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CxP 70038	0	CxP 70038	NPD 7120.4C	1.c(2)	32668	POLICY: Scope: Programs and projects that develop and operate aeronautical and space ground and flight systems and technologies shall be planned and executed using risk management decision processes including safety and security of personnel, systems and assets. (Requirement 32668)	S	Y	Y	Mgmt
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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.	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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) Note: A buffer area should be added around the exclusion area. Air Force AFOSH Standard 48-12, Health Hazard Control for Laser Operations, includes a guide for operation of lasers from aircraft. It can be used to develop the buffer zone for space-based laser shots directed at the ground. (See Range Commanders Council (RCC) Document 316-91, Laser Range Safety.)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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.	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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: See NASA-STD-8719.13, Software Safety Standard, for further information.	S	Y	Y	SWA

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			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/engineering 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.	S	Y	Y	Safety
CxP 70038	4.1	78-4.1	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)	S	Y	Y	Safety
			NPR 8715.3C	02.7.1.b	45964	System Safety: Change Review: The project manager and the System Safety 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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
CxP 70055	0	CxP 70055	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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
			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)	S	Y	Y	Safety
CxP 70055	3.1	3.1	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).	S	Y	Y	PRA
			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).	S	Y	Y	Mgmt

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			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)	S	Y	Y	Safety
			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)	S	Y	Y	Mgmt
CxP 70055	3.1.b	3.1.b	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)	S	Y	Y	Mgmt
CxP 70055	3.2	3.2	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)	S	Y	Y	Mgmt
CxP 70055	4.1	4.1	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)	S	Y	Y	Mgmt
CxP 70055	4.6.1.2	4.6.1.2	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)	S	Y	Y	Safety
CxP 70056	0	CxP 70056	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)	S	Y	Y	SWA
			NPD 7120.4C	1.c(2)	32668	POLICY: Scope: Programs and projects that develop and operate aeronautical and space ground and flight systems and technologies shall be planned and executed using risk management decision processes including safety and security of personnel, systems and assets. (Requirement 32668)	S	Y	Y	Mgmt
			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)	S	Y	Y	Mgmt
			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 Support 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)	S	Y	Y	Mgmt
			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 are accepted in writing. (See paragraph 1.6 of this NPR.) (Requirement 45930) ^19 Residual risk is the level of risk that 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.	S	Y	Y	Safety
			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)	S	Y	Y	Safety
CxP 70056	4.2.3	4.2.3	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)	S	Y	Y	Safety
CxP 70065	0	CSR-31-009	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)	S	Y	Y	SWA
		CSR-33-001	NASA STD 8719.13B	5.07.2	33504	The tracing system shall be under configuration control. (Requirement 33504)	S	Y	Y	SWA
		CSR-34-002	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)	S	Y	Y	SWA
		CSR-34-005	NASA STD 8719.13B	5.06.3(05)	33491	The following documentation shall address safety-critical software: Software Requirements Specification (Requirement 33491)	S	Y	Y	SWA
			NASA STD 8719.13B	6.1.1	33570	Software safety requirements shall be developed and included in the software requirements specification. (Requirement 33570)	S	Y	Y	SWA
			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)	S	Y	Y	SWA

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			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)	S	Y	Y	SWA
			NASA STD 8719.13B	6.2.1	33587	All functional software safety requirements shall be incorporated into the software design. (Requirement 33587)	S	Y	Y	SWA
		CSR-34-006	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)	S	Y	Y	SWA
		CSR-34-008	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)	S	Y	Y	SWA
		CSR-35-006	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)	S	Y	Y	SWA
CxP 70065	3	3	NASA-STD-8739.8	7.2.1	33299	The requirements for NASA-STD-8719.13, NASA Software Safety Standard, shall be implemented. (Requirement 33299)	S	Y	Y	SWA
CxP 70065	3.1	CSR-31-003	NASA STD 8719.13B	5.02.3.2	33462	The Software Safety Plan shall be under configuration control. (Requirement 33462)	S	Y	Y	SWA
			NASA STD 8719.13B	5.06.3(02)	33488	The following documentation shall address safety-critical software: Software Project Management Plan (Requirement 33488)	S	Y	Y	SWA
			NASA STD 8719.13B	5.06.3(03)	33489	The following documentation shall address safety-critical software: Software Configuration Management Plan (Requirement 33489)	S	Y	Y	SWA
			NASA STD 8719.13B	5.06.3(10)	33496	The following documentation shall address safety-critical software: User documentation and procedures (Requirement 33496)	S	Y	Y	SWA
			NASA STD 8719.13B	5.06.3(11)	33497	The following documentation shall address safety-critical software: Operations and Maintenance Plan (Requirement 33497)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			NASA STD 8719.13B	6.1.1	33570	Software safety requirements shall be developed and included in the software requirements specification. (Requirement 33570)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			NASA STD 8719.13B	6.2.1	33587	All functional software safety requirements shall be incorporated into the software design. (Requirement 33587)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			NASA STD 8719.13B	6.4.1.2	33624	Unit level tests and component level tests shall include software safety testing. (Requirement 33624)	S	Y	Y	SWA
			NASA STD 8719.13B	6.4.1.2.1	33625	Any simulators, test drivers and stubs, along with any test data, used for testing at the unit level shall be configuration controlled and documented. (Requirement 33625)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			NASA STD 8719.13B	6.4.1.3	33628	System and acceptance tests shall include software safety testing. (Requirement 33628)	S	Y	Y	SWA

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			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)	S	Y	Y	SWA
CxP 70065	3.4	CSR-34-004	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)	S	Y	Y	SWA
			CSR-34-007	NASA STD 8719.13B	5.06.3(06)	33492	The following documentation shall address safety-critical software: Software Design Documentation (Requirement 33492)	S	Y	Y
		NASA STD 8719.13B		5.06.3(07)	33493	The following documentation shall address safety-critical software: Verification and Validation Plan (Requirement 33493)	S	Y	Y	SWA
		NASA STD 8719.13B		5.06.3(09)	33495	The following documentation shall address safety-critical software: Test Documentation (Requirement 33495)	S	Y	Y	SWA
		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)	S	Y	Y	SWA
		NASA STD 8719.13B		6.3.1	33605	All software safety design features and methods shall be implemented in the software code. (Requirement 33605)	S	Y	Y	SWA
		CSR-34-011	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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			NASA STD 8719.13B	5.02.3.1	33461	If the Software Safety Plan is documented in multiple locations, each plan shall include a cross-reference to the safety activities in the associated/related plans. (Requirement 33461)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			NASA STD 8719.13B	5.06.3(01)	33487	The following documentation shall address safety-critical software: Software Safety Plan (Requirement 33487)	S	Y	Y	SWA
		CSR-34-10	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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
NASA STD 8719.13B	5.01.3.2.4		33445	Software safety personnel shall support the system safety review process. (Requirement 33445)	S	Y	Y	SWA		
NASA STD 8719.13B	5.06.3(08)		33494	The following documentation shall address safety-critical software: Safety Analyses and Reports (Requirement 33494)	S	Y	Y	SWA		
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)	S	Y	Y	SWA		
CxP 70068	0	CxP 70068	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)	S	Y	Y	Safety

CxP Doc	CxP Doc Para	CxP Doc Req	Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Req Text	Tech Auth	OSMA Opinion	CxP Imp'n	CxP Discipline
CxP 70073	0	SCM-002P	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)	S	Y	Y	PP&C
CxP 70073-01	0	CxP 70073-01	NASA STD 8719.13B	5.02.3.2	33462	The Software Safety Plan shall be under configuration control. (Requirement 33462)	S	Y	Y	SWA
			NASA STD 8719.13B	5.06.3(03)	33489	The following documentation shall address safety-critical software: Software Configuration Management Plan (Requirement 33489)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
			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)	S	Y	Y	SWA
CxP 70086	4.4.3.2.7	4.4.3.2.7	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)	S	Y	Y	SWA
CxP 70128	4.2	4.2	NASA STD 8719.13B	5.06.3(04)	33490	The following documentation shall address safety-critical software: Software Quality Assurance Plan (Requirement 33490)	S	Y	Y	SWA
CxP 70128	4.2.6.1	4.2.6.1	NASA STD 8719.13B	5.02.3.1	33461	If the Software Safety Plan is documented in multiple locations, each plan shall include a cross-reference to the safety activities in the associated/related plans. (Requirement 33461)	S	Y	Y	SWA
CxP PMP	PMP 4.4.2	PMP 4.4.2	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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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).	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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.	S	Y	Y	Risk
			NPR 8000.4	2.7.06.2(1)	26063	The Risk List must be updated as changes (including changes in assumptions) occur. (Requirement 26063)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
			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)	S	Y	Y	Risk
CxPMD-017	0	CxPMD-017	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).	S	Y	Y	PRA
MD013	0	MD013	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)	S	Y	Y	Mgmt
			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)	S	Y	Y	Mgmt
			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)	S	Y	Y	Safety

CxP Doc	CxP Doc Para	CxP Doc Req	Parent Doc Num	Parent Doc Para	Parent Req ID	Parent Req Text	Tech Auth	OSMA Opinion	CxP Impl'n	CxP Discipline
Opinion/Impl'n Key: Y = Yes, N = No, U = Unassigned, F = Future, C = Conditional, O = Other, D = Program Disagrees, I = Institutional, X = Not SMA Requirement, R = Resolve, P = Partial Implementation, V = Variance Approved										
Tech Auth Key: S = SMA, E = Engineering, A = Administrator, H = Health, I = Information, P = Planet Protection, F = Facility Admin, U = Unassigned										