement 46458)
NPR 8715.3C	06.3.4.1.a	46459	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples between 0.001 and 10: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Request nuclear launch safety concurrence, in writing, from the NFSAM. (Requirement 46459)
NPR 8715.3C	06.3.4.1.b	46460	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples between 0.001 and 10: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Submit the request to the NFSAM a minimum of four months prior to launch. (Requirement 46460) Note: The request should be accompanied by the Radioactive On-Board Materials Report defined in paragraph 6.4 with a brief technical description of the radioactive material.

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NPR 8715.3C	06.3.4.2.a	46462	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples between 0.001 and 10: The NFSAM shall: Review the request and inform the program executive, in writing, of nuclear launch safety concurrence (or nonconcurrence) and any safety concerns not less than two months prior to launch. (Requirement 46462)
NPR 8715.3C	06.3.4.2.b	46463	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples between 0.001 and 10: The NFSAM shall: Report launches with these quantities of radioactive material to OSTP prior to launch. (Requirement 46463)
NPR 8715.3C	06.3.5.1.a	46466	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Develop and document, in consultation with the NFSAM, a mutually agreed upon schedule for developing a nuclear safety review. (Requirement 46466)
NPR 8715.3C	06.3.5.1.b	46467	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Prepare or have prepared a nuclear safety review of the radiological risk for the proposed mission. (Requirement 46467)
NPR 8715.3C	06.3.5.1.c	46468	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the nuclear safety review contains the report described in paragraph 6.4 of this NPR. (Requirement 46468)
NPR 8715.3C	06.3.5.1.d	46469	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the nuclear safety review contains program excepts describing the mission. (Requirement 46469)
NPR 8715.3C	06.3.5.1.e	46470	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the nuclear safety review contains an analysis of the probabilities of launch and in-flight accidents which could result in the terrestrial release of radioactive materials (surface and air). (Requirement 46470)
NPR 8715.3C	06.3.5.1.f	46471	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the nuclear safety review contains an estimate of the upper bound of health and environmental effects due to a radioactive material release. (Requirement 46471)

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NPR 8715.3C	06.3.5.1.g	46472	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the nuclear safety review contains mission-specific information recommended for consideration in the launch or potential accident site emergency response and clean-up planning. (Requirement 46472)
NPR 8715.3C	06.3.5.1.h	46473	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Provide the Chief, Safety and Mission Assurance, and the NFSAM with the nuclear safety review along with a request for nuclear launch concurrence at least five months prior to the launch. (Requirement 46473)
NPR 8715.3C	06.3.5.2.a	46475	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: The NFSAM shall: Make a preliminary scoping evaluation of the radiological risk to identify the extent of analyses needed as part of a prelaunch nuclear safety review. (Requirement 46475)
NPR 8715.3C	06.3.5.2.b	46476	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: The NFSAM shall: Develop and document, in consultation with the program executive, a mutually agreed upon schedule for developing a nuclear safety review. (Requirement 46476)
NPR 8715.3C	06.3.5.2.c	46477	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 10 but less than 500: The NFSAM shall: Notify OSTP of the planned launch with these quantities of radioactive material as a part of the quarterly report. (Requirement 46477)
NPR 8715.3C	06.3.6.1.a	46480	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Develop and document, in consultation with the NFSAM, a mutually agreed upon schedule for developing a nuclear safety review. (Requirement 46480)
NPR 8715.3C	06.3.6.1.b	46481	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Prepare or have prepared a Safety Analysis Summary (SAS) that, in coordination with the NFSAM, addresses the radiological risk of the proposed mission. (Requirement 46481) Note: The level of detail in the SAS will be commensurate with the radiological risk. The program is encouraged to use other program documentation to provided mission and potential accident information in the SAS.

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NPR 8715.3C	06.3.6.1.c	46482	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the SAS contains a brief description of the planned mission, schedule, launch vehicle, and spacecraft to include operations while in-orbit and during near-Earth flight. (Requirement 46482)
NPR 8715.3C	06.3.6.1.d	46483	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the SAS contains a description of all radioactive materials, their physical state/chemical form, and quantities. (Requirement 46483)
NPR 8715.3C	06.3.6.1.e	46484	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the SAS contains probabilities and resulting consequences of launch and in-flight accidents that could result in the terrestrial release of radiological materials. (Requirement 46484)
NPR 8715.3C	06.3.6.1.f	46485	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the SAS contains an estimate of any health and environmental effects due to a radioactive material release. (Requirement 46485)
NPR 8715.3C	06.3.6.1.g	46486	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Ensure that the SAS contains mission-specefic information recommended for consideration in the launch or potential accident site emergency response and clean-up planning. (Requirement 46486)
NPR 8715.3C	06.3.6.1.h	46487	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Provide the Chief, Safety and Mission Assurance, with the SAS along with a request for nuclear launch concurrence at least six months prior to launch. (Requirement 46487)
NPR 8715.3C	06.3.6.1.i	46488	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Provide the OCHMO with the SAS at least six months prior to launch. (Requirement 46488)

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NPR 8715.3C	06.3.6.1.j	46489	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: Program executives (in addition to requirements in paragraph 6.2 of this NPR) shall: Forward the SAS to the NASA Administrator, along with the concurrence of the Chief, Safety and Mission Assurance, no later that four months before launch, and request nuclear launch safety approval form the NASA Administrator. (Requirement 46489)
NPR 8715.3C	06.3.6.2.a	46491	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: The NFSAM shall: Make a preliminary assessment of the radiological risk and provide a written assessment to the program executive. (Requirement 46491)
NPR 8715.3C	06.3.6.2.b	46492	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: The NFSAM shall: Develop and document, in consultation with the program executive, a mutually agreed upon schedule for nuclear launch safety analyses and review activities to be conducted to support a nuclear launch safety concurrence request. (Requirement 46492)
NPR 8715.3C	06.3.6.2.c	46493	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: The NFSAM shall: Review the SAS and provide timely comments to the program in accordance with the mutually agreed upon schedule. (Requirement 46493)
NPR 8715.3C	06.3.6.2.d	46494	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 500 but less than 1,000: The NFSAM shall: Notify OSTP of the planned launch as a part of the quarterly report. (Requirement 46494)
NPR 8715.3C	06.3.7.1.a	46497	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Program executives (in addition to requirements in Paragraph 6.2 of this NPR) shall: Request, in coordination with the Chief, Safety and Mission Assurance, the NASA Administrator to empanel an ad hoc INSRP for the mission. (Requirement 46497)
NPR 8715.3C	06.3.7.1.b	46498	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Program executives (in addition to requirements in Paragraph 6.2 of this NPR) shall: Factor the time required for an INSRP into the program master schedule. (Requirement 46498)

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NPR 8715.3C	06.3.7.1.c	46499	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Program executives (in addition to requirements in Paragraph 6.2 of this NPR) shall: Develop and document, in consultaiton with the NFSAM, the empanelled INSRP, the program, and the appropriate Department of Energy (DOE) offices (in accordance with interagency agreements for specific missions), a schedule for the delivery of a Safety Analysis Report (SAR), using a phased approach, with the complete final SAR being delivered no later that ten months prior to the launch. (Requirement 46499) Note: The mutually agreed upon schedule should address the planned analysis schedule, base assumptions, analysis limitations/bounds, and model descriptions associated with the SAR development. Interim reviews should be held for all individual analyses before completion and to provide a status of analyses as of a given date.
NPR 8715.3C	06.3.7.1.d(1)	46500	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Program executives (in addition to requirements in Paragraph 6.2 of this NPR) shall: Prepare or have prepared a SAR. (Requirement 46500) Note: The level of detail and content of the SAR will be comensurate with the mission radiological risk. In cases where the DOE provides the radioactive material, the DOE programmatic SAR may be adopted to satisfy this requirement, in accordance with the interagency agreement(s) for specific missions. In cases where launch vehicles, configuration, and radioactive materials are similar, the program executive, in consultation with the NFSAM and the INSRP, is encouraged to use a comparative analysis based upon previous mission(s) safety analyses that bound the anticipated risk for the new mission. Where radioactive materials are being provided from multiple sources, the program executive may provide a single or multiple SAR document(s) to best meet this requirement.
NPR 8715.3C	06.3.7.1.d(2)	46501	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Program executives (in addition to requirements in Paragraph 6.2 of this NPR) shall: Prepare or have prepared a SAR. (Requirement 46501) Note: The program executive is encouraged to begin coordination with the empanelled ad hoc INSRP in the early statges of mission development. The program executive should invite the INSRP to review the development of launch and mission accident scenarios, probabilities of occurrence, dispersion, specidication of associated environments, and helath effects via documentation and program safety reviews. The INSRP normally reviews and evaluates all program documentation associated with radioactive material safety for completeness and defensibility. The INSRP evaluation is documented in a Safety Evaluation Report (SER). The INSRP is normally assisted in its evaluation effort by expert consultants in various areas from a number of government agencies, national laboratories, industry, and academia.
NPR 8715.3C	06.3.7.1.e	46502	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Program executives (in addition to requirements in Paragraph 6.2 of this NPR) shall: Deliver the agreed upon iterations of the SAR to the INSRP according to the documented schedule. (Requirement 46502)

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NPR 8715.3C	06.3.7.2	46503	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For launches with A2 mission multiples equal to or greater than 1,000: Following the approval by the NASA Administrator to empanel an INSRP, the NASA INSRP Coordinator shall, in accordance with paragraph 6.2.7, facilitate the preparation of an INSRP-developed SER of the radiological risk for the proposed nuclear mission as required by PD/NSC-25. (Requirement 46503) Note: The SER should typically be completed no later than six months prior to launch. The SER, along with the final SAR and other related documents, are considered by the NASA Administrator before requesting a nuclear launch safety approval in accordance with PD/NSC-25.
NPR 8715.3C	06.3.8	46504	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple is equal to 10 but less that 1000:
NPR 8715.3C	06.3.8.1.a	46506	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple is equal to 10 but less that 1000: Program executives shall: Request a nuclear launch safety approval from the NFSAM. (Requirement 46506)
NPR 8715.3C	06.3.8.1.b	46507	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple is equal to 10 but less that 1000: Program executives shall: Perform a safety analysis to the level of detail defined in paragraph 6.3.6 of this NPR. (Requirement 46507)
NPR 8715.3C	06.3.8.1.c	46508	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple is equal to 10 but less that 1000: Program executives shall: Meet the launch concurrence/approval requirements defined in paragraph 6.3.6 of this NPR. (Requirement 46508)
NPR 8715.3C	06.3.8.2	46509	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple is equal to 10 but less that 1000: The NFSAM shall conduct reviews as defined in paragraph 6.3.6 of this NPR. (Requirement 46509)
NPR 8715.3C	06.3.9.1.a	46512	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple exceeds 1000: Program executives shall: Request a nuclear launch safety approval from the NFSAM. (Requirement 46512)

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NPR 8715.3C	06.3.9.1.b	46513	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple exceeds 1000: Program executives shall: Perform a safety analysis to the level of detaitl defined in paragraph 6.3.7 of this NPR. (Requirement 46513)
NPR 8715.3C	06.3.9.1.c	46514	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple exceeds 1000: Program executives shall: Meet the launch concurrence/approval requirements defined in paragraph 6.3.7 of this NPR. (Requirement 46514)
NPR 8715.3C	06.3.9.2.a	46516	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple exceeds 1000: The NFSAM shall: Advise the program executive concerning a request to the NASA Administrator to empanel an INSRP as per paragraph 6.2.2 of this NPR.
NPR 8715.3C	06.3.9.2.b	46517	Nuclear Safety for Launching of Radioactive Materials: Nuclear Launch Safety Approval Process: The level of analysis, evaluation, review and the total concurrence or approval required for a radiological risk assessment varies with the total amount of radioactive materials planned for launch as follows: For orbiting spacecraft being resupplied or modified in which the U.S. Government is the lead (e.g., International Space Station) and the A2 mission multiple exceeds 1000: The NFSAM shall: Coordinate a safety evaluation as defined in paragraph 6.3.7.1 of this NPR. (Requirement 46517)
NPR 8715.3C	06.4.2.1.a	46522	Nuclear Safety for Launching of Radioactive Materials: Reporting Requirements: Radioactive Materials Report: NASA program executives, Center Directors, facility managers, laboratory managers, and launch and landing site managers shall: Use the Planned Launches of Radioactive Materials Report shown in Figure 6.1 to report planned launches of radioactive materials and request for nuclear launch concurrence/spproval. (Requirement 46522)
NPR 8715.3C	06.4.2.1.b	46523	Nuclear Safety for Launching of Radioactive Materials: Reporting Requirements: Radioactive Materials Report: NASA program executives, Center Directors, facility managers, laboratory managers, and launch and landing site managers shall: Ensure that entries are made for each isotopic source for planned launch and resupplying missions. (Requirement 46523) Note: Isotopes of similar size, chemical form, and activity level may be combined on a single line entry.
NPR 8715.3C	06.4.2.2	46524	Nuclear Safety for Launching of Radioactive Materials: Reporting Requirements: Radioactive Materials Report: The NFSAM shall use the format of the Radioactive Materials Report shown in Figure 6.1 and Figure 6.2 for the quarterly report to notify OSTP of planned launches. (Requirement 46524) Note: Figure 6.2 shows the format for the report for resupplying radioactive materials to on-orbit spacecraft.
NPR 8715.3C	07.2.1	46528	Safety Training and Personnel Certification: Responsibilities: Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall provide training to assist managers/ supervisors and employees with their specific roles and responsibilities in safety programs. (Requirement 46528) Note: EO 12196, Occupational Safety and Health Programs for Federal Employees, dated February 26,1980, as amended, and 12 CFR 1960, Subpart H, Training, require the NASA establish comprehensive safety training programs.
NPR 8715.3C	07.2.2.a	46530	Safety Training and Personnel Certification: Responsibilities: The Chief, Safety and Mission Assurance, shall: Assist Center counterparts in wnsuring that 29 CFR Part 1960, Basic Program Elements for Federal Employees, Occupational Safety and Health and Health programs, and Relater Matters, requirements are followed. (Requirement 46530)

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NPR 8715.3C	07.2.2.b	46531	Safety Training and Personnel Certification: Responsibilities: The Chief, Safety and Mission Assurance, shall: Ensure Agency-wide consistency and uniformity in the NASA safety training program. (Requirement 46531)
NPR 8715.3C	07.2.2.c	46532	Safety Training and Personnel Certification: Responsibilities: The Chief, Safety and Mission Assurance, shall: Act as a clearinghouse for information regarding available safety training courses and materials. (Requirement 46532)
NPR 8715.3C	07.2.2.d	46533	Safety Training and Personnel Certification: Responsibilities: The Chief, Safety and Mission Assurance, shall: Develop, in conjunction with the Training and Development Division at NASA Headquarters, training courses suited to specific Agency safety needs. (Requirement 46533)
NPR 8715.3C	07.2.2.e	46534	Safety Training and Personnel Certification: Responsibilities: The Chief, Safety and Mission Assurance, shall: Co-develop, in conjunction with the OCHMO at NASA Headquarters, training courses and materials in areas of overlapping regulatory or programmatic responsibility. (Requirement 46534) Note: Safety forms and reports are retained per NPR 1441.1, NASA Records Retention Schedules.
NPR 8715.3C	07.2.3.a	46536	Safety Training and Personnel Certification: Responsibilities: Center training and personnel development offices and safety offices shall be jointly responsible for: Determining safety and certification training needs. (Requirement 46536)
NPR 8715.3C	07.2.3.b	46537	Safety Training and Personnel Certification: Responsibilities: Center training and personnel development offices and safety offices shall be jointly responsible for: Overseeing training efforts. (Requirement 46537)
NPR 8715.3C	07.2.3.c	46538	Safety Training and Personnel Certification: Responsibilities: Center training and personnel development offices and safety offices shall be jointly responsible for: Identifying budget requirements for training. (Requirement 46538)
NPR 8715.3C	07.2.3.d	46539	Safety Training and Personnel Certification: Responsibilities: Center training and personnel development offices and safety offices shall be jointly responsible for: Developing training courses and materials. (Requirement 46539)
NPR 8715.3C	07.2.3.e	46540	Safety Training and Personnel Certification: Responsibilities: Center training and personnel development offices and safety offices shall be jointly responsible for: Assuring that training records reflect employee safety training. (Requirement 46540)
NPR 8715.3C	07.3.1.a	46543	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Formulate and document a comprehensive safety training program (see Figure 7-1 below) at their Center. (Requirement 46543)
NPR 8715.3C	07.3.1.b	46544	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Develop and maintain a Center Safety Training Plan. (Requirement 46544)
NPR 8715.3C	07.3.1.c	46545	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Ensure that all persons engaged in physical work are instructed in accident prevention and fully informed of the hazards involved. (Requirement 46545)
NPR 8715.3C	07.3.1.d	46546	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Ensure that training for all persons in electrical work includes first-aid procedures and cardiopulmonary resuscitation. (Requirement 46546)
NPR 8715.3C	07.3.1.e	46547	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Ensure that personnel at risk of exposure to cryogenic liquids receive training in correct first aid measures for these liquids. (Requirement 46547)
NPR 8715.3C	07.3.1.f	46548	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Provide system safety training to meet the needs of programmatic activities. (Requirement 46548)
NPR 8715.3C	07.3.1.g	46549	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Ensure that software safety personnel and project/program lead software safety analysts are trained to NASA-STD-8719.13, Software Safety Standard, and NASA-STD-8739.8, Software Assurance Standard. (Requirement 46549)

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NPR 8715.3C	07.3.1.h	46550	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Ensure that operators of motorized equipment (including motor vehicles) have formal initial training, consisting of both classroom and operational testing, if operating the motorized equipment involves skills beyond those associated with normal, everyday operation of private motor vehicles, to assure operator proficiency. (Requirement 46550)
NPR 8715.3C	07.3.1.i	46551	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Ensure that operators of motorized equipment have periodic refresher training and testing, as determined by the safety office, if operationg the motor vehicle requires skills beyond those associated with normal, everyday operation of private motor vehicles. 9Requirement)
NPR 8715.3C	07.3.1.j	46552	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center Directors shall: Annually review operations being performed at their Center to ensure that the implemented safety training program is working effectively and to identify and include training for jobs that are potentially hazardous in addition to the mandatory listing in paragraph 7.4.5. (Requirement 46552) Note: Employee safety committees, employee representatives, and other interested groups should be provided an opportunity to assist in the hazardous job identification process.
NPR 8715.3C	07.3.2	46553	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center subject matter experts shall review NASA training materials at least annually and update materials as needed when regulatory agencies or changes in NASA policy documents generate technical changes. (Requirement 46553)
NPR 8715.3C	07.3.3	46554	Safety Training and Personnel Certification: Planning and Implementation of the Safety Training Program: Center SMA Directors shall maintain a current copy of the Center Safety Training Plan. (Requirement 46554)
NPR 8715.3C	07.4.2	46560	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Center SMA Directors shall develop required safety certification programs for their Center. (Requirement 46560)
NPR 8715.3C	07.4.3.a	46562	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Medical offices and cognizant health officials shall: Determine the need for physical and medical examinations including their depth, scope, and frequency to support certification requirements. (Requirement 46562)
NPR 8715.3C	07.4.3.b	46563	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Medical offices and cognizant health officials shall: Be responsible for medical certification in health hazard and related activities. (Requirement 46563)
NPR 8715.3C	07.4.3.c	46564	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Medical offices and cognizant health officials shall: Oversee or conduct required personnel medical examinations in support of the safety certification effort. (Requirement 46564)
NPR 8715.3C	07.4.3.d	46565	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Medical offices and cognizant health officials shall: Ensure that physical and medical examinations to support certification requirements are in compliance with OSHA and other Federal, State, and local agency applicable codes, regulations, and standards covering the occupation or environment including medical monitoring and recordkeeping requirements. (Requirement 46565) Note: The need for fitness-for-duty examinations should be based on the hazardous consequences of the employee's inability to perform the job correctly due to physical or mental deficiencies.
NPR 8715.3C	07.4.4	46566	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Line managers shall manage the certification program for their employees and contractors in accordance with procedures in this NPR. (Requirement 46566)
NPR 8715.3C	07.4.5.1.a	46569	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Flight crew member certification (FAA licensing may not be sufficient). (Requirement 46569)

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NPR 8715.3C	07.4.5.1.b	46570	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Firefighter certification. (Requirement 46570)
NPR 8715.3C	07.4.5.1.c	46571	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Propellant and explosives user certification per NSS 1740.12. (Requirement 46571)
NPR 8715.3C	07.4.5.1.d	46572	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Propellant and explosives handler certification per NSS 1740.12. (Requirement 46572)
NPR 8715.3C	07.4.5.1.e	46573	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Rescue personnel certification. (Requirement 46573)
NPR 8715.3C	07.4.5.1.f	46574	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Self-contained breathing apparatus user certification. (Requirement 46574)
NPR 8715.3C	07.4.5.1.g	46575	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Self-contained underwater breathing apparatus user certification. (Requirement 46575)
NPR 8715.3C	07.4.5.1.h	46576	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: High-voltage electrician certification that adheres to NASA and State/local requirements. (Requirement 46576)
NPR 8715.3C	07.4.5.1.i	46577	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Altitude chamber operator certification. (Requirement 46577)
NPR 8715.3C	07.4.5.1.j	46578	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: High-pressure liquid/vapor/gas system operator certification. (Requirement 46578)
NPR 8715.3C	07.4.5.1.k	46579	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Hyperbaric chamber operator certification. (Requirement 46579)
NPR 8715.3C	07.4.5.1.L	46580	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Tank farm worker certification. (Requirement 46580)
NPR 8715.3C	07.4.5.1.m	46581	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Wind tunnel operator certification. (Requirement 46581)
NPR 8715.3C	07.4.5.1.n	46582	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Welder certification. (Requirement 46582)
NPR 8715.3C	07.4.5.1.o	46583	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Laser operator/maintenance personnel certification. (Requirement 46583)

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NPR 8715.3C	07.4.5.1.p	46584	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Centrifuge operator certification. (Requirement 46584)
NPR 8715.3C	07.4.5.1.q	46585	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Range safety officer certification. (Requirement 46585)
NPR 8715.3C	07.4.5.1.r	46586	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Crane operator certification. (Requirement 46586)
NPR 8715.3C	07.4.5.1.s	46587	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Certification for riggers for hoisting operations. (Requirement 46587)
NPR 8715.3C	07.4.5.1.t	46588	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Heavy equipment operator certification. (Requirement 46588)
NPR 8715.3C	07.4.5.1.u	46589	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Confined space entry personnel certification. (Requirement 46589)
NPR 8715.3C	07.4.5.1.v	46590	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Certification for lockout/tagout personnel. (Requirement 46590)
NPR 8715.3C	07.4.5.1.w	46591	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors or their designees shall ensure: Certification for individuals involved strictly with the handling, transport, or packaging of hazardous materials that will not otherwise disturb the integrity of the basic properly packaged shipping container that holds the hazardous material. Note: Operations that involve the reduction of palletized or otherwise combined items of packaged hazardous materials qualify as handling. Center safety officials or their designees may require additional hazardous operations safety certifications. (Requirement 46591)
NPR 8715.3C	07.4.5.2	46592	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Hazardous Operations Requiring Safety Certification: Center SMA Directors who certify individuals to perform or control hazardous operations, or to use or transport hazardous material, shall ensure the individuals possess the necessary knowledge, skill, judgment, and physical ability to do the job in a safe and a healthful manner. (Requirement 46592)
NPR 8715.3C	07.4.6.1.a	46595	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: A physical examination (see paragraph 7.4.3). (Requirement 46595)
NPR 8715.3C	07.4.6.1.b	46596	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: Initial training (classroom, online, and/or on-the-job). Note: The level and structure of training is established according to the hazards of the job being performed. (Requirement 46596)

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NPR 8715.3C	07.4.6.1.c	46597	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: A written examination to determine adequacy and retention of training. (Requirement 46597)
NPR 8715.3C	07.4.6.1.d	46598	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: Periodic refresher training, as determined by the Center safety official, including review of emergency response procedures. (Requirement 46598)
NPR 8715.3C	07.4.6.1.e	46599	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: A recertification period as determined by the Center safety official in the absence of any local, State or Federal requirements (but not to exceed a four-year interval). (Requirement 46599)
NPR 8715.3C	07.4.6.1.f	46600	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: Applicable requirements of 29 CFR Part 1910, Occupational Safety and Health Standards. (Requirement 46600)
NPR 8715.3C	07.4.6.1.g	46601	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and safety offices shall ensure that hazardous operations certification and hazardous material handler certification include as a minimum: Specific training in the Federal, NASA, and local rules for preparing, packaging, marking, and transporting hazardous material and/or equipment operation associated with the job. (Requirement 46601)
NPR 8715.3C	07.4.6.2	46602	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Center training and personnel development offices and Center safety offices shall ensure that drivers or operators of vehicles transporting hazardous materials are instructed in the specific hazards of the cargo or material in their vehicle and the standard emergency and first-aid procedures that should be followed in the event of a spill or exposure to the hazardous material. Note: Training requirements can be found in 29 CFR Part 1910, Occupational Safety and Health Standards, and 49 CFR Part 177, Carriage by Public Highway. (Requirement 46602)
NPR 8715.3C	07.4.6.3.a	46604	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Mission Directorate Associate Administrators, Center Directors, project managers, and supervisors shall ensure that: Personnel who are hazardous-operations-safety-certified or hazardous-material-handler-certified are identified through the issuance of a card, license, or badge (to be immediately available) or a listing on a personnel certification roster or database. (Requirement 46604)
NPR 8715.3C	07.4.6.3.b	46605	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Certification Requirements: Mission Directorate Associate Administrators, Center Directors, project managers, and supervisors shall ensure that: Personnel certification rosters indicate the name, date, materials or operations for which certification is valid, name of certifying official, and date of expiration. (Requirement 46605)
NPR 8715.3C	07.5.1	46607	Safety Training and Personnel Certification: Mission Critical Personnel Reliability Program (PRP): The Director of each NASA installation shall designate mission critical areas for the Space Shuttle and other critical systems including the International Space Station, designated ELVs, designated payloads, Shuttle Carrier Aircraft, and other designated resources that provide access to space. (Requirement 46607)

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NPR 8715.3C	07.5.2	46608	Safety Training and Personnel Certification: Mission Critical Personnel Reliability Program (PRP): Personnel having unescorted access to these areas shall meet the suitability, qualification, and screening provisions detailed in 14 CFR Part 1214.5, Space Flight: Mission Critical Systems Personnel Reliability Program: Screening Requirements. (Requirement 46608)
NPR 8715.3C	07.6.1.a	46612	Safety Training and Personnel Certification: Hazardous Materials and Chemicals Risk Information: Mission Directorate Associate Administrators, Center Directors, project managers, and supervisors shall ensure that: The risk of all hazardous chemicals produced or imported are evaluated and included in their safety training and certification program. (Requirement 46612)
NPR 8715.3C	07.6.1.b	46613	Safety Training and Personnel Certification: Hazardous Materials and Chemicals Risk Information: Mission Directorate Associate Administrators, Center Directors, project managers, and supervisors shall ensure that: Information involving the risk of all hazardous chemicals is made available to all employees in accordance with 29 CFR Part 1910.1200. (Requirement 46613)
NPR 8715.3C	08.2.1.a	46625	Safety for Facility Acquisition, Construction, Activation, and Disposal: Roles and Responsibilities: Center Directors shall: Ensure this NPR is applied to the CoF projects and facility maintenance projects. (Requirement 46625)
NPR 8715.3C	08.2.1.b	46626	Safety for Facility Acquisition, Construction, Activation, and Disposal: Roles and Responsibilities: Center Directors shall: Ensure this NPR is applied to Center-approved facility projects according to the degree of safety policy impact and regulatory considerations on those projects. (Requirement 46626)
NPR 8715.3C	08.2.1.c	46627	Safety for Facility Acquisition, Construction, Activation, and Disposal: Roles and Responsibilities: Center Directors shall: Ensure that the requirements in this NPR do not supersede more stringent requirements imposed by individual NASA organizations and other Government agencies. (Requirement 46627)
NPR 8715.3C	08.2.1.d	46628	Safety for Facility Acquisition, Construction, Activation, and Disposal: Roles and Responsibilities: Center Directors shall: Use NASA-STD-8719.7, Facilities System Safety Guidebook, which provides for a review of the facility life cycle and the safety tasks that shall be accomplished during acquisition, modification, and test activities and facility operations, maintenance, and disposal. (Requirement 46628)
NPR 8715.3C	08.2.1.e	46629	Safety for Facility Acquisition, Construction, Activation, and Disposal: Roles and Responsibilities: Center Directors shall: Ensure that existing facilities undergoing major renovations meet national consensus codes in effect at the time of the renovations. Note: Major renovations are any facility modifications controlled by a design review process as provided in NASA-STD-8719.7, Facility System Safety Guidebook. (Requirement 46629)
NPR 8715.3C	08.3.1.a	46632	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Identify, track, and resolve hazards at the earliest possible life-cycle phase to eliminate risk to personnel and mission success and to minimize the cost and need for a retrofit program. (Requirement 46632)
NPR 8715.3C	08.3.1.b	46633	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Perform safety oversight functions to ensure compliance with NASA safety policies. (Requirement 46633)
NPR 8715.3C	08.3.1.c	46634	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Monitor facility construction, modification, repair, and rehabilitation for compliance with safety, fire protection, and building codes and standards. (Requirement 46634)
NPR 8715.3C	08.3.1.d	46635	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Provide for the programmatic and technical review of all proposed facility acquisition, design, and construction projects to assure that all safety requirements are specified and funded. (Requirement 46635)

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NPR 8715.3C	08.3.1.e	46636	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Maintain current building configurations during all phases of the facility acquisition, maintenance, operation, and disposal process. (Requirement 46636)
NPR 8715.3C	08.3.1.f	46637	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Process any change to facility hardware, software, or procedures through the configuration management program. (Requirement 46637)
NPR 8715.3C	08.3.1.g	46638	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that NASA facility acquisition, construction, and activation safety activities: Include the safety inspection of all facilities, occupied or unoccupied, at least annually to ensure compliance with safety, fire protection, and building codes and standards. (Requirement 46638)
NPR 8715.3C	08.3.2.a	46640	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: For projects with safety or fire protection implications, Center Directors shall ensure that: NASA fire protection and safety personnel formally monitor fire protection and safety compliance efforts during the various phases of the projects. (Requirement 46640)
NPR 8715.3C	08.3.2.b	46641	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: For projects with safety or fire protection implications, Center Directors shall ensure that: NASA fire protection and safety monitoring efforts are documented. (Requirement 46641)
NPR 8715.3C	08.3.2.c	46642	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: For projects with safety or fire protection implications, Center Directors shall ensure that: Fire protection or safety monitoring document(s) have formal concurrence from the safety office or fire protection office. (Requirement 46642)
NPR 8715.3C	08.3.3.a	46644	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that: Any final inspection effort (operational readiness inspection, operational readiness review, test readiness review, pre-final inspection, final inspection) includes a safety and/or health representative. (Requirement 46644)
NPR 8715.3C	08.3.3.b	46645	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Acquisition, Construction, and Activation Objectives: Center Directors shall ensure that: All facility safety and health issues are documented, resolved, or adequately controlled prior to acceptance, activation, and operation. (Requirement 46645)
NPR 8715.3C	08.4.1.a	46648	Safety for Facility Acquisition, Construction, Activation, and Disposal: Basic Requirements for Facility Acquisition, Construction, and Activation: Center Directors shall: Designate and assign facility safety program management responsibilities to a NASA Center SMA organization that is independent from the specific facilty (user) management. (Requirement 46648)
NPR 8715.3C	08.4.1.b	46649	Safety for Facility Acquisition, Construction, Activation, and Disposal: Basic Requirements for Facility Acquisition, Construction, and Activation: Center Directors shall: Assure that the NASA fire protection and safety organizations review all proposed NASA-owned, controlled, or operated facility configuration changes and construction work change orders that have a potential fire protection or safety impact. Note: This does not preclude the use of checklists and other guidelines to assist the project in determining the potential fire or safety impact and necessary protection requirements. (Requirement 46649)
NPR 8715.3C	08.4.1.c	46650	Safety for Facility Acquisition, Construction, Activation, and Disposal: Basic Requirements for Facility Acquisition, Construction, and Activation: Center Directors shall: Ensure compliance with EM 385-1-1, U.S. Army Corps of Engineers, Safety and Health Requirements or local Center requirements, which ever are most stringent, for construction undertaken at NASA sites and facilities by the U.S. Army Corps of Engineers. Note: For related NASA-managed projects, EM 385-1-1 is considered an advisory document. (Requirement 46650)

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NPR 8715.3C	08.5.1.a	46653	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Managers: The Center Directors or designees shall: Appoint a facility operations manager or facility coordinator to oversee proper operation of the facility. Note: A safety coordinator may be appointed to assist the manager. (Requirement 46653)
NPR 8715.3C	08.5.1.b	46654	Safety for Facility Acquisition, Construction, Activation, and Disposal: Facility Managers: The Center Directors or designees shall: Ensure that the extent of each facility operations manager's authority is detailed in writing for the complete safety coverage of all facility operations. Note: The Center safety office will interface with the facility operations managers or safety coordinators, as appropriate, to ensure proper safety program implementation. (Requirement 46654)
NPR 8715.3C	08.6.1.a	46657	Safety for Facility Acquisition, Construction, Activation, and Disposal: FSMP: Center Directors shall: Develop and maintain a written FSMP that includes facility acquisition, modification, test activities, operations, maintenance, and disposal to monitor timely completion of all required life-cycle safety program tasks. (Requirement 46657)
NPR 8715.3C	08.6.1.b	46658	Safety for Facility Acquisition, Construction, Activation, and Disposal: FSMP: Center Directors shall: Ensure that the FSMP includes a facility hazard analysis, hazard analysis tracking index, and hazard resolution verification in accordance with NASA-STD-8719.7, Facilities System Safety Guidebook. (Requirement 46658)
NPR 8715.3C	08.6.1.c	46659	Safety for Facility Acquisition, Construction, Activation, and Disposal: FSMP: Center Directors shall: Ensure that the FSMP is used to implement safety requirements including organizational responsibilities, resources, milestones, methods of accomplishment, depth of efforts, and integration with other program engineering and management activities. (Requirement 46659)
NPR 8715.3C	08.6.1.d	46660	Safety for Facility Acquisition, Construction, Activation, and Disposal: FSMP: Center Directors shall: Ensure that the FSMP includes applicable local directives, instructions, and guidelines for minor or normal acquisitions and facility modification projects, as a minimum. (Requirement 46660)
NPR 8715.3C	08.6.1.e	46661	Safety for Facility Acquisition, Construction, Activation, and Disposal: FSMP: Center Directors shall: Ensure that the FSMP contains a realistic milestone schedule commencing with the development of functional requirements during the facility conceptual development phase to monitor timely completion of all required safety program tasks for facility design. (Requirement 46661)
NPR 8715.3C	08.6.1.f	46662	Safety for Facility Acquisition, Construction, Activation, and Disposal: FSMP: Center Directors shall: Ensure that all FSMP milestones support the scheduled facility need date or occupancy date, as appropriate. (Requirement 46662)
NPR 8715.3C	09.3.3	46687	Safety and Risk Management for NASA Contracts: Authority and Responsibility: COs or the COTR shall ensure the contractors' safety risk assessments are developed and provided to NASA for approval before the start of any hazardous deliverable work or support operations. (Requirement 46687)
NPR 8715.3C	09.4.1	46693	Safety and Risk Management for NASA Contracts: Requirements: COs and COTRs shall:
NPR 8715.3C	09.4.1.a	46694	Safety and Risk Management for NASA Contracts: Requirements: COs and COTRs shall: Ensure contract solicitations require the submission of safety and risk management documentation (e.g., corporate safety policies, implementation procedures, safety performance experience, and mishap rates by the North American Industrial Classification System (NAICS) codes and draft program planning documents, such as safety and health plans and risk management plans) as provided by the Center's SMA Organization. (See Appendix E and Appendix F for more information to ensure that solicitation instructions included the requirements outlined in both Appendices.) (Requirement 46694)
NPR 8715.3C	09.4.1.b	46695	Safety and Risk Management for NASA Contracts: Requirements: COs and COTRs shall: Ensure contract solicitations include the evaluation of safety and risk management documentation (e.g., corporate safety policies, implementation procedures, safety performance experience, and mishap rates by the NAICS codes) and draft program planning documents, such as safety and health plans and risk management plans as a factor for evaluating bids. (See Appendix E and Appendix F for more information). (Requirement 46695)

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NPR 8715.3C	09.4.1.c	46696	Safety and Risk Management for NASA Contracts: Requirements: COs and COTRs shall: Ensure that safety and risk management evaluation criteria and solicitation instructions are developed in conjunction with responsible project personnel and Center SMA organization represetnatives. (See Appendix E and Appendix F for more information.) (Requirement 46696)
NPR 8715.3C	09.4.2.a	46698	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: Brief all onsite contractors on local safety requirements to include incident and accident reporting, emergency evacuation procedures, fire reporting, medical emergency notification and response actions, hazardous material spill reporting and response, site entry/exit procedures, and hot work permit requirements before contract performance begins and at least annually, thereafter. (Requirement 46698)
NPR 8715.3C	09.4.2.b	46699	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: Document the onsite contractors briefings. (Requirement 46699)
NPR 8715.3C	09.4.2.c	46700	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: Inform the onsite contractor of any adjacent NASA and any other contractor operations that could pose a hazard to their operation and employees. (Requirement 46700)
NPR 8715.3C	09.4.2.d	46701	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: Assist the program or project manager or other responsible officer in implementing contractor safety surveillance and evaluation programs. (Requirement 46701)
NPR 8715.3C	09.4.2.e	46702	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: During the pre-award phase of acquisition, develop, document, and provide to the CO safety, mission success and risk management requirements for design, development, fabrication, test, and the operations of systems, equipment, and facilities in a timely manner to ensure inclusion in the solicitation. (Requirement 46702)
NPR 8715.3C	09.4.2.f	46703	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: During pre-award phase of acquisition, develop, document, and provide to the CO a statement of work elements, evaluation criteria, and solicitation instructions requiring the submittal of safety and risk management documentation (e.g., corporate safety policies, implementation procedures, safety performance experience, and mishap rates by the NAICS codes and draft program planning documents, such as safety and health plans and risk management plans) in a timely manner to ensure inclusion in the solicitation. (Requirement 46703)
NPR 8715.3C	09.4.2.g	46704	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors shall: Participate in the contractor selection and evaluation process providing support to the CO to ensure the proper evaluation of contractor proposal information (e.g., corporate safety policies, implementation procedures, safety performance experience, and mishap rates by the NAICS codes) and draft program planning documents, such as safety and health plans and risk management plans, as a factor for evaluating bids. (Requirement 46704)
NPR 8715.3C	09.4.3	46705	Safety and Risk Management for NASA Contracts: Requirements: Center SMA Directors, COs, and COTRs shall ensure that contracts include a provision to require the contractor to provide a written plan for mitigating risks from hazardous operations to adjacent and other contractors. (See Appendix E and Appendix F for more information.) (Requirement 46705)
NPR 8715.3C	10.2.1.1	46726	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The Chief, Safety and Mission Assurance, shall: The Chief, Safety and Mission Assurance, may designate, in writing, a NASA management official to represent NASA SMA at EAV reviews. The designee shall keep the Chief, Safety and Mission Assurance, apprised of all SMA issues and actions. (Requirement 46726)
NPR 8715.3C	10.2.1.a	46727	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The Chief, Safety and Mission Assurance, shall: Oversee the process of for evaluating the safety review portion of any requests made for liability insurance or indemnification. (Requirement 46727)
NPR 8715.3C	10.2.1.b	46728	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The Chief, Safety and Mission Assurance, shall: Provide the NASA Administrator or delegee with an evaluation of the safety procedures and practices associated with a request for liability insurance or indemnification. (Requirement 46728)

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NPR 8715.3C	10.2.1.c	46729	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The Chief, Safety and Mission Assurance, shall: Provide the cognizant Mission Directorate Associate Administrator with a listing of the documentation needed to perform a safety review of the request for liability insurance or indemnification (see paragraph 10.3.2). (Requirement 46729)
NPR 8715.3C	10.2.2.1	46731	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The cognizant Mission Directorate Associate Administrator shall: Coordinate the processing of requests for liability insurance or indemnification made to the NASA Administrator or delegee. (Requirement 46731)
NPR 8715.3C	10.2.2.2	46732	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The cognizant Mission Directorate Associate Administrator shall: Obtain the concurrence of the Chief, Safety and Mission Assurance, the NASA General Counsel, NASA Chief Engineer, and the NASA Chief Financial Officer prior to submission of the request for liability insurance or indemnification to the NASA Administrator or delegee for approval. (Requirement 46732)
NPR 8715.3C	10.2.2.3	46733	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The cognizant Mission Directorate Associate Administrator shall: Ensure that the Chief, Safety and Mission Assurance, is provided full access to all safety documentation related to the request for liability insurance or indemnification (see paragraph 10.3.2). (Requirement 46733)
NPR 8715.3C	10.2.3	46734	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The NASA General Counsel shall interpret and certify that requests for liability insurance or indemnification for EAV developers are processed in accordance with applicable laws, regulations, and policies. (Requirement 46734)
NPR 8715.3C	10.2.4	46735	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The overall lead EAV Program/Project Center's SMA Director shall assure that the required safety procedures and practices are being followed in the development of the EAV and ensure that adequate records are maintained to support the safety reviews associated with any decision on liability insurance or indemnification.
NPR 8715.3C	10.2.5	46736	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The EAV Program/Project Manager shall collect and certify as accurate the safety review material provided to the Chief, Safety Mission Assurance, as part of a request for liability insurance or indemnification. (Requirement 46736)
NPR 8715.3C	10.2.6	46737	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The Contracting Officer, Grants Officer, or other designated NASA official shall ensure that EAV funding instruments include procedures and requirements for safety reviews needed with requests for liability insurance or indemnification. (Requirement 46737)
NPR 8715.3C	10.2.7	46738	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Responsibility: The NASA Chief Engineer shall review requests for liability insurance or indemnification for compliance to NASA engineering practices and provide comments to the Chief, Safety and Mission Assurance, and the Mission Directorate Associate Administrator. (Requirement 46738)
NPR 8715.3C	10.3.1	46740	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: Safety and Mission Success Reviews, as defined in NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments, shall be performed at the following times, at a minimum, during a request for liability insurance or indemnification of an EAV: (Requirement 46740)
NPR 8715.3C	10.3.1.a	46741	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: Safety and Mission Success Reviews, as defined in NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments, shall be performed at the following times, at a minimum, during a request for liability insurance or indemnification of an EAV: Within 1 month of request being officially submitted.

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NPR 8715.3C	10.3.1.b	46742	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: Safety and Mission Success Reviews, as defined in NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments, shall be performed at the following times, at a minimum, during a request for liability insurance or indemnification of an EAV: A minimum of 1 month prior to any decision meeting with the NASA Administrator on granting liability insurance or indemnification.
NPR 8715.3C	10.3.1.c	46743	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: Safety and Mission Success Reviews, as defined in NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments, shall be performed at the following times, at a minimum, during a request for liability insurance or indemnification of an EAV: A minimum of 3 weeks prior to each EAV flight where liability insurance or indemnification has been granted.
NPR 8715.3C	10.3.2	46744	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: (Requirement 46744)
NPR 8715.3C	10.3.2.a	46745	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Program/project safety or SMA plan(s) implementation (e.g., system safety plan, quality assurance plan, test/mission plan, risk assessment/management plan, hardware/software assurance plan, independent verification and validation plan, emergency/contingency plan(s), and environmental management plans).
NPR 8715.3C	10.3.2.b	46746	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Results of as-built reviews.
NPR 8715.3C	10.3.2.c	46747	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: The adequacy of the SMA processes to cover all facets of the program.
NPR 8715.3C	10.3.2.d	46748	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Risk identification, risk management, and risk tradeoffs.
NPR 8715.3C	10.3.2.e	46749	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Safety and hazard risk identification/analyses (including NEPA documentation), and how the risks are closed/mitigated/tracked.

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NPR 8715.3C	10.3.2.f	46750	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Prioritization of the above risk items as to their criticality.
NPR 8715.3C	10.3.2.g	46751	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: The method for reviewing SMA provisions of external interfaces (e.g., system safety working group, Space Shuttle/International Space Station program, Ground Safety Review Panel, range, international partners/participants).
NPR 8715.3C	10.3.2.h	46752	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Review of demonstrated and documented compliance with applicable range safety requirements.
NPR 8715.3C	10.3.2.i	46753	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: The overall lead EAV Program/Project Manager, with their Center SMA Director, shall present the following safety materials nominally required as a part of a program compliant with NPD 7120.4 and NPD 8700.1, and the subordinate documents, at the Safety and Mission Success Review as a minimum: Any required probabilistic risk assessment(s) for the EAV.
NPR 8715.3C	10.3.3	46754	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: For EAV program-wide or EAV preflight reviews being held after the Safety and Mission Success Review discussed in paragraph 10.3.1.c, the Mission Directorate Associate Administrator shall ensure that the Chief, Safety and Mission Assurance (or designee), is invited to participate in the reviews. (Requirement 46754)
NPR 8715.3C	10.3.4	46755	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: EAV SMA Assessment Reviews: For EAV flights which are performed outside of established U.S. ranges, the EAV Program/Project Manager shall invite any ranges involved in the EAV flight to participate in the safety review process defined in this chapter. (Requirement 46755)
NPR 8715.3C	10.4.1	46757	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: SMA Review Process Products: Upon completion of each Safety and Mission Success Review, the Chief, Safety and Mission Assurance (and/or designee), shall issue an initial assessment of the EAV program/project's SMA process(es) to the applicable Mission Directorate Associate Administrator. The assessment shall include: (Requirement 46757)
NPR 8715.3C	10.4.1.a	46758	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: SMA Review Process Products: Upon completion of each Safety and Mission Success Review, the Chief, Safety and Mission Assurance (and/or designee), shall issue an initial assessment of the EAV program/project's SMA process(es) to the applicable Mission Directorate Associate Administrator. The assessment shall include: A preliminary assessment of whether the developer is following appropriate safety procedures and practices in the development of the EAV.
NPR 8715.3C	10.4.1.b	46759	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: SMA Review Process Products: Upon completion of each Safety and Mission Success Review, the Chief, Safety and Mission Assurance (and/or designee), shall issue an initial assessment of the EAV program/project's SMA process(es) to the applicable Mission Directorate Associate Administrator. The assessment shall include: Recommendations for corrections or additions to the program/project SMA planning.

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NPR 8715.3C	10.4.1.c	46760	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: SMA Review Process Products: Upon completion of each Safety and Mission Success Review, the Chief, Safety and Mission Assurance (and/or designee), shall issue an initial assessment of the EAV program/project's SMA process(es) to the applicable Mission Directorate Associate Administrator. The assessment shall include: Requests for further actions or information along with a written response to the assessment.
NPR 8715.3C	10.4.2	46761	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: SMA Review Process Products: The Mission Directorate Associate Administrator shall ensure that the results of the safety review are included in the package submitted to the Administrator or delegee for review and decision regarding the request for liability insurance or indemnification. (Requirement 46761)
NPR 8715.3C	10.4.3	46762	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: SMA Review Process Products: The Chief, Safety and Mission Assurance, shall maintain a record of the safety reviews associated with any request for liability insurance or indemnification per NPD 1441.1, NASA Records Retention Schedules, for a minimum of 10 years beyond the life of the EAV program/project. (Requirement 46762)
NPR 8715.3C	10.5	46763	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Range Safety Requirements (Note: The following two basic program/project requirements are summarized from 14 CFR Chapter III (FAA) and the range safety requirement documents (i.e., EWR 127-1). These requirements are not to be considered as all-inclusive but are provided to assist the program/project manager in understanding which fundamental requirements must be met. These requirements form the basis for developing an acceptable safety risk mitigation plan for EAV projects.)
NPR 8715.3C	10.5.1	46764	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Range Safety Requirements: Operations: The EAV operator should use a structured analytical approach in preplanning for orbital, suborbital, and entry flight by developing detailed flight rules, procedures, and checklists prior to the Flight Readiness Review, for both nominal and contingency operations. The EAV operator shall document scenarios that allow for continued safe flight and landing or flight termination in a manner that minimizes risk in off-nominal situations. (Requirement 46764)
NPR 8715.3C	10.5.2	46765	Process/Requirements for the SMA Portions of Requests for Liability Insurance or Indemnification of EAV Developers: Range Safety Requirements: Notification: The EAV operator shall coordinate, develop procedures, and demonstrate (in conjunction with the host range and/or FAA), prior to launch and reentry, the capability to notify maritime and aviation authorities with sufficient time to clear the trajectory, ground-track, and emergency abort areas (if applicable) of traffic. (Requirement 46765)
NPR 8715.3C	11.3.1.a	57254	NASA Meteoroid Environment Program: Responsibility: The Chief, Safety and Mission Assurance, shall: Lead the NASA ME Program (Requirement 57254).
NPR 8715.3C	11.3.1.b	57255	NASA Meteoroid Environment Program: Responsibility: The Chief, Safety and Mission Assurance, shall: Establish policies for the understanding of the ME (Requirement 57255).
NPR 8715.3C	11.3.1.c	57256	NASA Meteoroid Environment Program: Responsibility: The Chief, Safety and Mission Assurance, shall: Provide resources and support needed to continue ME research and quantification by the ME Program (Requirement 57256).
NPR 8715.3C	11.3.1.d	57257	NASA Meteoroid Environment Program: Responsibility: The Chief, Safety and Mission Assurance, shall: Ensure that software tools, models, and their associated databases are provided (or made available) to aid programs/projects in ME evaluation of mitigation options (Requirement 57257).
NPR 8715.3C	11.3.1.e	57258	NASA Meteoroid Environment Program: Responsibility: The Chief, Safety and Mission Assurance, shall: Provide oversight of the Meteoroid Environment Office (MEO) in the implementation of the NASA ME Program and coordination of ME research with spaceflight programs and organizations inside of and outside of NASA (Requirement 57258).
NPR 8715.3C	11.3.1.f	57259	NASA Meteoroid Environment Program: Responsibility: The Chief, Safety and Mission Assurance, shall: Ensure assistance and expertise in ME is provided to NASA programs/projects in the evaluation of the ME upon request by the programs (Requirement 57259).

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NPR 8715.3C	11.3.2.a	57261	NASA Meteoroid Environment Program: Responsibility: The cognizant Mission Directorate Associate Administrator shall: Ensure that evaluation of the ME is inlcuded in NASA spaceflight programs in design and operations (Requirement 57261).
NPR 8715.3C	11.3.2.b	57262	NASA Meteoroid Environment Program: Responsibility: The cognizant Mission Directorate Associate Administrator shall: Determine the level of acceptable risk due to ME (Requirement 57262). Note: Level of acceptable risk is normally expressed jointly for ME and Orbital Debris. (See NPR 8715.6, NASA Procedural Requirements for Limiting Orbital Debris, paragraph 1.3.2.1.) Note: Upon request, the NASA MEO can provide technical expertise on ME.
NPR 8715.3C	11.3.3	57263	NASA Meteoroid Environment Program: Responsibility: The Assistant Administrator, Office of External Relations, shall endeavor to incorporate the NASA ME Program interfaces in negotiated international agreements for space activities and launch services (Requirement 57263).
NPR 8715.3C	11.3.4	57264	NASA Meteoroid Environment Program: Responsibility: The Director, NASA Marshall Space Flight Center, shall provide administrative support for the NASA MEO and may supplement MEO funding (Requirement 57264).
NPR 8715.3C	11.3.6.a	57267	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Lead the technical work for the ME Program (Requirement 57267).
NPR 8715.3C	11.3.6.b	57268	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Provide technical expertise and assistance to NASA mission program/project managers in technical ME assessments by providing information and/or directing queries to the knowledgeable technical staff (Requirement 57268).
NPR 8715.3C	11.3.6.c	57269	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Provide technical support to NASA management in the understanding of the ME (Requirement 57269).
NPR 8715.3C	11.3.6.d	57270	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Perform and support research into improved techniques for determination of the ME in government and academia (Requirement 57270).
NPR 8715.3C	11.3.6.e	57271	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Develop techniques and technical support for NASA programs/projects and NASA partners in the inclusion of ME quantification with probabilistic risk assessments (i.e.; NPR 8705.5, Probabilistic Risk Assessment (PRA) Procedures for NASA Programs and Projects) and other risk quantification documents (i.e.; NPR 8000.4, Risk Management Procedural Requirements) (Requirement 57271).
NPR 8715.3C	11.3.6.f	57272	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Develop, validate, and update ME models and databases (such as the MEM) and makes those software tools available to NASA programs and partners (Requirement 57272).
NPR 8715.3C	11.3.6.g	57273	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Coordinate the collection of ME data and information internal and external to NASA (Requirement 57273).
NPR 8715.3C	11.3.6.h	57274	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Collect information on spacecraft meteoroid impacts and resulting damage and maintain a database of close calls and mishaps due to meteoroids (Requirement 57274). Note: Spacecraft programs/projects are responsible for determining ME damage and any associated mishap or close call reporting. The NASA MEO will collect that information for NASA-wide use.
NPR 8715.3C	11.3.6.i	57275	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Develop and provide forecasting of the ME for NASA space flight programs upon request (Requirement 57275).
NPR 8715.3C	11.3.6.j	57276	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Develop ME fluxes for Earth orbital and lunar regions (Requirement 57276).

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NPR 8715.3C	11.3.6.k	57277	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Develop and maintain a NASA Guidebook on ME to provide further information and guidance to NASA programs/projects, ME professionals, and NASA partners (Requirement 57277). Note: Development of the NASA Guidebook on ME will be a technical update to existing NASA ME documentation which includes NASA SP-8013, NASA Micrometeoroid Environment Environment Model [Near Earth to Lunar Surface], NASA SP 8038, Micrometeoroid Environment Model [Interplanetary and Planetary], NASA TM 4527 Natural Orbital Environment Guidelines for Use in Aerospace Vehicle Development, and SSP 30425 Space Station Program Natural Environment Definition for Design. The NASA Guidebook on ME will not contain requirements for ME mitigation.
NPR 8715.3C	11.3.6.L	57278	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Provide ad hoc assistance to the Department of Defense and other U.S. Government departments and organizations on matters related to the characterization of the ME for NASA space missions (Requirement 57278).
NPR 8715.3C	11.3.6.m	57279	NASA Meteoroid Environment Program: Responsibility: The NASA MEO shall: Participate in the determination, adoption, and use of international meteoroid mitigation guidelines through international forums (Requirement 57279).
NPR 8735.1B	1.2.1.a	57132	General Requirements: Responsibilities: The Chief, Safety and Mission Assurance, shall: Establish Agency-wide requirements for the exchange of significant problem and nonconforming item data among NASA activities and with GIDEP (Requirement 57132).
NPR 8735.1B	1.2.1.b	57133	General Requirements: Responsibilities: The Chief, Safety and Mission Assurance, shall: Exchange significant problem and nonconforming item data identified by Headquarters among NASA activities and with GIDEP (Requirement 57133).
NPR 8735.1B	1.2.1.c	57134	General Requirements: Responsibilities: The Chief, Safety and Mission Assurance, shall: Designate an Agency ALERT Coordinator who serves as the NASA representative to the GIDEP (Requirement 57134).
NPR 8735.1B	1.2.2	57135	General Requirements: Responsibilities: The NASA Mission Directorate Associate Administrators and Center Directors shall maintain continuous oversight of their organization's processing of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories (Requirement 57135).
NPR 8735.1B	1.2.3.a	57137	General Requirements: Responsibilities: Center Directors and the Assistant Administrator for Infrastructure and Administration shall: Participate in GIDEP (Requirement 57137).
NPR 8735.1B	1.2.3.b	57138	General Requirements: Responsibilities: Center Directors and the Assistant Administrator for Infrastructure and Administration shall: Designate a civil service employee as the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator (with the exception of the Jet Propulsion Laboratory where a non-civil service employee may be appointed) (Requirement 31834).
NPR 8735.1B	1.2.3.c.1	57140	General Requirements: Responsibilities: Center Directors and the Assistant Administrator for Infrastructure and Administration shall: Develop, document, and implement Center processes for: The identification, control, and correction of problems and nonconforming items (Requirement 57140).
NPR 8735.1B	1.2.3.c.2	57141	General Requirements: Responsibilities: Center Directors and the Assistant Administrator for Infrastructure and Administration shall: Develop, document, and implement Center processes for: The exchange of significant problem and nonconforming item data identified by their Center with other NASA Centers and with GIDEP (Requirement 57141).
NPR 8735.1B	1.2.3.c.3	57142	General Requirements: Responsibilities: Center Directors and the Assistant Administrator for Infrastructure and Administration shall: Develop, document, and implement Center processes for: The evaluation and disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories (Requirement 57142).
NPR 8735.1B	1.2.5.a	57149	General Requirements: Responsibilities: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall: Review all GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories from their respective facilities for adequacy before release (Requirement 57149).

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NPR 8735.1B	1.2.5.b	57150	General Requirements: Responsibilities: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall: Sign and release all GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories from their respective facilities (Requirement 57150).
NPR 8735.1B	2.1	57152	Documenting GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall document significant problem and nonconforming item data for exchange among NASA Centers and GIDEP using the following decision criteria (Requirement 57152):
NPR 8735.1B	2.1.a	57153	Documenting GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall document significant problem and nonconforming item data for exchange among NASA Centers and GIDEP using the following decision criteria: Significant problem and nonconforming item data shall be documented and exchanged using the GIDEP unless the GIDEP reporting criteria contained in GIDEP S0300-BU-GYD-010, GIDEP Requirements Guide, Chapter 7, cannot be met, or there are restrictions on release and distribution of the information (Requirement 57153).
NPR 8735.1B	2.1.b	57154	Documenting GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall document significant problem and nonconforming item data for exchange among NASA Centers and GIDEP using the following decision criteria: GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, and GIDEP Agency Action Notices shall be documented in accordance with the requirements of GIDEP S0300-BT-PRO-010, GIDEP Operations Manual (Requirement 57154).
NPR 8735.1B	2.1.c(1)	57155	Documenting GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall document significant problem and nonconforming item data for exchange among NASA Centers and GIDEP using the following decision criteria: If the data cannot be released via GIDEP, a NASA Advisory shall be used (Requirement 57155).
NPR 8735.1B	2.2	57157	Documenting GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The Headquarters and Center GIDEP ALERT and NASA Advisory Coordinators shall document NASA Advisories using the approved format available in the NASA Community Information Exchange System (CIES) forum in GIDEP, or using a Center-unique form, incorporating the following information at a minimum (Requirement 57157):
NPR 8735.1B	3.1.a	57175	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For the release and distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, or GIDEP Agency Action Notices, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall, in the following sequence: Coordinate with the Center/Headquarters Office of Chief Counsel and Center/Headquarters Export Control Official (Requirement 57175).
NPR 8735.1B	3.1.b	57176	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For the release and distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, or GIDEP Agency Action Notices, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall, in the following sequence: Release GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, and GIDEP Agency Action Notices to the GIDEP Operations Center for distribution in accordance with the GIDEP requirements of S0300-BT-PRO-010, GIDEP Operations Manual (Requirement 57176).

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NPR 8735.1B	3.2.a	57178	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For the release and distribution of NASA Advisories, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall, in the following sequence: Certify that the notice was classified as a NASA Advisory because it did not meet GIDEP release requirements (Requirement 57178).
NPR 8735.1B	3.2.b(1)	57179	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For the release and distribution of NASA Advisories, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall, in the following sequence: Coordinate with the Center Office of Chief Counsel and Center Export Control Official (Requirement 57179).
NPR 8735.1B	3.2.c	57181	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For the release and distribution of NASA Advisories, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall, in the following sequence: Release and distribute the NASA Advisory to the other Center and Headquarters GIDEP ALERT and NASA Advisory Coordinators through the NASA CIES Forum in GIDEP and/or by fax or e-mail (Requirement 57181).
NPR 8735.1B	3.2.d	57182	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For the release and distribution of NASA Advisories, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall, in the following sequence: Provide a copy of the NASA Advisory to the Deputy Assistant Inspector General in the NASA Headquarters Office of the Inspector General (Requirement 57182).
NPR 8735.1B	3.3.1	57184	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The NASA Office of the Inspector General or another Government agency might identify situations potentially involving fraud, waste, and abuse which could also impact safety and mission assurance. When this information is provided by the Office of the Inspector General or other Government agency to the Office of Safety and Mission Assurance, the Agency ALERT Coordinator shall convert the information into a NASA Advisory (Requirement 57184).
NPR 8735.1B	3.3.2	57185	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: The NASA Office of the Inspector General or another Government agency might identify situations potentially involving fraud, waste, and abuse which could also impact safety and mission assurance. The Center/Headquarters GIDEP ALERT and NASA Advisory Coordinators shall exercise caution in processing and distributing these NASA Advisories to ensure distribution only to those people with a need to know the information, as this information is usually associated with an ongoing investigation (Requirement 57185).
NPR 8735.1B	3.4.1.a	57188	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For distribution to the international partner, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator or the Program, Project, or Operations/Institutional Manager shall: Release information excerpted from GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories in accordance with NPD 2110.1, Foreign Access to NASA Technology Transfer Materials (Requirement 57188).
NPR 8735.1B	3.4.1.b(1)	57189	Release and Distribution of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For distribution to the international partner, the Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator or the Program, Project, or Operations/Institutional Manager shall: Ensure that only GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisory information that apply to the international partner's participation in a joint NASA/international partner program is released (Requirement 57189).

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NPR 8735.1B	4.1.c(03)	57198	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Upon receipt of a GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory, all Program, Project, and Operations/Institutional Managers shall evaluate and disposition the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory by: The Center/Headquarters GIDEP ALERT and NASA Advisory Coordinator shall ensure that these documents are maintained for a minimum of five years following the end of operations (Requirement 57198).
NPR 8735.2A	1.2.01	43038	Introduction: Roles and Responsibilities: The Chief, Safety and Mission Assurance, provides policy direction for all NASA quality assurance matters. Included in this role are technical guidance on the type and extent of quality assurance requirements appropriate for NASA acquisitions; functional oversight relative to Contract Administration and Audit Service (CAAS) quality assurance delegations; functional oversight relative to the adequacy of quality assurance personnel staffing and training; and independent assurance of the adequacy of program/project office quality assurance surveillance functions per NPR 8705.6. (Requirement 43038)
NPR 8735.2A	1.2.02	43039	Introduction: Roles and Responsibilities: The NASA Contract Administration Services and Audit Policy Group (NCASPG) provides oversight and policy determination for Contract Administration Services provided by non-NASA Federal agencies and NASA support contractors. The membership and responsibilities of the NCASPG are provided in NPD 7410.1.
NPR 8735.2A	1.2.03	43040	Introduction: Roles and Responsibilities: NASA Center Directors are responsible for providing quality assurance services for all projects and programs hosted by, or assigned to, their Center, including the implementation of management controls to ensure proper performance of Government contract quality assurance functions. These responsibilities are typically delegated to the Safety and Mission Assurance (SMA) office (see paragraph 1.2.6 below).
NPR 8735.2A	1.2.06.a	43052	Introduction: Roles and Responsibilities: NASA Center SMA Directors, as assigned by the Center Director, shall: Implement Government contract quality assurance functions that are performed directly by NASA Center civil service personnel and their delegates and support contractors. (Requirement 43052)
NPR 8735.2A	1.2.06.b.1	43054	Introduction: Roles and Responsibilities: NASA Center SMA Directors, as assigned by the Center Director, shall: Provide support to contracting officers and program/project managers in the: Selection of acquisition sources that present acceptable quality risk. (Requirement 43054)
NPR 8735.2A	1.2.06.b.2	43055	Introduction: Roles and Responsibilities: NASA Center SMA Directors, as assigned by the Center Director, shall: Provide support to contracting officers and program/project managers in the: Contracting of competent quality assurance support contractors (see NPD 8730.5, paragraph 1.b(10)). (Requirement 43055)
NPR 8735.2A	1.2.06.b.3	43056	Introduction: Roles and Responsibilities: NASA Center SMA Directors, as assigned by the Center Director, shall: Provide support to contracting officers and program/project managers in the: Selection and assignment of competent civil service quality assurance professionals, including the NASA SMA Lead, when requested by the program/project manager (see NPD 8730.5, paragraph 1.b(10)). (Requirement 43056)
NPR 8735.2A	1.2.06.b.4	43057	Introduction: Roles and Responsibilities: NASA Center SMA Directors, as assigned by the Center Director, shall: Provide support to contracting officers and program/project managers in the: Development of Government contract quality assurance requirements to be incorporated into PQASPs, quality assurance LODs, or support contracts. (Requirement 43057)
NPR 8735.2A	1.2.06.b.5	43058	Introduction: Roles and Responsibilities: NASA Center SMA Directors, as assigned by the Center Director, shall: Provide support to contracting officers and program/project managers in the: Performance of contractor pre-award surveys, post-award surveys, quality audits, inspections, or other quality assurance functions considered necessary. (Requirement 43058)

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NPR 8735.2A	4.6.1(1)	43271	Performance of Quality Assurance Functions by Non-NASA Organizations: Management of Delegated Functions: NASA Center Directors shall develop and implement procedures to monitor and control hours associated with the performance of delegated/assigned functions. (Requirement 43271)
NPR 8735.2A	4.6.2	43273	Performance of Quality Assurance Functions by Non-NASA Organizations: Management of Delegated Functions: The National Contract Administration Services and Audit Policy Group (NCASPG) shall agree in advance to the planned level of CAAS support and shall examine for reasonableness the hours reported and charged. (Requirement 43273)
NPR 8735.2A	4.6.3	43274	Performance of Quality Assurance Functions by Non-NASA Organizations: Management of Delegated Functions: NASA Center Directors shall report any significant changes in the overall estimate (a variation of more than 15 percent) to the NASA Headquarters Office of the Chief Financial Officer and to the NASA Headquarters Office of Safety and Mission Assurance. (Requirement 43274)

Enclosure 3: Individual requirements of NASA-Level Safety and Mission Assurance Documents identified as not directly applicable for Constellation Program

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NPD 8700.1C	5.h	1101	RESPONSIBILITY: Supervisors and managers are responsible for educating their employees on the hazards of their job, establishing and promoting safe work practices, instilling in employees the importance of safety and mission success, and implementing safety and mission success regulations. (Requirement 1101)
NPD 8700.1C	5.i	1102	RESPONSIBILITY: Employees are responsible for understanding the safety and mission-success requirements of their organization, performing their tasks in accordance with established safety procedures, and using prescribed personal protective equipment. (Requirement 1102)
NPD 8720.1B	5.e.(1)	13042	The Center SMA functional manager is responsible for: Ensuring that Reliability and Maintainability data is available for use as heritage data both to support current programs/projects at other Centers and to establish Reliability and Maintainability goals and requirements for follow-on or new programs/projects. (Requirement 13042)
NPR 8715.3C	01.02.1.k	45577	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that research and development for new or unique safety functions and technologies are conducted to help meet NASA goals. (Requirement 45577)
NPR 8715.3C	01.07.2.1.a	45699	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: Design safety critical systems such that the critical operation or its necessary functions can be assured. To provide assurance, design the component, subsystem, or system so it is capable of being tested, inspected, and maintained. (Requirement 45699)
NPR 8715.3C	01.07.2.1.b(1)	45700	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: Where high reliability cannot be verified by reliability analysis using accepted data in which uncertainties are incorporated, design safety critical systems so that no combination of two failures and/or operator errors (fail-safe, fail-safe as a minimum) will result in loss of life. (Requirement 45700)
NPR 8715.3C	01.07.2.1.c	45702	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: When requesting a variance from the two-failure tolerance requirement, provide evidence and rationale that one or more of the following are met: (Requirement 45702)
NPR 8715.3C	01.07.2.1.c.1	45703	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: When requesting a variance from the two-failure tolerance requirement, provide evidence and rationale that one or more of the following are met: (1) Two-failure tolerance is not feasible for technical reasons. (Requirement 45703)
NPR 8715.3C	01.07.2.1.c.2	45704	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: When requesting a variance from the two-failure tolerance requirement, provide evidence and rationale that one or more of the following are met: The System or subsystem is designed and certified in accordance with approved consensus standards. (Requirement 45704)
NPR 8715.3C	01.07.2.1.d	45706	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: Where high reliability cannot be verified by reliability analysis using accepted data in which uncertainties are incorporated, design safety critical operations so that no single failure or operator error (fail-safe) will result in system loss/damage or personal injury. (Requirement 45706)

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NPR 8715.3C	01.07.2.1.e	45707	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: Where high reliability cannot be verified by reliability analysis using accepted data in which uncertainties are incorporated, provide functional redundancy where there is insufficient time for recovery or system restoration. Where there is sufficient time between a failure and the manifestiation of its effect, design for restoration of safe operation using spares, procedures, or maintenance provides an alternative means of achieving failure tolerance. (Requirement 45707)
NPR 8715.3C	01.07.2.1.f	45708	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: Design safety critical systems and operations to have a safety margin. (Requirement 45708)
NPR 8715.3C	01.07.2.1.g	45709	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: When using redundancy, verify that common cause failures (e.g., contamination, close proximity) do not invalidate the assumption of failure independence. (Requirement 45709)
NPR 8715.3C	01.07.2.1.h	45710	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: When using redundancy in operations that could cause or lead to severe injury, major damage, or mission failure (safety critical oprations), verify operability under conditions, that singularly or separately added together represent the operating intended condition. (Requirement 45710)
NPR 8715.3C	01.07.2.1.i	45711	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure operability and functionality and to achieve failure tolerance, project managers shall: When using reliabilty analyses, assess the probability of failure to provide the function and the time to restore the function, where loss of life, serious injury or catastrophic system loss can occur. Uncertainties shall be incorporated in these assessments. The time to restore the function shall include the active time to repair and the time associated with the logistics or administrative downtime that affect the ease or rapidity of achieving full restoration of the failed function. (Requirement 45711)
NPR 8715.3C	01.07.2.2.a	45713	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure funcitonal protection, project managers shall ensure that: Loss of functional protection for safety-critical operations requires termination of the operations at the first stable configuration. (Requirement 45713)
NPR 8715.3C	01.07.2.2.b	45714	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure funcitonal protection, project managers shall ensure that: At least one single level of functional protection is used to protect high-value facilities and flight systems. (Requirement 45714)
NPR 8715.3C	01.07.2.2.c	57236	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Reliability and Failure Tolerance: To assure funcitonal protection, project managers shall ensure that: In addition to the requirement in paragraph 1.7.2.1.b, for systems intended to be operated by humans, crew survival capabilities such as abort, escape, emergency egress, emergency medical, emergency systems, safe haven, and rescue are valid means of preventing loss of life and, when used, shall include validation, training, and certification (Requirement 57236). Note Definitions for the crew survival and associated capabilities can be found in NPR 8705.2, Human-Rating Requirements for Space Systems, and other NPRs.

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NPR 8715.3C	01.07.3.1.a	45718	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Inhibits: Where high reliability is not verified by reliability analysis using accepted data with uncertainties incorporated, the project manager shall ensure that: Operations that require the control of a condition, event, signal, process, or item for which proper recognition, performance, or tolerance is essential to safe system operation, use, or function are designed such that an inadvertent or unauthorized event cannot occur (inhibit). (Requirement 45718)
NPR 8715.3C	01.07.3.1.b	45719	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Inhibits: Where high reliability is not verified by reliability analysis using accepted data with uncertainties incorporated, the project manager shall ensure that: Operations have three inhibits where loss of life can occur. (Requirement 45719)
NPR 8715.3C	01.07.3.1.c	45720	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Inhibits: Where high reliability is not verified by reliability analysis using accepted data with uncertainties incorporated, the project manager shall ensure that: Operations have two inhibits where personal injury, illness, mission loss, or system loss or damage can occur. (Requirement 45720)
NPR 8715.3C	01.07.3.1.d(1)	45721	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Inhibits: Where high reliability is not verified by reliability analysis using accepted data with uncertainties incorporated, the project manager shall ensure that: The capability of inhibits or control procedures when required in operations by this paragraph are verified under operational conditions including the verification of independence among multiple inhibits. (Requirement 45721)
NPR 8715.3C	02.2.1	45818	System Safety: Institutional Roles and Responsibilities: Mission Directorate Associated Administrators, Center Directors, program and project managers, and line managers shall ensure that system safety activities are conducted for all programs and projects including system acquisistions, in-house developments (research and technology), design, construction, fabrication and manufacture, experimentation and test, packaging and transportation, storage, checkout, launch, flight, reentry, retrieval and disassembly, maintenance and refurbishment, modification, and disposal. (Requirement 45818)
NPR 8715.3C	03.02.3	45993	Operational Safety: Motor Vehicle Safety: Seat Belts: Executive Order 13043, Increasing Seat Belt Use in the United States, dated April 16, 1997, as amended, requires all Federal employees to use seat belts while on official business. The EO states seat belt use is required by Federal employees operating or in any vehicle with seat belts while on Federal Business. (Requirement 45993)
NPR 8715.3C	03.10.1	46107	Operational Safety: Lifting Safety: Center Directors and project managers shall comply with NASA-STD-8719.9, Standard for Lifting Devices and Equipment, for protecting persons and property during lifting operations. (Requirement 46107) Note: This standard established minimum safety requirements for the design, testing, inspection, personnel certification, maintenance, and use of overhead and gantry cranes, mobile cranes, derricks, hoists, special hoist-supported personnel lifting devices, hydrasets, hooks, mobile aerial platforms, power industrial trucks, jacks, and slings for NASA-owned and NASA contractor-supplied equipment used in support of NASA operations at NASA Centers.
NPR 8715.3C	03.11.1	46109	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: Center Directors and project managers shall use NSS 1740.12, Safety Standard for Explosives, Propellants, and Pyrotechnics, for protecting personnel and property from hazards of explosives and explosive materials, including all types of explosives, propellants (liquid and solid), oxidizers, and pyrotechnics. (Requirement 46109) Note: ASTM Manual 36, Safe Use of Oxygen and Oxygen Systems, addresses the requirements for working with explosive, propellant, and pyrotechnic substances.
NPR 8715.3C	03.11.2	46110	Operational Safety: Explosive, Propellant, and Pyrotechnic Safety: Center Directors and project managers shall ensure that explosive, propellant, and pyrotechnic operations are conducted in a manner that exposes the minimum number of people to the smallest quantity of explosives for the shortest period consistent with the operation being conducted. (Requirement 46110)

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text
NPR 8715.3C	03.12.2	46130	Operational Safety: Underwater Operations Safety: Center Directors and project managers shall use NSS/WS 1740.10, NASA Safety Standard for Underwater Facility and Non-Open Water Operations, as the minimum standard to establish the safety requirements for all NASA neutral buoyancy facilities, equipment, personnel, and operations involving underwater activities including the simulation of a weightless environment. (Requirement 46130) Note: This standard also applies to NASA personnel participating in underwater operations at non-NASA facilities.
NPR 8715.3C	03.15.4.c	46234	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: Laser operations during any open-air laser scenario conducted on DoD-controlled ranges or test facilities or by DoD personnel use the Range Commanders Council Document 316-91, Laser Range Safety. (Requirement 46234)
NPR 8715.3C	03.15.4.g	46238	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: Any laser that can cause injury or damage has a Center-approved safety documentation, test plan, and test procedure review. (Requirement 46238)
NPR 8715.3C	03.17.5	46280	Operational Safety: Confined Spaces: Supervisor shall have the overall responsibility for entry and work in condined spaces and ensure compliance with ANSI Z117.1, Safety Requirements for Confined Space, and the NIOSH Publication No. 87-113, A Guide to Safety in Confined Space. (Requirement 46280) Note: Permit requirements for confined spaces are given in 29 CFR 1910.146, Permit-Required Confined Spaces.
NPR 8715.3C	09.2.1	46666	Safety and Risk Management for NASA Contracts: Applicability and Scope: When NASA activities include contractor involvement, Center Directors and project managers shall include contractors in the NASA Safety Program. (Requirement 46666)
NPR 8715.3C	09.2.2	46667	Safety and Risk Management for NASA Contracts: Applicability and Scope: Center SMA Directors, project managers, COs, and COTRs shall ensure that NASA contracts are written to hold contractors accountable for the safety of their employees, their services, their products, and for complying with NASA and Center safety requirements. (Requirement 46667)
NPR 8715.3C	09.5.1	46707	Safety and Risk Management for NASA Contracts: Access to NASA Facilities by State and Federal Compliance Safety and Health Officers: Unless exclusive Federal jurisdiction is claimed by Federal OSHA, Center Directors and project managers shall allow both Federal and State OSHA compliance safety and health officers and investigators to review and survey contractor operations and investigate contractor mishaps at NASA Centers. Note: If the state does not have a Department of Labor-approved safety plan or the Center is under exclusive Federal jurisdiction, only Federal compliance officers shall have the right of access to NASA or contractor operations. Further access requirements for OSHA and National Institute of Occupational Safety and Health are provided in NPR 8715.1, NASA Occupational Safety and Health Programs.
NPR 8715.3C	09.5.2.a	46709	Safety and Risk Management for NASA Contracts: Access to NASA Facilities by State and Federal Compliance Safety and Health Officers: Center Directors and project managers shall: Notify the OSMA, the OCHMO, Occupational Health Division, and the Designated Agency Safety and Health Official (DASHO) of any OSHA (Federal or State) impending investigations. (Requirement 46709)
NPR 8715.3C	09.5.2.b	46710	Safety and Risk Management for NASA Contracts: Access to NASA Facilities by State and Federal Compliance Safety and Health Officers: Center Directors and project managers shall: Provide the results of Federal and State OSHA investigations to the OSMA, Safety Assurance and Requirements Division, the OCHMO, and the DASHO. (Requirement 46710)
NPR 8715.3C	09.6.1	46712	Safety and Risk Management for NASA Contracts: Contractor Citations: Center Directors and project managers shall ensure contractor organizations are accountable for providing their employees with safe working conditions regardless of where the employees are working. Note: This provision is required by 5 U.S.C. Section 7902; 29 U.S.C. Section 651 et seq.; 49 U.S.C. Section 1421, the Occupational Safety and Health Act of 1970, as amended, and therefore, it is the contractor's responsibility to submit a timely reply to any OSHA citation it receives. The contractor is responsible for settling citations issued against its operation unless specifically addressed in the contract. (Requirement 46712)

Enclosure 4: Traceability of Individual Requirements from NASA-Level Safety and Mission Assurance Documents which are Directly Applicable to Constellation Program

Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Requirement Text	CxP Discipline	CxP Doc Num	CxP Doc Para	CxP Doc Req
NASA STD 8719.13B	4.1.1	33382	When the system is determined to be safety-critical, the software shall be evaluated for its contribution to the safety of the system. (Requirement 33382)	SWA	CxP 70059	7.5.7.2	SWA-69
NASA STD 8719.13B	4.1.1.1	33383	Until proven otherwise, based on the following evaluation criteria, all software within a safety critical system shall be assumed to be safety critical. (Requirement 33383)	SWA	CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.1.1.2.a	33385	Software shall be classified as safety-critical if it meets at least one of the following criteria: Resides in a safety-critical system (as determined by a hazard analysis) AND at least one of the following apply: 1) Causes or contributes to a hazard. 2) Provides control or mitigation for hazards. 3) Controls safety-critical functions. 4) Processes safety-critical commands or data (see note 4-1 below). 5) Detects and reports, or takes corrective action, if the system reaches a specific hazardous state. 6) Mitigates damage if a hazard occurs. 7) Resides on the same system (processor) as safety-critical software (see note 4-2 below). (Requirement 33385)	SWA	CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.1.1.2.b	33386	Software shall be classified as safety-critical if it meets at least one of the following criteria: Processes data or analyzes trends that lead directly to safety decisions (e.g., determining when to turn power off to a wind tunnel to prevent system destruction). (Requirement 33386)	SWA	CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.1.1.2.c	33387	Software shall be classified as safety-critical if it meets at least one of the following criteria: Provides full or partial verification or validation of safety-critical systems, including hardware or software subsystems. (Requirement 33387)	SWA	CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.1.1.2.Note 4-1:	33388	If data is used to make safety decisions (either by a human or the system), then the data is safety-critical, as is all the software that acquires, processes, and transmits the data. However, data that may provide safety information but is not required for safety or hazard control (such as engineering telemetry) is not safety-critical. (Requirement 33388)	SWA	CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.1.1.3(1)	33390	The software evaluation shall occur during the concept or formulation phase, prior to the acquisition or planning for the given software for all new projects. (Requirement 33390)	SWA	CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.1.1.4	33392	The evaluation results shall be recorded in an appropriate document. (Requirement 33392)	SWA	CxP 70059	7.5.7.3	SWA-76
NASA STD 8719.13B	4.1.1.5	33393	The Center or responsible Program Safety and Mission Assurance (SMA) organization shall approve the evaluation conclusions. (Requirement 33393)	SWA	CxP 70059	7.5.7.2	SWA-124
					CxP 70059	7.5.7.6	SWA-112
NASA STD 8719.13B	4.1.2	33394	The requirements of this Standard shall apply to all safety-critical software elements regardless of the presence of non-software hazard controls or mitigations (e.g., operator intervention, hardware overrides). (Requirement 33394)	SWA	CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	4.2.1	33399	Software safety personnel shall participate in system safety analyses, including the PHA, which is usually conducted during the concept or formulation phase. (Requirement 33399)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
NASA STD	4.2.1.1	33400	Identified hazards associated with a specific requirement, design concept and/or	SWA	CxP 70059	7.5.7.3	SWA-75

8719.13B			operation shall be evaluated for software s contribution to hazard causes, controls, or mitigations. (Requirement 33400)		CxP 70059	7.5.7.3	SWA-76
NASA STD 8719.13B	4.2.1.2	33401	Software safety analyses shall be conducted in conjunction with the overall system safety analyses. System safety analyses provide input into software safety analyses, and results of the software analyses are provided back to the system safety program for use in updating and refining their analyses. These analyses, and the feedback loop, will continue throughout the system life cycle as more detail becomes available, including the design and verification of software safety features. (Requirement 33401)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
NASA STD 8719.13B	4.2.2	33402	System safety analyses, including the PHA, subsequent system hazard analyses, and software safety analyses shall be used to create new, or identify existing, software requirements necessary to mitigate or resolve any hazards where software is a potential cause or contributor, or enable software to be used as a hazard control. Such requirements are designated as software safety requirements. (Requirement 33402)	SWA	CxP 70059	7.5.7.5.1	SWA-80
NASA STD 8719.13B	4.2.2.1	33403	Identified software safety requirements and software hazard causes, contributors, and controls shall be recorded in an appropriate document and referenced in a safety plan. The requirements are usually documented in a section of the software requirements specification. The safety plan can be part of a system safety plan, a software management/development plan, a software or system assurance plan, or when warranted, in a standalone software safety plan. (Requirement 33403)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.5.1	SWA-80
NASA STD 8719.13B	5.01.2.1	33424	Program/project/facility management shall be responsible for software safety planning within the project. (Requirement 33424)	SWA	CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.4.2	SWA-125
					CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.01.2.1.1	33425	Program/project/facility management shall consult with software safety personnel regarding the acquisition of safety-critical software and its applicability to this Standard. (Requirement 33425)	SWA	CxP 70059	7.5.7.3	SWA-127
NASA STD 8719.13B	5.01.2.1.2	33426	Program/project/facility management shall ensure that the acquired or developed system is periodically evaluated for the use of software in safety-critical functions. (Requirement 33426)	SWA	CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70065	0	CSR-34-008
NASA STD 8719.13B	5.01.2.1.3	33427	Program/project/facility management shall provide adequate resources, including trained software safety personnel (trained per NASA policy), schedule time, tools, and budget, to the software safety program. (Requirement 33427)	SWA	CxP 70059	7.5.7.4.1	SWA-100
NASA STD 8719.13B	5.01.2.1.4	33428	Program/project/facility management shall designate personnel to be responsible for the software safety program (e.g., software safety manager) of the project, program, or facility. (Requirement 33428)	SWA	CxP 70059	7.2	SWA-3
NASA STD 8719.13B	5.01.2.1.5	33429	Program/project/facility management shall work with SMA management to provide a means to resolve conflicts related to software safety requirements or processes. (Requirement 33429)	SWA	CxP 70059	1.8	MGT-18
					CxP 70059	1.8	MGT-19
					CxP 70059	1.8	MGT-20
					CxP 70059	1.9	MGT-21
NASA STD 8719.13B	5.01.2.2	33430	Program/project/facility management shall ensure that the software safety program is planned and executed throughout the entire software life cycle. (Requirement 33430)	SWA	CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.4.3	SWA-72
NASA STD 8719.13B	5.01.2.3	33431	Program/project/facility management shall ensure that software safety is an integral part of the overall system safety and software development efforts. (Requirement 33431)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77

					CxP 70065	3.4	CSR-34-10
NASA STD 8719.13B	5.01.2.4	33432	Program/project/facility management shall implement a process or mechanism to document, trace, communicate, and close software safety concerns that result from safety analyses or design reviews, with concurrence of the safety personnel. (Requirement 33432)	SWA	CxP 70059	7.5.3	SWA-45
					CxP 70059	7.5.3	SWA-46
					CxP 70059	7.5.3	SWA-47
NASA STD 8719.13B	5.01.3.1	33434	A software safety manager shall be assigned to each project, program or facility, with the responsibility to develop and implement the software safety processes and plans. (Requirement 33434)	SWA	CxP 70059	7.2	SWA-3
NASA STD 8719.13B	5.01.3.1.1	33435	The software safety manager shall communicate software safety concerns directly to the project manager for resolution within the project. (Requirement 33435)	SWA	CxP 70059	7.5.7.4.1	SWA-6
NASA STD 8719.13B	5.01.3.1.2	33436	The software safety manager shall follow the approved method to elevate software safety concerns that cannot be resolved within the project. (Requirement 33436)	SWA	CxP 70059	7.5.7.4.1	SWA-6
NASA STD 8719.13B	5.01.3.1.3	33437	The software safety manager shall assure that risks affecting software safety are captured, addressed, and managed as part of program, project, and facility risk management processes, and those risks which could impose a system hazard are captured in the system hazard analyses. (Requirement 33437)	SWA	CxP 70059	7.5.7.4.1	SWA-101
NASA STD 8719.13B	5.01.3.1.4	33438	The software safety manager (or designee) shall be a part of any change control board that approves software modifications affecting safety-critical systems. (Requirement 33438)	SWA	CxP 70059	7.5.7.4.3	SWA-7
NASA STD 8719.13B	5.01.3.1.5	33439	The software safety manager shall provide input to management on the selection of off-the-shelf or previously created (reused) software for incorporation into safety-critical systems. (Requirement 33439)	SWA	CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	5.01.3.1.6	33440	The software safety manager shall provide inputs to management regarding requirements to be imposed on a contractor(s) for development of safety-critical software. These requirements include, at a minimum, documentation, process definition, quality assurance and verification and validation requirements as they relate to assuring safety of the system. (Requirement 33440)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.01.3.2	33441	One or more personnel shall be assigned the responsibility for performing software safety analyses (or assuring it is properly conducted and documented). This person or persons shall be referred to in this document as the software safety personnel. (Requirement 33441)	SWA	CxP 70059	7.2	SWA-3
NASA STD 8719.13B	5.01.3.2.1	33442	Software safety personnel shall have the organizational freedom and authority to analyze and report software safety non-conformances. (Requirement 33442)	SWA	CxP 70059	1.8	MGT-18
					CxP 70059	1.8	MGT-19
					CxP 70059	7.5.7.4.1	SWA-101
NASA STD 8719.13B	5.01.3.2.2	33443	Software safety personnel shall review system hazard analyses for changes that impact the software subsystem. (Requirement 33443)	SWA	CxP 70059	7.5.7.3	SWA-75
NASA STD 8719.13B	5.01.3.2.3	33444	Software safety personnel shall provide information on changes in safety-critical software to system safety personnel for evaluation and incorporation into system safety documents. (Requirement 33444)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.5	SWA-86
					CxP 70065	3.4	CSR-34-10
NASA STD 8719.13B	5.01.3.2.4	33445	Software safety personnel shall support the system safety review process. (Requirement 33445)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.5	SWA-86
					CxP 70065	3.4	CSR-34-10

NASA STD 8719.13B	5.01.3.2.5	33446	Software safety personnel shall participate in project reviews. These include any NASA-specific reviews, e.g., Preliminary and Critical Design Reviews (PDR, CDR), Design Certification Review (DCR), FACI (First Article Configuration Inspection), Test Readiness Review (TRR), Certification of Flight Readiness (CoFR), Preflight Acceptance Review (PAR), Flight Acceptance Review (FAR), facility reviews, etc. (Requirement 33446)	SWA	CxP 70059	2.2.1	SAF-181
NASA STD 8719.13B	5.01.4.1	33448	At least one software assurance engineer shall be assigned responsibility for assuring that software safety is planned, approved, and implemented. (Requirement 33448)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.01.4.1.1	33449	The software assurance engineer shall assure that software safety processes, product standards and procedures are followed. (Requirement 33449)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.4.2	SWA-125
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.01.4.1.2	33450	The software assurance engineer shall be assigned responsibility for performing software safety assurance audits. (Requirement 33450)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.4.2	SWA-125
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.01.4.1.3	33451	The software assurance engineer shall report software safety process non conformances to software and system safety personnel, to project/program/facility management. (Requirement 33451)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.5.3	SWA-45
					CxP 70059	7.5.3	SWA-46
					CxP 70059	7.5.3	SWA-47
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.1	33457	Software safety assessment and planning shall be performed for each software acquisition, development, and maintenance activity, and for changes to legacy systems. (Requirement 33457)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
					CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.02.1.1	33458	Safety program reviews shall be planned and conducted to ensure proper implementation of the software safety program. (Requirement 33458)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
					CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.02.2	33459	Software safety planning shall be implemented at a point in time sufficient to provide direction to personnel performing the software development and assurance activities. Ideally, software safety planning will begin at project conception or formulation. Legacy systems and projects already in development should determine, with input from Center or program SMA, how this Standard should be applied. (Requirement 33459)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
					CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.02.3	33460	The software safety manager shall document software safety planning information in a Software Safety Plan. (Requirement 33460)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
					CxP 70065	3.4	CSR-34-011
NASA STD	5.02.3.1	33461	If the Software Safety Plan is documented in multiple locations, each plan shall	SWA	CxP 70065	3.4	CSR-34-011

8719.13B			include a cross-reference to the safety activities in the associated/related plans. (Requirement 33461)		CxP 70128	4.2.6.1	4.2.6.1
NASA STD 8719.13B	5.02.3.2	33462	The Software Safety Plan shall be under configuration control. (Requirement 33462)	SWA	CxP 70065	3.1	CSR-31-003
					CxP 70073-01	0	CxP 70073-01
NASA STD 8719.13B	5.02.4.	33463	The Software Safety Plan shall describe how the requirements specified by this Standard will be implemented. For example, this can be done by means of a matrix showing the relationship between requirements of this Standard and the activities specified in the plan. (Requirement 33463)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.5	33464	The Software Safety Plan shall specify the activities to be carried out, the schedule on which they will be implemented, the personnel who will carry out the activities, the methodologies used, and the products that will result. (Requirement 33464)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.6	33465	The Software Safety Plan shall address the interrelationships among system safety, software assurance, software development efforts, and the Center or Program SMA organization. (Requirement 33465)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.6.1	33466	If this project is a candidate for IV&V, the Software Safety Plan shall address, either specifically or by reference to the IV&V MOA, the role of IV&V for the safety-critical software and detail how IV&V will work with the software safety program and personnel. (Requirement 33466)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.6.2	33467	The Software Safety Plan shall specifically address the mechanism by which safety-critical requirements are generated, implemented, tracked, and verified. (Requirement 33467)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.6.3	33468	The Software Safety Plan shall specify procedures for ensuring prompt follow-up and satisfactory resolution of software safety concerns and recommendations. (Requirement 33468)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.6.4	33469	The Software Safety Plan shall specify how the software safety activity schedule will be synchronized with related program/project activities. (Requirement 33469)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.02.6.5	33470	The Software Safety Plan shall specify the number and relative schedule of software safety assurance audits. (Requirement 33470)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.02.6.6	33471	The Software Safety Plan shall document an agreement between the project and NASA Center level SMA detailing when software safety engineers are required to review a system (e.g. when certain types of problems or anomalies are reported) and the proposed solutions or upgrades. (Requirement 33471)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.02.6.7	33472	The Software Safety Plan will also document responsibility for monitoring the system during operation, and procedures to be followed when those monitoring the system feel safety of the system, environment, or personnel may be threatened. (Requirement 33472)	SWA	CxP 70065	3.4	CSR-34-011

NASA STD 8719.13B	5.02.7	33473	The Software Safety Plan shall be periodically reviewed to ensure it addresses expected system operational conditions. These reviews consist of routine scheduled reviews, and event driven reviews. As a minimum, these reviews will be performed at the following times: (1) Prior to delivery. (2) Every 2 years. (3) Prior to retirement, extended deactivation, and reactivation after retirement or extended periods. (4) When a major change is made to the system or operating procedures. (Requirement 33473)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.02.7.Note	33474	The Software Safety Plan should be revised when differences exist between the plan and actual/expected conditions. Software safety personnel may generate a completely new plan in place of revising the old plan if desired. (Requirement 33474)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.03.1	33476	The project/program/facility software safety plan shall have a section describing the training requirements for all project software safety roles. This includes training on or about the specific system and environment the project/program/facility will operate in. (Requirement 33476)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.04.1	33478	Resource requirements and the allocation of those resources to software safety tasks for this project/program/facility shall be specified in an appropriate project plan and in the process planning documents. (Requirement 33478)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.05.1	33480	The integration of software safety with the chosen software life cycle shall be documented in the project Software Safety Plan. (Requirement 33480)	SWA	CxP 70059	1.13	MGT-32
					CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.05.2	33481	Software safety activities shall be performed throughout all phases of the software development life cycle. Activities which may be completed within or dependent upon a particular phase, or may need to be updated within successive phases, are documented as such. (Requirement 33481)	SWA	CxP 70059	1.2	MGT-2
NASA STD 8719.13B	5.05.3	33482	Software safety activities shall continue to be performed at a needed level once the system is operational. Section 7 provides requirements for the operational phase of the system. (Requirement 33482)	SWA	CxP 70059	1.2	MGT-2
NASA STD 8719.13B	5.06.1	33484	The documents to be prepared as part of the software safety program, and their contents, shall be specified in the Software Safety Plan. (Requirement 33484)	SWA	CxP 70059	1.13	MGT-32
NASA STD 8719.13B	5.06.2	33485	The change and approval process for software safety related portions of all project documents, including the plan itself, shall be specified in an appropriate project plan. (Requirement 33485)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.06.3(01)	33487	The following documentation shall address safety-critical software: Software Safety Plan (Requirement 33487)	SWA	CxP 70065	3.4	CSR-34-011
NASA STD 8719.13B	5.06.3(02)	33488	The following documentation shall address safety-critical software: Software Project Management Plan (Requirement 33488)	SWA	CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.06.3(03)	33489	The following documentation shall address safety-critical software: Software Configuration Management Plan (Requirement 33489)	SWA	CxP 70065	3.1	CSR-31-003
					CxP 70073-01	0	CxP 70073-01
NASA STD 8719.13B	5.06.3(04)	33490	The following documentation shall address safety-critical software: Software Quality Assurance Plan (Requirement 33490)	SWA	CxP 70128	4.2	4.2
NASA STD 8719.13B	5.06.3(05)	33491	The following documentation shall address safety-critical software: Software Requirements Specification (Requirement 33491)	SWA	CxP 70059	7.5.7.5.5	SWA-96
					CxP 70065	0	CSR-34-005
NASA STD 8719.13B	5.06.3(06)	33492	The following documentation shall address safety-critical software: Software Design Documentation (Requirement 33492)	SWA	CxP 70059	7.5.7.5.2	SWA-85
					CxP 70065	3.4	CSR-34-007

NASA STD 8719.13B	5.06.3(07)	33493	The following documentation shall address safety-critical software: Verification and Validation Plan (Requirement 33493)	SWA	CxP 70059	7.5.7.5.4	SWA-94
					CxP 70065	3.4	CSR-34-007
NASA STD 8719.13B	5.06.3(08)	33494	The following documentation shall address safety-critical software: Safety Analyses and Reports (Requirement 33494)	SWA	CxP 70059	7.5.7.5	SWA-86
					CxP 70065	3.4	CSR-34-10
NASA STD 8719.13B	5.06.3(09)	33495	The following documentation shall address safety-critical software: Test Documentation (Requirement 33495)	SWA	CxP 70059		SWA-34
					CxP 70065	3.4	CSR-34-007
NASA STD 8719.13B	5.06.3(10)	33496	The following documentation shall address safety-critical software: User documentation and procedures (Requirement 33496)	SWA	CxP 70059	7.5.7.7	SWA-117
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.06.3(11)	33497	The following documentation shall address safety-critical software: Operations and Maintenance Plan (Requirement 33497)	SWA	CxP 70059	7.5.7.7	SWA-115
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.07.1	33502	A tracing system shall map the relationships between software safety requirements and system hazards, as well as trace the flow down of software safety requirements to design, implementation, and test. (Requirement 33502)	SWA	CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	5.07.1.1	33503	The software tracing system shall include, or link to, the system-level hazard tracking system to allow tracking of software-related hazard controls and mitigations, and to verify closure of system hazards. (Requirement 33503)	SWA	CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	5.07.2	33504	The tracing system shall be under configuration control. (Requirement 33504)	SWA	CxP 70059	7.5.7.5.5	SWA-96
					CxP 70065	0	CSR-33-001
NASA STD 8719.13B	5.07.3	33505	The tracing system reports shall be reviewed by software safety personnel. These reports are, at a minimum, available for project formal reviews. (Requirement 33505)	SWA	CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	5.08.1	33507	There shall be a system for closed-loop tracking of discrepancies, problems, and failures in the baselined safety-critical software products and processes. (Requirement 33507)	Safety	CxP 70059	2.2.2.2	SAF-36
					CxP 70068	0	CxP 70068
NASA STD 8719.13B	5.08.1.1	33508	This system shall trace identified safety-critical software problems back to the system-level hazard involved. (Requirement 33508)	SWA	CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	5.08.1.2	33509	Software safety personnel shall approve safety-critical discrepancy report closures. (Requirement 33509)	SWA	CxP 70059	7.5.3	SWA-45
NASA STD 8719.13B	5.08.2	33510	All discrepancy reports shall be reviewed regularly for safety impacts by software safety personnel. (Requirement 33510)	SWA	CxP 70059	7.5.3	SWA-46
NASA STD 8719.13B	5.08.3	33511	All software changes including those that result from problem or discrepancy resolution shall be evaluated for potential safety impact, including the creation of new hazard contributions and impacts, modification of existing hazard controls or mitigations, or detrimental effect on safety-critical software or hardware. (Requirement 33511)	SWA	CxP 70059	7.5.3	SWA-47
NASA STD 8719.13B	5.09(1)	33513	Safety-critical software is managed in accordance with a software configuration management process that is approved by the software configuration manager. (Requirement 33513)	SWA	CxP 70059	7.5.7.4.3	SWA-73
NASA STD 8719.13B	5.09(2)	33514	Software configuration management is practiced during all phases of the software life cycle, from initiation of development through software maintenance, and is responsible for ensuring that any changes during the development and maintenance processes are made in a controlled and complete manner. (Requirement 33514)	SWA	CxP 70059	7.5.7.4.3	SWA-73
NASA STD 8719.13B	5.09.1	33516	Software and documentation shall be placed under strict configuration control, including source code, executables, test plans and procedures, and associated data, prior to verification of the safety requirements. (Requirement 33516)	SWA	CxP 70059	7.5.7.4.3	SWA-73
					CxP 70065	3.1	CSR-31-003

NASA STD 8719.13B	5.09.1.1	33517	All baselined safety-critical software and associated documentation, simulators, models, test suites, data, etc. shall be maintained in a controlled configuration management system. (Requirement 33517)	SWA	CxP 70059	7.5.7.4.3	SWA-73
NASA STD 8719.13B	5.09.1.2	33518	The organization responsible for Software Configuration Management shall formally provide and document the release of safety-critical software. (Requirement 33518)	SWA	CxP 70059	7.5.7.4.3	SWA-73
NASA STD 8719.13B	5.09.2	33519	All changes, modifications, and patches made to safety-critical requirements, design, code, systems, equipment, test plans, procedures, simulators, models, test suites, or criteria shall be evaluated to determine the effect of the proposed change on system safety. (Requirement 33519)	SWA	CxP 70059	7.3.6	SWA-28
NASA STD 8719.13B	5.09.2.1	33520	Software safety personnel shall approve changes to baselined safety-critical software. (Requirement 33520)	SWA	CxP 70059	7.5.7.4.3	SWA-74
NASA STD 8719.13B	5.09.3	33521	For software in its operational phase, the configuration management system shall track and control incremental changes to the safety-critical software and its release to operations. (Requirement 33521)	SWA	CxP 70065	3.1	CSR-31-003
					CxP 70073-01	0	CxP 70073-01
NASA STD 8719.13B	5.09.3.1	33522	Any reconfiguration changes made to the software system on a routine basis (e.g., mission-specific database changes) shall be configuration controlled. This allows a record so that safety impacts may be analyzed if needed. (Requirement 33522)	SWA	CxP 70065	3.1	CSR-31-003
					CxP 70073-01	0	CxP 70073-01
NASA STD 8719.13B	5.10.1	33524	Acceptance or closure of any system-level hazards related to software shall be dependent on the successful conclusion of all assurance activities linked to its associated software safety requirements. (Requirement 33524)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
NASA STD 8719.13B	5.10.2	33525	Software safety tasks shall be coordinated with the overall software assurance disciplines to eliminate duplication of effort. (Requirement 33525)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	5.11.1	33527	The approach to preventing the inadvertent introduction of software hazards by project tools shall be documented in an appropriate project plan. Tools may include CASE products, compilers, editors, fault tree generators, simulators, emulators, and test environments for hardware and software. (Requirement 33527)	SWA	CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.11.1.1	33528	All project tools that could potentially impact safety-critical software, the degree of impact, and mitigation strategies shall be identified in the appropriate project plan. (Requirement 33528)	SWA	CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.11.1.2	33529	The process and criteria used to select, approve, and control project tools shall be described in the appropriate project plan. (Requirement 33529)	SWA	CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.11.1.2.1	33530	The process shall address the following areas: installation of upgrades to previously approved tools, withdrawal of a previously approved tool, and identification of limitations that may be imposed on tool use. (Requirement 33530)	SWA	CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.11.1.2.2	33531	The software safety manager shall ensure sufficient safety testing and analysis is performed to verify that any changes in the use of project tools does not influence known hazards or adversely affect the residual risk of the software. (Requirement 33531)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91

					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	5.11.2	33532	The software safety manager shall approve the approach. (Requirement 33532)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.5.7.4.1	SWA-6
NASA STD 8719.13B	5.12.1	33534	All off-the-shelf and reused software shall be evaluated for the potential to impact safety-critical functions within the current system. (Requirement 33534)	SWA	CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	5.12.1.1	33535	Safety-critical OTS and reused software shall undergo safety analysis that considers its ability to meet required safety functions, extra functionality, even if not planned for use that may be present, the impact on safety, and interfaces to developed code. (Requirement 33535)	SWA	CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	5.12.1.2	33536	Software safety analysis shall consider the interactions of COTS software components with the developed software and any other COTS software that is part of the system. (Requirement 33536)	SWA	CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	5.12.1.3	33537	Additional analysis, testing, or a combination thereof shall be performed to verify safety-critical OTS or reused software to the same level required of in-house developed software to the extent possible via black box testing. (Requirement 33537)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	5.13.1	33541	The contract or MOA/MOU shall include provisions sufficient to assure that the contracted safety-critical software is developed according to this Standard. (Requirement 33541)	SWA	CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
					CxP 70059	1.3	MGT-6
					CxP 70059	7.1	SWA-1
					CxP 70059	7.3.1	SWA-9
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	5.13.1.1	33542	The contract or MOA/MOU shall include all software safety deliverables, including the software safety plan, preliminary and subsequent hazard analyses, safety-critical software development audit reports, and verification reports. (Requirement 33542)	SWA	CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
					CxP 70059	1.3	MGT-6
					CxP 70059	7.1	SWA-1
					CxP 70059	7.3.1	SWA-9

					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	5.13.1.2	33543	The contract or MOA/MOU shall specify how the customer (i.e., the NASA program/project) will determine if the contractor is performing the software safety activities properly. (Requirement 33543)	SWA	CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
					CxP 70059	1.3	MGT-6
					CxP 70059	7.1	SWA-1
					CxP 70059	7.3.1	SWA-9
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	5.13.1.3	33544	The contract or MOA/MOU shall define a method for problem reporting and corrective action between the contractor and the customer. (Requirement 33544)	SWA	CxP 70059	7.5.7.4.1	SWA-101
NASA STD 8719.13B	5.13.1.4	33545	The contract or MOA/MOU shall specify that customer agreement is required for changes to baselined safety-critical software elements. (Requirement 33545)	SWA	CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
					CxP 70059	1.3	MGT-6
					CxP 70059	7.1	SWA-1
					CxP 70059	7.3.1	SWA-9
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
NASA STD 8719.13B	5.14.1	33547	There shall be an official certification process established, documented, and conducted prior to the release of any safety-critical software for its intended operational use. (Requirement 33547)	SWA	CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	5.14.3.a	33550	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All software hazards have been identified. (Requirement 33550)	SWA	CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	5.14.3.b	33551	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All hazard controls that require software implementation have been identified. (Requirement 33551)	SWA	CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	5.14.3.c	33552	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All software safety requirements and elements have been identified and tracked. (Requirement 33552)	SWA	CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	5.14.3.d	33553	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All software safety requirements and elements have been successfully validated, or waivers/deviations have been approved. (Requirement 33553)	SWA	CxP 70059	7.5.7.5.6	SWA-99
					CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	5.14.3.e	33554	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All software safety requirements and elements have been properly verified, or waivers/deviations have been approved. (Requirement 33554)	SWA	CxP 70059	7.5.7.5.6	SWA-99
					CxP 70059	7.5.7.6	SWA-109

NASA STD 8719.13B	5.14.3.f	33555	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All discrepancies in safety-critical software have been dispositioned with the safety organization's concurrence, per the certification process. (Requirement 33555)	SWA	CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	5.14.3.g	33556	The software safety organization shall participate in evaluation of the following areas as part of their certification process: All operational workarounds associated with discrepancies in safety-critical software have the concurrence of the Center or Program safety organization, per the certification process. (Requirement 33556)	SWA	CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	5.14.4	33557	Personnel conducting software safety functions shall be prepared to represent the software to an appropriate safety panel for certification. (Requirement 33557)	SWA	CxP 70059	7.5.7.6	SWA-111
NASA STD 8719.13B	5.14.5	33558	The organization providing the safety engineering shall approve the results and reports prior to acceptance of the software and the system. The Center SMA organization reviews the results and provides final certification or approval for operation of safety-critical products and facilities. (Requirement 33558)	SWA	CxP 70059	7.5.7.6	SWA-110
					CxP 70059	7.5.7.6	SWA-112
NASA STD 8719.13B	5.15.1	33560	If one or more requirements (i.e., a numbered “shall” statement) contained within this Standard cannot be met by any safety-critical software project, a waiver/deviation package shall be prepared by a software safety expert and approved according to NPR 8715.3. (Requirement 33560)	SWA	CxP 70059	7.5.7.5.6	SWA-99
NASA STD 8719.13B	5.15.2	33561	The project shall submit a written request for a waiver/deviation, detailing the justification to support the waiver/deviation. (Requirement 33561)	SWA	CxP 70059	7.5.7.5.6	SWA-99
NASA STD 8719.13B	6.1.1	33570	Software safety requirements shall be developed and included in the software requirements specification. (Requirement 33570)	SWA	CxP 70059	7.5.7.5.1	SWA-80
					CxP 70065	0	CSR-34-005
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.1.1.1	33571	Software safety requirements shall be derived from the system safety requirements, environmental requirements, standards, program specification, vehicle or facility requirements, interface requirements, system hazard reports, and system hazard analyses [ref. section 4.2]. (Requirement 33571)	SWA	CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70065	0	CSR-34-005
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.1.1.2	33572	Software safety requirements, both generic and specific, shall be clearly identified as such in the software requirements specification. (Requirement 33572)	SWA	CxP 70059	7.5.7.5.1	SWA-80
					CxP 70065	0	CSR-34-005
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.1.1.3	33573	Software safety requirements shall be expressed and structured so that they are clear, precise, unequivocal, verifiable, testable, maintainable and feasible. (Requirement 33573)	SWA	CxP 70065	3.4	CSR-34-004
NASA STD 8719.13B	6.1.1.4	33574	Software safety requirements shall include the modes or states of operation under which they are valid, and any modes or states in which they are not applicable. Note: These requirements are also referred to as “must work” and “must not work” functions. For example, the safety critical commands and checks which initiate a robotic arm movement must not work during system initiation or perhaps when in maintenance mode. (Requirement 33574)	SWA	CxP 70059	7.5.7.5.1	SWA-78
NASA STD 8719.13B	6.1.1.5	33575	Any safety related constraints between the hardware and software shall be included in the software requirements documentation. That is, when the software and hardware work together to perform a safety critical function, their roles, precedence, and failure modes, are documented and understood. (Requirement 33575)	SWA	CxP 70059	7.5.7.5.1	SWA-71
NASA STD 8719.13B	6.1.2	33576	Software safety personnel shall analyze the software safety requirements, both technical and procedural. (Requirement 33576)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44

					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.1.2.1.a	33578	The analysis methodology shall be recorded in an appropriate document and include the following steps, at a minimum: Verify that all software safety requirements meet the requirements of section 6.1.1 and sub-sections. (Requirement 33578)	SWA	CxP 70059		SWA-81
					CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70059	7.5.7.5	SWA-86
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
					CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	6.1.2.1.b	33579	The analysis methodology shall be recorded in an appropriate document and include the following steps, at a minimum: Examine the software safety requirements for ambiguities, inconsistencies, omissions, and undefined conditions. (Requirement 33579)	SWA	CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70059	7.5.7.5	SWA-86
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	6.1.2.1.c	33580	The analysis methodology shall be recorded in an appropriate document and include the following steps, at a minimum: Verify that all software safety requirements are traceable to system safety requirements, environmental requirements, standards, program specification, vehicle or facility requirements, interface requirements, and system hazard reports. (Requirement 33580)	SWA	CxP 70059	7.5.7.5.5	SWA-96
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.1.2.1.d	33581	The analysis methodology shall be recorded in an appropriate document and include the following steps, at a minimum: Verify that the software safety requirements provide adequate response to potential failures. Areas to consider should include, but are not limited to, limit ranges, relationship logic for interdependent limits, out-of-sequence event protection, timing problems, sensor or actuator failures, voting logic, hazardous command processing requirements, Fault Detection, Isolation, and Recovery (FDIR), switchover logic for failure tolerance, and the ability to reach and maintain a safe state if so required. (Requirement 33581)	SWA	CxP 70059		SWA-81
					CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70059	7.5.7.5	SWA-86
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
					CxP 70059	7.5.7.5.5	SWA-96

NASA STD 8719.13B	6.1.2.1.e	33582	The analysis methodology shall be recorded in an appropriate document and include the following steps, at a minimum: Verify that the software safety requirements include positive measures to prevent potential problems and implement required "must work" functions. (Requirement 33582)	SWA	CxP 70059		SWA-81
					CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70059	7.5.7.5	SWA-86
					CxP 70059	7.5.7.5.1	SWA-71
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
					CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	6.1.2.2	33583	The documented results of the analysis, including any newly identified hazards, hazard causes, and improperly decomposed requirements, shall be provided to the responsible system safety personnel. (Requirement 33583)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
NASA STD 8719.13B	6.1.2.3	33584	Improperly decomposed requirements shall be documented for project level resolution. (Requirement 33584)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA STD 8719.13B	6.1.2.4	33585	The software safety requirements analysis results shall be presented at project formal reviews and system-level safety reviews by the responsible safety organization. (Requirement 33585)	SWA	CxP 70059	7.5.7.5	SWA-86
NASA STD 8719.13B	6.2.1	33587	All functional software safety requirements shall be incorporated into the software design. (Requirement 33587)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.7.5.2	SWA-126
					CxP 70065	0	CSR-34-005
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.2.1.1	33588	The software design shall identify safety design features and methods (e.g., inhibits, failure detection and recovery, interlocks, assertions, and partitions) that will be used to implement the software safety requirements. (Requirement 33588)	SWA	CxP 70059	7.5.7.5.2	SWA-83
					CxP 70065	3.1	CSR-31-003
					CxP 70065	3.4	CSR-34-007
NASA STD 8719.13B	6.2.1.2	33589	The software design shall allow software safety features and requirements to be thoroughly tested. (Requirement 33589)	SWA	CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
NASA STD 8719.13B	6.2.1.3	33590	Design elements that implement safety-critical requirements or can potentially affect the safety-critical elements through failure or other mechanisms, shall be designated as safety-critical. (Requirement 33590)	SWA	CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	6.2.1.3.1	33591	Software design documentation shall clearly identify all safety-critical design elements. (Requirement 33591)	SWA	CxP 70059	7.5.7.5.1	SWA-71
NASA STD 8719.13B	6.2.1.4	33592	To the extent practical, the software design shall modularize the safety-related aspects of the design [ref. NASA-GB-8719.13, Software Safety Guidebook]. (Requirement 33592)	SWA	CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.2.2	33593	Software safety personnel shall analyze the software design. (Requirement 33593)	SWA	CxP 70059	7.5.7.5.2	SWA-126
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
NASA STD 8719.13B	6.2.2.1	33594	The analysis methodology shall be recorded in an appropriate document (e.g., software safety plan or software assurance plan). (Requirement 33594)	SWA	CxP 70059	1.13	MGT-32
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	6.2.2.2.a	33596	The analysis methodology shall include the following steps, at a minimum: Verify that the software design meets the requirements of section 6.2.1 and sub-	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44

			sections. (Requirement 33596)		CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.2.2.2.b	33597	The analysis methodology shall include the following steps, at a minimum: Verify that the design does not compromise any safety controls or processes, that any additional hazard, hazard cause, or hazard contribution is documented, and that the design maintains the system in a safe state during all modes of operation. The analysis should, at a minimum, consider: timing constraints, hardware failures, common-mode failures, fault migration, communications, interrupts, concurrency, event sequence, fault tolerance, FDIR design, adverse environments, invalid inputs, off-the-shelf or reused software, design assumptions, information flow, (Requirement 33597)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-94
NASA STD 8719.13B	6.2.2.2.c	33598	The analysis methodology shall include the following steps, at a minimum: Verify that safety features incorporated in the design are adequate for their function. (Requirement 33598)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-94
NASA STD 8719.13B	6.2.2.2.d	33599	The analysis methodology shall include the following steps, at a minimum: Safety analyses, such as PHAs, sub-system hazard analyses, FMEAs (Failure Modes and Effects Analysis), FTAs (Fault Tree Analysis), shall be used to help determine design features to prevent, mitigate or control failures and faults, and the level of failure/fault combinations to include (e.g., both a software and a hardware failure, or multiple concurrent hardware failures). (Requirement 33599)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-95
NASA STD 8719.13B	6.2.2.2.e	33600	The analysis methodology shall include the following steps, at a minimum: Verify that any partitioning or isolation methods used in the design adequately isolate the safety-critical design elements from those that are non-safety-critical. This is particularly important with the incorporation of COTS. (Requirement 33600)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-94
NASA STD 8719.13B	6.2.2.2.f	33601	The analysis methodology shall include the following steps, at a minimum: Verify all safety-critical design elements are traceable to software safety requirements, and vice versa. (Requirement 33601)	SWA	CxP 70059		SWA-81
					CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70059	7.5.7.5	SWA-86
					CxP 70059	7.5.7.5.1	SWA-71
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
					CxP 70059	7.5.7.5.5	SWA-96
NASA STD	6.2.2.3	33602	The documented results of the analysis including any newly identified hazards,	SWA	CxP 70059	7.5.7.3	SWA-75

8719.13B			shall be provided to the responsible system safety personnel. (Requirement 33602)		CxP 70059	7.5.7.3	SWA-76
NASA STD 8719.13B	6.2.2.4	33603	The software safety design analysis results shall be presented at project formal reviews and system-level safety reviews. (Requirement 33603)	SWA	CxP 70059	7.5.7.5	SWA-86
NASA STD 8719.13B	6.3.1	33605	All software safety design features and methods shall be implemented in the software code. (Requirement 33605)	SWA	CxP 70059	7.5.7.5.3	SWA-87
					CxP 70065	3.4	CSR-34-007
NASA STD 8719.13B	6.3.1.1	33606	The software coding standards shall incorporate requirements for clearly identifying safety-critical code and data within source code comments, and strongly discouraging unsafe language features such as pointers or memcopy, requiring these features to also be clearly identified and documented whenever used [ref. checklist in NASA GB 8719.13, NASA Software Safety Guidebook]. (Requirement 33606)	SWA	CxP 70059	7.5.7.5.3	SWA-87
NASA STD 8719.13B	6.3.1.2	33607	The software coding standard shall be used in the development of software code. (Requirement 33607)	SWA	CxP 70059	7.5.7.5.3	SWA-87
NASA STD 8719.13B	6.3.2	33608	Software safety personnel shall analyze the software implementation (e.g., code). (Requirement 33608)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.3.2.1	33609	The analysis methodology shall be recorded in an appropriate document (e.g., software safety plan or software assurance plan). (Requirement 33609)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	5.2.6.1	QAS-TBD
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	6.3.2.2.a	33611	The analysis methodology shall include the following steps, at a minimum, and can include source code reviews and inspections: Verify that the safety-critical software code and data meets the requirements of section 6.3.1 and sub-sections. (Requirement 33611)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.3.2.2.b	33612	The analysis methodology shall include the following steps, at a minimum, and can include source code reviews and inspections: Verify that design safety	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44

			features and methods are correctly implemented in the software code. (Requirement 33612)		CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.3.2.2.c	33613	The analysis methodology shall include the following steps, at a minimum, and can include source code reviews and inspections: Verify that the code implementation does not compromise any safety controls or processes, does not create any additional hazards, and maintains the system in a safe state during all modes of operation. The analysis should, at a minimum, consider the elements detailed in 6.2.2.2.b. (Requirement 33613)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
NASA STD 8719.13B	6.3.2.2.d	33614	The analysis methodology shall include the following steps, at a minimum, and can include source code reviews and inspections: Ensure that code and data verification activities adequately substantiate all software safety requirements, to the extent that a requirement can be verified at a component or unit level. (Requirement 33614)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.3.2.2.e	33615	The analysis methodology shall include the following steps, at a minimum, and can include source code reviews and inspections: Verify all safety-critical code units are traceable to safety-critical design elements. (Requirement 33615)	SWA	CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	6.3.2.3	33616	The documented results of the analysis, including any newly identified hazards and improperly implemented safety features, shall be provided to the responsible system safety personnel. (Requirement 33616)	SWA	CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
NASA STD 8719.13B	6.3.2.4	33617	The software safety code analysis results shall be presented at project formal reviews and system-level safety reviews. (Requirement 33617)	SWA	CxP 70059	7.5.7.5	SWA-86
NASA STD 8719.13B	6.3.3	33618	Verification of each safety-critical code unit and data shall be completed prior to the unit's incorporation in a higher-level code package. (Requirement 33618)	SWA	CxP 70065	3.1	CSR-31-003
					CxP 70086	4.4.3.2.7	4.4.3.2.7
NASA STD 8719.13B	6.4.1	33622	All functional software safety requirements and safety-critical software elements shall be verified by testing. (Requirement 33622)	SWA	CxP 70059	7.5.7.5.4	SWA-90
NASA STD 8719.13B	6.4.1.1	33623	Testing shall verify that system hazards related to software have been eliminated or controlled to an acceptable level of risk. (Requirement 33623)	SWA	CxP 70059	7.5.7.5.4	SWA-91
NASA STD 8719.13B	6.4.1.2	33624	Unit level tests and component level tests shall include software safety testing. (Requirement 33624)	SWA	CxP 70059	7.5.7.5.4	SWA-91
					CxP 70065	3.1	CSR-31-003
NASA STD	6.4.1.2.1	33625	Any simulators, test drivers and stubs, along with any test data, used for testing at	SWA	CxP 70059	7.5.7.4.3	SWA-73

8719.13B			the unit level shall be configuration controlled and documented. (Requirement 33625)		CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.4.1.2.2	33626	Any simulators, test drivers and stubs, along with any test data, used for testing at the component level shall be configuration controlled and documented. (Requirement 33626)	SWA	CxP 70059	7.5.7.4.3	SWA-73
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.4.1.2.3	33627	The results of unit level and component level tests and the test procedures, simulators, test suites, drivers, stubs and data shall be documented. (Requirement 33627) Note: When changes occur within software units or components containing safety-critical requirements, these test articles (simulator, test drivers, and stubs) may be used to conduct regression tests.	SWA	CxP 70059	7.5.7.5.4	SWA-95
NASA STD 8719.13B	6.4.1.3	33628	System and acceptance tests shall include software safety testing. (Requirement 33628)	SWA	CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.4.1.3.1	33629	Correct and safe operation of the software in conjunction with system hardware and operator inputs shall be verified prior to system acceptance. (Requirement 33629)	SWA	CxP 70059	7.5.7.5.4	SWA-94
					CxP 70065	3.1	CSR-31-003
NASA STD 8719.13B	6.4.1.3.2	33630	System testing shall verify the correct and safe operation of the system in the presence of failures and faults including software, hardware, input, timing, memory corruption, communication, and other failures. (Requirement 33630)	SWA	CxP 70059	7.5.7.5.4	SWA-94
NASA STD 8719.13B	6.4.1.3.3	33631	Safety analyses, such as PHAs, sub-system hazard analyses, FMEAs, FTAs, shall be used to determine which failures to test for, and the level of failure combinations to include (e.g., both a software and a hardware failure, or multiple concurrent hardware failures). (Requirement 33631)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	6.4.1.3.4	33632	System testing shall verify the correct and safe operation of the system under system load, stress, and off-nominal conditions. (Requirement 33632)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
NASA STD 8719.13B	6.4.1.3.5	33633	System testing shall verify correct and safe operations in all anticipated operational and off-nominal configurations. (Requirement 33633)	SWA	CxP 70059	7.2	SWA-3
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.7.5.2	SWA-126
					CxP 70065	0	CSR-35-006
NASA STD 8719.13B	6.4.1.4	33634	Additional hazardous states or contributors identified during testing shall undergo complete analysis prior to software delivery or use. (Requirement 33634)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
					CxP 70065	0	CSR-31-009

					CxP 70065	0	CSR-34-006
					CxP 70065	3.4	CSR-34-10
NASA STD 8719.13B	6.4.2	33635	Requirements that cannot be verified by test shall be verified by evaluation, inspection, or demonstration. (Requirement 33635)	SWA	CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-95
NASA STD 8719.13B	6.4.2.1	33636	The rationale for selecting evaluation, inspection, or demonstration shall be recorded in an appropriate document (e.g., system safety report, hazard analysis). (Requirement 33636)	SWA	CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-95
NASA STD 8719.13B	6.4.2.2	33637	The evaluation, inspection, or demonstration methodology shall be recorded in an appropriate document. (Requirement 33637)	SWA			
NASA STD 8719.13B	6.4.2.3	33638	The software safety personnel shall concur with both the rationale for not performing a test and the selected evaluation, inspection, or demonstration methodology used to verify the requirement. (Requirement 33638)	SWA	CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-95
NASA STD 8719.13B	6.4.3	33639	The results from the software and system test process, or the requirements verification evaluation, inspection, or demonstration process, shall be analyzed. (Requirement 33639)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.4.3.1	33640	The analysis methodology shall be recorded in an appropriate document. (Requirement 33640)	SWA			
NASA STD 8719.13B	6.4.3.2.a	33642	The analysis methodology shall include the following steps, at a minimum: Verify that the software and system tests data meet the requirements of section 6.4.1 and sub-sections. (Requirement 33642)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.4.3.2.b	33643	The analysis methodology shall include the following steps, at a minimum: Verify that the requirements verification evaluation, inspection, or demonstration data meet the requirements of section 6.4.2 and sub-sections (Requirement 33643)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.6	SWA-108
					CxP 70059	7.5.7.6	SWA-109

NASA STD 8719.13B	6.4.3.2.c	33644	The analysis methodology shall include the following steps, at a minimum: Verify via test coverage analysis that all safety requirements, functions, controls, and processes have been completely covered within the unit, component, system, and acceptance level tests. (Requirement 33644)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.4.3.2.d	33645	The analysis methodology shall include the following steps, at a minimum: Verify that all software safety requirements have been tested, or evaluated, inspected, or demonstrated. (Requirement 33645)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.4.3.2.e	33646	The analysis methodology shall include the following steps, at a minimum: Verify that all software safety functions are correctly performed and that the software system does not perform unintended functions. (Requirement 33646)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.1	SWA-101
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.3	SWA-87
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94
					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.4.3.3	33647	The documented results of the analysis, including any newly identified hazards and improperly implemented safety features, shall be provided to the responsible system safety personnel. (Requirement 33647)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.3	SWA-75
					CxP 70059	7.5.7.3	SWA-76
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.5.4	SWA-90
					CxP 70059	7.5.7.5.4	SWA-91
					CxP 70059	7.5.7.5.4	SWA-93
					CxP 70059	7.5.7.5.4	SWA-94

					CxP 70059	7.5.7.5.4	SWA-95
					CxP 70059	7.5.7.6	SWA-108
NASA STD 8719.13B	6.4.3.4	33648	Improperly implemented safety features shall be input into the problem reporting system for project-level resolution. (Requirement 33648)	SWA	CxP 70059	2.2.2.2	SAF-36
					CxP 70059	7.5.3	SWA-45
					CxP 70059	7.5.3	SWA-46
					CxP 70059	7.5.3	SWA-47
					CxP 70059	7.5.7.6	SWA-109
NASA STD 8719.13B	6.4.3.5	33649	The software safety test analysis results shall be presented at project formal reviews and system-level safety reviews. (Requirement 33649)	SWA	CxP 70059	7.5.7.5.4	SWA-95
NASA STD 8719.13B	7.1	33655	The requirements of this Standard shall continue to be applicable after the safety-critical software has been released for operations. (Requirement 33655)	SWA	CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
					CxP 70059	7.1	SWA-1
NASA STD 8719.13B	7.2	33656	The software safety requirements to specify, develop, analyze, and test safety-critical software, shall apply to all changes made to the software or routine operational updates (e.g., mission specific database updates). (Requirement 33656)	SWA	CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
					CxP 70059	7.1	SWA-1
NASA STD 8719.13B	7.2.1	33657	Software safety change analysis shall evaluate whether the proposed change could invoke a hazardous state, affect a hazard control, increase the likelihood of a hazardous state, adversely affect safety-critical software, or change the safety-criticality of an existing software element. (Requirement 33657)	SWA	CxP 70059		SWA-81
					CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.1	SWA-68
					CxP 70059	7.5.7.2	SWA-69
					CxP 70059	7.5.7.2	SWA-70
					CxP 70059	7.5.7.5	SWA-86
					CxP 70059	7.5.7.5.1	SWA-71
					CxP 70059	7.5.7.5.1	SWA-78
					CxP 70059	7.5.7.5.1	SWA-80
					CxP 70059	7.5.7.5.2	SWA-83
					CxP 70059	7.5.7.5.2	SWA-85
					CxP 70059	7.5.7.5.5	SWA-96
NASA STD 8719.13B	7.2.1.1	33658	The analysis activity shall include an assessment of the amount of regression testing needed to verify that the implementation of new software requirements has not affected the implementation of existing safety-critical software. (Requirement 33658)	SWA	CxP 70059	7.5.7.7	SWA-113
NASA STD 8719.13B	7.2.1.2	33659	Software safety personnel shall concur on any changes to basic, as built, or approved upgrades of the operational software. (Requirement 33659)	SWA	CxP 70059	7.3.6	SWA-28
					CxP 70059	7.4.3	SWA-40
					CxP 70059	7.5.3	SWA-47
					CxP 70059	7.5.7.4.3	SWA-7
					CxP 70059	7.5.7.4.3	SWA-74
NASA STD 8719.13B	7.3	33660	Operational documentation, including user manuals and procedures, shall describe all safety related commands, data, input sequences, options, and other items necessary for the safe operation of the system. (Requirement 33660)	SWA	CxP 70059	7.5.7.7	SWA-115
NASA STD 8719.13B	7.3.1	33661	All error message descriptions and corrective actions shall be included in operational documentation. (Requirement 33661)	SWA	CxP 70059	7.5.7.7	SWA-116

NASA STD 8719.13B	7.3.2	33662	Software safety personnel shall review any updates to user manuals and procedures for safety impacts, and to ensure that any software-related hazard closures that depend on operational workarounds are properly documented. (Requirement 33662)	SWA	CxP 70059	7.5.7.7	SWA-117
NASA STD 8719.13B	7.4	33663	The requirements of this Standard expire for a particular facility or system only upon the retirement of that facility or system. (Requirement 33663)	SWA	CxP 70059	7.3.8	SWA-32
NASA STD 8719.13B	7.4.1	33664	When the facility or system is retired, there shall be a retirement plan which addresses the safe termination of operations, decommissioning, and retirement of that system or facility. (Requirement 33664)	SWA	CxP 70059	7.3.8	SWA-32
NASA-STD-8739.8	5.1.1(1)	33174	The acquirer shall identify a person with responsibility for software assurance, e.g, a software assurance manager. (Requirement 33174)	SWA	CxP 70059	7.2	SWA-3
NASA-STD-8739.8	5.1.2.01	33177	Ensure completion of the Software Assurance Classification Assessment in Appendix A, for each project, including software management agreement on the results. (Requirement 33177)	SWA	CxP 70059	7.3.1	SWA-9
NASA-STD-8739.8	5.1.2.02	33178	Ensure that projects with safety-critical software comply with the requirements in NASA STD-8719.13 and the software assurance requirements and activities for the assessed Class of software. (Requirement 33178)	SWA	CxP 70059	7.2	SWA-3
NASA-STD-8739.8	5.1.2.03(1)	33179	Ensure that Class A and B projects, which require the most software assurance, follow all the requirements of Sections 5, 6, and 7. (Requirement 33179) See Table 1 for requirements and implementation of those requirements by Software Class. While the implementation of requirements for Class B will be tailored to some degree, the actual requirements are not. Class C software may address tailoring the requirements based on what is applicable for the software engineering requirements of NPR 7150.2 and according to any potential risks specific to the planned operational or development environment. Class D software may have the most requirements tailoring, matching the assurance activities to the less formal development activities. An experienced software assurance engineer must work closely with the project to assess the software for the project and tailor the software assurance activities accordingly. (See Table 1)	SWA	CxP 70059	7.3.1	SWA-10
NASA-STD-8739.8	5.1.2.04	33184	Assure all classifications of software are compared and agreed upon with the project. (Requirement 33184) As some projects may have multiple software tasks, each may need to be assessed separately. The assurance and engineering ITAs will need to settle any disagreements in classification.	SWA	CxP 70059	7.3.1	SWA-11
NASA-STD-8739.8	5.1.2.05	33185	Apply software assurance requirements in Section 5 for the acquirer software assurance activities, based on both the results of the Software Assurance Classification Assessment and Table 1 for guidance. (Requirement 33185)	SWA	CxP 70059	7.3.1	SWA-10
					CxP 70059	7.3.1	SWA-11
					CxP 70059	7.3.1	SWA-12
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.3.1	SWA-14
					CxP 70059	7.3.1	SWA-15
					CxP 70059	7.3.1	SWA-9
					CxP 70059	7.3.2	SWA-16
					CxP 70059	7.3.2	SWA-17
					CxP 70059	7.3.2	SWA-18
					CxP 70059	7.3.2	SWA-19
					CxP 70059	7.3.2	SWA-21
					CxP 70059	7.3.3	SWA-22
					CxP 70059	7.3.3	SWA-23
NASA-STD-	5.1.2.06	33186	Apply software assurance requirements in Sections 6 and 7 for the provider	SWA	CxP 70059	7.4.1	SWA-35

8739.8			software assurance activities for each RFP/MOU/MOA, based on both the results of the Software Assurance Classification Assessment and Table 1 for guidance. (Requirement 33186)		CxP 70059	7.4.1	SWA-37
					CxP 70059	7.4.2	SWA-38
					CxP 70059	7.4.2	SWA-39
					CxP 70059	7.4.3	SWA-40
					CxP 70059	7.4.4	SWA-41
					CxP 70059	7.5.1	SWA-42
					CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.3	SWA-45
					CxP 70059	7.5.3	SWA-46
					CxP 70059	7.5.3	SWA-47
					CxP 70059	7.5.4	SWA-49
					CxP 70059	7.5.4	SWA-50
					CxP 70059	7.5.4	SWA-51
					CxP 70059	7.5.4	SWA-52
					CxP 70059	7.5.5	SWA-53
					CxP 70059	7.5.5	SWA-54
					CxP 70059	7.5.5	SWA-55
					CxP 70059	7.5.5	SWA-56
					CxP 70059	7.5.6	SWA-66
NASA-STD-8739.8	5.1.2.07	33187	Assure contractual statements include appropriate oversight/insight requirements, including needed deliverables (e.g, records, documents, reports). (Requirement 33187)	SWA	CxP 70059	7.3.1	SWA-12
NASA-STD-8739.8	5.1.2.08	33188	Prepare a preliminary acquirer program/project software assurance plan documenting the planned level of software assurance effort and activities required and the necessary resources using the template provided in Appendix B. (Requirement 33188)	SWA	CxP 70059	7.3.1	SWA-13
NASA-STD-8739.8	5.1.2.09	33189	Verify that the RFP/MOU/MOA address software quality metrics (see definition in Section 3.1 of the Standard). (Requirement 33189)	SWA	CxP 70059	7.3.1	SWA-14
NASA-STD-8739.8	5.1.2.10	33190	Participate in the process to identify, analyze, track, and control procurement/development risks. (Requirement 33190)	SWA	CxP 70059	7.3.1	SWA-15
NASA-STD-8739.8	5.2.1.1	33193	Evaluate the proposals to verify that the software assurance requirements in the RFP have been addressed. (Requirement 33193)	SWA	CxP 70059	7.3.2	SWA-16
NASA-STD-8739.8	5.2.1.2	33194	Participate in pre-award surveys when such surveys are requested. (Requirement 33194)	SWA	CxP 70059	7.3.2	SWA-17
NASA-STD-8739.8	5.2.1.3	33195	Participate in contract negotiation to ensure that all software engineering, software assurance, management, and development requirements have been addressed and, where appropriate, are included in any resulting contracts. (Requirement 33195)	SWA	CxP 70059	7.3.2	SWA-18
NASA-STD-8739.8	5.2.1.4	33196	Coordinate with project management to perform an updated Software Assurance Classification Assessment with the accepted proposal information and defined software assurance development approach. (Requirement 33196)	SWA	CxP 70059	7.3.2	SWA-19
NASA-STD-8739.8	5.2.1.5	33197	Apply the updated Software Assurance Classification Assessment results to update the software assurance requirements. (Requirement 33197)	SWA	CxP 70059	7.3.2	SWA-19
NASA-STD-8739.8	5.2.1.6	33198	Ensure that each Software Assurance Classification Assessment Report is maintained and made available to the SMA director, SMA office, SMO, project management, and/or Center Director upon request. (Requirement 33198)	SWA	CxP 70059	7.3.2	SWA-21

NASA-STD-8739.8	5.3.1.1	33201	Verify that the provider's software assurance plan meets contractual requirements. (Requirement 33201)	SWA	CxP 70059	7.3.3	SWA-22
NASA-STD-8739.8	5.3.1.2	33202	Verify that the acquirer's software assurance plan and the provider's software assurance plan are consistent, compatible, and are baselined. (Requirement 33202)	SWA	CxP 70059	7.3.3	SWA-23
NASA-STD-8739.8	5.3.1.3	33203	Ensure that acquirer software assurance personnel are trained and qualified to accomplish their tasks. (Requirement 33203)	SWA	CxP 70059	1.8	MGT-20
NASA-STD-8739.8	5.3.1.4	33204	Assure that provider software assurance personnel are trained and qualified to accomplish their tasks. (Requirement 33204)	SWA	CxP 70059	1.8	MGT-20
NASA-STD-8739.8	5.4.1.1	33207	Provide surveillance to assure that both the acquirer and provider software assurance functions are performed according to their specific software assurance plans and the contract. (Requirement 33207)	SWA	CxP 70059	7.3.4	SWA-119
NASA-STD-8739.8	5.4.1.2	33208	Verify that the provider has developed and maintained processes for assurance of COTS, MOTS, and GOTS software addressing both the basic acquired software and any modifications or applications written to adopt them into the intended system. (Requirement 33208)	SWA	CxP 70059	7.3.4	SWA-120
NASA-STD-8739.8	5.4.1.3	33209	Ensure that acquirer software assurance staff performs tasks to provide insight into whether the provider is adhering to approved software assurance, management, and development plans and procedures and that these plans and procedures are effectively fulfilling their purpose. (Requirement 33209) These tasks may include activities such as audits, reviews, analyses, and assessments.	SWA	CxP 70059	7.3.1	SWA-9
NASA-STD-8739.8	5.4.1.4	33210	Ensure that acquirer software assurance staff performs tasks to provide oversight of the provider's management, assurance, and engineering processes. Specifically, reviews, audits, and evaluations may be performed to ensure adherence to and effectiveness of approved plans and procedures. (Requirement 33210)	SWA	CxP 70059	7.3.1	SWA-9
NASA-STD-8739.8	5.4.1.5	33211	Assure that both deliverable and any designated non-deliverable software development products have proper configuration management. (Requirement 33211)	SWA	CxP 70059	7.3.1	SWA-9
NASA-STD-8739.8	5.4.1.6	33212	Assure that problem reports, discrepancies from reviews, and test anomalies are documented, addressed, analyzed, and tracked to resolution. (Requirement 33212)	SWA	CxP 70059	7.5.3	SWA-45
					CxP 70059	7.5.3	SWA-46
					CxP 70059	7.5.3	SWA-47
					CxP 70059	7.5.7.6	SWA-109
NASA-STD-8739.8	5.4.1.7	33213	Assure that software products (e.g, software requirements, preliminary design, detailed design, use cases, code, models, simulators, test data, inspection results, flow diagrams) are reviewed and software quality metrics (e.g, defect metrics) are collected, analyzed, trended, and documented. (Requirement 33213)	SWA	CxP 70059	7.5.5	SWA-56
NASA-STD-8739.8	5.5.1.1	33216	Ensure that an audit (e.g, Functional Configuration Audit, Physical Configuration Audit) is performed prior to delivery to assure that all delivered products are complete, contain the proper versions, and that all discrepancies, open work, and deviations and waivers are properly documented and approved. (Requirement 33216)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	5.5.1.2	33217	Ensure that any acquirer facilities (e.g, buildings, hardware) are prepared to receive and install the software. (Requirement 33217)	SWA	CxP 70059	7.3.5	SWA-24
NASA-STD-8739.8	5.5.1.3	33218	Assure that all acceptance documentation is present, including signed certifications. (Requirement 33218)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.7.6	SWA-108
					CxP 70059	7.5.7.6	SWA-109

NASA-STD-8739.8	5.5.1.4	33219	Assure that all acquisition lessons learned are recorded and entered into the NASA lessons learned database. (Requirement 33219)	SWA	CxP 70059	7.3.5	SWA-25
NASA-STD-8739.8	5.6.1.1	33222	Ensure that software assurance processes are in place for operation of the software developed or acquired by NASA. (Requirement 33222) A separate Software Assurance Plan may be necessary as a new contract may cover the operational phase.	SWA	CxP 70059	1.16	MGT-41
NASA-STD-8739.8	5.6.1.2	33223	Depending upon the operational environment and the criticality of operation, ensure that software assurance processes include a periodic audit of the operations to ensure any changes to the software or software induced operational workarounds have been reviewed and approved. (Requirement 33223)	SWA	CxP 70059	1.9	MGT-27
					CxP 70059	5.2.7.5.3	QAS-27
					CxP 70059	5.2.7.5.4.2	QAS-29
					CxP 70059	7.3.6	SWA-28
NASA-STD-8739.8	5.6.2(1)	33224	Software assurance staff shall perform periodic operational assessments to ensure baseline management of software requirements, design, code, and documentation and to ensure review and approval of software changes or software induced operational workarounds. (Requirement 33224)	SWA	CxP 70059	7.3.6	SWA-28
NASA-STD-8739.8	5.7.1.1	33228	Ensure that software assurance processes are in place for software maintenance. (Requirement 33228)	SWA	CxP 70059	7.3.7	SWA-122
NASA-STD-8739.8	5.7.1.2	33229	Assure the transfer and maintenance of any licenses, simulators, models, and test suites from the developer to NASA, or the designated maintenance contractor. (Requirement 33229)	SWA	CxP 70059	7.3.7	SWA-29
NASA-STD-8739.8	5.7.1.3	33230	Assure that any metrics collected on the software, along with any trending and reliability data, are transferred to the maintenance organization and maintained in order to better understand and predict problem areas in the software. (Requirement 33230)	SWA	CxP 70059	7.3.7	SWA-30
NASA-STD-8739.8	5.8.1.1	33233	Assure that software engineering and management prepare, approve, and execute a retirement plan. (Requirement 33233)	SWA	CxP 70059	7.3.8	SWA-31
NASA-STD-8739.8	5.8.1.2	33234	Ensure that the retirement plan includes archival and eventual disposal of software assurance records and documents created over the life of the program/project in accordance with the requirements of NPR 1441.1, NASA Records Retention Schedules. (Requirement 33234)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	6.1.1	33237	The provider shall plan, document, and implement a software assurance program for software development, operation, and maintenance activities. (Requirement 33237) This includes documentation of software assurance procedures, processes, tools, techniques, and methods to be used.	SWA	CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	6.1.2	33238	The software assurance program shall include processes for assurance of COTS, MOTS, and GOTS software addressing both the basic acquired software and any modifications or applications written to adopt them into the intended system. (Requirement 33238)	SWA	CxP 70059	7.1	SWA-1
NASA-STD-8739.8	6.1.3	33239	The software assurance program shall include the disciplines of Software Quality, Software Safety, Software Reliability, and Software V&V. (Requirement 33239)	SWA	CxP 70059	7.1	SWA-1
NASA-STD-8739.8	6.1.4	33240	When IV&V has been selected for a project, the provider shall coordinate with IV&V personnel to share data and information. (Requirement 33240)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	6.1.5	33241	The software assurance program shall describe what metrics will be collected and reported in regards to the software assurance program activities. (Requirement 33241)	SWA	CxP 70059	7.4.1	SWA-37
NASA-STD-8739.8	6.2.1(1)	33243	The provider shall identify the person responsible for directing and managing the software assurance program; e.g, a software assurance manager. (Requirement 33243)	SWA	CxP 70059	7.4.2	SWA-38

NASA-STD-8739.8	6.2.2	33245	The software assurance manager shall establish and maintain the interfaces with project management and ensure the working relationship between software assurance personnel and that of the project. (Requirement 33245)	SWA	CxP 70059	7.1	SWA-1
NASA-STD-8739.8	6.2.3	33246	The software assurance manager shall have a reporting channel to provider management that is independent of the provider's project management and software development function. (Requirement 33246)	SWA	CxP 70059	1.8	MGT-18
					CxP 70059	1.8	MGT-19
NASA-STD-8739.8	6.2.4	33247	The software assurance manager shall conduct and document periodic reviews of the software assurance process. (Requirement 33247)	SWA	CxP 70059	7.4.2	SWA-39
NASA-STD-8739.8	6.2.5	33248	The software assurance manager shall conduct and document periodic reviews, audits, and assessments of the development process and products. (Requirement 33248)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	6.2.6	33249	The software assurance manager shall assure that problems and risks are reported, recorded, addressed, and tracked to closure. (Requirement 33249)	SWA	CxP 70059	0	SWA-128
					CxP 70059	0	SWA-129
					CxP 70059	7.5.7.3	SWA-127
					CxP 70059	7.5.7.4.1	SWA-101
NASA-STD-8739.8	6.3.1(1)	33251	Each software provider shall establish and maintain a software assurance plan that addresses all software development and maintenance activities. (Requirement 33251)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	6.3.2.1	33254	Conform to IEEE 730-2002, IEEE Standard for Software Quality Assurance Plans. (Requirement 33254)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	6.3.2.2	33255	In addition, address how the provider will implement the requirements of Sections 6.0 and 7.0 of this Standard. (Requirement 33255)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.4.3	SWA-77
					CxP 70059	7.5.7.6	SWA-108
					CxP 70059	7.5.7.6	SWA-109
NASA-STD-8739.8	6.3.2.3	33256	If there is any conflict between Section 6.0 or Section 7.0 of this Standard and IEEE 730-2002, IEEE Standard for Software Quality Assurance Plans, this Standard shall take precedence. (Requirement 33256)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	6.4.1	33258	The provider shall submit any proposed deviations from or modification to the baselined software assurance plan to the acquirer as a formal change request. (Requirement 33258)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	7.3.1	SWA-13
NASA-STD-8739.8	6.4.2	33259	Proposed changes shall be accompanied by a risk analysis, as defined in NPR 7120.5, NASA Program and Project Management Processes and Requirements, to identify the potential impact of the change. (Requirement 33259)	SWA	CxP 70056	0	CxP 70056
NASA-STD-8739.8	6.5	33260	Software Assurance Approval Authority. The software assurance manager shall have approval authority on the establishment and composition of all software baselines and any changes to the baselines before submission to the acquirer. (Requirement 33260) This includes changes to software plans, procedures, verification approaches, requirements, design, and code.	SWA	CxP 70059	7.4.3	SWA-40
NASA-STD-	6.6.1	33262	Software assurance records shall be prepared, maintained, placed under	SWA	CxP 70059	1.13	MGT-31

8739.8			configuration management, and contain the descriptions and results of software assurance activities, (e.g, audit reports, classification evaluations, milestone review, software assurance briefings, problem reporting tracking). (Requirement 33262)		CxP 70059	1.13	MGT-32
NASA-STD-8739.8	6.6.2	33263	Software assurance records shall include recommended preventive measures, corrective actions, and lessons learned. (Requirement 33263)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	5.2.7.2.1	QAS-17
					CxP 70059	7.3.5	SWA-25
NASA-STD-8739.8	6.7.1	33265	The provider shall prepare software assurance status reports that include: a. Highlights of organization and key personnel changes. b. Assurance accomplishments and resulting software assurance program metrics for activities such as inspection and test, reviews, contractor/subcontractor surveys, audits. c. Subcontractor assurance accomplishments, including items listed above, plus summaries of acceptance and certification reports. d. Significant problems, their status, solutions, and remedial and preventive actions. e. Trends in software quality metric data (e.g, defect types, location, priority/criticality). f. Plans for upcoming software assurance activities. g. Recommendations and lessons learned. (Requirement 33265)	SWA	CxP 70059	7.4.4	SWA-41
NASA-STD-8739.8	6.8.1	33267	Personnel managing, developing, and implementing the software assurance process shall be trained and/or experienced in software assurance. (Requirement 33267)	SWA	CxP 70059	1.8	MGT-20
NASA-STD-8739.8	6.8.2	33268	Software assurance training shall be obtained and/or originated and maintained for management, engineering, and assurance personnel. (Requirement 33268)	SWA	CxP 70059	1.8	MGT-20
NASA-STD-8739.8	6.8.3	33269	Software assurance personnel shall be trained in relevant software engineering design methods and languages, processes, development environments, tools, test techniques, and other software engineering and assurance methods needed to stay current with the engineering environment and products they must assure. (Requirement 33269)	SWA	CxP 70059	1.8	MGT-20
NASA-STD-8739.8	6.8.4	33270	Software assurance personnel shall be trained for the environment and operational particulars of the program/project to which they are assigned. (Requirement 33270) This may include on-the-job training as well as orientation and specific engineering training.	SWA	CxP 70059	1.8	MGT-20
NASA-STD-8739.8	6.8.5	33271	Records shall be maintained and readily available for review (e.g, training, testing, and certification/recertification status of personnel). (Requirement 33271)	SWA	CxP 70059	2.1.12	SAF-1009
NASA-STD-8739.8	6.9.1	33273	The provider shall flow down the requirements of this Standard to any subcontractor who develops, tests, maintains, operates, or provides services for the software. (Requirement 33273)	SWA	CxP 70059	7.3.1	SWA-9
NASA-STD-8739.8	6.9.2	33274	The provider shall assure that the subcontractors satisfy the requirements of this Standard. (Requirement 33274)	SWA	CxP 70059	7.3.1	SWA-9
NASA-STD-8739.8	7.1.1.01	33280	All of the required plans (e.g, configuration management, risk management, provider's assurance plan, software management plan) are documented, adhere to applicable standards and procedures, are mutually consistent, and are being executed. (Requirement 33280)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.1.02	33281	All software requirements are defined, traceable from one life cycle phase to another, and analyzed in a manner that is measurable or otherwise verifiable. (Requirement 33281)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.7.5.5	SWA-96
NASA-STD-	7.1.1.03	33282	Software products and related documentation have been evaluated, according to	SWA	CxP 70059	7.3.1	SWA-13

8739.8			the software assurance plan. (Requirement 33282)		CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.1.04	33283	Project documentation, including plans, procedures, requirements, design, verification documentation, reports, schedules, and records and any changes to them are reviewed for impact to the quality of the product. (Requirement 33283)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.1.05	33284	Formal and acceptance software testing are witnessed by software assurance personnel to verify satisfactory completion and outcome. (Requirement 33284)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.1.06	33285	Lower level testing results and software development folders are updated, audited, and/or reviewed for completeness. (Requirement 33285)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.1.07	33286	Software quality metrics are in place and are used to ensure the quality and safety of the software products being delivered. (Requirement 33286) Trends in software quality metrics are reported to assist in risk mitigation.	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.5	SWA-56
NASA-STD-8739.8	7.1.1.08	33287	The software development plans specify the standards and procedures for management, acquisition, engineering, and assurance activities. (Requirement 33287)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.1.09	33288	The software is verified (e.g, tested, analyzed, measured) for compliance with functional and performance requirements. (Requirement 33288)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.7.5.4	SWA-90
NASA-STD-8739.8	7.1.1.10	33289	The status and quality of the software are presented at formal reviews. (Requirement 33289)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.7.5	SWA-86
NASA-STD-8739.8	7.1.1.11	33290	Problems with products are reported during participation in formal and informal reviews (e.g, inspections, peer reviews, test readiness reviews, requirements reviews) along with regular reporting to project management and engineering during team meetings. (Requirement 33290)	SWA	CxP 70059	7.5.2.1	SWA-43
NASA-STD-8739.8	7.1.2.1	33292	Those software life cycle processes employed for the project adhere to the applicable plans. (Requirement 33292)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.4.2	SWA-39
					CxP 70059	7.5.2.2	SWA-44
					CxP 70059	7.5.7.5.2	SWA-126
NASA-STD-8739.8	7.1.2.2	33293	Problems found with implementation of the software life cycle processes, including management, engineering, and assurance, are documented, tracked, and resolved through the problem reporting and corrective action process and through discussions with the project manager. (Requirement 33293)	SWA	CxP 70059	7.5.2.1	SWA-43
					CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	7.1.2.3	33294	The software engineering practices, development environment, test environment, and libraries employed for the project adhere to applicable standards and procedures. (Requirement 33294)	SWA	CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	7.1.2.4	33295	Formal reviews and inspections are monitored and address software quality issues. (Requirement 33295)	SWA	CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	7.1.2.5	33296	All management, engineering, and assurance processes are audited for compliance with applicable plans. (Requirement 33296)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.3.6	SWA-28
					CxP 70059	7.4.1	SWA-35
					CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	7.1.2.6	33297	The software quality metrics process is assessed for compliance to appropriate documentation or requirements. (Requirement 33297) Trending is accomplished following the defined software quality metrics process.	SWA	CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	7.2.1	33299	The requirements for NASA-STD-8719.13, NASA Software Safety Standard, shall be implemented. (Requirement 33299)	SWA	CxP 70059	7.1	SWA-1
					CxP 70065	3	3

NASA-STD-8739.8	7.2.2	33300	Software safety tasks shall be coordinated between system safety program, software development, and software assurance to ensure completion of required tasks and elimination of duplicate efforts. (Requirement 33300)	SWA	CxP 70059	7.5.7.3	SWA-76
NASA-STD-8739.8	7.2.3	33301	In the course of performing software assurance, any safety risks shall be communicated to the appropriate safety organization. (Requirement 33301)	SWA	CxP 70065	0	CSR-34-002
NASA-STD-8739.8	7.2.4	33302	Periodic reviews and/or audits shall be conducted for compliance with the defined software safety process for acquisition, development, and assurance of safety-critical software. (Requirement 33302)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.3.6	SWA-28
					CxP 70059	7.4.1	SWA-35
NASA-STD-8739.8	7.3.1	33304	Software assurance shall assure that fault tolerance and redundancy have been specified, implemented correctly, and verified by testing. (Requirement 33304)	SWA	CxP 70059	7.5.4	SWA-49
NASA-STD-8739.8	7.3.2	33305	Software reliability analyses and measurements, including trends and metric data, shall be included in appropriate status reports to the software assurance manager and project management. This data is to be used to trace and recommend actions on specific modules which may have less than desired reliability. (Requirement 33305)	SWA	CxP 70059	7.5.4	SWA-50
NASA-STD-8739.8	7.3.3	33306	Collection and classification of defects found during/from software assurance and programmatic/project formal and informal reviews shall be maintained. (Requirement 33306)	SWA	CxP 70059	7.5.2.2	SWA-44
NASA-STD-8739.8	7.3.4	33307	The use of software quality metrics shall be documented, monitored, analyzed and tracked during each stage of development and across development and operational phases. (Requirement 33307) Examples include fault counts by severity levels, time between discovery and removal of faults, and number of faults found in a time period per lines of code or number of function points.	SWA	CxP 70059	7.5.4	SWA-51
NASA-STD-8739.8	7.3.5	33308	Trend analyses shall be performed on the software quality metrics and made available for lessons learned or root cause analyses. (Requirement 33308)	SWA	CxP 70059	7.5.4	SWA-52
NASA-STD-8739.8	7.4.1	33310	Software assurance shall assure that software V&V activities occur according to established plans, policies, procedures, and standards. (Requirement 33310)	SWA	CxP 70059	7.5.5	SWA-53
NASA-STD-8739.8	7.4.2	33311	Software assurance shall participate in the formal and informal reviews. (Requirement 33311) Such activities include peer reviews, inspections, and milestone reviews (e.g, software requirements review, design reviews, test readiness reviews, certification readiness reviews).	SWA	CxP 70059	7.5.5	SWA-54
NASA-STD-8739.8	7.4.3	33312	Software assurance shall witness or review/audit results of software testing and demonstration. (Requirement 33312)	SWA	CxP 70059	7.5.5	SWA-55
NASA-STD-8739.8	7.4.4	33313	Software assurance shall use defect data collected by the project to analyze software quality metrics. (Requirement 33313)	SWA	CxP 70059	7.5.5	SWA-56
NASA-STD-8739.8	7.4.5	33314	Software assurance shall collect and maintain software assurance records showing the participation of software assurance staff in verification and validation efforts, such as minutes, records, artifacts, and signature on test reports. (Requirement 33314)	SWA	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
					CxP 70059	7.3.5	SWA-25
NASA-STD-8739.8	7.4.6	33315	Software assurance shall provide objective evidence to the project and NASA SMA of the software's readiness for operational release. (Requirement 33315)	SWA	CxP 70059	1.14	MGT-35
					CxP 70059	1.14	MGT-36
					CxP 70059	1.14	MGT-37
					CxP 70059	1.14	MGT-38
					CxP 70059	1.16	MGT-33
					CxP 70059	1.16	MGT-34
					CxP 70059	1.16	MGT-39
					CxP 70059	1.16	MGT-40
					CxP 70059	1.16	MGT-41

NASA-STD-8739.8	7.5.3	33321	When the IV&V function is required, the provider shall provide all required information to NASA IV&V Facility personnel. (Requirement 33321) (This requirement includes specifying on the contracts and subcontracts, IV&V's access to system and software products and personnel.)	SWA	CxP 70059	7.3.1	SWA-13
					CxP 70059	7.4.1	SWA-35
NPD 8700.1C	1.a	1003	POLICY: It is NASA policy to-- Protect the public, Astronauts and pilots, NASA workforce, and high-value equipment and property from potential harm as a result of NASA activities and operations by providing safe programs, technologies, operations, and facilities; and protect the environment. (Requirement 1003)	Mgmt	CxP 70059	1.1	MGT-1
NPD 8700.1C	1.c	1006	POLICY: It is NASA policy to-- Establish and maintain independent lines of communications for unrestricted flow of information concerning Safety and Mission Assurance (SMA), risks, or other matters affecting the ability to meet the mission-success criteria. (Requirement 1006)	Mgmt	CxP 70059	1.8	MGT-18
					CxP 70059	1.8	MGT-19
NPD 8700.1C	1.d(1)	1062	POLICY: It is NASA policy to-- Define and document both SMA requirements and safety and mission- success criteria in NASA programs and projects as a foundation for the design and development of safe and reliable program hardware and software. (Requirement 1062)	Mgmt	CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
					CxP 70059	1.3	MGT-4
					CxP 70059	1.3	MGT-5
NPD 8700.1C	1.d(2)	30884	POLICY: It is NASA policy to-- All solicitation instruments (announcements of opportunity, cooperative agreements, requests for proposals, or other) will require prospective providers to identify and describe SMA and Risk Management (RM) approaches (where appropriate) and how the risk factors will be managed. (Requirement 30884)	Mgmt	CxP 70059	1.2	MGT-2
					CxP 70059	1.3	MGT-3
NPD 8700.1C	1.e	1063	POLICY: It is NASA policy to-- Verify and validate life-cycle implementation of SMA, RM, and mission- success requirements through ongoing surveillance of program, project, and contractor processes. (Requirement 1063)	Mgmt	CxP 70059	1.16	MGT-34
NPD 8700.1C	1.f	1064	POLICY: It is NASA policy to-- Certify the safety and operational readiness of flight hardware/software, mission-critical support equipment, hazardous facilities/operations, and high-energy, ground-based systems through formal review processes. (Requirement 1064)	Mgmt	CxP 70059	1.16	MGT-34
					CxP 70059	1.9	MGT-22
NPD 8700.1C	1.g	1065	POLICY: It is NASA policy to-- Fully address safety and mission success concerns, risks and risk acceptance, and appropriate lessons learned at all management committee reviews, other major milestone review activities, and operational readiness reviews. (Requirement 1065)	Mgmt	CxP 70059	1.9	MGT-22
NPD 8700.1C	1.i	1067	POLICY: It is NASA policy to-- Report and track to resolution all corrective actions resulting from investigations of mishaps, incidents, nonconformances, and anomalies; and distribute and use lessons learned to improve activities and operations. (Requirement 1067)	Quality	CxP 70059	2.1.11	SAF-160
					CxP 70059	5.1.3	QAS-1
NPD 8700.1C	5.a	1013	RESPONSIBILITY: Each NASA organizational element shall allocate and maintain appropriate levels of authority, funding, and training necessary to achieve compliance with the policies set forth above. (Requirement 1013)	Mgmt	CxP 70059	1.8	MGT-20
NPD 8700.1C	5.e.1	1039	RESPONSIBILITY: Program and project managers are responsible for the safety and mission success of their program/projects. Program and project managers shall-- Implement Agency SMA and Risk Management policies, guidelines, and standards and establish safety and mission-success requirements within their programs and projects. (Requirement 1039)	Mgmt	CxP 70059	1.1	MGT-1

NPD 8700.1C	5.e.2	1040	RESPONSIBILITY: Program and project managers are responsible for the safety and mission success of their program/projects. Program and project managers shall-- Develop, in coordination with the responsible Center SMA functional manager(s), the program and project RM plans; establish/maintain a mission- risk profile; and serve as the final risk acceptance/disposition official for activities within their program/project. (Requirement 1040)	Mgmt	CxP 70056	0	CxP 70056
NPD 8700.1C	5.e.3	1041	RESPONSIBILITY: Program and project managers are responsible for the safety and mission success of their program/projects. Program and project managers shall-- Coordinate with the responsible Mission Suport Offices, Functional Support Offices and Administrative Staff Offices to ensure that other domains of potential risk (information management, environment, security, legal) are properly included in RM plans. (Requirement 1041)	Mgmt	CxP 70056	0	CxP 70056
NPD 8700.1C	5.e.4	1085	RESPONSIBILITY: Program and project managers are responsible for the safety and mission success of their program/projects. Program and project managers shall-- Use and distribute lessons learned to enhance the probability of mission success and establish recurrence control through a closed-loop corrective/preventative action system. (Requirement 1085)	Quality	CxP 70059	1.16	MGT-41
					CxP 70059	2.1.11	SAF-160
					CxP 70059	5.2.9.3	QAS-50
					CxP 70059	7.3.5	SWA-25
NPD 8700.1C	5.e.5	1086	RESPONSIBILITY: Program and project managers are responsible for the safety and mission success of their program/projects. Program and project managers shall-- Designate an individual with specific responsibilities for coordinating/executing SMA efforts within the program/project. (Requirement 1086)	Quality	CxP 70059	1.1	MGT-50
					CxP 70059	1.9	MGT-23
NPD 8720.1B	1.a.(1)	13014	It is NASA policy for: Plan, establish, document, and implement-- System Reliability and Maintainability design and operational performance requirements (qualitative and quantitative). (Requirement 13014)	RMS	CxP 70059	3.1.1	RMS-2
					CxP 70059	3.1.2	RMS-3
					CxP 70059	4.1	RMS-65
					CxP 70059	4.1.1	RMS-66
NPD 8720.1B	1.a.(2)	13032	It is NASA policy for: Plan, establish, document, and implement-- System maintenance concepts. (Requirement 13032)	RMS	CxP 70059	4.2.1	RMS-82
NPD 8720.1B	1.a.(3)	13015	It is NASA policy for: Plan, establish, document, and implement-- Requirements and tasks for Reliability and Maintainability engineering, analysis, and testing (including hardware, software, firmware, and human elements). (Requirement 13015)	RMS	CxP 70059	3.1	RMS-1
					CxP 70059	3.1.2	RMS-3
					CxP 70059	3.2	RMS-18
					CxP 70059	3.2.1.4	RMS-113
					CxP 70059	4.1.3	RMS-70
NPD 8720.1B	1.a.(4)	13016	It is NASA policy for: Plan, establish, document, and implement-- Timely and continuous assessment of the progress toward achieving the Reliability and Maintainability requirements, including identification of areas for improvement. (Requirement 13016)	RMS	CxP 70059	3.1.2	RMS-118
					CxP 70059	3.1.4	RMS-10
					CxP 70059	3.1.4	RMS-5
					CxP 70059	4.1.5	RMS-75
NPD 8720.1B	1.a.(5)	13033	It is NASA policy for: Plan, establish, document, and implement-- Integration of Reliability and Maintainability processes, analytical activities, and data with systems engineering, risk management, and other processes, assessments, and analyses including, but not limited to, safety, security, quality, logistics, availability, probabilistic risk assessment, life-cycle cost, configuration management, and maintenance. (Requirement 13033)	RMS	CxP 70059	3.1	RMS-1
					CxP 70059	3.2.5.1	RMS-32
					CxP 70059	4.1.1	RMS-66
					CxP 70059	4.1.2	RMS-67
					CxP 70059	4.1.2	RMS-68
					CxP 70059	4.1.8	RMS-79
					CxP 70059	4.2.7	RMS-97
NPD 8720.1B	5.d.(1)	13009	Program and project managers are responsible for: Integrating all Reliability and Maintainability activities with the associated design and operation functions and associated program/project safety, quality assurance, risk management (including	RMS	CxP 70059	3.1	RMS-1
					CxP 70059	3.1.3	RMS-6
					CxP 70059	3.2.2	RMS-23

			probabilistic risk assessment), and logistics (including maintenance) activities. (Requirement 13009)		CxP 70059	3.2.5.1	RMS-32
					CxP 70059	3.3.1.1	RMS-57
					CxP 70059	4.1.1	RMS-66
					CxP 70059	4.1.2	RMS-67
					CxP 70059	4.1.2	RMS-68
					CxP 70059	4.1.8	RMS-79
					CxP 70059	4.2.7	RMS-97
NPD 8720.1B	5.d.(2)	13010	Program and project managers are responsible for: Establishing a maintenance concept early in the system development and ensuring that compatibility is sustained among system design, maintenance planning, and logistics support activities. (Requirement 13010)	RMS	CxP 70059	4.2.1	RMS-82
					CxP 70059	4.2.1.2	RMS-84
NPD 8720.1B	5.d.(3)	13011	Program and project managers are responsible for: Establishing and maintaining a data collection system that provides a basis for generating the information to evaluate Reliability and Maintainability performance throughout the system's life cycle. (Requirement 13011)	RMS	CxP 70059		SAF-123
					CxP 70059		SAF-124
					CxP 70059		SAF-129
					CxP 70059	4.2.2	RMS-87
NPD 8720.1B	5.d.(4)	13039	Program and project managers are responsible for: Identifying the organization(s) that will maintain the Reliability and Maintainability data for the lifetime of the system and coordinating with the Center SMA functional manager to ensure that Reliability and Maintainability data is available for use as heritage data. (Requirement 13039)	RMS	CxP 70059		SAF-123
					CxP 70059		SAF-124
					CxP 70059		SAF-129
					CxP 70059	0	MGT-132
					CxP 70059	4.2.2	RMS-87
NPD 8730.1B	1.a	11010	It is NASA policy to accomplish the following: Require that suppliers of calibration laboratory services to NASA be compliant with the calibration laboratory competency requirements identified in ANSI/NCSL Z540.1-1994 (R2002). (Requirement 11010)	Quality	CxP 70059	A.1.7.6	QAS-120
NPD 8730.1B	1.b	11021	It is NASA policy to accomplish the following: Require that suppliers of calibration laboratory services be accredited to ANSI/ISO/IEC 17025:2000, where it is appropriate and beneficial to NASA to require independent accreditation, and be compliant with the calibration laboratory competency requirements identified in ANSI/NCSL Z540.1-1994 (R2002). (Requirement 11021)	Quality	CxP 70059	A.1.7.6	QAS-120
NPD 8730.1B	1.c(1-5)	11011	It is NASA policy to accomplish the following: Maintain calibration on all test and measuring equipment and safety instruments used to perform measurements associated with the following functions: (1) Acceptance testing (determining that a part, component, or system meets specifications). (2) Inspection, maintenance, or calibration. (3) Flight hardware qualification. (4) Measurement of processes where test equipment accuracy is essential for the safety of personnel or the public. (5) Telecommunication, transmission, and test equipment where exact signal interfaces and circuit confirmations are essential to mission success. (Requirement 11011)	Quality	CxP 70059	A.1.7.6	QAS-120
NPD 8730.1B	1.c(6)	30895	It is NASA policy to accomplish the following: Maintain calibration on all test and measuring equipment and safety instruments used to perform measurements associated with the following functions: (6) Development, testing, and special applications where the specifications, end products, or data are accuracy sensitive, including instruments used in hazardous and critical applications. (Requirement 30895)	Quality	CxP 70059	A.1.7.6	QAS-120

NPD 8730.1B	1.d	11022	It is NASA policy to accomplish the following: Limit use of noncalibrated instruments to only applications where substantiated accuracy is not required, or for "indication only" purposes in nonhazardous, noncritical applications. (Requirement 11022)	Quality	CxP 70059	A.1.7.6	QAS-120
NPD 8730.2B	1	10013	POLICY: It is NASA policy to control risk and enhance reliability in NASA spaceflight and critical ground support systems, in part, by managing the selection, acquisition, traceability, testing, handling, packaging, storage, and application of Electrical, Electronic, and Electromechanical (EEE) parts; advanced packaging and interconnect systems; and mechanical parts (including fasteners, bearings, studs, pins, rings, shims, valves, springs, brackets, clamps, and spacers). (Requirement 10013)	RMS	CxP 70059	3.2.6	RMS-34
NPD 8730.2B	1.a	10014	To carry out this policy, NASA shall accomplish the following: Select parts and packaging technology based on their intended use considering, but not limited to, performance, environmental, criticality, and lifetime requirements. (Requirement 10014)	RMS	CxP 70059	3.2.6	RMS-34
NPD 8730.2B	1.b	10025	To carry out this policy, NASA shall accomplish the following: Document the derating criteria for parts. (Requirement 10025)	RMS	CxP 70059	3.2.6	RMS-34
NPD 8730.2B	1.c(1)	10026	To carry out this policy, NASA shall accomplish the following: Utilize the results of surveys/audits as a means to determine capability and qualification of sources. (Requirement 10026)	Quality	CxP 70059	3.2.6	RMS-34
NPD 8730.2B	1.c(2)	30896	To carry out this policy, NASA shall accomplish the following: NASA Centers may utilize the results of surveys/audits performed by other Centers or third-party auditors. The process used by third-party auditors/surveyors (including those performed by other Government agencies or commercial third-party auditors) must be reviewed prior to use to determine that the process meets minimum NASA requirements. (Requirement 30896)	Quality	CxP 70059	3.2.6	RMS-34
NPD 8730.5	1.a	42126	Policy: It is NASA policy to comply with prescribed requirements for performance of work and to provide for independent assurance of compliance through implementation of a quality assurance program. (Requirement 42126)	Quality	CxP 70059	5.1.3	QAS-1
					CxP 70059	5.1.3	QAS-70
NPD 8730.5	1.b.01	42128	Policy: NASA quality assurance programs shall: Be designed and implemented in a manner that mitigates risks associated with noncompliance. Determination of risk considers the likelihood of noncompliance and the consequences associated with noncompliance, including the maturity, complexity, criticality, and value of work performed, as well as demonstrated experience with past quality system or program performance. (Requirement 42128)	Quality	CxP 70059	5.2.7.5.4.1	QAS-79
					CxP 70059	5.2.9.2	QAS-135
					CxP 70059	5.2.9.2	QAS-48
NPD 8730.5	1.b.02	42129	Policy: NASA quality assurance programs shall: Attain confidence levels for requirement compliance that are commensurate with the severity of consequences that would be incurred in the event of noncompliance. (Requirement 42129)	Quality	CxP 70059	5.2.7.2.2.c	QAS-20
					CxP 70059	5.2.7.5.1.e	QAS-24
					CxP 70059	5.2.6.1	QAS-71
NPD 8730.5	1.b.02.a	42130	Policy: NASA quality assurance programs shall: For circumstances where noncompliance cannot result in loss of life or loss of mission, statistically-based sampling plans or 100 percent inspection shall be employed based on determination of risk. (Requirement 42130)	Quality	CxP 70059	A.1.7.4.3.a	QAS-171

NPD 8730.5	1.b.02.b	42131	Policy: NASA quality assurance programs shall: For circumstances where noncompliance can result in loss of life or loss of mission, Government Mandatory Inspection Points (GMIP) shall be performed to ensure 100 percent compliance with safety/mission critical attributes. Safety/mission critical attributes include hardware characteristics, manufacturing process requirements, operating conditions, and functional performance criteria that, if not met, can result in loss of life or loss of mission. (Requirement 42131)	Quality	CxP 70059	5.2.7	QAS-11
NPD 8730.5	1.b.03	42132	Policy: NASA quality assurance programs shall: Be reevaluated and adjusted based on changes to risk factors. (Requirement 42132)	Quality	CxP 70059	5.2.7.5.4.1	QAS-79
					CxP 70059	5.2.7.5.4.2	QAS-29
NPD 8730.5	1.b.04	42133	Policy: NASA quality assurance programs shall: Include prework assurance measures that provide increased confidence for meeting prescribed requirements (e.g., preaward surveys, qualified source selection, training), concurrent assurance measures to ensure that work is being performed in accordance with requirements (e.g., process control, process witnessing), and postwork assurance measures to ensure that work was properly performed (e.g., inspections, tests, record review, configuration control). (Requirement 42133)	Quality	CxP 70059	5.2.7.5.4.1	QAS-79
					CxP 70059	5.2.9.2	QAS-48
NPD 8730.5	1.b.05	42134	Policy: NASA quality assurance programs shall: Flow applicable quality assurance requirements down to successive levels of the supply chain to ensure control of subtier suppliers and verificaiton of safety/mission critical attributes at all levels of the supply chain. (Requirement 42134)	Quality	CxP 70059	A	QAS-51
					CxP 70059	A.1.1.1	QAS-52
					CxP 70059	A.1.1.1	QAS-53
NPD 8730.5	1.b.06	42135	Policy: NASA quality assurance programs shall: Continually be improved through: advocacy; awareness training; teaming and sharing of quality assurance tools, techniques and data; integration of quality assurance processes to prevent duplication of effort; and dissemination/implementation of lessons learned and best practices. (Requirement 42135)	Quality	CxP 70059	1.17	MGT-43
					CxP 70059	A.1.8.3	QAS-229
NPD 8730.5	1.b.07	42136	Policy: NASA quality assurance programs shall: Ensure that customers and Government authorities are quickly notified concerning noncompliant products or failure experiences potentially affecting product safety, reliability, or functionality. Customers and Government authorities include: contracting officers, Government contract management agents, authorities responsible for assigning, managing, or overseeing work, and, where noncompliant conditions might constitute evidence of possible fraud, malpractice, or other serious misconduct, the NASA Office of Inspector General. (Requirement 42136)	Quality	CxP 70059	A.1.8.3.3.a	QAS-238
					CxP 70059	A.1.8.3.3.d	QAS-241
					CxP 70059	A.1.8.3.5	QAS-267
					CxP 70059	A.1.8.3.5.d	QAS-283
NPD 8730.5	1.b.08	42137	Policy: NASA quality assurance programs shall: Provide for investigative and corrective actions upon discovery or notification of noncompliance. (Requirement 42137)	Quality	CxP 70059	5.2.7.7.2	QAS-34
NPD 8730.5	1.b.08.a	42138	Policy: NASA quality assurance programs shall: Investigative actions shall identify the proximate and root cause(s) of noncompliance and the scope/population of noncompliant items. (Requirement 42138)	Quality	CxP 70059	5.2.7.7.2	QAS-37
NPD 8730.5	1.b.08.b	42139	Policy: NASA quality assurance programs shall: Corrective actions shall include the correction, replacement, repair, or authorized disposition of noncompliant items/conditions, implementation of preventive measures to eliminate the causes of noncompliance, and validation that implemented preventive measures have effectively eliminated recurrence of the noncompliant condition (recurrence control). (Requirement 42139)	Quality	CxP 70059	5.2.7.7.2	QAS-36
					CxP 70059	5.2.7.7.2	QAS-37
NPD 8730.5	1.b.09	42140	Policy: NASA quality assurance programs shall: Ensure clear and mutual understanding of prescribed quality requirements among organizations responsible for contracting or assigning work, performing work, and assuring conformity of work. (Requirement 42140)	Quality	CxP 70059	5.2.7.5.4.1	QAS-79
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49

NPD 8730.5	1.b.10.a	42142	Policy: NASA quality assurance programs shall: Be performed by persons that are competent on the basis of: Demonstrated knowledge, skills, and experience related to quality assurance principles and practices, and related to the specific product, process, or attribute for which assurance is being provided. (Requirement 42142)	Quality	CxP 70059	5.2.4	QAS-3
					CxP 70059	5.2.4	QAS-4
					CxP 70059	5.2.4	QAS-5
					CxP 70059	5.2.4	QAS-6
					CxP 70059	5.2.4	QAS-7
NPD 8730.5	1.b.10.b	42143	Policy: NASA quality assurance programs shall: Be performed by persons that are competent on the basis of: Meeting formal certification or qualification requirements where prescribed in required/invoked documents or where deemed necessary to ensure personnel competency to perform specialized quality assurance functions. (Requirement 42143)	Quality	CxP 70059	5.2.4	QAS-3
					CxP 70059	5.2.4	QAS-4
					CxP 70059	5.2.4	QAS-5
					CxP 70059	5.2.4	QAS-6
					CxP 70059	5.2.4	QAS-7
NPD 8730.5	1.b.11	42144	Policy: NASA quality assurance programs shall: Be performed by persons that are not assigned direct responsibility for ensuring that cost or schedule objectives are met. (Requirement 42144)	Quality	CxP 70059	A.1.7.5.1	QAS-173
					CxP 70059	A.1.7.5.1	QAS-179
NPD 8730.5	1.b.12	42145	Policy: NASA quality assurance programs shall: Be supported by records demonstrating compliance with technical/quality requirements. Records shall be legible, traceable to the applicable product, identifiable to the applicable requirement, and readily retrievable for requirement verification. (Requirement 42145)	Quality	CxP 70059	A.1.4.2.4	QAS-61
					CxP 70059	A.1.4.2.4	QAS-62
					CxP 70059	A.1.7.6.i	QAS-221
					CxP 70059	A.1.7.6.i	QAS-222
NPD 8730.5	1.b.13	42146	Policy: NASA quality assurance programs shall: Include the collection and analysis of quality data for the purpose of identifying and initiating resolution of problem areas (e.g., projects, products, processes, operations, organizations), common deficiency causes, nonconformance trends, defect anomalies, and process variations. (Requirement 42146)	Quality	CxP 70059	A.1.4.2.4	QAS-61
					CxP 70059	A.1.4.2.4	QAS-62
					CxP 70059	A.1.7.6.i	QAS-221
					CxP 70059	A.1.7.6.i	QAS-222
NPD 8730.5	1.b.14	42147	Policy: NASA quality assurance programs shall: Be performed in accordance with a documented quality system that follows the criteria specified in Attachment A. (Requirement 42147)	Quality	CxP 70059	5.1.3	QAS-1
					CxP 70059	5.1.3	QAS-70
					CxP 70059	5.2.6.3	QAS-73
NPD 8730.5	1.c	42148	Policy: Government quality assurance organizations are to ensure that contractors implement quality system requirements and deliver conforming product in accordance with Federal Acquisition Regulations (FAR), the NASA FAR Supplement, and NPR 8735.2, Management of Government Safety and Mission Assurance Functions for NASA Contracts, Chapters 1 and 2. (Requirement 42148)	Quality	CxP 70059	5.1.3	QAS-1
					CxP 70059	5.1.3	QAS-70
					CxP 70059	5.2.6.3	QAS-73
					CxP 70059	5.2.6.3	QAS-74
NPD 8730.5	5.d.1	42197	Responsibility: Program/project managers shall: Provide necessary program dollars for costs associated with Government and contractor implementation of the requirements prescribed by this NPD and NPR 8735.2. (Requirement 42197)	Quality	CxP 70059	1.8	MGT-20
NPD 8730.5	5.d.2	42198	Responsibility: Program/project managers shall: Ensure program planning and acquisition documents incorporate applicable requirements of this NPD, including specification of applicable quality system requirements identified in Attachment A of this NPD. (Requirement 42198)	Quality	CxP 70059	5.1.3	QAS-1
					CxP 70059	5.1.3	QAS-70
					CxP 70059	A.1.1.1	QAS-52
					CxP 70059	A.1.1.1	QAS-53
NPD 8730.5	5.d.3	42199	Responsibility: Program/project managers shall: Identify safety/mission critical attributes and associated Government mandatory inspection points. (Requirement 42199)	Quality	CxP 70059	1.15	MGT-13
					CxP 70059	A.1.7.4.2.b	QAS-170
NPD 8730.5	5.d.4	42200	Responsibility: Program/project managers shall: Initiate corrective actions upon discovery or notification of noncompliance. (Requirement 42200)	Quality	CxP 70059	5.2.7.7.1.a	QAS-131
					CxP 70059	5.2.7.7.2	QAS-34
					CxP 70059	A.1.8.2.4.1	QAS-124
NPD 8730.5	5.e.1	42202	Responsibility: Procurement officials shall: Incorporate quality assurance	Quality	CxP 70059	A.1.1.1	QAS-52

			requirements identified in Attachment A of this NPD into procurement contracts utilizing input provided by the program/project and Center SMA office. (Requirement 42202)		CxP 70059	A.1.1.1	QAS-53
NPD 8730.5	5.e.2	42203	Responsibility: Procurement officials shall: Ensure that prospective contractors meet contract qualification requirements (quality system, product, process, personnel). (Requirement 42203)	Quality	CxP 70059	1.15	MGT-13
					CxP 70059	5.2.7.2.2	QAS-18
					CxP 70059	5.2.7.5.3	QAS-27
					CxP 70059	A.1.1.1	QAS-53
					CxP 70059	A.1.1.3	QAS-58
					CxP 70059	A.1.7.4.1	QAS-101
NPR 8000.4	1.3.1.a	26006	The Program Manager (PM) is responsible for the following: a.) Applying a continuous risk management process within the program throughout its life cycle. (Requirement 26006)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.1.b	30898	The Program Manager (PM) is responsible for the following: b.) Documenting and approving that process within a Risk Management Plan. (Requirement 30898)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.1.c	30899	The Program Manager (PM) is responsible for the following: c.) Documenting and managing risks throughout the programs life cycle. (Requirement 30899)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.1.d	30900	The Program Manager (PM) is responsible for the following: d.) Approving the formal acceptance of all program risks. (Requirement 30900)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.1.e	30901	The Program Manager (PM) is responsible for the following: e.) Providing program risk status, especially concerning primary risks (see Appendix A, Glossary), to the Program Management Council (PMC) or Governing PMC as appropriate.(Requirement 30901)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.2.a	26007	The Project Manager is responsible for the following: a.) Applying a continuous risk management process within the project throughout its life cycle. (Requirement 26007)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.2.b	30902	The Project Manager is responsible for the following: b.) Documenting and approving that process within a Risk Management Plan. (Requirement 30902)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.2.c	30903	The Project Manager is responsible for the following: c.) Documenting and managing risks throughout the projects life cycle. (Requirement 30903)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.2.d	30904	The Project Manager is responsible for the following: d.) Approving the formal acceptance/closure of all project risks. (Requirement 30904).	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	1.3.2.e	30905	The Project Manager is responsible for the following: e.) Providing project risk status, especially concerning primary risks, to the Program Manager, Center Director, PMC, or Governing PMC as appropriate. (Requirement 30905)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	2.7.06.1	26065	Every program/project shall have a Risk List. (Requirement 26065) The Risk List is the listing of all identified risks in priority order from highest to lowest risk, together with the information that is needed to manage each risk and document its evolution over the course of the project. Risk prioritization is performed by the project team and consolidated and approved by the PM. Figure 3 provides suggested data elements and format for the Risk List.	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	2.7.06.2(1)	26063	The Risk List must be updated as changes (including changes in assumptions) occur. (Requirement 26063)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8000.4	2.7.06.2(2)	30912	Extracts from the Risk list shall be presented at project meetings, reviews, and milestones as required by the RM Plan. (Requirement 30912)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2

NPR 8000.4	2.7.06.2(3	30913	Programs/projects may also find it beneficial to use the classification of risks to create subsets of the Risk List in addition to the complete Risk List so that working or functional groups may focus on specific areas of risk (for example, tracking all of the environmental risks or the security risks or technical risks together). The Risk List must be widely accessible to all members of the program/project team. (Requirement 30913)	Risk	CxP PMP	PMP 4.4.2	PMP 4.4.2
NPR 8705.5	0.P.2.b	32944	This NPR shall be used specifically for programs/projects that provide aerospace products or capabilities; i.e., space and aeronautics systems, flight and ground systems, technology demonstration/validation, and operations (Requirement 32944).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.1.4	32960	All PRAs shall be conducted in accordance with this NPR (Requirement 32960).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.2.1	32964	NASA program and project managers shall use the criteria in paragraph 1.2.3, Table 1, and paragraph 1.2.4 to determine when a PRA must be conducted and the scope to be implemented (Requirement 32964).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.2.2	32965	The PRA approach for each project shall be described in the project s risk management plan and submitted for Governing Program Management Committee (GPMC) review and approval at the project formulation decision milestone (Requirement 32965).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.2.3.1.1(2)	32969	Decision-making for projects involving complex systems in high-stakes programmatic contexts shall be supported by a full-scope PRA with consideration of uncertainty (Requirement 32969).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-2
NPR 8705.5	1.2.3.1.3(2)	32972	Uncertainty analysis shall be performed to provide the decision-maker with a full appreciation of the overall degree of uncertainty about the PRA results and an understanding of which sources of uncertainty are critical to the results that guide decisions (Requirement 32972).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-11
NPR 8705.5	1.2.3.2.3	32976	Similar to a "full-scope" PRA, sources of uncertainties that have a strong effect on the limited-scope PRA results and insights shall be identified and quantified (Requirement 32976).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.2.3.3.2	32979	In a simplified PRA, the sources of uncertainties that have the strongest effects on the PRA results shall be identified and, in cases where they affect the management decision process, shall be quantified (Requirement 32979).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.3.1	32984	After determining the level at which the PRA shall be conducted, the program or project manager shall document the PRA decision and its basis in the program/project risk plan (Requirement 32984).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	1.3.2	32985	The program or project manager shall brief the GPMC on the PRA decision and the rationale during the formulation phase of the program or project (Requirement 32985). (See NPR 1000.3, The NASA Organization, paragraph 6.6.)	PRA	CxP 70059	6	PRA-14
NPR 8705.5	1.3.3	32986	Any disputes concerning the PRA decision and level of implementation shall be elevated to the next level of Program Management Committee (Requirement 32986).	PRA	CxP 70059	6	PRA-14
NPR 8705.5	1.4.4	33016	Center Directors, Center SMA Directors, and program/project SMA Directors shall assist Center-based programs/projects in conducting required PRAs; i.e., provide required resources, training, tools, technical advice, or assistance in obtaining competent support services (Requirement 33016).	PRA	CxP 70059	1.8	MGT-20
NPR 8705.5	1.4.5	33017	Program/project managers and other decision-makers shall conduct and use PRA with the best state-of-practice methods and data to support management decisions to improve safety and performance (Requirement 33017). (See Probabilistic Risk	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-3
					CxP 70059	6	PRA-6

			Assessment Procedures Guide for NASA Managers and Practitioners, chapters 7 and 12.)		CxP 70059	6	PRA-7
					CxP 70059	6	PRA-8
					CxP 70059	6	PRA-9
NPR 8705.5	1.4.5.1	33018	Program/project managers shall document PRA decisions, justifications and plans for implementing and conducting PRAs in program/project risk management plans (Requirement 33018).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-4
					CxP 70059	6	PRA-5
					CxP 70059	6	PRA-9
NPR 8705.5	1.4.5.2	33019	The program or project manager shall brief the GPMC on the PRA decision and the rationale during the formulation phase of the program or project (Requirement 33019).	PRA	CxP 70059	6	PRA-14
NPR 8705.5	1.4.5.3	33020	Program/project managers shall maintain and safeguard records resulting from PRAs in accordance with the guidelines in NPR 1441.1, NASA Records Retention Schedule (Requirement 33020).	PRA	CxP 70059	6	PRA-3
					CxP 70059	6	PRA-7
					CxP 70059	6	PRA-9
NPR 8705.5	1.4.5.4	33021	Program/project managers shall adequately and clearly communicate PRA results and insights that explicitly include initial assumptions, residual uncertainties, and significant risk drivers to all involved program/project staff and management, and ensure that the PRA results and insights, as well as their implications regarding systems design, operation, and upgrade, are reviewed, analyzed, properly interpreted, and understood (Requirement 33021). (See Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners, chapter 13.)	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-10
					CxP 70059	6	PRA-11
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-4
					CxP 70059	6	PRA-5
					CxP 70059	6	PRA-6
					CxP 70059	6	PRA-9
NPR 8705.5	1.4.5.5	33022	Program/project managers shall update design, operating, and implementation plans to reflect insights from PRA and use the insights gathered from PRA to reinforce or modify existing relevant management decisions or to generate new management decisions (Requirement 33022). (See Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners, chapter 13.)	PRA	CxP 70059	6	PRA-6
NPR 8705.5	1.4.5.5.1	33023	If the residual risk, as shown through the use of PRA, is deemed unacceptable as defined by program requirements, the program/project manager shall consider modifying the project through design, operation, upgrade, and maintenance, and implement management decisions to reduce risk to an acceptable level as defined at the appropriate level of the Agency; i.e., Headquarters, Center, Enterprise, program, or project, as appropriate (Requirement 33023).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-2
NPR 8705.5	2.01.2(1)	33029	The process that shall be used for conducting a typical scenario-based PRA involves objective definition, system familiarization, identification of initiating events, scenario modeling, failure modeling, quantification, uncertainty analysis, sensitivity analysis, importance ranking, and data analysis (Requirement 33029).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-10
					CxP 70059	6	PRA-11
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-7
					CxP 70059	6	PRA-8
					CxP 70059	6	PRA-9
NPR 8705.5	2.01.3(1)	33031	The process and techniques provided in the Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners shall be used for conducting PRAs in accordance with this NPR (Requirement 33031).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	2.02.1(2)	33035	The objective of the risk assessment shall be well defined and, associated with it, the appropriate undesirable consequences of interest (called end states) that are consistent with the stated study objective(s) must be identified and selected (Requirement 33035)	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-7
NPR 8705.5	2.02.2(1)	33037	Depending on the scope of the PRA, applicable configuration, time frame, and	PRA	CxP 70059	6	PRA-1

			rules for considering initiators (i.e., whether to include external events such as micrometeoroids) shall be defined (Requirement 33037).		CxP 70059	6	PRA-11
					CxP 70059	6	PRA-7
NPR 8705.5	2.03(2)	33040	If the PRA is performed on an existing system that has been operated for some time, the engineering information shall be on an as-built and as-operated basis; if the PRA is conducted on a new or proposed system, then the as-designed system shall be used as the basis (Requirement 33040).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-6
NPR 8705.5	2.04.1	33043	The complete set of initiating events (see Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners, sections 15.1.7/8 and 15.2.5) shall be identified (Requirement 33043).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-13
					CxP 70059	6	PRA-7
NPR 8705.5	2.04.1.2(1)	33045	The initiating events shall be identified, analyzed, and screened to ensure that they have the potential to initiate accident scenarios leading to the defined end states (Requirement 33045).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-13
					CxP 70059	6	PRA-7
NPR 8705.5	2.04.1.3(2)	33048	When initiating events are treated as a group, their frequencies shall be logically summed up to derive the group initiator frequency (Requirement 33048). (See Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners, chapters 4, 5, and 15.)	PRA	CxP 70059	6	PRA-1
NPR 8705.5	2.05(1)	33050	Scenario Modeling. The PRA shall identify and evaluate potential scenarios leading to undesired consequences (Requirement 33050).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-7
NPR 8705.5	2.06(1)	33052	Failure Modeling. The PRA shall evaluate the failure (type and probability) of each event in the scenarios identified above (Requirement 33052).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-10
					CxP 70059	6	PRA-7
					CxP 70059	6	PRA-8
					CxP 70059	6	PRA-9
NPR 8705.5	2.07(1)	33054	Quantification. The PRA shall quantify the scenarios (Requirement 33054).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-7
NPR 8705.5	2.08(2)	33057	Any PRA insights reported to decision-makers shall include an appreciation of the overall degree of uncertainty about the results and an understanding of which sources of uncertainty are critical (Requirement 33057).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-7
NPR 8705.5	2.11(1)	33061	Data Analysis. The PRA shall conduct data analyses to support quantification (Requirement 33061).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-7
NPR 8705.5	3.1.2(1)	33068	The PRA team shall include a PRA expert who has had training and extensive experience in the application and conduct of PRAs, preferably for several different types of systems. The PRA expert shall serve as the PRA Technical Authority, with technical decision-making authority for the PRA (Requirement 33068).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-4
NPR 8705.5	3.1.2.1	33070	The PRA Technical Authority shall guide or facilitate the process and keep Headquarters Office of Safety and Mission Assurance informed of PRA activities and status (Requirement 33070).	PRA	CxPMD-017	0	CxPMD-017
NPR 8705.5	3.1.2.2	33071	Selection of the PRA Technical Authority shall be made with guidance from Center SMA organizations or Headquarters Office of Safety and Mission Assurance (Requirement 33071).	PRA	CxP 70055	3.1	3.1
NPR 8705.5	3.2.2(2)	33075	Terminology shall also be consistent with what is used in the program/project in order to facilitate risk communication (Requirement 33075).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-10
					CxP 70059	6	PRA-11
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-7
					CxP 70059	6	PRA-8

NPR 8705.5	3.2.3(2)	33077	Contributors to undesired events shall be quantified on the basis of existing data (Requirement 33077). This requires that some analyses of previous mission failures be performed. (See Probabilistic Risk Assessment Procedures Guide for NASA Managers and Practitioners, chapter 13.)	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-7
					CxP 70059	6	PRA-8
					CxP 70059	6	PRA-9
NPR 8705.5	3.4.1(1)	33085	A PRA shall follow quality assurance principles and practices that are analogous to those in other engineering fields and practices (Requirement 33085).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	3.5.1	33101	In order to enhance the quality and credibility of a PRA study, an independent peer review of the work shall be conducted for all full-scope PRAs (Requirement 33101) and should also be conducted for all other PRAs.	PRA	CxP 70059	6	PRA-1
NPR 8705.5	3.5.1.1	33102	This review shall be carried out by independent peers, that is, recognized PRA experts who are not involved in the study and have no stake in it (Requirement 33102).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	3.5.1.3	33104	In general, this review shall concentrate on the appropriateness of methods, information, sources, judgments, and assumptions as well as their application to the program/project/system being evaluated and its objective(s) (Requirement 33104).	PRA	CxP 70059	6	PRA-1
NPR 8705.5	4.1.1	33108	A PRA shall be comprehensive, balanced, and tailored (Requirement 33108).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-7
NPR 8705.5	4.1.1.1	33109	A comprehensive PRA shall consider the complete environment and all factors that pertain to the system being assessed, including, as appropriate to satisfy its stated objective(s), the safety of the public, astronauts, pilots, and the NASA workforce; protection of high-value equipment and property; adverse impacts on the environment; national interests; and security (Requirement 33109).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-11
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-13
					CxP 70059	6	PRA-7
NPR 8705.5	4.1.1.2	33110	A balanced PRA shall ensure that the scope considers issues of safety, operation, and mission assurance; is conducted at a level commensurate with the level of risk; and is timely to assist program/project management in limiting risk (Requirement 33110).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-11
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-13
					CxP 70059	6	PRA-7
NPR 8705.5	4.1.1.3	33111	A tailored PRA shall ensure that the level of detail is commensurate with the complexity of the hazards, scope, and objective(s) of the mission/project being evaluated (Requirement 33111).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-11
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-13
					CxP 70059	6	PRA-7
NPR 8705.5	4.1.2	33112	PRA implementation procedures shall reflect and incorporate the results of project risk analysis (Requirement 33112), including:	PRA	CxP 70059	6	PRA-12
					CxP 70059	6	PRA-13
NPR 8705.5	4.1.2.a	33113	PRA implementation procedures shall reflect and incorporate the results of project risk analysis (Requirement 33113), including: Identification of the elements of risk (initiators, hazards, scenarios, probabilities, and consequences) (Requirement 33113).	PRA	CxP 70059	6	PRA-1
					CxP 70059	6	PRA-12
					CxP 70059	6	PRA-13
					CxP 70059	6	PRA-7
NPR 8705.5	4.1.2.b	33114	PRA implementation procedures shall reflect and incorporate the results of project risk analysis (Requirement 33114), including: Recommended controls (preventive and mitigating features, compensatory measures) needed to reduce and manage risks (Requirement 33114)	PRA	CxP 70059	6	PRA-12
					CxP 70059	6	PRA-13
NPR 8705.6	3.2.07.1	42384	Program/Project Managers shall: Incorporate PA&R process activities into	Mgmt	CxP 70059	1.16	MGT-106

			program/project plans, including a program/project-unique mission assurance process map and matrix developed and maintained by the program/project with appropriate support and guidance of the Headquarters and/or Center SMA organization. Program/project management and responsible Center SMA organization use these products to actively manage the SMA function and to develop and support required inputs to the SMARR. (Requirement 42384)		CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.07.2	42385	Program/Project Managers shall: Support the PA&R process (either Headquaters-led or Center-led) by providing logistic and resource support required for successful execution of and response to PA&R process activities. (Requirement 42385)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.07.3	42386	Program/Project Managers shall: Coordinate with Center SMA and Center procurement to ensure that contracts provide for adequate contractor support of Headquarters-led and Center-led PA&R activities. (Requirement 42386)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.07.4	42387	Program/Project Managers shall: Provide the PA&R Audit/Review Lead with the applicable programmatic BRS and OQE to facilitate PA&R process activities. (Requirement 42387)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.07.5	42388	Program/Project Managers shall: Provide authorization for the program/project contractors to support PA&R process activities. (Requirement 42388)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.07.6	42389	Program/Project Managers shall: In concert with the Center Director, Center SMA Director, and Program/Project SMA Manager, provide a Corrective Action Plan to the OSMA for resolution of Headquarters-led PA&R findings within 60 calendar days of the audit/review. (Requirement 42389)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.07.7	42390	Program/Project Managers shall: In concert with the Program/Project SMA Manager, provide a Corrective Action Plan to the Center Director for resolution of Center-led PA&R findings. (Requirement 42390)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.08.1	42392	SMA Managers Reporting (matrixed or direct) to the Program/Project Manager shall: Support the program/project manager in the development and maintenance of the program Assurance Process Map and Matrix. (Requirement 42392)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.08.2	42393	SMA Managers Reporting (matrixed or direct) to the Program/Project Manager shall: Develop and maintain a program-specific Mission Assurance Portfolio which contains the OQE necessary to support the PA&R audits, reviews, and assessments. (Requirement 42393)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	3.2.08.3	42394	SMA Managers Reporting (matrixed or direct) to the Program/Project Manager shall: Identify to the PA&R Audit/Review Lead (either Headquarters-led or Center-led) other audits, reviews, or assessments that may have previously verified compliance with the applicable programmatic BRS. (Requirement 42394)	Mgmt	CxP 70059	1.16	MGT-106
					CxP 70059	1.16	MGT-28
NPR 8705.6	4.2.6.1	42441	Program/Project Managers shall: Provide the necessary logistics and resources required to support the preparation and conduct of Headquarters-led or Center-led SMARRs. (Requirement 42441)	Mgmt	CxP 70059	1.16	MGT-28
					CxP 70059	1.16	SAF-78
NPR 8705.6	4.2.6.2	42442	Program/Project Managers shall: Coordinate with Center SMA and Center procurement to ensure that contracts provide for adequate contractor support of Headquarters-led and Center-led SMARR activities. (Requirement 42442)	Mgmt	CxP 70059	1.16	MGT-28
					CxP 70059	1.16	SAF-78
NPR 8705.6	4.2.7.1	42444	SMA Managers reporting (matrix or direct) to the Program/Project Manager shall: Help to identify all independent organizations which have assessed portions of the program or project. (Requirement 42444)	Mgmt	CxP 70059	1.16	MGT-28
					CxP 70059	1.16	SAF-78
NPR 8705.6	4.2.7.2	42445	SMA Managers reporting (matrix or direct) to the Program/Project Manager	Mgmt	CxP 70059	1.16	MGT-28

			shall: Compile the program/project SMARR material, including the program's assessment of residual safety and mission success risk related to the upcoming milestone, identifying risk consequence and likelihood with supporting rationale and uncertainty associated with estimated likelihood. (Requirement 42445)		CxP 70059	1.16	SAF-78
NPR 8705.6	4.2.7.3	42446	SMA Managers reporting (matrix or direct) to the Program/Project Manager shall: Coordinate the presentation of the Center and program/project SMARR material to the Chief Safety and Mission Assurance Officer. (Requirement 42446)	Mgmt	CxP 70059	1.16	MGT-28
					CxP 70059	1.16	SAF-78
NPR 8705.6	4.2.7.4	42447	SMA Managers reporting (matrix or direct) to the Program/Project Manager shall: Coordinate within the program/project and support Headquarters-led and Center-led SMARR preparation meetings, as required. (Requirement 42447)	Mgmt	CxP 70059	1.16	MGT-28
					CxP 70059	1.16	SAF-78
NPR 8705.6	4.2.7.5	42448	SMA Managers reporting (matrix or direct) to the Program/Project Manager shall: Participate in SMARR polling as described in paragraphs 4.2.3.2. and 4.2.6.3. (Requirement 42448)	Mgmt	CxP 70059	1.16	MGT-28
					CxP 70059	1.16	SAF-78
NPR 8715.3C	01.02.1.a	45566	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that their safety planning and direction; the development of safety requirements, safety policies, safety methodology, and safety procedures; and the implementation and evaluation of their safety programs achieve the safety requirements in this NPR (Requirement 45566).	Mgmt	CxP 70055	3.1	3.1
					CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
NPR 8715.3C	01.02.1.b	45567	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure the conduct of assessments of quantitative and/or qualitative safety risks to people, property, or equipment, and include recommendations to either reduce the risks or accept them. (Requirement 45567)	Safety	CxP 70055	3.1	3.1
					CxP 70059	2.2.1.2	SAF-12
					CxP 70059	2.2.1.2	SAF-182
NPR 8715.3C	01.02.1.c	45568	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that safety assessments of all system changes are conducted, prior to changes to these systems being implemented, so as to preclude an unknown increase in risk to personnel or equipment. (Requirement 45568)	Safety	CxP 70059	2.2.1	SAF-1014
					CxP 70059	2.2.1	SAF-6
NPR 8715.3C	01.02.1.d	45569	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that employees are informed of any risk acceptance when the employees are the ones at risk. (Requirement 45569)	Mgmt	CxP 70055	3.1	3.1
					CxP 70059	1.1	MGT-1
					CxP 70059	1.2	MGT-2
NPR 8715.3C	01.02.1.e	45570	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that safety surveillance and periodic inspections are conducted to assure compliance with NASA safety policies and to assess the effectiveness of NASA safety activities as required by Federal, State, and local regulations, NASA policy, and national consensus standards. (Requirement 45570)	Mgmt	CxP 70059	1.9	MGT-25
					CxP 70059	2.1.6	SAF-175
					CxP 70059	2.2.2.2	SAF-40
NPR 8715.3C	01.02.1.f	45571	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that technical reviews of the safety of development efforts and operations are conducted in accordance with sound system safety engineering principles. (Requirement 45571)	Safety	CxP 70055	4.6.1.2	4.6.1.2
					CxP 70059	1.16	SAF-78
NPR 8715.3C	01.02.1.g	45572	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that trained individual(s) determine the corrective actions needed for mitigating or controlling safety risk for all activities. (Requirement 45572)	Mgmt	CxP 70059	2.1.12	SAF-1009
					CxP 70059	2.1.12	SAF-1010
					CxP 70059	2.1.12	SAF-87
					CxP 70059	2.2.1.2.1	SAF-20

NPR 8715.3C	01.02.1.h	45573	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that NASA employees and safety professionals are trained for their roles and responsbilities associated with specific safety functions. (Requirement 45573)	Safety	CxP 70059	2.2.2.2	SAF-45
NPR 8715.3C	01.02.1.i(1)	45574	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure that software safety is included in their safety programs (Requirement 45574).	Safety	CxP 70059	2.2.3	SAF-183
					CxP 70059	2.2.3	SAF-70
					CxP 70059	2.2.3	SAF-71
					CxP 70059	2.2.3	SAF-72
NPR 8715.3C	01.02.1.L	45578	Institutional and Programmatic Safety Requirements: NASA General Safety Program Roles and Responsibilities: Ensure the integrity of information and information systems, where compromise may impact safety, by adherence to NASA information technology security procedures as required by NPR 2810.1, Security of Information Technology. (Requirement 45578)	PP&C	CxP 70073	0	SCM-002P
NPR 8715.3C	01.03.1.a(1)	45581	Institutional and Programmatic Safety Requirements: Public Safety: Center Directors, project managers, supervisors and NASA employees shall: Eliminate risk or the adverse effect of NASA operations on the public, or provide public protection by exclusion or other protective measures where the risk or the adverse effect of NASA operations on the public cannot be eliminated. (Requirement 45581)	Mgmt	CxP 70059	1.1	MGT-1
NPR 8715.3C	01.05.2.a	45652	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: Addresses life-cycle, safety relevant functions and activities. (Requirement 45652)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.b	45653	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project Managers shall ensure the the SMA Plan: Graphically represents project organizational relationships and assurance roles and responsibilities employing a Mission Assurance Process Map as described in NPR 8705.6, Safety and Mission Assurance Audits, Reviews, and Assessments. (Requirement 45653)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.c	45654	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: Reflects a life-cycle SMA 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 preflight verification and test, disassembly, and disposal. (Requirement 45654)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.d	45655	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: Contains data and information to support each section of the SMA Plan for each major milestone review to include the Safety and Mission Success Review (formerly SMA Readiness Review). (Requirement 45655)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.e	45656	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Paln: Contains trending and metrics utilized to display progress and to predict growth towards SMA goals and requirements. (Requirement 45656)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.01	45658	Institutional and Programmatic Safety Requirements: Program Management	Mgmt	CxP 70059	1.13	MGT-31

			Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Safety per this NPR. (Requirement 45658)		CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.02	45659	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Reliability and maintainability per NPD 8720.1, NASA Reliability and Maintainability (R&M) Program Policy. (Requirement 45659)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.03	45660	Institution:Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Risk assessment per NPR 8705.5, Probabilistic Risk Assessment (PRA) Procedures for NASA Programs and Projects. (Requirement 45660)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.04	45661	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Quality assurance per NPD 8730.5, NASA Quality Assurance Program Policy. (Requirement 45661)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.05	45662	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Software safety and assurance per NASA-STD-88719.13, Software Safety Standard, and NASA-STD-8739.8, Software Assurance Standard. (Requirement 45662)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.06	45663	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Occupational safety and health per NPR 8715.1, NASA Occupational Safety and Health Programs. (Requirement 45663)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.07	45664	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Range safety per NPR 8715.5, Range Safety Program. (Requirement 45664)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.08	45665	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Human-rating per NPR 8705.2, Human-Rating Requirements for Space Systems. (Requirement 45665)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.09	45666	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Mishap reporting per NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping. (Requirement 45666)	Mgmt	CxP 70059	1.13	MGT-31
					CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.2.f.10	45667	Institutional and Programmatic Safety Requirements: Program Management	Mgmt	CxP 70059	1.13	MGT-31

			Roles and Responsibilities in the NASA Safety Program: Project managers shall ensure that the SMA Plan: As a minimum, addresses the following topics and associated requirements: Compliance verification, audit, SMA reviews, and SMA process mpas per NPR 8705.6, Safety and Mission Assurance Audits, Reviews and Assessments. (Requirement 45667)		CxP 70059	1.13	MGT-32
NPR 8715.3C	01.05.3	45668	Institutional and Programmatic Safety Requirements: Program Management Roles and Responsibilities in the NASA Safety Program: Project Managers shall ensure that contractor operations and designs are evaluated for consistency and compliance with the safety and health provisions provided in their contractual agreements. (Requirement 45668)	Quality	CxP 70059	5.2.6.3	QAS-73
					CxP 70059	5.2.7.7.2	QAS-37
NPR 8715.3C	01.06.1.1.a(1)	45672	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Assessment: Project managers for flight systems and line managers for institutional systems shall: Use a process for risk assessment that supports decisions regarding safety and mission success as well as other decisions such as the development of surveillance plans and information security (see Chapter 2). (Requirement 45672)	Safety	CxP 70059	2.2.1.2	SAF-12
					CxP 70059	2.2.1.2	SAF-182
NPR 8715.3C	01.06.2.1.a	45676	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Establish and document a formal, closed loop, transparent decision-making process for accpeting residual risk for their assigned activities, personnel, and/or property. (Requirement 45676)	Safety	CxP 70059	2.2.2.2	SAF-36
NPR 8715.3C	01.06.2.1.b	45677	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Meet Federal safety and health standards when making risk-informed decisions to accept residual risk. (Requirement 45677)	Safety	CxP 70059	2.2.2.2	SAF-43
NPR 8715.3C	01.06.2.1.c(1)	45678	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Reduce the risk to an acceptable level using the technical safety requirements provided in Paragraph 1.7 of this NPR. (Requirement 45678)	Safety	CxP 70059	2.2.1	SAF-1015
					CxP 70059	2.2.1	SAF-181
NPR 8715.3C	01.06.2.1.d	45680	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Only accept residual risk consistent with NASA requirements and, in all cases, ensure the acceptance of risk to NASA employees and/or equipment does not endanger the public or NASA employees. (Requirement 45680)	Safety	CxP 70059	2.2.1.2	SAF-1018
					CxP 70059	2.2.1.2	SAF-1019
					CxP 70059	2.2.1.2	SAF-44
NPR 8715.3C	01.06.2.1.e	45681	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Document the basis for any risk-informed decisions. (Requirement 45681)	Safety	CxP 70056	4.2.3	4.2.3
					CxP 70059	2.2.2.2	SAF-43
NPR 8715.3C	01.06.2.1.f(1)	45682	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Communicate to: 1) the cognizant office of primary responsibility (OSMA, Office of the Chief Engineer (OCE), Office of the Chief Health and Medical Officer (OCHMO) for review, decisions regarding residual risk acceptance and (Requirement 45682)	Mgmt	MD013	0	MD013
NPR 8715.3C	01.06.2.1.f(2)	45683	Institutional and Programmatic Safety Requirements: Risk Assessment and Risk Acceptance: Risk Acceptance: Center Directors and project managers shall: Communicate to: 2) to any employee or person for whom the risk has been accepted. (Requirement 45683)	Mgmt	MD013	0	MD013

NPR 8715.3C	01.07.1.1.a	45689	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Risk Reduction Protocol: Project managers shall ensure that hazards are mitigated according to the following stated order of precedence: Eliminate hazards. (Requirement 45689)	Safety	CxP 70059	2.2.1.1	SAF-1041
NPR 8715.3C	01.07.1.1.b	45690	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Risk Reduction Protocol: Project managers shall ensure that hazards are mitigated according to the following stated order of precedence: Minimize the hazard risk through design/operation. (Requirement 45690)	Safety	CxP 70059	2.2.1.1	SAF-1041
NPR 8715.3C	01.07.1.1.c	45691	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Risk Reduction Protocol: Project managers shall ensure that hazards are mitigated according to the following stated order of precedence: Incorporate safety devices. (Requirement 45691)	Safety	CxP 70059	2.2.1.1	SAF-1041
NPR 8715.3C	01.07.1.1.d	45692	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Risk Reduction Protocol: Project managers shall ensure that hazards are mitigated according to the following stated order of precedence: Provide cautions and warning devices. (Requirement 45692)	Safety	CxP 70059	2.2.1.1	SAF-1041
NPR 8715.3C	01.07.1.1.e(1)	45693	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: Risk Reduction Protocol: Project managers shall ensure that hazards are mitigated according to the following stated order of precedence: Develop administrative procedures and training. (Requirement 45693)	Safety	CxP 70059	2.2.1.1	SAF-1041
NPR 8715.3C	01.07.4	45723	Institutional and Programmatic Safety Requirements: Technical Safety Requirements for NASA-Unique Designs and Operations: System Safety Managers shall assure that the above requirements are placed in program/project requirements and that any variances to those requirements are processed in accordance with the requirements of this NPR. (See paragraph 1.13 of this NPR.) (Requirement 45723)	Mgmt	CxP 70055	3.1.b	3.1.b
					CxP 70055	4.1	4.1
NPR 8715.3C	01.13.4.a	45793	Institutional and Programmatic Safety Requirements: Safety Variances: Center Directors (or designees) and project managers shall: Establish and implement Center/program/project-level processes and requirements as needed to satisfy the SMA variance policy and associated requirements provided in this NPR to include processes for preparation, review, and approval of variance requests. (Requirement 45793)	Mgmt	CxP 70059	1.5	MGT-14
					CxP 70059	1.5	MGT-47
NPR 8715.3C	01.13.4.b	45794	Institutional and Programmatic Safety Requirements: Safety Variances: Center Directors (or designees) and project managers shall: Ensure that all variance requests include (but are not limited to) documentation as to why the requirement cannot be met, alternative means to reduce the hazard or risk, the type of variance, the duration of the variance if temporary, and comments from any affected workers or their representatives if the variance affects personnel safety. (Requirement 45794)	Mgmt	CxP 70059	1.5	MGT-14
					CxP 70059	1.5	MGT-47
NPR 8715.3C	01.13.4.c	45795	Institutional and Programmatic Safety Requirements: Safety Variances: Center	Mgmt	CxP 70059	1.5	MGT-14

			Directors (or designees) and project managers shall: Ensure all variance requests include a risk assessment that determines whether there is an increase in risk because the requirement is not satisfied or that the intent of the requirement is met through alternate means that provide an equivalent or lower level of risk. (Requirement 45795)		CxP 70059	1.5	MGT-47
NPR 8715.3C	01.13.4.d	45796	Institutional and Programmatic Safety Requirements: Safety Variances: Center Directors (or designees) and project managers shall: Ensure all requests for deviations or waivers include a plan for correcting the associated deficiency and identify a date or development milestone for bringing the project into compliance with the associated requirement. (Requirement 45796)	Mgmt	CxP 70059	1.5	MGT-14
					CxP 70059	1.5	MGT-47
NPR 8715.3C	01.13.4.e	45797	Institutional and Programmatic Safety Requirements: Safety Variances: Center Directors (or designees) and project managers shall: Ensure variance requests are approved in accordance with the policy in paragraph 1.13.3 of this NPR. (Requirement 45797)	Mgmt	CxP 70059	1.5	MGT-14
					CxP 70059	1.5	MGT-47
NPR 8715.3C	01.13.4.f	45798	Institutional and Programmatic Safety Requirements: Safety Variances: Center Directors (or designees) and project managers shall: Provide copies of all approved safety variances to the OSMA. (Requirement 45798)	Mgmt	CxP 70059	1.5	MGT-14
					CxP 70059	1.5	MGT-47
NPR 8715.3C	01.13.4.g	45799	Institutional and Programmatic Safety Requirements: Safety Variances: Center Directors (or designees) and project managers shall: Forward any request for variance to Federal, State, or local regulations to the OSMA for review prior to submittal to the appropriate Federal/State/local agency. (Requirement 45799)	Mgmt	CxP 70059	1.5	MGT-14
					CxP 70059	1.5	MGT-47
NPR 8715.3C	02.5.1.1.a	45892	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): Project managers shall: Ensure, for Category I projects/programs, that the SSTP is approved by the governing Program Management Council (PMC) and has concurrence by the cognizant SMA managers and the project's senior engineer. (Requirement 45892)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.1.b	45893	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): Project managers shall: Ensure that the System Safety Manager and the prime contractor (for out-of-house projects) have the resources to implement the SSTP. (Requirement 45893)	Safety	CxP 70059	2.2.2.2	SAF-32
NPR 8715.3C	02.5.1.1.c	45894	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): Project managers shall: Ensure, for Category I projects/programs, that changes to the SSTP are approved by the governing PMC and have concurrence by the Chief, Safety and Mission Assurance. (Requirement 45894)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.1.d	45895	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): Project managers shall: When the SSTP is not an integral part of the SEMP, ensure that the SSTP is coordinated with the SEMP for the integration of system safety activities with other system engineering technical processes. (Requirement 45895)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.a	45901	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Develop a SSTP during the project formulation phase and update the plan throughout the system life cycle. (Requirement 45901)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.b	45902	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Ensure that the scope of system safety technical processes in the SSTP follows the graded approach specified in Tables 2.1 and 2.2. (Requirement 45902)	Safety	CxP 70055	0	CxP 70055

NPR 8715.3C	02.5.1.3.c	45903	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Ensure that the SSTP provides the specifics of the system safety modeling activities and their application to risk-informed decision making and safety monitoring throughout the project life cycle. (Requirement 45903)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.d	45904	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: In consultation with the project managers, establish and document, in the SSTP, the objectives and scope of system safety tasks and define applicable safety deliverables and performance measures. (Requirement 45904)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.e	45905	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Provide technical direction and manage implementation of system safety activities as specified in the SSTP. (Requirement 45905)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.f	45906	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Ensure that system safety engineering activities are integrated into system engineering technical processes. (Requirement 45906)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.g	45907	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Determine the acceptability of residual risk stemming from safety assessments. (Requirement 45907)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.h	45908	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Ensure that specific safety requirements are integrated into overall programmatic requirements and are reflected in applicable program and planning documents including the statement of work for contractor designs. (Requirement 45908)	Safety	CxP 70055	0	CxP 70055
NPR 8715.3C	02.5.1.3.i	45909	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Maintain appropriate safety participation in the program design, tests, operations, failures and mishaps, and contractor system safety activities at a level consistent with mishap potential for the life of the program. (Requirement 45909)	Safety	CxP 70059	2.2.2.3	SAF-57
NPR 8715.3C	02.5.1.3.j	45910	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Establish an independent safety reporting channel to keep the Center SMA Director apprised of the system safety status (including tests and operations), particularly regarding problem areas that may require assistance from the Center, the NASA Engineering and Safety Center, or Headquarters. (Requirement 45910)	Mgmt	CxP 70055 CxP 70059	3.2 1.8	3.2 MGT-18
NPR 8715.3C	02.5.1.3.k	45911	System Safety: Core Requirements for System Safety Processes: System Safety Technical Plan (SSTP): The assigned System Safety Manager shall: Support OSMA requirements for audits, assessments, and reviews. (Requirement 45911)	Mgmt	CxP 70059 CxP 70059	1.9 2.1.6	MGT-27 SAF-175
NPR 8715.3C	02.5.2.1	45915	System Safety: Core Requirements for System Safety Processes:System Safety Modeling: System Safety Managers shall ensure that the system safety modeling activities are fully integrated into system engineering and are supported by domain, systems and specialty engineers. (Requirement 45915)	Safety	CxP 70059	2.2.2.2	SAF-42

NPR 8715.3C	02.5.2.2.a	45917	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Ensure that system safety models use systematic, replicable, and scenario-based techniques to identify hazards, to characterize the risk of accidents, to identify risk control measures, and to identify key uncertainties. (Requirement 45917)	Safety	CxP 70059	2.2.1	SAF-181
NPR 8715.3C	02.5.2.2.b	45918	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Initially conduct system safety analyses during project formulation and design concept phases (prior to the Preliminary Design Review) and maintain and update these analyses continuously throughout the project life cycle. (Requirement 45918)	Safety	CxP 70059	2.2.1	SAF-181
					CxP 70059	2.2.1	SAF-6
NPR 8715.3C	02.5.2.2.c	45919	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Ensure, for Category I and II programs/projects, probabilistic risk assessment techniques are used for system safety analysis. (Requirement 45919)	Safety	CxP 70059	2.2.1.2	SAF-12
					CxP 70059	6	PRA-1
NPR 8715.3C	02.5.2.2.d	45920	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Ensure that the system safety models are developed in an iterative process to allow model expansion, model updating, and model integration as the design evolves and operational experience is acquired. (Requirement 45920)	Safety	CxP 70059	2.2.2.3	SAF-66
NPR 8715.3C	02.5.2.2.f	45922	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Use system-specific and all relevant data including failure histories, mishap investigation findings, and the NASA LLIS in system safety analysis. (Requirement 45922)	Safety	CxP 70059	2.2.1	SAF-181
NPR 8715.3C	02.5.2.2.g	45923	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Maintain an up-to-date database of identified hazards, accident scenarios, probabilities and consequences, and key uncertainties throughout the life of the program. (Requirement 45923)	Safety	CxP 70059	2.2.2.3	SAF-1024
					CxP 70059	2.2.2.3	SAF-56
NPR 8715.3C	02.5.2.2.h	45924	System Safety: Core Requirements for System Safety Processes: System Safety Modeling: System safety engineers shall: Document the bases for the system safety analyses including key assumptions, accident scenarios, probabilities, consequence severities, and uncertainties such that they are traceable. (Requirement 45924)	Safety	CxP 70059	2.2.1	SAF-181
NPR 8715.3C	02.5.3.1.a	45928	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: Program/project managers shall: Ensure that a framework is constructed for systematically incorporating system safety analysis results into the evaluation of decision alternatives. (Requirement 45928)	Safety	CxP 70059	2.2.2.2	SAF-1020
NPR 8715.3C	02.5.3.1.b	45929	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: Program/project managers shall: Establish and document a formal and transparent decision-making process for hazard closure^18 and formally accepting residual risk that has been determined to be acceptable by the cognizant technical authority. (Requirement 45929) ^18 Closure of a hazard condition or other safety issue is the demonstration that all safety requirements expressly formulated to address the condition or issue have been satisfied.	Safety	CxP 70059	2.2.2.2	SAF-36
					CxP 70059	2.2.2.2	SAF-43
NPR 8715.3C	02.5.3.1.c	45930	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: Program/project managers shall: Ensure acceptable residual risks^19 are accepted in writing. (See paragraph 1.6 of this NPR.) (Requirement 45930) ^19 Residual risk is the level of risk that	Safety	CxP 70056	0	CxP 70056
					CxP 70059	2.2.1.2	SAF-1018
					CxP 70059	2.2.1.2	SAF-1019
					CxP 70059	2.2.1.2	SAF-44

			remains present after the applicable safety-related requirements have been satisfied. In a risk-informed context, such requirements may include measures and provisions intended to reduce risk from above to below a defined acceptable level.		CxP 70059	2.2.2.2	SAF-43
NPR 8715.3C	02.5.3.1.d	45931	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: Program/project managers shall: Ensure that decisions to accept risk are coordinated with the governing SMA organization and communicated to the next higher level of management for review. (See paragraph 1.6.2 of this NPR.) (Requirement 45931)	Safety	CxP 70059	1.16	SAF-78
					MD013	0	MD013
NPR 8715.3C	02.5.3.1.e	45932	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: Program/project managers shall: Where residual risks have been determined by either the cognizant technical authority or the cognizant SMA authority as "unacceptable," initiate risk mitigation/control activities, as appropriate, to reduce the risk to an acceptable level. (Requirement 45932)	Safety	CxP 70056	0	CxP 70056
					CxP 70059	2.2.2.4	SAF-1027
NPR 8715.3C	02.5.3.1.f	45933	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: Program/project managers shall: Ensure that the requirements of this chapter are specified in related contracts, memoranda of understanding, and other agreement documents. (See Chapter 9 of this NPR.) (Requirement 45933)	Safety	CxP 70059	2.1.2	SAF-1001
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.2.2.2	SAF-38
					CxP 70059	2.2.2.2	SAF-39
NPR 8715.3C	02.5.3.2.a	45935	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: The System Safety Manager shall: Ensure that the system safety models are constructed to support the implementation of the risk-informed decision framework. (Requirement 45935)	Safety	CxP 70059	1.16	SAF-78
					CxP 70059	2.2.2.3	SAF-60
NPR 8715.3C	02.5.3.2.b	45936	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: The System Safety Manager shall: Ensure that the system safety models incorporate all the safety attributes important to risk-informed decision making by working with the project manager and other decision makers as deemed appropriate. (Requirement 45936)	Safety	CxP 70059	2.2.2.2	SAF-42
NPR 8715.3C	02.5.3.2.c	45937	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: The System Safety Manager shall: Establish the methods and tools that are used in the risk-informed framework. (Requirement 45937)	Safety	CxP 70059	2.2.2.3	SAF-1022
					CxP 70059	2.2.2.3	SAF-65
NPR 8715.3C	02.5.3.2.d	45938	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: The System Safety Manager shall: Check and validate the methods and tools before implementation and obtain concurrence from the project manager. (Requirement 45938)	Safety	CxP 70059	2.2.2.3	SAF-1023
NPR 8715.3C	02.5.3.2.e	45939	System Safety: Core Requirements for System Safety Processes: Application of System Safety Models for Risk-informed Decisions: The System Safety Manager shall: Document the bases for the methods and tools used and analytical results. (Requirement 45939)	Safety	CxP 70059	2.2.2.3	SAF-1026
NPR 8715.3C	02.5.4.1	45942	System Safety: Core Requirements for System Safety Processes: Performance Monitoring: Project managers shall ensure that the performance attributes and precursors that are identified as being important indicators of system safety are monitored. (Requirement 45942)	Safety	CxP 70059	2.2.2.2	SAF-1021

NPR 8715.3C	02.5.4.2.a	45944	System Safety: Core Requirements for System Safety Processes: Performance Monitoring: The System Safety Manager shall: Establish the methods and tools that are used in the performance monitoring and precursor assessments. (Requirement 45944)	Safety	CxP 70059	2.2.2.3	SAF-1022
NPR 8715.3C	02.5.4.2.b	45945	System Safety: Core Requirements for System Safety Processes: Performance Monitoring: The System Safety Manager shall: Check and validate the methods and tools used for performance monitoring and precursor assessments before implementation. (Requirement 45945)	Safety	CxP 70059	2.2.2.3	SAF-1023
NPR 8715.3C	02.5.4.2.c	45946	System Safety: Core Requirements for System Safety Processes: Performance Monitoring: The System Safety Manager shall: Maintain an up-to-date databse of the performance monitoring results and precursor results. (Requirement 45946)	Safety	CxP 70059	2.2.2.3	SAF-1024
NPR 8715.3C	02.5.4.2.d	45947	System Safety: Core Requirements for System Safety Processes: Performance Monitoring: The System Safety Manager shall: Ensure that the performance monitoring and precursor data are fed back into system safety analyses and the results updated. (Requirement 45947)	Safety	CxP 70059	2.2.2.3	SAF-1025
NPR 8715.3C	02.5.4.2.e	45948	System Safety: Core Requirements for System Safety Processes: Performance Monitoring: The System Safety Manager shall: Document the bases for the methods and tools that are used in the performance monitoring and precursor assessments. (Requirement 45948)	Safety	CxP 70059	2.2.2.3	SAF-1026
NPR 8715.3C	02.6.1.a	45952	System Safety: System Safety Reviews: The program/project manager shall: Conduct periodic system safety and mission success reviews of their program/project depending on the complexity of the system. Note: The greater the risks, complexity of systems, or visibility of the programs, the greater the independence and formality of the reviews. (Requirement 45952)	Mgmt	CxP 70059	1.16	MGT-39
					CxP 70059	1.16	SAF-78
					CxP 70059	1.9	MGT-27
NPR 8715.3C	02.6.1.b	45953	System Safety: System Safety Reviews: The program/project manager shall: Document the periodicity of the System Safety and Mission Success Program Reviews in the SSTP. (Requirement 45953)	Safety	CxP 70059	2.2.2.2	SAF-35
NPR 8715.3C	02.6.1.c	45954	System Safety: System Safety Reviews: The program/project manager shall: Ensure that the System Safety and Mission Success Program Reviews focus on the evaluation of management and technical documentation, hazard closure, and the safety residual risks remaining in the program at that stage of development. (Requirement 45954)	Safety	CxP 70059	1.16	SAF-78
NPR 8715.3C	02.6.1.d	45955	System Safety: System Safety Reviews: The program/project manager shall: Establish and maintain dedicated independent assessment activities for Priority I programs and projects, such as the Constellation Program. (Requirement 45955)	Safety	CxP 70059	2.2.2.3	SAF-55
NPR 8715.3C	02.6.2.a	45957	System Safety: System Safety Reviews: The System Safety Manager shall: Conduct periodic independent reviews of the system safety tasks keyed to project milestones (Requirement 45957)	Safety	CxP 70059	2.2.2.3	SAF-54
NPR 8715.3C	02.6.2.b	45958	System Safety: System Safety Reviews: The System Safety Manager shall: Assist and support independent review groups established to provide independent assessments of the program. (Requirement 45958)	Safety	CxP 70059	2.2.2.3	SAF-55
NPR 8715.3C	02.6.2.c	45959	System Safety: System Safety Reviews: The System Safety Manager shall: Support the OSMA independent safety assessment process to determine readiness to conduct tests and operations having significant levels of safety risks. (Requirement 45959)	Safety	CxP 70059	2.2.2.3	SAF-59
NPR 8715.3C	02.7.1.a	45963	System Safety: Change Review: The project manager and the System Safety Manager shall: Update the system safety analyses to identify any change in risk. (Requirement 45963)	Safety	CxP 70038	4.1	78-4.1
					CxP 70059	2.2.1	SAF-181
NPR 8715.3C	02.7.1.b	45964	System Safety: Change Review: The project manager and the System Safety	Safety	CxP 70038	4.1	78-4.1

			Manager shall: Ensure that safety personnel assess the potential safety impact of the proposed change and any changes to the baseline risk and previously closed hazards. (Requirement 45964)		CxP 70059	2.2.1	SAF-181
NPR 8715.3C	02.7.1.c	45965	System Safety: Change Review: The project manager and the System Safety Manager shall: Ensure that proposed changes to correct a safety problem are analyzed to determine the amount of safety improvement (or detriment) that would result from incorporation of the change. (Requirement 45965)	Safety	CxP 70038	4.1	78-4.1
					CxP 70059	2.2.1	SAF-181
NPR 8715.3C	02.7.1.d	45966	System Safety: Change Review: The project manager and the System Safety Manager shall: Ensure that the safety impact for every change that is proposed to a program baseline (even if the statement is "No Impact") is documented. (Requirement 45966)	Safety	CxP 70059	2.2.1	SAF-1014
					CxP 70059	2.2.2.3	SAF-64
					CxP 70059	2.2.4	SAF-73
NPR 8715.3C	02.8.1.a	45970	System Safety: Documentation: The project manager (or designated agent) and the System Safety Manager shall: Ensure that all pertinent details of the system safety analysis and review are traceable from the initial identification of the risks through their resolution and any updates in the SSTP. (Requirement 45970)	Safety	CxP 70059	2.2.1	SAF-6
NPR 8715.3C	02.8.1.b	45971	System Safety: Documentation: The project manager (or designated agent) and the System Safety Manager shall: Ensure that records are maintained per NPR 1411.1, NASA Records Retention Schedules. (Requirement 45971)	PP&C	CxP 70059	A.1.4.2.4	QAS-61
NPR 8715.3C	02.8.2.a	45973	System Safety: Documentation: The System Safety Manager shall: Submit a system safety analysis report to the program/project manager at each milestone (formulation, evaluation, implementation, or other equivalent milestones [e.g., Safety Requirements Review^20, Preliminary Design Review, Critical Design Review, and Flight Readiness Review]) detailing the results of the system safety analyses completed to date to document the status of system safety tasks. (Requirement 45973) ^20 Safety requirements include both deterministic and risk-informed requirements. A deterministic safety requirement is the qualitative or quantitative definition of a threshold of action or performance that must be met by a mission-related design item, system, or activity in order for that item, system, or activity to be acceptably safe. A risk-informed requirement is a safety requirement that has been established, at least in part, on the basis of the consideration of a safety-related risk metric and its associated uncertainty.	Safety	CxP 70059	2.2.2.3	SAF-60
NPR 8715.3C	02.8.2.b	45974	System Safety: Documentation: The System Safety Manager shall: Ensure that each submitted revision to the system safety analysis report lists the risks that have been addressed, the risks that have yet to be addressed, and expected residual risks that will remain following the implementation of risk reduction strategies. (Requirement 45974)	Safety	CxP 70059	1.16	SAF-78
NPR 8715.3C	02.8.2.c	45975	System Safety: Documentation: The System Safety Manager shall: Ensure that the system safety analysis report documents management and technical changes that affect the established safety baseline (by changes in the planned approach, design, requirements, and implementation) and is revised when required. (Requirement 45975)	Safety	CxP 70059	1.16	SAF-78
NPR 8715.3C	02.8.2.d	45976	System Safety: Documentation: The System Safety Manager shall: Ensure that a final approved system safety analysis report is produced that contains a verification of the resolution of the risks and a written acceptance of the residual risks from the program/project manager to complete the audit trail (Requirement 45976)	Safety	CxP 70059	2.2.2.2	SAF-43

NPR 8715.3C	03.05.1	46031	Operational Safety: Pressure System Safety: Center Directors and Project Managers shall use NPD 8710.5, NASA Safety Policy for Pressure Vessels and Pressurized Systems, to protect personnel and property from hazards posed by pressure vessels and pressurized systems. Note: This document assigns responsibility for the various aspects of a NASA pressure vessel and pressurized systems program, references the codes, standards, guides, and Federal regulations that must be followed, and establishes unique NASA requirements. (Requirement 46031)	Safety	CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.08.2.a	46070	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Identify, assess, analyze, and develop adequate safety controls for all hazardous operations. (Requirement 46070)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.b	46071	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that all hazardous operations have a Hazardous Operating Procedure or a Hazardous Operating Permit (HOP). (Requirement 46071) Note: HOPs consist of a detailed plan listing step-by-step functions or tasks to be performed on a system or equipment to ensure safe and efficient operations. HOPs list special precautions, start and stop time of the operation, and the approving supervisor(s). Certain operations (e.g., rigging, high voltage) depend on adherence to overall standards and general guidelines and specific training as opposed to HOPs for each specific operation.	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.c	46072	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that all HOPs developed at NASA sites or for NASA operations have concurrence from the responsible fire protection or safety office. (Requirement 46072)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.d	46073	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that all HOPs are approved by the NASA Center safety office or the contractor safety office to assure that a review has been performed. (Requirement 46073)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.e	46074	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that deviations or changes to HOPs are also approved by the cognizant NASA Center safety office or contractor safety office to assure that a review has been preformed. (Requirement 46074) Note: If deviations or changes to HOPs are approved by the contractor's safety office, a copy should be forwarded to the local NASA safety office for informational purposes.	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.f	46075	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure facility operating instructions and changes are developed based on the facility mission and operational requirements. (Requirement 46075)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.g	46076	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that all procedures include sufficient detail to identify residual hazards and cautions to NASA personnel. (Requirement 46076)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.08.2.h	46077	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that hazardous procedures are marked conspicuously on the title page; e.g., "THIS DOCUMENT CONTAINS HAZARDOUS OPERATIONS PROCEDURES," to alert operators that strict adherence to the procedural steps and safety and health precautions contained therein is required to ensure the safety and health of personnel and equipment. (Requirement 46077)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012

NPR 8715.3C	03.08.2.i	46078	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that specific personnel certificaiton requirements are established, as listed in Chapter 7, in cases where hazardous operations (e.g., rigging, high voltage) depend on adherence to specific standards, guidelines, and training. (Requirement 46078)	Safety	CxP 70059	2.2.2.2	SAF-45
NPR 8715.3C	03.08.2.k	46080	Operational Safety: Hazardous Operations: Center Directors and project managers shall: Ensure that personnel use the buddy system whereby an adjacent or nearby person not directly exposed to the hazard serves as an observer to render assistance where the risk of injury is high. (Requirement 46080)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.09.2.d	46088	Operational Safety: Laboratory Hazards: Center Directors and project managers shall ensure that: The design, fabrication, or modification of laboratories used for experimentation, testing, or analyses performed on human or animal subjects are coordinated in advance with the OCHMO at (202) 358-2390. (Requirement 46088)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.2	46195	Operational Safety: Test Operations Safety: Center Directors and project managers shall ensure that test plans are developed and evaluated to assure test performance within safe operating limits. (Requirement 46195) Note: Evaluations will address the test article, test facility, testing procedures, test conditions, operator involvement, and potential risk to adjoining facilities and personnel.	Safety	CxP 70059	2.1.13	SAF-1011
NPR 8715.3C	03.14.3.2	46198	Operational Safety: Test Operations Safety: Safety Documentation: Center Directors and project managers shall ensure that established test controls are clearly identified in test drawings, facility drawings, and test procedures. (Requirement 46198)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.4.1.a	46201	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Design test systems such that test personnel or critical test hardware are not subject to a test environment wherein a credible single-point failure (e.g., power loss) could result in injury, illness, or loss to the critical test hardware. (Requirement 46201)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.4.1.b	46202	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Construct all systems (electrical, mechanical, pneumatic, and/or hydraulic) so that no single failure could cause a critical condition. (Requirement 46202)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.4.1.c	46203	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Ensure that software may interface with test systems meets the requirements stated in Chapter 1 of this NPR. (Requirement 46203)	SWA	CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.4.3	SWA-72
NPR 8715.3C	03.14.4.1.d	46204	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Calibrate and certify safety-critical instrumentation before test operations and as required by test documentation or the test organization's internal procedures. (Requirement 46204)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.4.1.e	46205	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Ensure all personnel involved in test are informed of potential hazards, safety procedures, and protective measures. (Requirement 46205)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.4.1.f	46206	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Ensure the availability of appropriate emergency medical treatment facilities. (Requirement 46206)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012

NPR 8715.3C	03.14.4.1.g	46207	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Conduct formal reviews of engineering designs that are complicated or potentially hazardous to facilities. (Requirement 46207)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.4.1.h	46208	Operational Safety: Test Operations Safety: Test System Requirements: Project managers responsible for developing test systems shall: Ensure test results report include anomalies, safety implications, and lessons learned. (Requirement 46208)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
NPR 8715.3C	03.14.5.1.a	46211	Operational Safety: Test Operations Safety: Test Readiness Review: Center Directors and project managers shall ensure that Test Readiness Reviews: Are conducted for tests involving new or modified hardware and/or procedures. (Requirement 46211)	Safety	CxP 70059	2.1.13	SAF-1013
NPR 8715.3C	03.14.5.1.b	46212	Operational Safety: Test Operations Safety: Test Readiness Review: Center Directors and project managers shall ensure that Test Readiness Reviews: Determine and document the safety, technical, and operational readiness of the test. (Requirement 46212)	Safety	CxP 70059	2.1.13	SAF-1013
					CxP 70059	2.1.13	SAF-90
NPR 8715.3C	03.14.6.1	46214	Operational Safety: Test Operations Safety: Pre-test Meeting: Center Directors and project managers shall ensure that a pre-test meeting is conducted with all involved personnel to discuss the facility, design, instrumentation, safety, and operator training and certification. (Requirement 46214) Note: The meeting should also establish the test plan, identify test constraints to ensure facility safety, and determine test article readiness, ground support equipment readiness, and procedural readiness.	Safety	CxP 70059	2.1.13	SAF-1011
NPR 8715.3C	03.14.7.2.a	46218	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Tests involving hazardous substances, where human test subjects or test team personnel may be exposed, are reviewed for adequacy of test team safeguards, including direct communication between the test subjects and the test conductors. (Requirement 46218)	Safety	CxP 70059	2.1.13	SAF-1011
NPR 8715.3C	03.14.7.2.b	46219	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: A facility environmental control system failure or failure in the distribution system affecting one pressure-suited occupant shall not affect any other pressure-suited occupant for test requiring crew participation in a pressure suit. (Requirement 46219)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.14.7.2.c	46220	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: A means exists for immediately detecting an incipient fire or other hazardous condition in each crew compartment of any test area. (Requirement 46220)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.14.7.2.d	46221	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Automatic fire detection is provided for critical areas not suitable for visual monitoring. (Requirement 46221)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.14.7.2.e	46222	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Crewed test systems are designed for timely and unencumbered rescue of incapacitated crew members. (Requirement 46222)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033

NPR 8715.3C	03.14.7.2.f	46223	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Software controlling crewed test systems are thoroughly analyzed to ensure that no command results in death or injury to the test subjects (Requirement 46223) Note: Policies and requirements for software are given in NPD 2820.1, NASA Software Policy, and NPR 7150.2, NASA Software Engineering Requirements.	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.14.7.2.g	46224	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Crewed test systems are designed to provide for manual overrides of critical software commands to ensure the safety of test subjects during any system event or test scenario (normal operation, malfunction, emergency). (Requirement 46224)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.14.7.2.h	46225	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Manual overrides of critical software commands support safe test termination and egress of test subjects. (Requirement 46225)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.14.7.2.i	46226	Operational Safety: Test Operations Safety: Human Research Subjects: Center Directors and project managers shall ensure that: Medical resources and facilities needed for response are alerted, on-call, and immediately available as needed. (Requirement 46226)	Safety	CxP 70059	2.1.13	SAF-1011
					CxP 70059	2.1.13	SAF-1012
					CxP 70059	2.1.13	SAF-90
					CxP 70059	2.2.2.2.e	SAF-1035
					CxP 70059	2.5	SAF-1033
NPR 8715.3C	03.15.3	46230	Operational Safety: Non-Ionizing Radiation Center Directors and project managers shall comply with these regulations unless a specific exemption is obtained from the U.S. Department of Health and Human Services, Food and Drug Administration. (Requirement 46230)	Safety	CxP 70059	2.1.9	SAF-23
NPR 8715.3C	03.15.4.a	46232	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: Only trained and certified employees are assigned to install, adjust, and operate laser equipment. (Requirement 46232)	Safety	CxP 70059	2.1.12	SAF-1010
NPR 8715.3C	03.15.4.b	46233	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: Personnel operating lasers are trained and certified in accordance with Chapter 7 of this NPR. (Requirement 46233)	Safety	CxP 70059	2.1.12	SAF-1010
NPR 8715.3C	03.15.4.d	46235	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: Laser operation conforms to the principles and requirements set forth in ANSI Z136.1, American National Standard for Safe Use of Laser, and ANSI Z136.2, Safe Use of Optical Fiber Communication Systems utilizing Laser Diode and LED Sources. (Requirement 46235)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.4.e	46236	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: Exposure of personnel to laser radiation does not exceed the permissible exposure levels provided in ANSI Z136.1, American National Standard for Safe Use of Laser. (Requirement 46236)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.4.f	46237	Operational Safety: Non-Ionizing Radiation: Center Directors and project managers shall ensure that: To the maximum extent practicable, laser hazards to personnel are eliminated by engineering design before they become operational, or procedures are developed and equipment provided to reduce the risk for those hazards that cannot be eliminated. (Requirement 46237)	Safety	CxP 70038	0	CxP 70038

NPR 8715.3C	03.15.7.1.a	46254	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: Identify the airborne use of Class III-B and IV lasers early in the system acquisition process and track their use throughout the program life cycle. (Requirement 46254) Note: A realistic and timely application of safety engineering to laser systems can avoid or reduce the costs involved in redesign, time lost in modification, and loss of mission capacity.	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.b	46255	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: Ensure the design of laser systems for NASA aircraft and spacecraft includes a system of interlocks to prevent inadvertent laser beam output. (Requirement 46255)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.c	46256	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: When a test circuit switch is provided to override the ground interlock to aid ground test operations, maintenance, or service, ensure the design precludes inadvertent operation. (Requirement 46256)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.d	46257	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: Ensure that the crew will not operate the laser except in accordance with the prescribed mission profile. (Requirement 46257)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.e	46258	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: For long-range laser shots, designate as large an exclusion area as practical to minimize the risk to the people outside the area. (Requirement 46258)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.f	46259	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: Ensure a hazard evaluation and written safety precautions are completed prior to airborne laser operations. (Requirement 46259)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.g	46260	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: Ensure that the hazard analysis considers catastrophic events and the need for very reliable, high-speed laser shutdown should such events occur. (Requirement 46260) Note: See ANSI Z136.1, American National Standard for Safe Use of Lasers, for hazard evaluation and control information.	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.h	46261	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: Ensure that qualified personnel perform laser hazard evaluations to determine specific hazards associated with specific uses, establish appropriate hazard control measures, and identify crew and public-at-large protection requirements. (Requirement 46261)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.1.i	46262	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Project managers shall: When completing the hazard evaluation, consider and document the atmospheric effects of laser beam propagation, the transmission of laser radiation through intervening materials, the use of optical viewing aids, and resultant hazards; e.g., electrical, cryogenic, toxic vapors. (Requirement 46262)	Safety	CxP 70038	0	CxP 70038
NPR 8715.3C	03.15.7.3	46264	Operational Safety: Non-Ionizing Radiation: Airborne Operations Using Class III-B and IV Lasers: Program managers and safety evaluators shall assess the safety aspects, compliance with safety requirements, and resolution of laser safety-related problems. (Requirement 46264)	Safety	CxP 70038	0	CxP 70038

NPR 8715.3C	03.15.8.1.a	46267	Operational Safety: Non-Ionizing Radiation: Laser Software: Project managers shall ensure that: Laser software provides safety precautions for fast-moving lasers and prevents misdirected laser operation. (Requirement 46267)	SWA	CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.4.3	SWA-72
NPR 8715.3C	03.15.8.1.b	46268	Operational Safety: Non-Ionizing Radiation: Laser Software: Project managers shall ensure that: Laser software development is subjected to a software safety analysis per Chapter 1 of this NPR. (Requirement 46268)	SWA	CxP 70059	7.1	SWA-1
					CxP 70059	7.5.7.4.3	SWA-72
NPR 8715.3C	03.15.8.1.c	46269	Operational Safety: Non-Ionizing Radiation: Laser Software: Project managers shall ensure that: Existing laser software systems are reviewed to assure that safety precautions are provided. (Requirement 46269) Note: Se NASA-STD-8719.13, Software Safety Standard, for further information.	SWA	CxP 70038	0	CxP 70038
NPR 8715.3C	06.2.4.a	46409	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators and program executives shall: Designate an individual responsible for ensuring the implementation of the requirements for nuclear launch safety approval in accordance with paragraph 9 of PD/NSC-25. (Requirement 46409)	Safety	CxP 70059	2.6	SAF-1034
NPR 8715.3C	06.2.4.b	46410	Nuclear Safety for Launching of Radioactive Materials: Responsibilities: Mission Directorate Associate Administrators and program executives shall: Notify the NASA Headquarters NFSAM, in writing, as soon as radioactive sources are identified for potential use on NASA spacecraft to schedule nuclear launch safety approval activities. (Requirement 46410)	Safety	CxP 70059	2.6	SAF-1034
NPR 8715.3C	07.4.1.a	46557	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall ensure that: Personnel who perform or control hazardous operations or use or transport hazardous material have been trained and certified with the necessary knowledge, skill, judgement, and physical ablitiy (if specified in the job classification) to do the job safely. (Requirement 46557) Note: Many NASA operations involve hazardous materials or chemicals, technology, or systems with potential hazards to life, the environment, or property.	Safety	CxP 70059	2.1.12	SAF-1009
					CxP 70059	2.1.12	SAF-1010
					CxP 70059	2.1.12	SAF-87
NPR 8715.3C	07.4.1.b	46558	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall ensure that: Personnel obtain hazardous operation safety certification for those tasks that potentially have an immediate danger to the individual (death/injury to self) if not done correctly, or could create a danger to other individuals in the immediate area (death or injury), or are a danger to the environment. (Requirement 46558) Note: Detailed training and certification requirements may be found in specific NASA Standards; e.g., NASA-STD-8719.9, Standard for Lifting Devices and Equipment, or NSS 1740.12, Safety Standard for Explosives, Propellants and Pyrotechnics.	Safety	CxP 70059	2.1.12	SAF-1009
					CxP 70059	2.1.12	SAF-1010
					CxP 70059	2.1.12	SAF-87
NPR 8715.3C	07.4.1.c	46559	Safety Training and Personnel Certification: Personnel Safety Certification Programs for Potentially Hazardous Operations and Materials: Mission Directorate Associate Administrators, Center Directors, project managers, and line managers shall ensure that: All contractor personnel engaged in potentially hazardous operations or hazardous material handling are certified via a process similar to that for NASA personnel. (Requirement 46559)	Safety	CxP 70059	2.1.12	SAF-1009
					CxP 70059	2.1.12	SAF-1010
					CxP 70059	2.1.12	SAF-87

NPR 8715.3C	07.5.3	46609	Safety Training and Personnel Certification: Mission Critical Personnel Reliability Program (PRP): Mission Directorate Associate Administrators, Center Directors, project managers, supervisors, Cos, and COTRs shall ensure that contracts cover mission-critical operations or areas referenced by 48 CFR Part 1852.246-70, NASA FAR Supplement, Mission Critical Space System Personnel Reliability Program. (Requirement 46609)	Safety	CxP 70059	2.1.9	SAF-1003
NPR 8715.3C	09.3.1.a	46670	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Work with cognizant safety officals to develop and approve safety requirements and objectives for efforts to be contracted, and advise COs and COTRS of specific safety concerns or issues related to contract performance. (Requirement 46670)	Safety	CxP 70059	2.2.2.2	SAF-37
NPR 8715.3C	09.3.1.b	46671	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Ensure that the application of the requirements in Chapter 2 of this NPR are specified in related contracts, memoranda of understanding, and other documents for joint ventures between NASA and other parties including commercial services, interagency efforts, and international partnerships. (Requirement 46671)	Mgmt	CxP 70059	1.14	MGT-35
NPR 8715.3C	09.3.1.c	46672	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Ensure that NASA responsibilities are specified in contracts, memoranda of understanding, and other documents for joint ventures between NASA and other parties including commercial services, interagency efforts, and international partnerships. (Requirement 46672)	Safety	CxP 70059	1.14	MGT-35
NPR 8715.3C	09.3.1.d	46673	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Ensure that contracts contain safety, mission success, and risk management requirements for design, development, fabrication, test, and the operations of systems, equipment, and facilities in consultation with Center SMA Directors. (Requirement 46673)	Safety	CxP 70059	2.1.2	SAF-1001
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.2.2.2	SAF-38
					CxP 70059	2.2.2.2	SAF-39
NPR 8715.3C	09.3.1.e	46674	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Use the software safety requirements in NASA-STD-8719.13, Software Safety Standard, and NASA-STD-8739.8, Software Assurance Standard, as the basis for contracts, memoranda of understanding, and other documents related to software. (Requirement 46674)	Safety	CxP 70059	7.3.2	SWA-18
NPR 8715.3C	09.3.1.f	46675	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Provide specific safety tasks to the CO for incorporation into contracts. (Requirement 46675)	Safety	CxP 70059	2.2.2.2	SAF-39
NPR 8715.3C	09.3.1.g	46676	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Define the surveillance of contractor safety matters with respect to the nature of the procurement. (Requirement 46676)	Safety	CxP 70059	2.2.2.2	SAF-40
NPR 8715.3C	09.3.1.h	46677	Safety and Risk Management for NASA Contracts: Authority and Responsibility: Project managers shall: Ensure that performance-based contracts have a surveillance plan. (Requirement 46677)	Safety	CxP 70059	2.2.2.2	SAF-40
NPR 8715.3C	09.3.2.a	46679	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Develop safety requirements and objectives that are clearly delineated in contract specifications in conjunction with project officials. (Requirement 46679)	Safety	CxP 70059	2.2.2.2	SAF-38
NPR 8715.3C	09.3.2.b	46680	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Establish safety performance as an element to be evaluated in contracts with fee plans. (Requirement 46680)	Mgmt	CxP 70059	1.14	MGT-38

NPR 8715.3C	09.3.2.c	46681	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Require copies of MSDS for new hazardous materials as requested by the local NASA safety office. (Requirement 46681)	Safety	CxP 70059	2.1.9	SAF-1003
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.1.9	SAF-24
NPR 8715.3C	09.3.2.d	46682	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Participate in onsite visits and pre-bid conferences to ensure potential bidders understand safety provisions. (Requirement 46682)	Safety	CxP 70059	2.1.9	SAF-1003
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.1.9	SAF-24
NPR 8715.3C	09.3.2.e	46683	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Review, comment, and approve (or disapprove) the contractors' safety risk assessment, submitted in response to paragraph 9.3.3, before the start of any hazardous deliverable work or support operations. (Requirement 46683)	Safety	CxP 70059	2.1.9	SAF-1003
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.1.9	SAF-24
NPR 8715.3C	09.3.2.f	46684	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Coordinate any matter regarding proposed deviations to safety requirements of 48 CFR Part 1823.70, Safety and Health, with the OSMA, or designated representative. (Requirement 46684)	Safety	CxP 70059	2.1.9	SAF-1003
					CxP 70059	2.1.9	SAF-179
					CxP 70059	7.3.3	SWA-23
					CxP 70059	7.3.5	SWA-24
NPR 8715.3C	09.3.2.g	46685	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Implement NPR 5100.4, Federal Acquisition Regulation Supplement (NASA FAR Supplement). (Requirement 46685)	Safety	CxP 70059	2.1.9	SAF-1003
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.1.9	SAF-24
NPR 8715.3C	09.3.2.h	46686	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers, COs, and COTRs shall: Implement 48 CFR Parts 1807, Acquisition Planning; 1823, Environment, Energy and Water Efficiency, Renewable Energy Technologies, Occupational Safety, and Drug-Free Workplace; 1842, Contract Administration and Audit Services; and 1846, Quality Assurance. (Requirement 46686)	Safety	CxP 70059	2.1.9	SAF-1003
					CxP 70059	2.1.9	SAF-179
					CxP 70059	2.1.9	SAF-23
					CxP 70059	2.1.9	SAF-24
NPR 8715.3C	09.3.4.a	46689	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers shall: Assist the CO and COTR in evaluating the prospective contractor's safety record and safety program. (Requirement 46689)	Mgmt	CxP 70059	1.14	MGT-37
					CxP 70059	2.2.2.2	SAF-37
					CxP 70059	2.2.2.2	SAF-39
					CxP 70059	2.2.2.3	SAF-61
NPR 8715.3C	09.3.4.b	46690	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers shall: Assist the CO and COTR in applying any special safety provisions to grants or cooperative agreements (see paragraph 2.7). (Requirement 46690)	Mgmt	CxP 70059	1.14	MGT-36
					CxP 70059	1.9	MGT-26
					CxP 70059	2.1.11	SAF-159
					CxP 70059	2.2.2.2	SAF-37
					CxP 70059	2.2.2.2	SAF-39
					CxP 70059	2.2.2.3	SAF-61
NPR 8715.3C	09.3.4.c	46691	Safety and Risk Management for NASA Contracts: Authority and Responsibility: System Safety Managers shall: During the pre-award phase of acquisition, develop, document and provide to the CO criteria for the safety performance elements to be evaluated in contracts with fee plans in a timely manner to ensure inclusion in the solicitation. (Requirement 46691)	Mgmt	CxP 70059	1.14	MGT-38
					CxP 70059	2.2.2.2	SAF-37
					CxP 70059	2.2.2.2	SAF-39
					CxP 70059	2.2.2.3	SAF-61

NPR 8715.3C	09.7.1.a	46715	Safety and Risk Management for NASA Contracts: Grants: Project managers that select research projects that could contain possible safety issues shall: Identify the need for special safety conditions to be included in grants or cooperative agreement award documents. Note: A "special safety condition" addressing safety should be included in grants and cooperative agreements when contract performance involves NASA facilities, Government-Furnished Equipment, or hazardous or energetic materials or chemicals that may pose a significant safety or health risk to the public, NASA employees, and contractor employees when used. (Requirement 46715)	Safety	CxP 70059	2.1.10	SAF-26
NPR 8715.3C	09.7.1.b	46716	Safety and Risk Management for NASA Contracts: Grants: Project managers that select research projects that could contain possible safety issues shall: Identify special safety conditions that include provisions for applicable OSHA requirements and host institution and general industry-accepted practices to be followed during research to eliminate or control risks associated with implementing the grant or cooperative agreement. (Requirement 46716)	Safety	CxP 70059	2.1.10	SAF-27
NPR 8715.3C	11.3.5	57265	NASA Meteoroid Environment Program: Responsibility: NASA Space Flight Program/Project Managers shall evaluate ME risk mitigation measures for inclusion in spaceflight design and operations (Requirement 57265). Note: Upon request, the NASA MEO can provide technical expertise on ME. Note: The risk assessment and shielding/mitigation approach must combine MM and OD to be accurate and effective. Design, test, and evaluation of MMOD shielding and inherently technical/egineering functions, and have been responsibility's that have been managed directly by each NASA Space Flight Program/Project and tasked to the technical/engineering line organizations.	Safety	CxP 70038	0	CxP 70038
NPR 8735.1B	1.2.4.a	57144	General Requirements: Responsibilities: Program, Project, and Operations/Institutional Managers shall: Review all contracts to ensure incorporation of GIDEP participation requirements to evaluate GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories (Requirement 57144).	RMS	CxP 70059	0	RMS-117
					CxP 70059	3.4.1.1	RMS-62
NPR 8735.1B	1.2.4.b	57145	General Requirements: Responsibilities: Program, Project, and Operations/Institutional Managers shall: Ensure that all applicable GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories are reveiwed and dispositioned for impact to all levels under their purview (Requirement 57145).	RMS	CxP 70059	3.4.1.4	RMS-60
NPR 8735.1B	1.2.4.c	57146	General Requirements: Responsibilities: Program, Project, and Operations/Institutional Managers shall: Ensure that all significant parts, material, and safety problems of a general concern are identified and corresponding data exchanged via GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories (Requirement 57146).	RMS	CxP 70059	3.4.1.1	RMS-62
					CxP 70059	3.4.1.5	RMS-58
NPR 8735.1B	1.2.4.d	57147	General Requirements: Responsibilities: Program, Project, and Operations/Institutional Managers shall: Ensure that the status of all applicable GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories are reviewed at program milestones and readiness reviews (Requirement 57147).	RMS	CxP 70059	3.4.1.3	RMS-61

NPR 8735.1B	4.1.a	57193	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Upon receipt of a GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory, all Program, Project, and Operations/Institutional Managers shall evaluate and disposition the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory by: Determining its relevance and impact to programs, projects, and institutions (Requirement 57193). (See paragraph 4.2 and 4.3 for exceptions to Program and Project Managers' requirements for closed-loop GIDEP reporting).	RMS	CxP 70059	3.4.1.4	RMS-60
NPR 8735.1B	4.1.b	57194	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Upon receipt of a GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory, all Program, Project, and Operations/Institutional Managers shall evaluate and disposition the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory by: Identifying actions to be taken to reduce or eliminate any detrimental effects on programs, projects, and institutions or identifying other disposition actions to be taken (e.g., risk accepted after assessment, parts replaced, parts placed in segregated stores, additional testing performed) (Requirement 57194).	RMS	CxP 70059	3.4.1.3	RMS-61
NPR 8735.1B	4.1.c	57195	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Upon receipt of a GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory, all Program, Project, and Operations/Institutional Managers shall evaluate and disposition the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory by: Preparing and providing a response to the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory in the form of a Parts, Materials, and Safety Problem Impact Statement (NASA Form 1544 (see Appendix C)) or Center-designated form (Requirement 57195).	RMS	CxP 70059 CxP 70059 CxP 70059	3.4.1.2 3.4.1.3 3.4.1.6	RMS-63 RMS-61 RMS-59
NPR 8735.1B	4.1.c(01)	57196	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Upon receipt of a GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory, all Program, Project, and Operations/Institutional Managers shall evaluate and disposition the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory by: For GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, or NASA Advisories that do not apply to a program, project, or institution, the Program, Project, or Operations/Institutional Manager shall provide a "no impact" response on the form (Requirement 57196).	RMS	CxP 70059 CxP 70059 CxP 70059	3.4.1.2 3.4.1.3 3.4.1.6	RMS-63 RMS-61 RMS-59

NPR 8735.1B	4.1.d(1)	57199	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Upon receipt of a GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory, all Program, Project, and Operations/Institutional Managers shall evaluate and disposition the GIDEP ALERT, GIDEP SAFE-ALERT, GIDEP Problem Advisory, GIDEP Agency Action Notice, or NASA Advisory by: Collecting additional information as requested by the NASA Advisory initiator (Requirement 57199).	RMS	CxP 70059	3.4.1.5	RMS-58
NPR 8735.1B	4.3	57205	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: Program and Project Managers shall ensure that the baselining of the parts list includes a check of historical GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories (Requirement 57205).	RMS	CxP 70059	3.4.1.4	RMS-60
NPR 8735.1B	4.4(1)	57206	Evaluation and Disposition of GIDEP ALERTS, GIDEP SAFE-ALERTS, GIDEP Problem Advisories, GIDEP Agency Action Notices, and NASA Advisories: For human flight operations and safety critical systems, Program, Project, and Operations/Institutional Managers shall continue closed-loop GIDEP processing throughout the entire program/project life until disposal (Requirement 57206).	Safety	CxP 70059	3.4.1.3	RMS-61
NPR 8735.2A	1.2.04.a	43042	Introduction: Roles and Responsibilities: Program and/or project managers are responsible for the quality of their assigned products and services. To that end, they shall: Plan and budget for implementation of Government contract quality assurance functions. (Requirement 43042)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	1.2.04.b	43043	Introduction: Roles and Responsibilities: Program and/or project managers are responsible for the quality of their assigned products and services. To that end, they shall: Identify high-risk and low-risk item acquisitions using input/support provided by the Center SMA office. (Requirement 43043)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	1.2.04.c	43044	Introduction: Roles and Responsibilities: Program and/or project managers are responsible for the quality of their assigned products and services. To that end, they shall: Develop Program/Project Quality Assurance Surveillance Plans (PQASP) per Chapter 3 of this NPR using input/support provided by the Center SMA office. (Requirement 43044)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-135
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	1.2.04.d	43045	Introduction: Roles and Responsibilities: Program and/or project managers are responsible for the quality of their assigned products and services. To that end, they shall: Appoint a program/project SMA Lead, or request SMA Director assignment/provision of a NASA SMA Lead, in accordance with local Center organizational governance procedures. (Requirement 43045)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	1.2.05.a	43047	Introduction: Roles and Responsibilities: Contracting officers ensure performance of all necessary actions for effective contracting and safeguard the interests of the United States in its contractual relationships. To implement requirements of this NPR, contracting officers shall: Make contract awards which ensure that the Government is not assuming unacceptable quality risk, and which take into consideration SMA office input regarding contractor past performance in meeting contract requirements related to safety, quality, and product configuration. (Requirement 43047)	Quality	CxP 70059	5.2.6.3	QAS-73
					CxP 70059	5.2.7	QAS-11
NPR 8735.2A	1.2.05.b	43048	Introduction: Roles and Responsibilities: Contracting officers ensure	Quality	CxP 70059	5.2.6.3	QAS-73

			performance of all necessary actions for effective contracting and safeguard the interests of the United States in its contractual relationships. To implement requirements of this NPR, contracting officers shall: Take inputs from the program/project manager and/or the NASA SMA Lead to establish quality assurance requirements to be delegated to a non-NASA Federal agency via a Letter of Delegation (LOD) and/or to be performed under contract by a quality assurance support contractor. (Requirement 43048)		CxP 70059	5.2.7	QAS-11
NPR 8735.2A	1.2.05.c(1)	43049	Introduction: Roles and Responsibilities: Contracting officers ensure performance of all necessary actions for effective contracting and safeguard the interests of the United States in its contractual relationships. To implement requirements of this NPR, contracting officers shall: Incorporate appropriate clauses or provisions into the prime contract that allow NASA, delegated Federal agency personnel, and/or quality assurance support contractors timely access to contractor and subcontractor facilities to perform quality assurance functions required by this NPR. (Requirement 43049)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	A.1.7.4.1	QAS-100
					CxP 70059	A.1.7.4.1	QAS-101
					CxP 70059	A.1.7.4.2.b	QAS-170
					CxP 70059	A.1.8.2.2	QAS-122
NPR 8735.2A	1.2.07.a	43060	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Identify key processes, products, documents, records, and performance characteristics requiring Government assurance actions and determine the appropriate level and type of Government contract quality assurance actions to be applied. (Requirement 43060)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-135
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	1.2.07.b	43061	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Support the program/project manager and contracting officer in the development of the PQASP, LODs, and/or quality assurance support contracts. (Requirement 43061)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-135
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
					CxP 70059	A.1.7.4.2.b	QAS-170
NPR 8735.2A	1.2.07.c	43062	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Provide detailed information concerning the resource(s) required to perform required quality assurance activities, including preparation of the NASA Center estimate of required delegated agency or surveillance support contract support (Requirement 43062)	Quality	CxP 70059	5.2.6.1	QAS-71
					CxP 70059	5.2.6.2.a	QAS-72
					CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
					CxP 70059	A.1.7.4.2.b	QAS-170
NPR 8735.2A	1.2.07.d	43063	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Ensure clear and mutual understanding of delegated/assigned quality assurance functions between NASA, the delegated agency, and quality assurance support contractors. (Requirement 43063)	Quality	CxP 70059	5.2.6.1	QAS-71
					CxP 70059	5.2.6.2.a	QAS-72
					CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
					CxP 70059	A.1.7.4.2.b	QAS-170
NPR 8735.2A	1.2.07.e	43064	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Ensure that delegated/assigned quality assurance functions are properly and effectively performed over the life of the program/project in accordance with the LOD or support contract. (Requirement 43064)	Quality	CxP 70059	5.2.6.1	QAS-71
					CxP 70059	5.2.6.2.a	QAS-72
					CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.1	QAS-23
					CxP 70059	5.2.7.5.1	QAS-24
					CxP 70059	5.2.7.5.1	QAS-25
					CxP 70059	5.2.7.5.1.d	QAS-77
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49

					CxP 70059	A.1.7.4.2.b	QAS-170
NPR 8735.2A	1.2.07.f	43065	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Continuously evaluate the adequacy of the PQASP, LOD, and/or support contract based on contractor performance and other changing risk factors. (Requirement 43065)	Quality	CxP 70059	5.2.9.2	QAS-135
					CxP 70059	5.2.9.2	QAS-48
NPR 8735.2A	1.2.07.g	43066	Introduction: Roles and Responsibilities: The NASA SMA Lead appointed by the program/project manager or the Center SMA Director shall: Coordinate and integrate quality assurance functions performed by different parties to ensure that all of the requirements of Chapter 2 of this NPR are satisfied and to avoid duplication of effort. (Requirement 43066)	Quality	CxP 70059	5.2.6.1	QAS-71
					CxP 70059	5.2.6.2.a	QAS-72
					CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.1	QAS-133
					CxP 70059	5.2.9.1	QAS-134
					CxP 70059	5.2.9.3	QAS-136
NPR 8735.2A	2.1.1	43074	Government Contract Quality Assurance Requirements: Low-Risk Items: Program/project managers shall identify low-risk item acquisitions in accordance with the criteria specified in paragraph 2.1.3 below. (Requirement 43074)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.1.2.a	43076	Government Contract Quality Assurance Requirements: Low-Risk Items: Government contract quality assurance for acquisitions involving the supply of low-risk items shall be performed in accordance with: FAR Part 46 and NFS Part 1846.	Quality	CxP 70059		SAF-11
NPR 8735.2A	2.1.2.b	43077	Government Contract Quality Assurance Requirements: Low-Risk Items: Government contract quality assurance for acquisitions involving the supply of low-risk items shall be performed in accordance with: Procurement quality assurance requirements provided in the procuring organization's quality standard (e.g., AS9100 or ISO 9001 Section 7.4.3, Verification of Purchased Product).	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.1.2.c	43078	Government Contract Quality Assurance Requirements: Low-Risk Items: Government contract quality assurance for acquisitions involving the supply of low-risk items shall be performed in accordance with: Government Mandatory Inspection Point (GMIP) requirements per Chapter 8 of this NPR.	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.2.1(1)	43090	Government Contract Quality Assurance Requirements: High-Risk Items: Program/project managers shall identify high-risk item acquisitions. (Requirement 43090)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.3.1	43094	Government Contract Quality Assurance Requirements: Document Review: Contractor quality system procedures, technical products (e.g., data, drawings), and manufacturing process instructions shall be reviewed to ensure compliance with contract requirements. (Requirement 43094)	Quality	CxP 70059	5.2.7.2.2	QAS-18
NPR 8735.2A	2.3.1.1	43095	Government Contract Quality Assurance Requirements: Document Review: Document review shall be performed on a periodic basis and whenever document changes are made that affect quality system processes or product attributes. (Requirement 43095)	Quality	CxP 70059	5.2.7.2.2	QAS-19
NPR 8735.2A	2.3.1.2	43096	Government Contract Quality Assurance Requirements: Document Review: Selection of documents for review shall be based on the criticality, complexity, cost and importance of the product or process that is documented, and past product/process performance. (Requirement 43096)	Quality	CxP 70059	5.2.7.2.2	QAS-20
NPR 8735.2A	2.4.1.1	43100	Government Contract Quality Assurance Requirements: Product Assurance: Contractor hardware products shall be assured by product examination, process evaluation, and record review as follows: Product Examination: Supplier products shall be physically inspected, measured, and/or tested to ensure conformity to contract requirements. (Requirement 43100)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	2.4.1.2(1)	43101	Government Contract Quality Assurance Requirements: Product Assurance: Contractor hardware products shall be assured by product examination, process evaluation, and record review as follows: Process Witnessing: Supplier work processes shall be personally witnessed to ensure compliance with prescribed work instructions and contract requirements. (Requirement 43101)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.1.3(1)	43103	Government Contract Quality Assurance Requirements: Product Assurance: Contractor hardware products shall be assured by product examination, process evaluation, and record review as follows: Record Review: Recorded evidence demonstrating conformance to contract requirements shall be reviewed to ensure product and process conformance to contract requirements. (Requirement 43103)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.2	43105	Government Contract Quality Assurance Requirements: Product Assurance: The selection of product assurance actions and the sample size/frequency of attribute selection shall be based on the following risk factors: 1) the criticality, complexity, cost, and importance of product supplied, 2) the complexity and maturity of the process performed, 3) personnel safety considerations, and 4) the supplier?s past quality performance related to the product supplied or process performed. (Requirement 43105)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.4	43107	Government Contract Quality Assurance Requirements: Product Assurance: Product assurance attributes shall be pre-identified on checklists or by other documented methodology. (Requirement 43107)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.5(1)	43108	Government Contract Quality Assurance Requirements: Product Assurance: Accomplishment of product assurance actions shall be attested to by signature, legible printed name, and date or by an inspection control system such as inspection stamps or electronic medium. (Requirement 43108)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.5.1(1)	43110	Government Contract Quality Assurance Requirements: Product Assurance: Signatures, stamps, and data entries shall identify the discrete item examined (including any unique product identification/traceability information), process witnessed, or record verified. (Requirement 43110)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.5.2.a	43113	Government Contract Quality Assurance Requirements: Product Assurance: Where stamps or an electronic medium is used, the inspection control system shall: Indicate the date of acceptance. (Requirement 43113)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.5.2.b	43114	Government Contract Quality Assurance Requirements: Product Assurance: Where stamps or an electronic medium is used, the inspection control system shall: Ensure the legibility and durability of stamp impressions and ensure that stamps do not interlock with other stamps. (Requirement 43114)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.5.2.c	43115	Government Contract Quality Assurance Requirements: Product Assurance: Where stamps or an electronic medium is used, the inspection control system shall: Ensure that only properly authorized and qualified persons are permitted to apply stamps or make data entries and that individuals who are authorized to use stamps maintain control of their assigned stamp at all times. (Requirement 43115)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.5.2.d	43116	Government Contract Quality Assurance Requirements: Product Assurance: Where stamps or an electronic medium is used, the inspection control system shall: Ensure that data entries and/or stamp impressions provide direct traceability to the individual applying the stamp or making the data entry. (Requirement 43116)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	2.4.5.3	43117	Government Contract Quality Assurance Requirements: Product Assurance: Where product assurance accomplishment is attested by application of stamps to inspected supplies, the stamp shall not be applied in a manner prohibited by drawings or specifications or which may degrade the quality of the product. (Requirement 43117)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.6	43118	Government Contract Quality Assurance Requirements: Product Assurance: Product assurance actions shall be performed at subcontractor locations only where necessary to ensure that the contracted organization maintains effective oversight of subcontractors or to ensure compliance with critical product attributes (see paragraph 8.3.f). (Requirement 43118)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.7	43119	Government Contract Quality Assurance Requirements: Product Assurance: Product assurance actions shall be performed by persons properly qualified and trained concerning the quality assurance technique being practiced and the specific product or processes for which assurance is being provided. (Requirement 43119)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.8	43120	Government Contract Quality Assurance Requirements: Product Assurance: The control of monitoring and measuring devices used to perform product assurance actions shall comply with the same/applicable requirements invoked upon the contractor. (Requirement 43120)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.4.9	43121	Government Contract Quality Assurance Requirements: Product Assurance: Product assurance actions performed on a sampling basis, for which there is a measurable population of items, shall be performed using statistically valid sampling plans to achieve prescribed confidence level objectives. (Requirement 43121)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.5.1(1)	43123	Government Contract Quality Assurance Requirements: Quality System Evaluation: The contractor?s quality system shall be reviewed to ensure compliance with invoked quality program requirements, including internally developed procedures. (Requirement 43123)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.1	QAS-23
					CxP 70059	5.2.7.5.1	QAS-24
NPR 8735.2A	2.5.2	43125	Government Contract Quality Assurance Requirements: Quality System Evaluation: The frequency of quality system audits shall be based on the contracted organization?s quality history, but no less than once every two years. (Requirement 43125)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.1	QAS-23
NPR 8735.2A	2.5.3	43126	Government Contract Quality Assurance Requirements: Quality System Evaluation: The following quality system elements shall be reviewed where applicable and where invoked upon the contractor (Requirement 43126):	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.3	QAS-27
					CxP 70059	5.2.7.5.3	QAS-28
NPR 8735.2A	2.5.3.p	43142	Government Contract Quality Assurance Requirements: Quality System Evaluation: The following quality system elements shall be reviewed where applicable and where invoked upon the contractor: Other quality program elements considered to represent unacceptable risk.	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.5.4	43143	Government Contract Quality Assurance Requirements: Quality System Evaluation: Quality system audits shall be performed and documented following written audit attributes, such as provided in AS9101, Quality Management Systems Assessment. (Requirement 43143)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.4.1	QAS-79
NPR 8735.2A	2.5.5	43144	Government Contract Quality Assurance Requirements: Quality System Evaluation: Quality system audit attribute selection shall be based on the importance of the attribute toward achieving product conformity. (Requirement 43144)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.4.1	QAS-79
NPR 8735.2A	2.5.6	43145	Government Contract Quality Assurance Requirements: Quality System	Quality	CxP 70059	5.2.7	QAS-11

			Evaluation: Quality system auditing shall include product sampling, where applicable, to validate quality system effectiveness. (Requirement 43145)		CxP 70059	5.2.7.5.1.d	QAS-77
NPR 8735.2A	2.5.6.1	43146	Government Contract Quality Assurance Requirements: Quality System Evaluation: Product sampling shall be based on the criticality, complexity, and maturity of the product, personnel safety considerations, and the supplier?s past quality performance related to the product. (Requirement 43146)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.5.1.d	QAS-78
NPR 8735.2A	2.6.1	43148	Government Contract Quality Assurance Requirements: Quality Data Analysis: Contractor quality data shall be collected and analyzed to identify problem areas (e.g., projects, products, processes, operations, organizations), common deficiency causes, quality trends, defect anomalies, and process variations. (Requirement 43148)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.6.2	43149	Government Contract Quality Assurance Requirements: Quality Data Analysis: Sources of data shall include contractor-generated metrics, NASA-identified nonconformances, post-delivery quality escapes, and quality data reported by delegated parties (e.g., DCMA, quality assurance support contractors, and accredited quality system registrars). (Requirement 43149)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.6.3.a	43151	Government Contract Quality Assurance Requirements: Quality Data Analysis: Data shall be evaluated at established periodic intervals for the purpose of: Adjusting the frequency and content of customer oversight actions, including allocation of quality assurance personnel resources. (Requirement 43151)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.6.3.b	43152	Government Contract Quality Assurance Requirements: Quality Data Analysis: Data shall be evaluated at established periodic intervals for the purpose of: Providing supporting rationale for acceptance/rejection of the contractor's quality system and/or written procedures. (Requirement 43152)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.6.3.c	43153	Government Contract Quality Assurance Requirements: Quality Data Analysis: Data shall be evaluated at established periodic intervals for the purpose of: Initiating corrective action based on identification of systemic problems and trends. (Requirement 43153)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.7.1	43156	Government Contract Quality Assurance Requirements: Nonconformance Reporting and Corrective/Preventive Action: Government-identified nonconformances shall be documented and reported to the contractor for performance of corrective and preventive actions. (Requirement 43156)	Quality	CxP 70059	5.2.7.7.2	QAS-34
NPR 8735.2A	2.7.2	43157	Government Contract Quality Assurance Requirements: Nonconformance Reporting and Corrective/Preventive Action: Corrective action requests shall be elevated to the appropriate level of contractor management based on problem criticality, recurrence, and/or nonresponsiveness. (Requirement 43157)	Quality	CxP 70059	5.2.7.7.2	QAS-35
NPR 8735.2A	2.7.3	43158	Government Contract Quality Assurance Requirements: Nonconformance Reporting and Corrective/Preventive Action: Corrective action requests shall require identification of: (Requirement 43158)	Quality	CxP 70059	5.2.7.7.2	QAS-34
NPR 8735.2A	2.7.3.d	43162	Government Contract Quality Assurance Requirements: Nonconformance Reporting and Corrective/Preventive Action: Corrective action requests shall require identification of: Measures taken/planned to prevent recurrence of the nonconformity.	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.7.4(1)	43163	Government Contract Quality Assurance Requirements: Nonconformance Reporting and Corrective/Preventive Action: Government follow-up shall be performed to ensure effective accomplishment of contractor corrective/preventive actions. (Requirement 43163)	Quality	CxP 70059	5.2.7.7.2	QAS-36
					CxP 70059	5.2.7.7.2	QAS-37

NPR 8735.2A	2.7.5	43165	Government Contract Quality Assurance Requirements: Nonconformance Reporting and Corrective/Preventive Action: Government identified nonconformances and corrective action reports shall be entered into an electronic nonconformance reporting and corrective action tracking system and, as appropriate for source evaluation/selection purposes, a past performance information management system. (Requirement 43165)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.8.1.a	43168	Government Contract Quality Assurance Requirements: Final Acceptance: Final acceptance constitutes acknowledgement that the supplies or services conform with applicable contract quality and quantity requirements, except where acceptance of nonconforming supplies is determined to be in the Government?s interest (see FAR Section 46.407 and Subpart 46.5) or where provided for by other terms and conditions of the contract. The Government shall formally accept delivery of product or services based on performance of the following actions: Final product inspection. (Requirement 43168)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.8.1.b	43169	Government Contract Quality Assurance Requirements: Final Acceptance: Final acceptance constitutes acknowledgement that the supplies or services conform with applicable contract quality and quantity requirements, except where acceptance of nonconforming supplies is determined to be in the Government?s interest (see FAR Section 46.407 and Subpart 46.5) or where provided for by other terms and conditions of the contract. The Government shall formally accept delivery of product or services based on performance of the following actions: Validation that there are no outstanding corrective actions resulting from contracting activity or contractor-identified nonconformances affecting acceptability of product. (Requirement 43169)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.8.1.c	43170	Government Contract Quality Assurance Requirements: Final Acceptance: Final acceptance constitutes acknowledgement that the supplies or services conform with applicable contract quality and quantity requirements, except where acceptance of nonconforming supplies is determined to be in the Government?s interest (see FAR Section 46.407 and Subpart 46.5) or where provided for by other terms and conditions of the contract. The Government shall formally accept delivery of product or services based on performance of the following actions: Validation that there are no outstanding engineering departures/waivers/deviations impacting acceptability of product and that all applicable engineering departures/waivers/deviations have been approved by the proper technical authority. (Requirement 43170)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.8.1.d	43171	Government Contract Quality Assurance Requirements: Final Acceptance: Final acceptance constitutes acknowledgement that the supplies or services conform with applicable contract quality and quantity requirements, except where acceptance of nonconforming supplies is determined to be in the Government?s interest (see FAR Section 46.407 and Subpart 46.5) or where provided for by other terms and conditions of the contract. The Government shall formally accept delivery of product or services based on performance of the following actions: Validation that all required GMIPs have been accomplished. (Requirement 43171)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	2.8.2	43172	Government Contract Quality Assurance Requirements: Final Acceptance: Performance of final acceptance is an inherently Governmental function which is the responsibility of the NASA contracting officer or his/her Government delegate. Performance of final acceptance shall not be delegated to a non-Governmental entity. (Requirement 43172)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	3.2.1.a	43177	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: The PQASP shall: Describe the activities, metrics, control mechanisms, and organizations that will be conducting quality assurance functions for the program/project. (Requirement 43177)	Quality	CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.1.b(1)	43178	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: The PQASP shall: Be a consolidated and integrated document (i.e., not divided among various/separate documents). (Requirement 43178)	Quality	CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.1.b(2)	43179	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: The PQASP shall: The PQASP may be a part of a larger program/project safety and mission assurance plan or may be a stand-alone document.	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	3.2.1.c(1)	43180	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: The PQASP shall: Incorporate applicable requirements from FAR Part 46, NFS Part 1846, NPD 8730.5, Chapter 2 of this NPR, and other related documents (e.g., Program/Project Plan, Risk Management Plan, contract, GMIP schedule). (Requirement 43180)	Quality	CxP 70059	5.2.6.3	QAS-74
					CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.1.d(1)	43182	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: The PQASP shall: Be initially prepared in conjunction with preparation of the Statement of Work and periodically adjusted thereafter based on changing risk factors as the program/project progresses through pre-award activities, Request for Proposal responses, and post-award activities. (Requirement 43182)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-135
					CxP 70059	5.2.9.2	QAS-48
					CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.2.1	43185	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: PQASPs shall contain the following: Introduction. Identify the program/project under surveillance; summarize the program/project objectives; and summarize the contents of the applicable contract(s). (Requirement 43185)	Quality	CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.2.2	43186	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: PQASPs shall contain the following: Objectives. Identify the specific outcomes of quality assurance actions in terms that are quantifiable and measurable. (Requirement 43186)	Quality	CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.2.3	43187	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: PQASPs shall contain the following: Reference Documents. Identify documents related to performance of quality assurance functions (e.g., NASA Directives, the Program/Project Plan, the Risk Management Plan, program/project requirements documents, the contract, invoked quality system requirements). (Requirement 43187)	Quality	CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.2.4	43188	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: PQASPs shall contain the following: Surveillance Functions. Identify the quality assurance surveillance functions to be performed for the program/project in accordance with Chapter 2 of this NPR and the following (Requirement 43188):	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	3.2.2.6	43218	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: PQASPs shall contain the following: Surveillance Organization. Identify the organizational entities of the program/project that will be performing surveillance (i.e., NASA, the delegated agency, and/or quality assurance support contractors), their assigned responsibilities, and their authority to act. (Requirement 43218)	Quality	CxP 70059	5.2.9.2	QAS-49

NPR 8735.2A	3.2.2.7	43219	Program/Project Quality Assurance Surveillance Plan (PQASP): PQASP Preparation and Content: PQASPs shall contain the following: Quality Assurance Resources. Identify the personnel, funding, and material resources to be applied to the program/project quality assurance effort. (Requirement 43219)	Quality	CxP 70059	5.2.9.2	QAS-49
NPR 8735.2A	4.2	43224	Performance of Quality Assurance Functions by Non-NASA Organizations: NASA Technical Direction: The NASA SMA Lead shall act as a liaison for providing technical direction and recommendations to delegated agencies and support contractors on matters related to the following, as applicable: (Requirement 43224)	Quality	CxP 70059	5.2.6.2.a	QAS-72
					CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.3.a	43235	Performance of Quality Assurance Functions by Non-NASA Organizations: Coordination of NASA Quality Assurance Functions: When there are multiple NASA delegations and/or tasks at a contractor's facility, duplication of effort and inconsistent surveillance methodologies are to be avoided. Prior to providing a new delegation and/or quality assurance support contractor tasking, NASA SMA Leads shall coordinate their efforts to: Establish agreement among the delegating activities for interpretation of common requirements. (Requirement 43235)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.3.b	43236	Performance of Quality Assurance Functions by Non-NASA Organizations: Coordination of NASA Quality Assurance Functions: When there are multiple NASA delegations and/or tasks at a contractor's facility, duplication of effort and inconsistent surveillance methodologies are to be avoided. Prior to providing a new delegation and/or quality assurance support contractor tasking, NASA SMA Leads shall coordinate their efforts to: Establish agreement among the delegating activities for acceptance or rejection of delegated agency or surveillance support contractor operational methods. (Requirement 43236)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.3.c	43237	Performance of Quality Assurance Functions by Non-NASA Organizations: Coordination of NASA Quality Assurance Functions: When there are multiple NASA delegations and/or tasks at a contractor's facility, duplication of effort and inconsistent surveillance methodologies are to be avoided. Prior to providing a new delegation and/or quality assurance support contractor tasking, NASA SMA Leads shall coordinate their efforts to: Place common requirements on the delegated agency or surveillance support contractor for similar supplies and services. (Requirement 43237)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.4.1	43239	Performance of Quality Assurance Functions by Non-NASA Organizations: Selection of Organizations Performing Quality Assurance Functions: Program/project offices or the Center SMA office, as delegated by the Center Director, shall select/assign the organization that will be responsible for performing Government contract quality assurance functions (NASA civil servants, a delegated agency, quality assurance support contractor, or an authorized third party) based on the qualifications and abilities of the organization in relation to the needs and objectives of the quality assurance function(s). (Requirement 43239)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.4	QAS-22
NPR 8735.2A	4.4.2	43240	Performance of Quality Assurance Functions by Non-NASA Organizations: Selection of Organizations Performing Quality Assurance Functions: The following factors shall be evaluated in the selection of an organization to perform quality assurance functions (Requirement 43240)	Quality	CxP 70059	5.2.6.2.a	QAS-72
					CxP 70059	5.2.7	QAS-11

NPR 8735.2A	4.5.2	43254	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead, in coordination with the contracting office technical representative and other interested/authorized contracting office attendees, shall conduct the planning conference prior to the post-contract award conference. (Requirement 43254)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.a	43256	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Contract and subcontract quality requirements. (Requirement 43256)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.b	43257	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: End-use and criticality of supplies and services. (Requirement 43257)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.c	43258	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Current procedures and general operations, particularly those applicable to supplies and services similar to those being procured. (Requirement 43258)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.d	43259	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Technical direction to be given to the contractor. (Requirement 43259)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.e	43260	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Functions to be delegated or tasked and the performance desired. (Requirement 43260)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.f	43261	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Special skills, knowledge, qualifications, training, and certifications required. (Requirement 43261)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.g	43262	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Quality assurance functions to be performed at the contractor's facility by NASA personnel. (Requirement 43262)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.h	43263	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Channels of communication. (Requirement 43263)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.i	43264	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Past quality assurance history of the contractor, known contractor deficiencies, and the contractor's progress in correcting deficiencies. (Requirement 43264)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.j	43265	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: MRB authority. (Requirement 43265)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	4.5.3.k	43266	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Redelegation and flowdown of requirements. (Requirement 43266)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.L	43267	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Interface situations arising from partial delegations, Department of Defense delegations, or other NASA delegations in the same facility. (Requirement 43267)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.m	43268	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: Response time for mandatory inspections. (Requirement 43268)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.5.3.n	43269	Performance of Quality Assurance Functions by Non-NASA Organizations: Planning Conference: The NASA SMA Lead shall ensure that the planning conference includes discussions of the following: NASA, delegated agency, and contractor responsibilities related to the reporting, tracking, corrective action resolution, and closure of contract nonconformances. (Requirement 43269)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.7.1	43276	Performance of Quality Assurance Functions by Non-NASA Organizations: Monitoring of Delegated Agency and Support Contractor Performance: NASA SMA Leads shall establish management controls to ensure adequate performance of delegated/tasked quality assurance functions. (Requirement 43276)	Quality	CxP 70059 CxP 70059	5.2.6.2.a 5.2.7	QAS-72 QAS-11
NPR 8735.2A	4.7.2(1)	43277	Performance of Quality Assurance Functions by Non-NASA Organizations: Monitoring of Delegated Agency and Support Contractor Performance: NASA SMA Leads shall evaluate performance on a continuing basis to ensure that LOD and support contract requirements are complied with and remain current. (Requirement 43277)	Quality	CxP 70059	5.2.7.2.1	QAS-16
NPR 8735.2A	4.7.3	43279	Performance of Quality Assurance Functions by Non-NASA Organizations: Monitoring of Delegated Agency and Support Contractor Performance: NASA SMA Leads shall provide evaluation results to the delegated agency/quality assurance support contractor. (Requirement 43279)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.7.4	43280	Performance of Quality Assurance Functions by Non-NASA Organizations: Monitoring of Delegated Agency and Support Contractor Performance: Contracting officers shall incorporate requirements into LODs and support contracts for delegated agencies and quality assurance support contractors to monitor their own performance and resource utilization and provide performance measurement data to NASA on a specified periodic basis. (Requirement 43280)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	4.8.1	43282	Performance of Quality Assurance Functions by Non-NASA Organizations: Inadequate Quality Assurance Support: Upon discovery that the delegated agency or the quality assurance support contractor is providing inadequate quality assurance support that does not comply with the LOD or support contract, as applicable, the contracting officer, in coordination with the NASA SMA Lead, shall formally request corrective action from the delegated agency or support contractor. (Requirement 43282)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.2.2.1	43298	NASA Letters of Delegation: Planning Delegations: Contracting officers shall: Issue delegations within 10 calendar days of contract award. (Requirement 43298)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	5.2.2.2	43299	NASA Letters of Delegation: Planning Delegations: Contracting officers shall: Request that delegated agencies provide notification of LOD acceptance within 30 calendar days of receipt. (Requirement 43299)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.2.2.3(1)	43300	NASA Letters of Delegation: Planning Delegations: Contracting officers shall: Specify that authorized redelegations be issued within 15 calendar days of acceptance of the original delegation. (Requirement 43300)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.1	43303	NASA Letters of Delegation: LOD Content: Contracting officers shall incorporate the applicable requirements and text from the template provided in Appendix C of this NPR into their LODs. (Requirement 43303)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.a	43305	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Name, location, and telephone number of the designated SMA Point of Contact (POC) who serves as NASA?s principal POC and technical/contractual authority liaison for matters pertaining to the delegation and a request for the delegated agency to include this information in letters of redelegation. (Requirement 43305)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.b	43306	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: The identification of any quality assurance decisions which require review by the NASA SMA Lead prior to, and after acceptance for, the Government. (Requirement 43306)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.c	43307	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Point of contact for obtaining assistance with locating any NASA-unique documents. (Requirement 43307)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.d	43308	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Dates, frequency, and distribution for submittal of required delegated agency reports. (Requirement 43308)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.e	43309	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Information concerning assignment of NASA technical representatives at the contractor's facility, including names and functions to be performed. (Requirement 43309)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.f	43310	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Request for the name of the delegated agency representative to serve as the principal point of contact for the facility where the delegated functions are to be performed. (Requirement 43310)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.g	43311	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Extent of redelegation authority. (Requirement 43311)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.h	43312	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Identification of surveillance functions to be performed by the delegated agency utilizing the template provided in Appendix C of this NPR. (Requirement 43312)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.i	43313	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Criteria for delegated agency selection of mandatory actions, if applicable. (Requirement 43313)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.j	43314	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Special instructions on preparation and distribution of shipping and acceptance documents. (Requirement 43314)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	5.3.2.k	43315	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Identification of the delegated agency?s responsibility for interim acceptance and for support at the remote site where final acceptance is to occur (for circumstances where final acceptance of supplies and services is not to occur at the contractor's facility). (Requirement 43315)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.L	43316	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Instructions regarding the respective responsibilities and authority of the delegated agency and NASA personnel (for circumstances where the delegated activities involve interface with NASA personnel (e.g., end item test and inspection)). (Requirement 43316)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.2.m	43317	NASA Letters of Delegation: LOD Content: Contracting officers shall include the following in their LODs: Identification of special training and qualification requirements for personnel performing delegated functions, including special process certifications (e.g., nondestructive testing, workmanship) and job classifications or competencies of personnel needed (e.g., safety engineer). (Requirement 43317)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.3.3	43318	NASA Letters of Delegation: LOD Content: Contracting officers shall maintain a central file of LODs for their Center. (Requirement 43318)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.5.1	43321	NASA Letters of Delegation: Action upon Completion of Delegated Functions: The contracting officer shall maintain delegations at all tiers for the same period of time as required for records to be maintained in the contract/subcontract under surveillance. (Requirement 43321)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.5.3	43323	NASA Letters of Delegation: Action upon Completion of Delegated Functions: Delegations may be reopened within one year after contract completion and shall be retained for easy retrieval. (Requirement 43323)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	5.5.4	43324	NASA Letters of Delegation: Action upon Completion of Delegated Functions: The contracting officer shall advise the delegated agency to hold the delegation open when conditions exist or are expected that would justify extension of the contract period of performance. (Requirement 43324)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	6.2	43327	Quality Assurance Support Contracts: Planning Quality Assurance Support Contracts: Contracting officers shall issue quality assurance support contracts in sufficient time to permit accomplishment of assigned quality assurance functions coincident with the commencement of contractor work operations (Requirement 43327).	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	6.3.1.a	43330	Quality Assurance Support Contracts: Quality Assurance Support Contract Contents: Contracting officers shall include the following contents in quality assurance support contracts: Applicable requirements and text from the template provided in Appendix C of this NPR. (Requirement 43330)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	6.3.1.b	43331	Quality Assurance Support Contracts: Quality Assurance Support Contract Contents: Contracting officers shall include the following contents in quality assurance support contracts: Identification of quality assurance surveillance functions to be performed by the support contractor utilizing the template provided in Appendix C of this NPR. (Requirement 43331)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	6.3.2(1)	43332	Quality Assurance Support Contracts: Quality Assurance Support Contract Contents: Quality assurance support contracts are not to include performance of inherently Governmental functions as defined in 48 CFR 7, Subpart 7.5. (Requirement 43332)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	8.2.1	43342	Government Mandatory Inspection Points (GMIPs): Selection and Assignment of GMIPs: Program/project Offices, with NASA SMA Lead and SMA office support, shall define GMIPs based on an analysis of risks related to contract noncompliance. This includes the following: (Requirement 43342)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.2.1.a	43343	Government Mandatory Inspection Points (GMIPs): Selection and Assignment of GMIPs: Program/project Offices, with NASA SMA Lead and SMA office support, shall define GMIPs based on an analysis of risks related to contract noncompliance. This includes the following: Safety-critical GMIPs are defined in order to assure conformance to hardware characteristics, manufacturing process requirements, operating conditions, and functional performance criteria that, if not met, can result in loss of life. A safety-critical GMIP shall be assigned for every (i.e., 100 percent) attribute/requirement where noncompliance could credibly result in loss of life. (Requirement 43343)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.2.1.b(1)	43344	Government Mandatory Inspection Points (GMIPs): Selection and Assignment of GMIPs: Program/project Offices, with NASA SMA Lead and SMA office support, shall define GMIPs based on an analysis of risks related to contract noncompliance. This includes the following: For circumstances where noncompliance could not credibly result in loss of life, but could result in serious injury, loss of mission, or loss of a significant mission resource, GMIPs shall be assigned to attain heightened confidence of contract compliance. (Requirement 43344)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.2.1.c(1)	43346	Government Mandatory Inspection Points (GMIPs): Selection and Assignment of GMIPs: Program/project Offices, with NASA SMA Lead and SMA office support, shall define GMIPs based on an analysis of risks related to contract noncompliance. This includes the following: Where analysis indicates an unacceptable likelihood of conformance with a key product attribute or process requirement, GMIPs shall be assigned to attain satisfactory confidence of contract compliance. (Requirement 43346)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.2.1.d	43348	Government Mandatory Inspection Points (GMIPs): Selection and Assignment of GMIPs: Program/project Offices, with NASA SMA Lead and SMA office support, shall define GMIPs based on an analysis of risks related to contract noncompliance. This includes the following: Program/project offices shall consider the following sources of information during the GMIP definition process: (Requirement 43348)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.2.1.e	43360	Government Mandatory Inspection Points (GMIPs): Selection and Assignment of GMIPs: Program/project Offices, with NASA SMA Lead and SMA office support, shall define GMIPs based on an analysis of risks related to contract noncompliance. This includes the following: Program/project offices shall consider the following conditions, operations, and quality assurance functions during the GMIP definition process: (Requirement 43360)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.a	43374	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Perform 100 percent of all assigned GMIPs in strict accordance with the prescribed technical criteria. (Requirement 43374)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.b(1)	43375	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Request formal disposition/authorization for GMIP omissions, waivers, or deviations from the designated NASA technical authority. (Requirement 43375)	Quality	CxP 70059	5.2.7	QAS-11

NPR 8735.2A	8.3.c	43377	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Indicate as acceptable only those characteristics that have been personally examined, witnessed, or verified. (Requirement 43377)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.d	43378	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Perform GMIPs after contractor personnel have made their acceptance decisions, except in those cases where concurrent inspections/tests are necessary to avoid the need for destructive testing or to prevent excessive costs or potential time delays. (Requirement 43378)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.e	43379	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Perform GMIPs as late as practicable in the material fabrication/installation/delivery cycle for circumstances where GMIP attributes can be altered (e.g., contamination). (Requirement 43379)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.f	43380	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Perform GMIPs at subcontractor facilities only when required in the Government?s interest, as specified in FAR Section 46.405. (Requirement 43380)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.g	43381	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Attest to the completion of GMIPs in accordance with the requirements of paragraph 2.4.5 of this NPR. (Requirement 43381)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.h	43382	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Periodically sign a statement indicating that they understand that their signature, application of a stamp, or data entry is a professional, individual warranty (guarantee) that they personally examined the product, witnessed the process, or verified the record as literally stated for the GMIP acceptance criteria. (Requirement 43382)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.i	43383	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Maintain positive controls which assure that all assigned GMIPs are incorporated into planning documents, where applicable, and accomplished. (Requirement 43383)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.j	43384	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Report, track, and ensure proper resolution of nonconformances identified during the conduct of GMIPs in accordance with section 2.7 of this NPR. (Requirement 43384)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.3.k	43385	Government Mandatory Inspection Points (GMIPs): Performance of GMIPs: Personnel responsible for the administration and performance of GMIPs shall: Where GMIP accomplishment is attested to by stamps/signatures on contractor developed/maintained planning records or data, ensure that such records are readily retrievable. (Requirement 43385)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.4.a	43387	Government Mandatory Inspection Points (GMIPs): Special Requirements for	Quality	CxP 70059	5.2.7	QAS-11

			Safety-Critical GMIPs: Safety-critical GMIPs shall be performed by Government personnel or under the direction and supervision of Government personnel. (Requirement 43387)		CxP 70059	5.2.7.4	QAS-22
NPR 8735.2A	8.4.b	43388	Government Mandatory Inspection Points (GMIPs): Special Requirements for Safety-Critical GMIPs: When safety-critical GMIPs are assigned to non-Governmental personnel, NASA supervision shall include periodic/random spot checks of GMIP performance, and other measures as necessary, to ensure that such persons are properly trained and qualified and are carrying out these inspections in an objective and competent manner. (Requirement 43388)	Quality	CxP 70059	5.2.7	QAS-11
					CxP 70059	5.2.7.4	QAS-22
NPR 8735.2A	8.4.c	43389	Government Mandatory Inspection Points (GMIPs): Special Requirements for Safety-Critical GMIPs: Safety-critical GMIPs shall include product examination or process witnessing versus record review whenever practicable. (Requirement 43389)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.4.d	43390	Government Mandatory Inspection Points (GMIPs): Special Requirements for Safety-Critical GMIPs: Contracting officers shall include in contracts a statement expressly prohibiting the contractor from continuing work operations planned subsequent to the performance of designated safety-critical GMIPs until Government accomplishment of the mandatory inspection point. (Requirement 43390)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.4.e	43391	Government Mandatory Inspection Points (GMIPs): Special Requirements for Safety-Critical GMIPs: For circumstances where destructive testing would be necessary to assure compliance with a safety-critical attribute, contractor assurance actions and associated GMIPs shall involve, wherever possible, the testing of a product sample that is determined to reliably/accurately represent the final product attribute. (Requirement 43391)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.5.a	43393	Government Mandatory Inspection Points (GMIPs): Contractor Interface for Performance of GMIPs: The onsite Government representatives (i.e., NASA, delegated agency, or support contractors) shall work with the contractor to: Incorporate GMIPs as hold points on contractor work planning documents. (Requirement 43393)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.5.b	43394	Government Mandatory Inspection Points (GMIPs): Contractor Interface for Performance of GMIPs: The onsite Government representatives (i.e., NASA, delegated agency, or support contractors) shall work with the contractor to: Develop a GMIP notification process that assures sufficiently advance Government notification of work operations involving GMIPs, that results in timely performance of GMIPs, and that results in minimal disruption to contractor work operations. (Requirement 43394)	Quality	CxP 70059	5.2.7	QAS-11
NPR 8735.2A	8.5.c	43395	Government Mandatory Inspection Points (GMIPs): Contractor Interface for Performance of GMIPs: The onsite Government representatives (i.e., NASA, delegated agency, or support contractors) shall work with the contractor to: Establish specific guidelines and requirements regarding contractor continuance of work operations in the event that the Government does not arrive within a specified agreed-to time frame to perform an assigned GMIP. (Requirement 43395)	Quality	CxP 70059	5.2.7	QAS-11