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NPR 8621.1C Location	Requirement	Rationale
	g. Compose the IA following these requirements: Note: Refer to Table C for breakdown of IA functions by mishap classification.	
3.2.1	(1) IA members and the executive secretary shall be Federal personnel. (2) The majority of IA members shall be independent from or have no responsibility for the operation or activity associated with the mishap or close call. (3) IA members, the executive secretary, advisors, and consultants shall have the requisite security clearances as identified in the Center or Program/Project MPCPs.	
3.4.1	3.4.1 Non-federal employees may serve as consultants to the IA.	
3.4.2	3.4.2 Consultants' academic and technical experience should match or exceed the technical and management complexity of systems related to the mishap.	
2.1.5 b.-d.	2.1.5 The IRT shall: b. Refrain from giving witnesses a copy of privileged written statements or transcripts of verbal witness statements. If witness statements or transcripts of witness statements are provided to witnesses, NASA cannot ensure privilege and confidentiality. c. Conduct evidence preservation actions without affecting essential safety operations. d. Collect and impound, with cognizant Safety Office, supervisors, and OPS support, appropriate data, records, equipment, witness statements, and facilities that may be involved in the mishap.	
1.4.1	1.4.1 IRT personnel training will consist of: a. NASA IRT Training. (1) Center/Program/Project IRT Responsibilities. (2) General Hazard Awareness. (3) Go-Kit Items and Use. (4) Securing a Mishap Site. (5) Witness Identification. (6) Witness Statement Collection. (7) Drug Testing Requirements and Procedures. (8) Evidence Impoundment and Chain of Custody. b. NASA Mishap Investigation Process Awareness. Note: Satisfied by SMA-002-07 Overview of Mishap Investigations; SMA-002-08 Mishap Investigation Roles and Responsibilities; SMA-002-009 Completing the Investigation and Mishap Report; and SMA-002-10 Introduction to Root Cause Analysis (valid for 2 years); and SMA-002-11 Interim Response Team Training c. Local Hazard Awareness. Note: Each Center, Program, or Project should customize personnel training to address exposure to hazards created by sources unique to local activities and conditions beyond general hazard awareness. Hazard awareness training may include, but is not limited to, bloodborne pathogens, confined space, High Crew, and hazardous materials.	
1.4.2.4	1.4.2.4 The Safety member shall have completed training in maintaining the security of the mishap site.	
1.4.2.5	1.4.2.5 All advisors and voting members shall have technical knowledge and completed training in areas required to support the IA.	
5.3.2	5.3.2 The Endorsement Review will include (Appendix I): Note: The Endorsement Review, or Mishap Out Brief, is intended to be the culmination of the mishap investigation process, whereby the Appointing and Endorsing Officials have reviewed the mishap investigation report and are prepared to concur or not concur with the report content including findings and recommendations. The Endorsement Review may be waived at the AO's discretion and in coordination with the cognizant Safety Office and OSMA Mishap Investigation Program Executive. The IA is released from duty at the review's conclusion. a. IA's presentation of the mishap investigation report and its associated findings and recommendations. b. Discussion and resolution of endorsing official comments and concerns. c. Determination of report release option. d. Identification of actions accepted by the AO.	
5.4.2	5.4.2 OSMA will complete a Mishap Summary public release review and distribute the Mishap Summary as necessary for the purpose of mishap prevention awareness and other action deemed appropriate by NASA Centers and field installations.	
5.4.3	5.4.3 Upon release of the Mishap Summary, the MDAA or the cognizant Safety Office shall distribute the Mishap Summary to the appropriate NASA programs and organizations including, but not limited to, the responsible organization or program, all cognizant Safety Offices, the OCHMO when injury or fatality is involved, and AMD when the mishap involves an aircraft.	
6.6.1	6.6.1 The AO shall ensure: a. Resources are provided to submit the Mishap Summary to the LLIS for entry for Type A and Type B mishaps and high-visibility mishaps and close calls. b. Lessons learned are developed and submitted as described in the MPCP for Type C and D mishaps and close calls.	
6.8.1	6.8.1 The IA shall not release original data and records unless copies are made as needed and retained with mishap investigation records.	
6.8.2	6.8.2 Physical mishap evidence retained by the cognizant Safety Office shall be kept for 2 years from the date of the mishap.	
6.8.3	6.8.3 Before disposition of physical evidence, the cognizant Safety Office shall seek concurrence from the Office of the General Counsel to confirm there is no active litigation affecting dispositional decisions.	
6.8.6 a.	6.8.6 The Chief/OSMA or designee shall: a. Archive HQ-approved NASA mishap investigation reports and related documents in accordance with NRRS 1441.1.	
Appendix A. Terms and Definitions	Advisor. For a mishap investigation, an advisor is a federal employee appointed to or engaged by the investigating authority in a non-voting role for domain knowledge and advice.	
Appendix A. Terms and Definitions	Approved Mishap Investigation Report. The final mishap investigation report authorized for public release.	
Appendix A. Terms and Definitions	Concept of Privilege. A level of confidentiality that a NASA (federal employee) investigating authority or interim response team member may grant to a witness to an incident. Confidentiality means a witness is assured verbally and in writing that information provided during interviews or in a written statement will be protected by NASA to the extent provided by law.	
Appendix A. Terms and Definitions	Consultant. For a NASA mishap investigation, a consultant is a non-government subject matter expert engaged by the investigating authority for domain knowledge and analysis or opinion.	

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Appendix A. Terms and Definitions	Contingency. For planning, an emergency or urgent need that is regarded as unlikely but requiring some extent of pre-determined action if it occurred.
Appendix A. Terms and Definitions	Control. An active mechanism used to detect the initiating event or the hazard or both, and enable an active device (hardware, software, environmental, or human) to prevent or reduce the likelihood of the hazard affecting a target. Controls minimize effects of the initiating event by detecting and correcting them before bringing about an undesired outcome.
Appendix A. Terms and Definitions	Damage. Either material or mission objective loss that is calculable as a Direct Cost (see Direct Cost of Mishap or Close Call).
Appendix A. Terms and Definitions	Evidence. Everything used to support or refute a hypothesis or finding. For a safety investigation, the types of evidence are physical (e.g., hardware), demonstrable (24 hours in 1 day), witness interview, and documentary (witness statement, logbooks, and electronic data).
Appendix A. Terms and Definitions	Fault Tree Analysis. An analytical technique whereby an undesired system state is specified, and the system is then analyzed in the context of its environment and operation to find all credible ways in which the undesired event can occur.
Appendix A. Terms and Definitions	Federal employee. (Per 5 U.S.C. pt. 2101) a. Civil service consists of all appointive positions in the executive, judicial, and legislative branches of the Government of the United States, except positions in the uniformed services. b. Armed forces means the Army, Navy, Air Force, Marine Corps, and Coast Guard. c. Uniformed services means the armed forces, the commissioned corps of the Public Health Service, and the commissioned corps of the National Oceanic and Atmospheric Administration.
Appendix A. Terms and Definitions	Hazard. A state or a set of conditions, internal or external to a system, having the potential to cause harm.
Appendix A. Terms and Definitions	Human Error. An action unintended or undesired by the human or a failure on the part of the human to perform a prescribed action within specified limits of accuracy, sequence, or time that fails to produce the expected result and has led or has the potential to lead to an undesired outcome.
Appendix A. Terms and Definitions	Human Factors. a. A body of scientific facts about human characteristics, capabilities, and behavior. The term includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluation. b. A body of information about human abilities, human limitations, and other human characteristics from a physical and psychological perspective relevant to the design, operations, and maintenance of complex systems.
Appendix A. Terms and Definitions	Human Factors Analysis. The study of how people interact with their environment. Physiological, psychological, and organizational behaviors are evaluated. Human factors analysis is an important component of mishap investigation. Determining why, how, and where human behaviors contributed to mishaps and close calls is key to preventing future mishaps.
Appendix A. Terms and Definitions	Incident Commander. The person responsible for directing or controlling resources by means of explicit legal, Agency, or delegated authority. The incident commander is responsible for all aspects of incident response including developing objectives, managing operations, setting priorities, and defining the Incident Command System organization for the particular response.
Appendix A. Terms and Definitions	Initiating Event. An active energy transfer event from a hazard with the potential to affect a valued target and lead to an undesired outcome.
Appendix A. Terms and Definitions	Launch. To place a vehicle and any payload from Earth in a suborbital trajectory, in Earth orbit, or in outer space.
Appendix A. Terms and Definitions	Life-Threatening Injury. An injury involving a substantial risk of death; loss or substantial functional impairment of a bodily member, organ, or mental faculty likely to be permanent; or an obvious disfigurement likely to be permanent.
Appendix A. Terms and Definitions	Mishap Investigation Report. The mishap investigation report documents the facts associated with an incident as determined by the investigating authority. In the report, the investigating authority identifies primary, or root, causes, and contributing and possible causes, and recommends corrective actions to prevent the occurrence of similar mishaps.
Appendix A. Terms and Definitions	Mishap Investigation Support Office, Mishap Regional Support Specialist. A NASA Safety Center federal employee trained and experienced in all facets of NASA mishap investigation. Specialists assist and advise Centers, programs, projects, and investigating authorities on behalf of the Office of Safety and Mission Assurance Mishap Investigation Program Executive on implementation of policy and best-practice techniques to conduct and endorse NASA mishap and close call investigations.
Appendix A. Terms and Definitions	Mishap Summary. A formatted presentation prepared by the NASA Safety Center Mishap Investigation Support Office as a public-releasable document to capture the event sequence, findings, and recommendations contained in a NASA Type A, Type B, or high-visibility mishap or close call investigation report.
Appendix A. Terms and Definitions	NASA Aircraft. Aircraft that are bought, borrowed, chartered, rented, or otherwise procured or acquired—including aircraft produced with the aid of NASA funding—regardless of cost, from any source for the purpose of conducting NASA science, research, or other missions, and which are NASA-operated or NASA-managed. Unmanned aircraft are defined as “aircraft” by the Federal Aviation Administration and are included in the definition of NASA aircraft unless specified otherwise.
Appendix A. Terms and Definitions	NASA Employees. Federal civil servants employed and paid by NASA, or on detail from other Federal agencies, and NASA Support Service Contractors.
Appendix A. Terms and Definitions	NASA Mishap Information System. A custom-developed system for capturing mishaps, close calls, and hazards, as required in this NPR.
Appendix A. Terms and Definitions	Occupational Injury or Illness. Work-related per 29 CFR pt. 1904.
Appendix A. Terms and Definitions	Procedure. A documented description of the sequential actions in performing a given task.
Appendix A. Terms and Definitions	Process. A set of activities used to convert inputs into desired outputs to generate expected outcomes and satisfy a purpose.
Appendix A. Terms and Definitions	Range. A permanent or temporary area or volume of land, sea, or airspace within or over which orbital, suborbital, or atmospheric vehicles are tested or flown. This includes the operation of launch vehicles from a launch site to orbital insertion or final landing or impact of suborbital vehicle components. This also includes the entry of space vehicles from the point that the commit to deorbit is initiated to the point of intact vehicle impact or landing or the impact of all associated debris. This includes range operations with aeronautical vehicles from takeoff to landing.

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Risk. In the context of mission execution, risk is operationally defined as a set of triplets:

- a. The scenarios leading to degraded performance with respect to one or more performance measures (e.g., scenarios leading to [1] injury, fatality, destruction of key assets; [2] exceedance of mass limits; [3] cost overruns; or [4] schedule slippage).
- b. The likelihoods (qualitative or quantitative) of those scenarios.
- c. The consequences (qualitative or quantitative severity of performance degradation) that would result if those scenarios were to occur.

Note: Uncertainties are included in the evaluation of likelihoods and consequences.

Appendix A. Terms and Definitions

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Spacecraft. A habitable vehicle or device including, but not limited to, orbiters, capsules, modules, landers, transfer vehicles, rovers, Extra Vehicular Activity suits, and habitats, designed for travel or operation outside Earth's atmosphere.

Appendix A. Terms and Definitions

Test. A procedure for critical evaluation; a means of determining the presence, quality, or truth of something; a trial. In engineering, a method of determining performance by exercising or operating a system or item using instrumentation or special test equipment that is not an integral part of the item being tested.

Appendix A. Terms and Definitions

Timeline. Events and conditions preceding and following a mishap supported by facts and arranged in chronological order.

Appendix A. Terms and Definitions

Undesired Outcome. An event or result that is unwanted and different from the desired and expected outcome. For mishap investigation, an undesired outcome should describe the loss that determined the mishap classification (i.e., property damage, mission failure, fatality, permanent disability, lost-time case, or first-aid case).

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NPR 8621.1.B Location	Requirement	Rationale
1.3.3.2	1.3.3.2 Even in cases where replacement parts are available from salvaged or excess equipment at little or no cost to NASA, the direct cost of the mishap or close call shall include the actual costs of replacement parts as if these were purchased new, plus labor calculated as if the salvage/excess parts were unavailable	Now in Notes section under 2.4.3
1.3.3.3	1.3.3.3 In cases where insurance compensation, contractor compensation, or other compensation is available or provided, the direct cost of the mishap or close call shall include the direct cost (or estimate of the cost) as if this compensation were not available or provided	Now in Notes section under 2.4.3
1.3.3.4	1.3.3.4 The cost of the safety mishap investigation shall not be included in the direct cost	Now in Notes section under 2.4.3
1.4.2 a.-d.	<p>1.4.2 Chief/OSMA. The Chief/OSMA or designee shall:</p> <p>a. Ensure the proper reporting, investigating, and recordkeeping for mishaps and close calls by defining the mishap reporting and investigating process, updating this NPR, verifying its implementation, developing mishap investigation training, and identifying candidate mishap investigation tools</p> <p>b. Concur with the mishap classification level, investigation approach, and the MIB membership and serve as an endorsing official for the mishap report for Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls</p> <p>c. Provide a qualified NASA person to support NTSB investigations of NASA aircraft mishaps.</p> <p>d. Archive NASA Headquarters-approved NASA mishap investigation board reports and related documents per NPR 1441.1</p>	
1.4.4 a.-b.	<p>1.4.4 AA. The AA shall:</p> <p>a. Serve as the appointing official for Type A mishaps if designated by the Administrator</p> <p>b. Obtain concurrence from the Chief/OSMA and the Chief Engineer on the MIB membership of mishaps in which he/she is the appointing official</p>	
1.4.7 m.-p.	<p>1.4.7 CD and ED/OHO. The CD and the ED/OHO shall:</p> <p>m. Initiate the use of the NASA Family Assistance Fund (NFAF), upon the NASA civil service employee family's agreement or request</p> <p>n. Obtain concurrence from the Chief/OSMA and the Chief Engineer on the MIB membership of Type A, Type B, high-visibility mishaps, and high-visibility close calls in which he/she is the appointing official</p> <p>o. Provide administrative and logistical support for the investigating authority working on the Center and distribute the authorized mishap report per this NPR</p> <p>p. Verify that NASA contractors and grantees conduct mishap investigations and provide mishap reports as specified in their contracts and in NFS 1852.223-70</p>	
1.4.7.1	1.4.7.1 The ED/OHO shall provide funding and support for investigations of mishaps that occur at NASA Headquarters	
1.4.8 d.	<p>1.4.8 Program and Project Managers. Program and project managers shall:</p> <p>d. Assist the investigating authority as requested</p>	
1.4.9 a.	<p>1.4.9 Responsible Organization. The responsible organization shall:</p> <p>a. Assist the investigating authority as requested</p>	
1.4.10 m.	<p>1.4.10 Appointing Official. The appointing official shall:</p> <p>m. Assist the investigating authority as requested</p>	
1.4.12 g.	<p>1.4.12 Ex Officio. The ex officio shall:</p> <p>g. For Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls, provide the Chief/OSMA interim briefings on the status of the investigation, upon his/her request</p>	
1.4.14	1.4.14 Investigating Authority. The investigating authority shall conduct a comprehensive investigation within the defined scope of the appointment letter or appointment orders, generate the products indicated in paragraph 1.7 and Figure 5 of this NPR, prepare a mishap report, and sign the report	
1.4.15 b.	<p>1.4.15 Investigating Authority's Advisors. The advisors shall:</p> <p>b. Provide advice to the investigating authority</p>	
1.4.21 a.-b.; d.	<p>1.4.21 Interim Response Team (IRT). The IRT shall:</p> <p>b. Assist the incident commander, as requested</p> <p>d. Only Federal employees on the IRT shall support the Center safety office in impounding data and collecting witness statements (written statements when possible)</p>	
1.4.22	1.4.22 Incident Commander. The incident commander shall implement the procedures outlined in the Center Mishap Preparedness and Contingency Plan to coordinate rescue activities, mitigate hazards, and safe and secure the mishap site	
1.4.24	<p>1.4.24 The Office of Protective Services (OPS) shall:</p> <p>a. Upon request from the appointing official, perform a classification review of the endorsed mishap report to determine if any section of the report (or the whole report) needs to be classified or if it may be authorized for public release</p>	
1.4.25	<p>1.4.25 The Center security office shall:</p> <p>a. Support the Incident Commander, Center safety office, and IRT in securing the mishap site and impounding data, records, equipment, and facilities</p> <p>b. Support the incident commander as he/she secures and safes the mishap site</p>	
1.4.26 b.-e.	<p>c. Initiate drug testing after a mishap if the mishap results in a fatality or personal injury requiring immediate hospitalization or in damage estimated to be in excess of \$10,000 to government or private property</p> <p>d. Assist the investigating authority, as requested</p> <p>e. Complete the initial mishap or close call report in accordance with the Center Mishap Preparedness and Contingency Plan</p>	
1.4.27 c.	<p>1.4.27 All Employees. All employees shall:</p> <p>c. Provide as much information as possible to the investigating authority</p>	
1.4.28	1.4.28 Center's Chief of Aircraft Operations. The Chief of Aircraft Operations shall notify the NTSB of a mishap involving aircraft per paragraph 1.6.6 of this NPR and complete NTSB Form 6120 per paragraph 1.6.8 of this NPR and NTSB requirements	
1.4.29	<p>1.4.29 Contracting Officers. Contracting officers shall:</p> <p>a. Involve the Center safety office in the acquisition strategy planning activities for proposed contracts as detailed in NASA NFS Part 1807, "Acquisition Planning"</p> <p>b. Incorporate applicable mishap and close call reporting and investigating procedures and corrective action requirements detailed in the NFS into contracts and grants covering NASA programs and operations</p>	
1.4.32	<p>1.4.32 Office of the General Counsel. The Office of the General Counsel shall:</p> <p>a. Develop and implement procedures for collateral investigations that will be performed for mishaps and close calls that do not involve criminal activity.</p> <p>b. Assist the AA/OPA (or designee) in the review of the approved mishap report as it is being prepared for public release</p>	

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- 1.4.33 Chief Engineer. The NASA Chief Engineer shall:
- a. Concur on MIB membership for Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls
- 1.5.1 Immediately after a mishap or close call, NASA employees shall notify the appropriate authorities in the manner specified in paragraph 1.4.27 of this NPR and the Center Mishap Preparedness and Contingency Plan Redundant to 1.4.27 (2.1.1 in version C)
- 1.5.2 The Center safety office shall collect employee safety concerns, mishap reports, and close call reports through a Center process, review the employee reports, verify that they meet the definitions of mishap or close call found in Appendix A and Figure 1, and report those that are consistent with the NPR
- 1.5.3 a. Mishap notification must be acknowledged (verbally, e-mailed, or faxed) to meet the intent of this requirement
- 1.5.5 Within 24 hours of a Type A mishap, Type B mishap, high-visibility mishap, or high visibility close call, the Center safety office shall follow up the initial phone notification by sending an electronic notification to OSMA/SARD that includes the following information: Center submitting report; author of report; author's phone number and mail code; date report submitted; time report submitted; incident date; incident time; incident general location; exact location (if known); responsible organization; organization's point of contact; point of contact's phone number and mail code; mission affected; program impact (if known); number and type of injuries or fatalities (if known); type of damage to equipment, flight hardware, flight software, or facilities; estimate of direct cost of damage; and a brief description of the mishap or close call
- 1.6.7 In the event that the NTSB exercises its authority to investigate a NASA aircraft mishap, NASA shall conduct a separate investigation in accordance with this NPR
- 1.7.2 For close calls, where the potential for a Type A mishap or Type B mishap is significant, the Center Safety and Mission Assurance (SMA) director may consider application of a MIB or MIT investigation and their associated products. Serious workplace hazards previously unidentified and discovered as a result of inspections, audits, surveys, or concerns shall be investigated in the same manner as close calls
- 1.7.3 For Type B mishaps, Type C mishaps, Type D mishaps, and close calls involving a single person, where the injury/illness occurred because an individual fell down the stairs, slipped or tripped on the floor or ground, experienced a musculoskeletal disorder (both cumulative trauma or acute) while performing routine office duties, was bitten by an insect, and/or aggravated a preexisting medical condition, the mishap investigation may be performed by one trained mishap investigator without the support from an ex officio.
- 1.7.4 The CD or ED/OHO shall elevate the level of investigation and required products of any mishap or close call upon the request of a higher authority, such as the Administrator, an Associate or Assistant Administrator, or upon his/her discretion
- 1.8.3 The Center safety office shall record mishaps involving injury or illness to NASA civil service employees on the OSHA 300 Log as required by 29 CFR Part 1904.7
- 2.1.1 f. The AA/OIA and each CD shall develop a Center Mishap Preparedness and Contingency Plan that describes the following:
f. Roles and responsibilities of the incident commander (or the location in the emergency preparedness plan where these can be found)
- 2.1.1 n. The information technology plan to provide computer data retrieval and data archive support to the investigating authority
- 2.1.1 o. Requisite security clearances, if any, for investigating authority members, chair, and ex officio
- 2.2.1 The program/project manager shall concur in a Program/Project Mishap Preparedness and Contingency Plan that:
- a. Is a comprehensive plan for all mishaps and close calls that occur offsite, at offsite program/project (as defined by NPR 7120.5) contractor sites, or in flight.
- b. Is consistent with the Centers' Mishap Preparedness and Contingency Plans, for all Centers in which the program operates.
- c. Covers any information and procedures required specifically by the program that are not covered in the Centers' Mishap Preparedness and Contingency Plans (i.e., special procedures for safing, handling, or containing hazardous chemicals present in the program's/project's hardware).
- 2.2.1 a.-e., g., i. d. Describes the procedures to comply with NPR 8621.1 notification, reporting, investigating, and recording requirements for all program/project activities not located at a Center or managed by a Center (e.g., program/project activities managed by Headquarters and located at a University, contractor site, or other off-Center location).
- e. Describes the training requirements and the IRT's membership for mishaps and close calls that occur offsite, at offsite program/project (as defined by NPR 7120.5) contractor sites, or in flight.
- g. Describes the procedures to impound data, records, equipment, facilities, and property not located at a NASA facility.
- i. Describes how offsite debris shall be collected, transported, and stored
- 2.2.2 The program/project manager shall have the appropriate NASA Offices, at a minimum, General Counsel, OPA, OER, OSMA, and Centers (all Centers at which the program/project has activities) review and comment on the Mishap Preparedness and Contingency Plan prior to its approval.
- 2.3 Mishap Preparedness and Contingency Plan Practice
- 2.3.1 The Program and Center Mishap Preparedness and Contingency Plans, including emergency response where appropriate, shall be practiced during contingency simulations that occur prior to a major test, launch, or space activity (Requirement).
Note: Practice is intended to mean tabletop and/or full enactment simulations (where possible).
- 2.3.2 For ongoing programs with repeated major test, launches, and space activities, the Program Mishap Preparedness and Contingency Plan, including emergency response where appropriate, shall be conducted at least every 18 months.
- 2.3.3 The Center Safety Office at the Center where the program is managed shall provide oversight of the Mishap Preparedness and Contingency Plan simulation.
- 2.3.4 At the conclusion of the simulation, the Center Safety Office and Program shall identify any deficiencies in the Mishap Preparedness and Contingency Plan, update the plan as needed, and/or take other necessary corrective actions to assure that the plan can be effectively implemented if a mishap occurs.
- 2.4.1 All MDAAs, Programs, Projects, and Centers shall submit their up-to-date Mishap Preparedness and Contingency Plans to OSMA/SARD for storage on the NASA Process Based Mission Assurance Secure Web Site.
- 2.6.3 The Center safety office shall develop and maintain NASA mishap investigation introductory training (onsite orientation training) that can be provided to the investigating authority and advisors upon their assignment to the investigation.
- a. The NASA mishap investigation introductory training shall include (at a minimum) a brief familiarization of the investigating authority's roles and responsibilities, NASA policy and procedures, and a description of root cause analysis.
- 2.7 Tools
- The Chief/OSMA supported by the Center safety offices shall identify candidate mishap investigation tools that can be implemented quickly and maintain a tool repository that makes these tools readily available to investigating authorities

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- 3.1.1 After the initial notifications are made, the supervisor shall provide any necessary assistance to safe the mishap site until the emergency response and/or personnel from the Center safety office arrive
- 3.1.5 The incident commander and emergency response personnel shall have the authority to take action to mitigate dangerous conditions, direct emergency response actions, and/or clean up a hazardous materials release.
- 3.1.6 The Center safety office and incident commander shall ensure protection of personnel from residual hazardous material prior to entry into the mishap site.
- 3.1.7 The Center safety office and/or incident commander shall stipulate the type of personal protective equipment (PPE) required.
- 3.1.8 Every professional supporting the investigation, including the IRT and investigating authority, shall adhere to the PPE requirements as defined by the Center safety office personnel or incident commander.
- 3.6.4 For NASA mishaps occurring on international programs and/or involving program participants, autopsies shall be conducted in accordance with the bilateral/multilateral agreements
- 3.6.5 For NASA mishaps occurring on international programs and/or involving international program participants, data, records, equipment, and facilities shall be impounded in accordance with the bilateral/multilateral agreements
- 3.9.2.1 When a mishap involving extensive damage to, or destruction of, NASA property occurs at other than government-owned facilities, overseas tracking stations, or contractor-owned plants, the contractor, tracking station manager, base commander, or other authority shall inform their point of contact at NASA
- 3.9.2.2 The Center safety office cognizant of the mishap shall confirm that the mishap occurred to the NASA-owned property on other than government-owned facilities
- 3.9.3.2 Military and Other Agency Personnel Casualties. The procedures for public announcements of mishaps involving military and other Federal personnel (including astronauts) detailed to NASA shall be the same as for NASA employees, with these additional requirements:
- a. The CD or ED/OHO shall inform the appropriate military service headquarters or other Federal agency of the mishap.
- b. The CD or ED/OHO shall inform the Center PAO that the military service organization or other Federal agency has been notified of the mishap.
- 3.9.3.4 Center Visitor Casualties. When a Type A mishap or Type B mishap occurs which involves visitors on a Center or at Headquarters, the CD or ED/OHO, in coordination with the Center PAO or Headquarters PAO, shall announce as soon as possible that a mishap occurred and the number of known fatalities and/or injured
- 4.2.7 g. The members shall not be from the direct chain of authority responsible for day-to-day or line management oversight of the facility, area, or activity involved in the mishap or have a vested interest in the outcome of the investigation
- 4.2.7 j. For all Type A mishaps involving injury, illness, or fatality, the MIB shall include an occupational health physician as a member.
- 4.2.7 p. Members shall have sufficient experience and technical expertise to understand the technology and management interfaces related to the mishap
- 4.2.7 r. For international programs, members shall be selected as described in bilateral/multilateral or international agreements
- 5.2 The investigating authority shall perform the following activities prior to arrival at the mishap site or shortly thereafter:
- b. Assessment of personnel resources. The chairperson may make a request to the appointing official to modify the investigating authority's membership to fill technical and/or analytical expertise gaps, provide management experience and knowledge, or eliminate members that have a conflict of interest.
- (1) For Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close call investigation boards, the Chief/OSMA and Chief Engineer shall concur on membership changes prior to any MIB member additions or deletions
- 5.2 c. Identification and selection of consultants as necessary
- 5.3.1.2 Neither the investigating authority nor the IRT has the authority to direct emergency response actions or activities to clean up a hazardous materials release.
- (1) These actions shall be directed by the incident commander.
- 5.3.2.4 When there is a mishap involving an injury or a fatality, the chairperson shall appoint a Federal employee to serve as an evidence custodian(s) who will implement the "chain of custody process" documented in the Program Mishap Preparedness and Contingency Plan to provide physical security over and controlled access to the injured/deceased personal effects and related sensitive material
- 5.5.1 It is NASA's philosophy to interview witnesses rather than interrogate them. "Interview" connotes a cooperative meeting where the interviewer approaches the interviewee as an equal. The cooperation of the interviewee is sought; encouragement is given to tell the story freely without interruption or intimidation. An interview is usually conducted informally with a voluntary or cooperative answering of questions. However, the investigating authority may also conduct more formal interviews. Even in those cases, witnesses shall not be sworn in.
- 5.5.3 The investigating authority conducting the witness interviews shall perform all steps as listed in paragraph 3.8 of this NPR.
- 5.8.3 The investigating authority shall prioritize the recommendations.
- 6.1.8 If the investigating authority would like to receive a preliminary review of the mishap report and feedback concerning the adequacy of the report, they may provide a draft mishap report to the appointing official and request a preliminary review.
- a. This preliminary review must occur within the time allocated for the completion of the mishap report.
- b. Upon receipt of a draft mishap report, the appointing official shall determine the appropriate preliminary review process and reviewing offices that should participate in the preliminary review, have them review the draft mishap report, and provide feedback to the investigating authority within 15 workdays.
- 6.1.8 c. The Center safety office or OSMA (dependent on level of investigation) shall participate in all preliminary reviews.
- d. Feedback from reviewers may include, but is not limited to, requests for clarification, additional facts, further root cause analysis (or other analysis), feasibility evaluation of recommendations, compliance with NPR, and/or removal (or placement in a nonreleasable appendix) of privileged or proprietary information, ITAR information, EAR information, material subject to the Privacy Act, or other inappropriate information (i.e., witness names).
- e. The chairperson and/or investigating authority is not required to make any changes to the mishap report with which he or she does not agree.
- 6.1.11
- 6.1.11 b. The contracting officer's signature indicates that any proprietary information or material subject to the Privacy Act has been identified and marked as non-releasable to the public (e.g., NASA Sensitive But Unclassified).

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- 6.3.3 For those mishap or close call reports where the Chief/OSMA is an endorsing official, all endorsements shall be forwarded to OSMA for review prior to completion of the Chief/OSMA endorsement.
- 6.5.2 Within 10 workdays, the MDAA or the Center safety office shall distribute the mishap report to the appropriate NASA programs and organizations including, but not limited to, the responsible organization and/or program, all Center safety offices, the CHMO (when an injury or fatality has occurred), and AD (when the mishap involved an aircraft).
- 6.5.3 Within 15 workdays, the Center safety office shall distribute information about the Type A mishap or Type B mishap via "weekly safety highlights" (or equivalent) to Center personnel, including a brief description of what caused the mishap and how it can be prevented.
- 7.2.1 d. The CAP shall include the following:
d. A review of any process changes required based on corrective actions.
- 7.4.3 Close calls involving aircraft that have been entered into the NAARS, in lieu of IRIS, must track the corrective action performance and completion in NAARS.
- 7.6.1 Following the authorization of the mishap report for public release, the appointing official shall designate a person or team of persons to develop the lessons learned identified in the mishap report.
- 7.6.3 Program and/or project managers that have mission failures or NASA mishaps for long-duration missions shall develop lessons learned for possible application to existing or future programs.
- 7.6.5 Prior to submission into NASA Lessons Learned Information System (LLIS), NASA program and policy officials, including, but not limited to, legal, import/export control, and public affairs, shall:
a. Review the proposed lessons learned to ensure they are consistent with NASA policy and do not contain any privileged or proprietary information, ITAR information, EAR information, or material subject to the Privacy Act.
b. Provide the appointing official with a written statement indicating that the lessons learned are cleared for submission into the NASA LLIS.
- 7.6.6 Based on the results of the review of the lessons learned, the appointing official shall either accept or reject the lessons learned and forward accepted lessons learned to the NASA LLIS.
- 7.6.7 OCE and program managers shall review the LLIS quarterly to determine if any mishap lessons learned should be translated into programmatic or Agency requirements.
- Appendix A. Terms and Definitions
First Responder. An individual who in the early stages of an incident is responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers as defined in section 2 of the Homeland Security Act of 2002 (6 U.S.C. 101), as well as emergency management, public health, clinical care, public works, and other skilled support personnel (such as equipment operators) that provide immediate support services during prevention, response, and recovery operations.

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NPR 8621.1.B Location	Old Requirement	NPR 8621.1.C Location	New Requirement	Rationale
1.3.1	The severity of the personnel injury and the direct cost of the mishap or close call (property damage and/or mission failure) shall determine the classification level of the mishap or close call (see Figure 1) and the corresponding type of investigation to be conducted	2.4.1	The severity of the personnel injury and the direct cost of the mishap or close call (property damage or mission failure) shall determine the classification level of the mishap or close call (Table A).	
1.3.3.1	The responsible manager, with review and concurrence by the Center safety office, shall calculate the direct cost of a mishap or close call by adding all the actual costs (or the estimate of the cost) (the greater value of actual or fair market value) of damaged property, destroyed property, or mission failure; i.e., actual cost of repair or replacement, labor (actual value of replacement or repair hours for internal and external/contracted labor), cost of the lost commodity (e.g., the cost of the fluid that was lost from a ruptured pressure vessel), as well as resultant costs such as environmental decontamination, property cleanup, and restoration	2.4.3	The responsible organization, with review and concurrence of the cognizant Safety Office, shall calculate the direct cost of a mishap or close call. Calculations are done by adding all of the actual or estimated costs of damaged or destroyed property, mission failure, lost commodity (e.g., the cost of the fluid lost from a ruptured pressure vessel), and resultant costs such as environmental decontamination, property cleanup, and restoration. Estimated costs are calculated by using the greater of the actual or the fair market value. Actual repair or replacement costs, labor (i.e., the actual value of replacement or repair hours for internal and external or contracted labor) should be included in calculations.	
1.3.3.5	The responsible program manager (or designee), in coordination with the Chief Financial Officer (or designee), shall calculate the cost of a mission failure by determining the cost of the "unique" mission from Mission Approval (Key Decision Point C) through project closeout, including consumables (e.g., fuel), launch costs, and dedicated institutional support costs such as Deep Space Network, NASA Engineering and Safety Center, Independent Technical Authority, or others.	2.4.4	The responsible program manager or designee, in coordination with the cognizant Chief Financial Officer or designee, shall calculate the cost of a mission failure by determining the cost of the "unique" mission from Mission Approval (reference NPR 7120.5E, Key Decision Point C) through project closeout, including consumables (e.g., fuel), launch costs, and dedicated institutional support costs such as Deep Space Network, NASA Engineering and Safety Center, Independent Technical Authority, or others.	
1.4.1 a.	Administrator. The Administrator: a. May elect to be the appointing official for Type A mishaps or delegate to the AA. (If the Administrator elects not to be the appointing official, the MDAA, CD, or another designee will serve as the appointing official.)	3.1.1 a.	The Administrator shall: a. Serve as the AO for Type A mishaps or delegate authority to the AA, MDAA, CD, or other designee (see section 3.1.5 for exceptions regarding mishaps involving human test subjects).	
1.4.1 b.	b. Shall serve as appointing official for NASA joint participation on a MIB with the Department of Defense (DoD) and other agencies unless authority is delegated by existing agreements.	3.1.1 b.	b. Serve as AO for NASA joint participation on an investigation with the Department of Defense and other agencies unless otherwise specified in existing agreements.	
1.4.3	Inspector General. The Inspector General shall investigate criminal activity associated with mishaps and close calls	2.5.2	The NASA Office of Inspector General (OIG) and the Center's Office of the Chief Counsel or the NASA Office of the General Counsel shall be notified of information potentially related to criminal activity in connection with a mishap.	
1.4.4 c.	1.4.4 AA. The AA shall: c. Serve as an endorsing official for all mishaps in which he/she is the appointing official			
1.4.7 q.	1.4.7 CD or ED/OHO			
1.4.10 e.	e. Serve as an endorsing official for mishaps and close calls in which he/she is the appointing official 1.4.10 AO shall: e. Serve as an endorsing official for mishaps and close calls in which he/she is the appointing official	Table E	<i>Requirement is the same, it has just been moved into a Table.</i>	
1.4.5 a.-b.	MDAA. The MDAA shall: a. Implement the mishap and close call reporting, investigating, and recordkeeping requirements for their assigned Mission Directorates for mishaps and close calls that occur outside the Center's gates, during in-space flight, or at a program/project contractor site that is not managed by a Center	1.3.2.1-1.3.2.3	1.3.2.1 The MDAA is responsible for ensuring program/project managers develop and implement Program/Project MPCPs in conformance with this NPR. This includes procedures to notify, report, investigate, and record mishaps and close calls associated with programs and projects that fall under MDAA responsibility. 1.3.2.3 The MDAA is responsible for ensuring mishap plans are consistent and complimentary across "loosely coupled" programs.	
1.4.5 c.	1.4.5 MDA. The MDA shall: c. Determine the mishap classification level (or assign a designee to determine the classification level) for all mishaps for which he/she has reporting responsibility and obtain concurrence on this classification level from the Chief/OSMA for Type A and B mishaps, high-visibility mishaps, and high-visibility close calls	2.4.2	The MDAA, CD and the ED/OHO or designees shall, within 24 hours, determine the mishap classification level for all mishaps within their jurisdiction and obtain concurrence on this classification level from the Chief/OSMA for Type A and Type B mishaps and high-visibility mishaps and close calls.	
1.4.7 d.	1.4.7 CD and ED/OHO. The CD and ED/OHO shall: d. Determine the mishap classification level (or assign a designee to determine the classification level) for all mishaps for which the Center has reporting responsibility and obtain concurrence on this classification level from the Chief/OSMA for Type A and B mishaps, high-visibility mishaps, and high-visibility close calls			
1.4.5 d.-e.	d. Serve as the appointing official for Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls that involve Mission Directorate managed programs/projects/activities that occur during space flight or occur outside the Center's gates at MDAA program/project sites (excludes off-site Center support contractor locations). e. Serve as the appointing official (or designate the responsibility in the Program/Project Mishap Preparedness and Contingency Plan) for Type C mishaps, Type D mishaps, and close calls that involve Mission Directorate managed programs/project/activities that occur during space flight or occur outside the Center's gates, during at MDAA program/project sites (excludes off-site Center support contractor locations).	3.1.2 a.-b.	3.1.2 The MDAA shall: a. Serve as the AO for Type A mishaps, if delegated by Administrator, Type B mishaps, high-visibility mishaps, and high-visibility close calls involving Mission Directorate-managed programs, projects, and activities occurring during space flight or occurring outside Center property at MDAA program and project sites (excluding offsite Center support contractor locations) (see section 3.1.5 for exceptions regarding mishaps involving human test subjects). b. Serve as the AO (or designate the responsibility in the Program/Project MPCP) for Type C and Type D mishaps, and close calls involving Mission Directorate-managed programs, projects, and activities occurring during space flight, aircraft operations, or outside Center gates at MDAA program or project sites (excluding offsite Center support contractor locations).	
1.4.5 f.	f. Provide funding and support for investigations within their programs and involving their hardware, facilities, or enabling activities	1.3.4.1	The Program/Project Manager is responsible for the implementation and funding of the Program/Project MPCP in coordination with applicable Centers' MPCPs and with the appropriate NASA HQ Offices, which include, at a minimum, MDAA, General Counsel, OSMA, OCOM, and OIR, before its final approval.	
1.4.5 g.	g. Ensure that agreements for joint programs with international partners and other Federal agencies incorporate elements of this NPR to ensure that joint mishap investigating and reporting complies with NASA requirements.	1.3.2.2	1.3.2.2 The MDAA is responsible for ensuring international partner joint program agreements and other Federal agency agreements incorporate the mishap and reporting elements of this NPR.	
1.4.6	1.4.6 Assistant Administrator, Office of Public Affairs (AA/OPA). a. The AA/OPA shall establish guidelines for the public release of mishap reports and related information b. With the assistance of the Center safety office, Interim Response Team (IRT), investigating authority, and CD or ED/OHO, the AA/OPA shall release information to the press and media (i.e., potential hazards that may affect the public, interim reports, and the authorized mishap report) c. For Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls, the AA/OPA (or designee) shall appoint a Headquarters public affairs advisor 3.4 Notify Personnel and the Public of Potential Hazards The AA/OPA (or designee), with the assistance of the Center safety office, IRT, and CD or ED/OHO shall immediately release information to the press and media to alert Center personnel and the public of any known hazards and their potential effects and provide instructions that will mitigate the risk and harm	2.2.5.2	2.2.5.2 The AA/OCOM, or designee, shall: a. Within 1 hour of the incident, release information to the media and alert Center personnel and the public of any known hazards and their potential effects, and provide instructions to mitigate the risk and harm. b. As warranted and with the assistance of the cognizant Safety Office, IRT, and CD or ED/OHO, release interim public affairs status reports about the investigation to the media through the Center Public Affairs Office (PAO).	
1.4.7 a.-c.	CD and ED/OHO. The CD and the ED/OHO shall: a. Develop Center and Program Mishap Preparedness and Contingency Plans to support this NPR (this includes procedures to notify, report, investigate, and record mishaps and close calls that involve programs, projects, and activities that fall under their responsibility) b. Implement the mishap reporting, investigating, and recordkeeping requirements for all projects, programs, and activities that fall under their SMA responsibility c. Provide funding and support for investigations at their Centers, within their projects and programs, and involving their hardware, facilities, or enabling activities	1.3.1	CD and ED/OHO shall develop the Center MPCP and include the content specified in section 1.2. The CD and ED/OHO are responsible for funding and supporting Center MPCPs in conformance with this NPR. This includes requirements to notify, report, investigate, and record mishaps and close calls that fall within CD and ED/OHO jurisdiction. The CD and ED/OHO (or delegate) are the approval authority for Center MPCPs.	
1.4.7 f.	f. Serve as the appointing official (or designate the responsibility in the Center Mishap Preparedness and Contingency Plan) for Type C mishaps, Type D mishaps, and close calls that occur at his/her Center, at off-site Center support contractor locations, or at off-site contractor locations that are managed by the Center and are not part of any MDAA program/project activity.	3.1.4 b.	b. Serve as the AO (or otherwise authorized in the Center MPCP) for Type C and Type D mishaps, and close calls that occur onsite at a Center, at offsite Center support contractor locations, or at Center-managed offsite contractor locations that are not part of an MDAA program or project activity.	
1.4.7 g.	CD and ED/OHO. The CD and the ED/OHO shall: In the event that there is a mishap involving injury of a human research subject at a NASA Center, request the Chief Health and Medical Officer (CHMO) concurrence on the investigating authority's membership	3.1.4 c.	The CD and ED/OHO shall: Serve as the AO in accordance with this NPR for mishaps involving a human research subject that occur at a Center.	
1.4.7 h.-j.	CD and ED/OHO. The CD and the ED/OHO shall: h. Personally report, by telephone or e-mail, to the Administrator within 24 hours of learning the instance of any NASA Type A mishap, or NASA Type B mishap, and personally report (or Deputy to report), by telephone or e-mail, to the Associate Administrator within 24 hours of learning the instance of any NASA Type C mishap that involves a lost-time injury or illness i. Personally report, by telephone or e-mail, to the Administrator within 24 hours of any nonoccupational fatality, such as sudden cardiac arrest of a NASA civil service employee or a resident contractor that occurred on site (a resident contractor is a NASA contractor whose primary place of business is on or near a NASA Center or NASA-owned facility) j. Personally report, by telephone or e-mail, to the Administrator when it becomes known that there is any off-the-job fatality or serious injury/illness of a NASA civil service employee or resident contractor	2.1.7	The CD or ED/OHO shall report, by telephone or email, to the Administrator when it becomes known that there is a work-related fatality or serious injury or illness of a NASA employee, resident non-NASA federal employee, or resident contractor (a NASA contractor whose primary place of business is on or near a NASA Center or NASA-owned facility).	

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	CD and ED/OHO. The CD and the ED/OHO shall: k. Ensure that local procedures for dealing with the needs of the NASA workforce (civil service employees and contractor employees) when they are experiencing a crisis situation (e.g., serious injury, illness, or fatality of workforce member or family member) are: (1) Reviewed annually		The CD or ED/OHO shall ensure that: a. In the case of Federal fatalities, release of victim names will be made through Center PAO at the earliest possible time after CD or ED/OHO, and AA/OCOM concurrence that next of kin notification has been accomplished with CD or ED/OHO protocols. b. Initial announcements should include what is known at the time, the injuries or fatalities that have occurred, and when additional information is expected to be available. c. For Centers located on a military installation, release of victim names will be made according to procedures previously agreed upon by the installation commander and CD or ED/OHO.
1.4.7 k.-l.	(2) Include a process for immediately notifying the next of kin for mishaps and on site nonoccupational medical events resulting in fatality or serious injury (3) Provide information to the person or family (when the person is unable to receive such information due to the injury or illness) concerning benefits, such as extended sick-leave and disability l. Ensure that the NASA civil service employees designated to communicate with the family of an injured, ill, or deceased individual have received training in NASA policy concerning benefits and crisis intervention	2.2.5.4	
1.4.8 a. & c.	Program and Project Managers. Program and project managers shall: a. Concur on the Program/Project Mishap Preparedness and Contingency Plan (Requirement 44137). c. Provide funding and support for investigations within their program jurisdiction or involving their hardware and facilities	1.3.4	1.3.4 The Program/Project Manager. 1.3.4.1 The Program/Project Manager is responsible for the implementation and funding of the Program/Project MPCP in coordination with applicable Centers' MPCPs and with the appropriate NASA HQ Offices, which include, at a minimum, MDAA, General Counsel, OSMA, OCOM, and OIR, before its final approval. 1.3.4.2 The Program/Project Manager shall develop the Program/Project MPCP and include the content specified in section 1.2. This includes requirements to notify, report, investigate, and record mishaps and close calls that fall within Program/Project jurisdiction.
1.4.8 b.	Program and Project Managers. Program and project managers shall: b. In the event of a mishap or close call at the Center, activate the Program Mishap Preparedness and Contingency Plan	2.1.3	Upon notification of a mishap, the Program/Project Manager shall initiate the Program/Project MPCP.
1.4.8 e.	Program and Project Managers. Program and project managers shall: e. When tasked by the appointing official, develop the Corrective Action Plan (CAP), implement the CAP, support the Center safety office personnel as they verify that the CAP has been completed, and generate the lessons learned	6.1.2	The responsible organization or program/project manager shall, within 15 workdays from being tasked, submit the CAP to the AO for approval and then implementation.
1.4.9 b.	Responsible Organization. The responsible organization shall: b. When tasked by the appointing official, develop the CAP, implement the CAP, support the Center safety office personnel as they verify that the CAP has been completed, and generate the lessons learned	6.1	6.1.1 The AO shall, after the mishap investigation report has been endorsed and at the earliest opportunity, direct the responsible organization or program/project to develop a CAP for those recommendations approved by the AO. 6.1.2 The responsible organization or program/project manager shall, within 15 workdays from being tasked, submit the CAP to the AO for approval and then implementation.
1.4.10 a.-d.; n.	Appointing Official. The appointing official shall: a. Use this NPR to determine the type of investigating authority (i.e., Mishap Investigation Board [MIB], Mishap Investigation Team [MIT], or Mishap Investigator [MI]) that will investigate a mishap or close call or, alternately, whether NASA will accept the investigation and subsequent mishap report of another competent authority that may have jurisdiction b. Determine the level of NASA involvement, if any, when a mishap resulted from the actions of an outside source that was not involved in NASA operations c. Initiate a NASA investigation pursuant to this NPR, when the appointing official believes that a NASA contractor's/grantee's mishap report is not adequate because it failed to reach root cause(s), failed to provide recommendations that prevent recurrence, is not suitably independent, or is in some other way deficient d. Generate a formal memorandum for Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls that communicates the appointment of the investigating authority members, the chairperson, the ex officio, and the advisors. (For Type C mishaps, Type D mishaps, and close calls, the appointment orders can be less formal and communicated via a Center process.) n. If the NTSB performs an investigation, the appointing official shall: (1) Initiate a NASA mishap investigation per this NPR (2) Request that a NASA representative be a party to the NTSB's investigation	3.2.1	The AO shall, for Type A and Type B mishaps and high-visibility mishaps and close calls: a. Within 48 hours of mishap, provide a provisional list of IA appointees to the OSMA Mishap Investigation Program Executive for concurrence. c. Within 7 workdays of mishap, appoint the members of the IA in accordance with Table B and section 3.5 of this NPR with concurrence from NASA Chief/OSMA, Office of the Chief Engineer (OCE), the OCHMO, and AMD when warranted by the undesired outcome. d. Designate the IA chairperson. e. Obtain concurrence from the AMD for Type A and Type B mishaps and high-visibility mishaps and close calls involving aircraft. f. Where applicable, determine if NASA will accept the investigation and subsequent mishap investigation report of another competent authority having jurisdiction.
1.4.10 f.	f. Assign the responsible organization(s)/program(s)/project(s) to develop the CAP, implement the CAP, and generate the lessons learned	6.1.1	The AO shall, after the mishap investigation report has been endorsed and at the earliest opportunity, direct the responsible organization or program/project to develop a CAP for those recommendations approved by the AO.
1.4.10 g.-h.	Appointing Official. The appointing official shall: g. Ensure that the mishap investigation process for the assigned mishap or close call is properly completed h. Verify that the mishap report is reviewed, endorsed, and authorized for public release	5.3.7	The AO shall: a. Serve as final authority for acceptance or rejection of mishap and close call investigation reports in which he or she holds the AO's position. b. Ensure the mishap investigation process is complete. c. Verify the mishap investigation report is reviewed and endorsed. d. Assess the recommendations. Note 1: Recommendations should be assessed in relationship to their effectiveness at reducing the likelihood and consequence of reoccurrence. The AO determines the method most appropriate to perform this assessment. The highest rated recommendations should be considered for endorsement and corrective action, while those rated lower may be deferred or eliminated by the AO. Note 2: The IA may recommend to the AO, at any time during the investigation, that immediate corrective action be taken to ensure the safety of personnel associated with ongoing operations, internal or external to NASA. e. If the AO rejects the mishap investigation report, he or she shall provide a written description of the deficiencies warranting the rejection, and direction going forward. Options include assigning the same IA to re-do part or all of the investigation; or dismissing the original IA and appointing a new IA with instructions in section 3.5; or releasing the IA in favor of a collateral investigation.
1.4.10 k.	Appointing Official. The appointing official shall: k. Release the investigating authority from duty	5.2	5.2 Investigating Authority Release Upon receiving the completed mishap investigation report for Type A and Type B mishaps and high-visibility mishaps and close calls, the AO shall first verify it fulfills the appointment letter and then inform the IA that its responsibilities have been fulfilled.
1.4.10 l.	Appointing Official. The appointing official shall: l. Generate the CAP closure statement and the mishap activities completion statement	6.5.2 6.7.1	6.5.2 The AO shall: a. Assess and, if warranted, approve any changes to the CAP. b. Send approved changes to the responsible organization and the cognizant Safety Office. c. Once corrective actions for Type A and Type B mishaps and high-visibility mishaps and close calls are fulfilled, provide a CAP closure statement to the supporting cognizant Safety Office and responsible organization advising the CAP has been closed. 6.7.1 The AO shall: a. Submit the mishap investigation activities completion statement to the responsible organization, OSMA (for Type A and Type B mishaps and high-visibility mishaps and close calls), the cognizant Safety Office, and other appropriate organizations indicating the investigation was performed; the CAP was implemented, completed, and closed; and the lessons learned were entered into the NASA LLIS (as determined appropriate by Center or mission authorities).
1.4.11 a.	Endorsing Official. a. The endorsing official shall review the mishap investigation report and provide a signed written endorsement, comments, and a recommendation as to whether the mishap report should be approved or rejected	5.3.4	Upon conclusion of the Endorsement Review, the endorsing officials shall sign the Endorsement Review Record, signifying mishap investigation report concurrence or nonconcurrence, and when applicable, provide comments related to concurrence or disagreement with elements of the report.
1.4.11 b.	Endorsing Official. b. This endorsement and any comments shall be attached to the mishap report and become part of the permanent record	5.3.5	The Endorsement Review Record and comments will be attached to the mishap investigation report and become part of the permanent record. b. Sign the completed mishap investigation report for Type A and Type B mishaps and high-visibility mishaps and close calls attesting to the following: Note: Ex officio requirements for Type C and Type D mishaps and close calls will comply with Center or Program policy. (1) The investigation was conducted in conformance with NASA policy and this NPR. (2) The investigation process was impartial, independent, and non-punitive. (3) The mishap investigation report contains all the required elements. (4) The mishap investigation report accurately identifies the proximate causes, root causes, and contributing factors. He or she should verify that the process was followed and the causes were identified and labeled correctly. (5) Adequate facts have been gathered and analyzed to substantiate the findings. (6) Recommendations reasonably address the causes and findings. (7) Each recommendation is associated with or traceable to at least one significant finding
1.4.12 e.-f.	Ex Officio. The ex officio shall: e. Assure that the mishap report contains the proper elements including proximate cause(s), root cause(s), failed barrier(s), and observation(s); sufficient facts/data to support the finding(s) and recommendation(s); and a mishap investigation summary (Requirement 44171). f. Sign the final mishap report demonstrating his/her belief that paragraphs 1.4.12.d-1.4.12.e, and paragraphs 1.7.1.a-1.7.1.l of this NPR have been satisfied or attach a signed written description of the report's deficiencies	5.1.3	
1.4.15 a.	Investigating Authority's Advisors. The advisors shall: a. Attend meetings as needed, travel with the investigating authority as requested, and have access to all investigative material with the exception of witness statements and testimony	3.3.3 b.	The IA Advisors shall: b. Attend meetings as necessary, travel with the IA as requested, and have access to all investigative material. Only the legal and medical advisors may be afforded access to privileged witness statements and interview records.
1.4.21 c.	Interim Response Team (IRT). The IRT shall: c. Preserve evidence, document the scene, identify witnesses, and collect debris	2.1.5 a.	The IRT shall: a. Preserve potential evidence, document the scene, obtain witness statements, and collect debris.
1.4.21 e.	Interim Response Team (IRT). The IRT shall: e. For mishaps at contractor or subcontractor sites, the IRT shall work through the contracting officer, with the guidance from the legal advisor, to obtain and impound data	2.1.6	The IA shall coordinate with the Contracting Officer prior to accessing the site, impounding contractor data, and interviewing contractor personnel as permitted by the contract.

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1.4.21 f. 3.7	<p>Interim Response Team (IRT). The IRT shall:</p> <p>f. Advise the supervisor if drug testing should be requested per the NPR 3792.1, Plan for a Drug-Free Workplace</p> <p>3.7 Initiate Drug Testing</p> <p>If the mishap results in a fatality or personal injury requiring immediate hospitalization, or in damage estimated to be in excess of \$10,000 to government or private property, the supervisor shall initiate post-accident/unsafe practice testing per NPR 3792.1, NASA Plan for a Drug-Free Workplace</p>	2.2.3 c.-d.	<p>c. At the earliest opportunity, advise the supervisor of a federal employee if drug testing should be requested in accordance with NPR 3792.1, Plan for a Drug-Free Workplace.</p> <p>Note: In accordance with NPR 3792.1, the supervisor will initiate drug testing after a mishap if the mishap results in a fatality or personal injury requiring immediate hospitalization or in damages estimated to be in excess of \$10,000 to Government or private property. This applies to federal employees only.</p> <p>d. At the earliest opportunity, notify the Contracting Officer or the Contracting Officer's Representative if drug testing for contract personnel is to be implemented according to the contract or applicable agreements.</p>
1.4.21 h.	<p>Interim Response Team (IRT). The IRT shall:</p> <p>h. Support the AA/OPA (or designee), Center safety office, IRT, and CD or ED/OHO in the release of information to the press and media to alert Center personnel and the public of any known hazards and their potential effects, and provide instructions that will mitigate the risk and harm</p>		<p>The IRT shall:</p> <p>b. Support the release of information to the media by PAO and other offices to alert Center personnel and the public of any known hazards and their potential effects.</p>
Throughout	Center Safety Office	Throughout	Cognizant Safety Office
1.4.23	<p>1.4.23 Center Safety Office. The Center safety office shall:</p> <p>a. Support the development of the Center Mishap Preparedness and Contingency Plan, Program Mishap Preparedness and Contingency Plan(s), contract clauses, mishap investigation training, and a mishap investigation tool repository (that makes tools readily accessible to investigating authorities)</p> <p>b. Develop the Program/Project Mishap Preparedness and Contingency Plans for Programs/Projects as defined by NPR 7120.5 and that their Center manages. Programs with aircraft in the developmental, qualification, or certification phases of the program shall have a Program Mishap Preparedness and Contingency Plan that is tailored for the particular phase of the program.</p> <p>c. Ensure that their Center's employees are familiar with the roles and responsibilities as documented within the Center Mishap Preparedness and Contingency Plan and this NPR</p> <p>d. Implement the Center Mishap Preparedness and Contingency Plan; when applicable, support the program as they initiate the Program Mishap Preparedness and Contingency Plan; and initiate, facilitate, and coordinate all investigation activities per the plan</p> <p>m. Keep an updated list of all Center personnel that have training and experience in mishap investigation including information such as relevant training courses, date of training, recent participation in a mishap investigation, and security clearances</p>	1.3.3	<p>1.3.3 The Cognizant Safety Office.</p> <p>1.3.3.1 The Cognizant Safety Office shall support the development of the Center MPCP, Program/Project MPCPs for programs and projects that have activities at the Center, contract clauses, and mishap investigation training.</p> <p>1.3.3.2 The Cognizant Safety Office shall ensure Center employees are familiar with the roles and responsibilities as documented in the Center MPCP and this NPR, and that IRT and IA personnel complete the training required in section 1.4.</p> <p>1.3.3.3 The Cognizant Safety Office shall review and provide concurrence that all program/project plans include any required program-/project-specific information and procedures not covered in the Center's MPCP (e.g., special procedures for safing, handling, or containing hazardous chemicals present in program or project hardware).</p> <p>1.3.3.4 The Cognizant Safety Office shall maintain an updated list of all Center personnel who have training and experience in mishap investigation including information such as relevant training courses, dates of training, and recent participation in a mishap investigation.</p> <p>1.3.3.5 The Cognizant Safety Office shall forward copies of Center and Program/Project MPCPs to the OSMA Mishap Investigation Program Executive as soon as the plans are approved.</p>
1.4.26 a.	<p>Supervisors. Supervisors shall:</p> <p>a. Notify the Center safety office when a mishap or close call occurs</p>	2.2.1	Supervisors shall notify the cognizant Safety Office when a mishap or close call occurs or is suspected.
1.4.27 a.-b.	<p>All Employees. All employees shall:</p> <p>a. If witness to, or involved in, a NASA mishap or close call, immediately notify both emergency response (e.g., 911, fire, ambulance, Center security office) of the need for assistance and a supervisor, management official, or a safety/health staff member of the circumstance of the mishap or close call</p> <p>b. Complete witness statements prior to leaving the mishap investigation site, to the extent possible</p>	2.1.1	<p>Employees shall:</p> <p>a. Employees who witness or are involved in a workplace injury, illness or property damage event shall notify emergency response (911 or designated emergency contact) of the need for assistance as soon as the safety of personnel permits.</p> <p>Note: Not all NASA mishaps or close calls require local emergency response notification. Situations involving damages to test articles or other items may need to be secured by means other than what the Program/Project/Center organizations can provide.</p> <p>b. Complete witness statements on request of emergency response or IRT personnel.</p>
1.4.29 c.	<p>Contracting Officers. Contracting officers shall:</p> <p>c. Coordinate with the contractor and subcontractor sites to assist the investigating authority in gaining contractor site access, impound contractor data, and interview contractor personnel as permitted by the contract</p>	2.1.6	The IA shall coordinate with the Contracting Officer prior to accessing the site, impounding contractor data, and interviewing contractor personnel as permitted by the contract.
1.4.30	<p>CHMO. The CHMO shall:</p> <p>a. Serve as the appointing official for a mishap involving a human research subject participating in NASA-funded research at a grantee site, or at another offsite location, and obtain the concurrence from the Chief/OSMA on the investigating authority's membership. In these investigations, the investigating authority composition shall include a safety officer that is trained in mishap investigation</p> <p>Note: If the mishap involving a human research subject occurs at a Center, the Center Director will serve as the appointing official per this NPR. For mishaps involving a human research subject the endorsement and authorization for public release processes will remain the same.</p> <p>b. Serve as an endorsing official for Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls involving an injury or fatality</p>	3.1.5	<p>The NASA Office of the Chief Health and Medical Officer (OCHMO) shall:</p> <p>a. Serve as the AO for a Type A mishap involving a human research subject participating in NASA-funded research at a grantee site or at another offsite location.</p> <p>b. Investigate mishaps involving human research subjects, processes, or protocols following these criteria:</p> <p>(1) A Type A mishap resulting in human research subject fatality or multiple life-threatening injuries will be investigated by a board convened by OCHMO in accordance with this NPR.</p> <p>(2) A Type B mishap resulting in a single life-threatening injury to a human research subject shall be investigated by a board convened by OCHMO in accordance with this NPR.</p> <p>Note: Life-threatening injury includes hospitalization with invasive treatment of damaged or failed organs, muscles, joints, or skeletal members. This differs from research done with subjects already hospitalized.</p> <p>(3) A Type C or D mishap resulting in an injury to a human research subject will be investigated by the Institutional Review Board (reference 45 CFR pt. 46.103) approving the human research study.</p>
1.5.3	<p>1.5.3 Notify Office of Safety and Mission Assurance, Safety and Assurance Requirements Division (OSMA/SARD). After emergency response has been initiated, within one hour of the occurrence of a Type A mishap, Type B mishap, high-visibility mishap, or high-visibility close call, the Center safety office shall notify OSMA/SARD by calling 1.202.358.0006, or, if no answer, by calling the NASA Headquarters After Hours Contact Center at 1.866.230.6272</p>	2.2.2	<p>The Cognizant Safety Office shall:</p> <p>a. Notify OSMA. After emergency response has been initiated and within 1 hour of a Type A or Type B mishap or a high-visibility mishap or close call, the cognizant Safety Office shall notify OSMA by calling 1-321-861-2312, or if no answer, by calling the NASA Headquarters After Hours Contact Center at 1-866-230-6272.</p> <p>b. During this notification, provide the following information:</p> <p>(1) Center name.</p> <p>(2) Location of incident.</p> <p>(3) Time of incident.</p> <p>(4) Number of fatalities, if known.</p> <p>(5) Number of hospitalized employees, if known.</p> <p>(6) Type of injury, if known.</p> <p>(7) Type and estimate of damage, if known.</p> <p>(8) Contact person and telephone number.</p> <p>(9) Brief description of the mishap.</p>
3.2	<p>3.2 After emergency response has been initiated, within 1 hour of the occurrence of a Type A mishap, Type B mishap, high-visibility mishap, or high-visibility close call, the Center safety office shall notify Headquarters as described in paragraph 1.5.3 and NPR 7100.1, paragraph 11.4.1 (Per NPR 7100.1, paragraph 11.4.1, this includes immediately reporting a human test subject injury or fatality that resulted in a loss of life, a permanent disability, hospitalization, extensive first aid, or lost workday(s))</p>		
3.11.1	<p>3.11.1 For Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls, the Center safety office shall send an electronic notification to OSMA/SARD containing information found in paragraph 1.5.3.2 of this NPR</p>		
1.5.3 b.	<p>Per NPR 7100.1, paragraph 11.4.1, this includes immediately reporting a human test subject injury or fatality that resulted in a loss of life, a permanent disability, hospitalization, extensive first aid, or lost workday[s]</p>	2.2.2 d.	<p>The Cognizant Safety Office shall:</p> <p>d. Within 1 hour, report a human test subject injury that results in a loss of life, permanent disability, hospitalization, first aid, or lost workdays in accordance with NPR 7100.1, Protection of Human Research Subjects, ch. 7.</p>
1.5.4-1.5.4.3	<p>1.5.4 Notify OSHA. Within 8 hours of a work-related mishap involving death of a Federal employee, or the hospitalization for inpatient care of three or more employees (provided at least one is a Federal employee), the Center safety office shall notify OSHA by calling the area office nearest the site of the mishap or OSHA's toll-free number, 1.800.321.6742.</p> <p>1.5.4.1 OSHA notification is required for any fatality or three or more hospitalizations that occur up to 30 workdays after the respective mishap.</p> <p>1.5.4.2 The Center safety office shall persist in making contact with OSHA to provide this report until OSHA has acknowledged receipt of the report.</p> <p>1.5.4.3 In notifying OSHA, the Center safety office shall provide OSHA with the following information: the establishment name, location of incident, time of incident, number of fatalities (if known), number of hospitalized employees (if known), contact person, contact person's phone number, and a brief description of the mishap</p>	2.2.2 e.	<p>The Cognizant Safety Office shall:</p> <p>e. Report to the Occupational Safety and Health Administration (OSHA) in accordance with 29 CFR pt. 1904.</p>
1.5.6	<p>1.5.6 Report Criminal Activity Associated with NASA Mishaps to the Office of Inspector General (OIG) and to either the Office of the General Counsel or Center Chief Counsel.</p> <p>1.5.6.1 The OIG and the Center's Office of the Chief Counsel or the NASA Office of the General Counsel shall be notified if it is suspected that a mishap resulted from criminal activity</p>	2.5.2	<p>The NASA Office of Inspector General (OIG) and the Center's Office of the Chief Counsel or the NASA Office of the General Counsel shall be notified of information potentially related to criminal activity in connection with a mishap.</p>
1.6.1-1.6.5	<p>1.6.1 NASA employees shall report immediately to the Center safety office any of the aircraft mishaps or anomalies described in Figure 3, paragraph 1.2, and paragraph 1.6.2 of this NPR</p> <p>1.6.2 Employees shall report unexpected aircraft departure from controlled flight for all aircraft except the following high performance jet/test aircraft which can experience departure from controlled flight when engaged in flight test activities: F-15, F-16, F/A-18, T-38, OV-10, and T-34 (Requirement 44295). These aircraft are exempt because it is a common occurrence for a high performance jet/test aircraft that does dynamic maneuvering to depart from controlled flight.</p> <p>1.6.3 Immediately after the occurrence of an aviation mishap or NTSB-defined mishap or close call, the Center aircraft operator shall provide all the information listed in Figure 4 to the Center safety office and the Center Chief of Aircraft Operations.</p> <p>1.6.4 The Center safety office shall notify OSMA/SARD and AD of any aircraft mishap or close call as listed in paragraph 1.6.2 and Figure 3 of this NPR.</p> <p>Note: Figure 3 and paragraph 1.6.2 are NTSB reporting requirements. Consequently, this requirement is in addition to reporting all aircraft-related Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls to the OSMA/SARD.</p> <p>1.6.5 The Center safety office shall ensure that for aircraft mishaps and close calls all information listed in Figure 4 of this NPR (with the exception of the pilot's name) is entered in IRIS</p>	2.3.1	<p>Employees shall immediately, and by the most expeditious means available, report an aircraft mishap or close call, including an NTSB-defined accident (defined in 49 CFR pt. 830.5), to the cognizant Safety Office and the Center Chief of Flight Operations and provide the information required under 49 CFR pt. 830.6.</p>
1.7.1 l.	l. Conclusions and recommendations	Table D m.	m. Findings and recommendations

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<p>1.8.1 1.8.4 3.11.2</p>	<p>Within 24 hours, the Center safety office shall ensure that all NASA mishaps and close calls are recorded in IRIS and include the following information: Center submitting report; author of report; author's phone number and mail code; date report submitted; time report submitted; incident date; incident time; incident general location; exact location (if known); responsible organization; organization's point of contact; point of contact's phone number and mail code; mission affected; program impact (if known); number and type of injuries or fatalities (if known); type of damage to equipment, flight hardware, flight software, or facilities; estimate of direct cost of damage; and a brief description of the mishap or close call</p> <p>3.11.2 Within 24 hours, the Center safety office shall ensure that all NASA mishaps and close calls are recorded in IRIS in accordance with paragraph 1.8.1 of this NPR</p>	<p>2.5.3.1 a.</p>	<p>The Cognizant Safety Office shall: a. Within 24 hours of notification, ensure all NASA mishaps and close calls are initially recorded in NMIS and are updated throughout the investigation.</p>
<p>1.9.2 5.9</p>	<p>1.9.2 The investigating authority shall not distribute witness statements, notes, or transcripts of witness testimony taken during interviews, or medical records to the collateral investigation board or any other Agency, unless ordered in a court of law.</p> <p>5.9 When and How to Turn Over for Criminal Investigation If it is reasonably suspected that a mishap resulted from criminal activity, the investigating authority shall halt the investigation; notify immediately the OIG and the Office of the General Counsel or the Office of the Chief Counsel, as appropriate; notify the appointing official; and wait for further direction. (The safety investigation should be completed regardless of the initiation of collateral investigations.)</p>	<p>3.2.5 h. 4.3.2 b.</p>	<p>3.2.5 The IA Chairperson shall: h. With the IA legal advisor assistance, refer allegations and evidence of criminal activity identified in the course of an investigation to the OIG and General/Chief Counsel. Privileged witness statements will be protected to the extent provided by law and all OIG requests for privileged information should be processed through NASA HQ. 4.3.2 b. NASA shall make every effort to keep the witness statements privileged to the greatest extent permitted by law.</p>
<p>1.9.3</p>	<p>In an unusual case, the MIB chair shall release privileged witness testimony and related material to the OIG upon receipt of a written request that is signed by the Inspector General or Deputy Inspector General, addressed to the NASA Administrator or Deputy Administrator, and forwarded to the MIB chair from the Administrator's office</p>	<p>4.7.2</p>	<p>The IA chairperson shall only release privileged witness statements and related material to the OIG upon receipt of a written request signed by the Inspector General or Deputy Inspector General, addressed to the NASA Administrator or Deputy Administrator, and forwarded to the IA chairperson from the Administrator's office.</p>
<p>1.10.5.1</p>	<p>A contractor onsite injury or illness that is classified as a Type C mishap, Type D mishap, or Close Call may be investigated by the contractor per their contract. The mishap report must be delivered to NASA, and NASA has the option of completing the endorsement process.</p>	<p>3.2.1 Note</p>	<p>3.2.1 The AO shall, for Type A and Type B mishaps and high-visibility mishaps and close calls: Note: For Type C and Type D mishaps and close calls, IA appointment is documented in the MPCP.</p>
<p>2.1.1 c.-e.</p>	<p>The AA/OIA and each CD shall develop a Center Mishap Preparedness and Contingency Plan that describes the following: c. Management responsibilities for establishing mishap investigations. d. Procedures to appoint an IRT for those mishaps and close calls that are not covered by a program/project Mishap Preparedness and Contingency Plan (i.e., facility mishaps and close calls). e. Procedures to appoint a MIT or MI for Type C mishaps, Type D mishaps, and close calls that occur at the Center or involve programs/projects/activities managed by the Center.</p>	<p>1.2.1 b., g., i.</p>	<p>1.2.1 Mishap Preparedness and Contingency Plans (MPCPs) should address the following elements: b. Organizational responsibility for establishing mishap investigations. g. Procedures to deploy an IRT. Note: A NASA federal employee will serve as IRT lead (cognizant safety representative) and impound coordinator, and will initiate collection of witness statement documentation. Even as these duties may not require immediate presence at the mishap scene, they nevertheless include accountability for collected and preserved evidence. i. The appointment of an IA—a Mishap Investigator (MI), Mishap Investigation Team (MIT), or Mishap Investigation Board (MIB).</p>
<p>2.1.1 g.-j.</p>	<p>g. Procedures to impound appropriate records and equipment that may be involved in the mishap to prevent unauthorized use or modification. h. List of responsible organizations, along with Center safety office personnel, that shall take immediate action to safeguard (or impound) appropriate records, equipment, and facilities and secure the mishap site. i. Identification of the location or space where impounded data, records, and equipment shall be stored and secured during an investigation. j. Procedures for release of impounded data, records, equipment, facilities, and the mishap site.</p>	<p>1.2.1 h.</p>	<p>h. The impoundment process for records and equipment that may be involved in the mishap including: (1) A list of organizations authorized to impound such evidence and secure onsite at a Center and offsite mishap locations. (2) The location where impounded data, records, and equipment, including electronic media, are stored and secured during an investigation of either onsite at a Center or offsite mishaps. (3) Steps for release of impounded data, records, equipment, facilities, and mishap site.</p>
<p>2.1.1 l.-m.</p>	<p>l. List of potential contractor support and onsite experts that can facilitate the immediate acquisition or purchase of products needed by the investigation board or team (e.g., high resolution cameras, recording devices, software, and others). m. The mandatory schedule for mishap simulations that include simulation of accident investigation procedures as described in this NPR, the Center Mishap Preparedness and Contingency Plan, and the Program Mishap Preparedness and Contingency Plan.</p>	<p>1.2.1 l., e.</p>	<p>l. Access to support and experts who can facilitate the immediate support, acquisition, or purchase of products needed by the IRT or IA (e.g., high-resolution cameras, recording devices, software, and others). e. The frequency interval for mishap response simulations covered by the Center MPCP and the Program/Project MPCP.</p>
<p>2.1.1 p.-q.</p>	<p>p. Description of the "chain of custody process" that will be used to secure and safeguard personnel effects and sensitive information related to injured or deceased individuals. q. The expiration date.</p>	<p>1.2.1 o.-q., a.</p>	<p>o. Center Director (CD) or Executive Director, Office of Headquarters (HQ) Operations (ED/OHO) next of kin notification regarding fatalities and injuries. p. Only the Johnson Space Center CD will do astronaut next of kin notification. q. Headquarters Office of Communications (OCOM) notification of the public for casualties, performed in accordance with local CD or ED/OHO protocols, involving NASA employees or military and other Federal personnel, including astronauts, detailed to NASA. a. An expiration date not to exceed 5 years from the effective date.</p>
<p>2.2.1 f.</p>	<p>2.2.1 The program/project manager shall concur in a Program/Project Mishap Preparedness and Contingency Plan that: f. Describes any special procedures for the emergency response personnel, the IRT, and the incident commander that are not covered in the Center Mishap Preparedness and Contingency Plan or the emergency response plan (e.g., identification and handling of hazardous commodities specific to the program)</p>	<p>1.2.3 a.</p>	<p>1.2.3 Program/Project MPCPs should address the following elements in addition to those listed in section 1.2.1: a. Special procedures for emergency response personnel and the program/project IRT that are not covered in the Center MPCP or Center Emergency Management Plan (e.g., identification and handling of hazardous materials unique to the project).</p>
<p>2.2.2 2.2.3 2.2.4 2.2.5</p>	<p>2.2.2 The program/project manager shall have the appropriate NASA Offices, at a minimum, General Counsel, OPA, OER, OSMA, and Centers (all Centers at which the program/project has activities) review and comment on the Mishap Preparedness and Contingency Plan prior to its approval. 2.2.3 The program manager (or designee) shall provide the Program Mishap Preparedness and Contingency Plan to OSMA/SARD for compliance review at least three weeks prior to the Safety and Mission Success Review. 2.2.4 The program manager shall submit the Program Mishap Preparedness and Contingency Plan to the Chief/OSMA for concurrence two weeks prior to the Program SMSR. 2.2.5 The program or project (as defined per NPR 7120.5) Safety and Mission Assurance representative shall review and approve the Mishap Preparedness and Contingency Plan, verifying that it has the content required per this NPR (NPR 8621.1), prior to submittal for signature.</p>	<p>1.3.4.1</p>	<p>1.3.4.1 The Program/Project Manager is responsible for the implementation and funding of the Program/Project MPCP in coordination with applicable Centers' MPCPs and with the appropriate NASA HQ Offices, which include, at a minimum, MDA, General Counsel, OSMA, OCOM, and OIR, before its final approval. Note: Program approval of NASA space flight Program/Project MPCPs is required prior to each project's applicable readiness review as defined in NPR 7120.5.</p>
<p>2.5.1</p>	<p>2.5.1 Contracting officers shall include appropriate mishap and close call notification, reporting, recording, and investigation procedures in NASA contracts</p>	<p>1.3.5.1</p>	<p>1.3.5.1 The Office of Procurement is responsible for incorporating applicable mishap and close call reporting and investigating procedures and corrective action requirements detailed in the NFS 1852.223-70 Safety and Health into contracts, agreements, and grants covering NASA programs and operations.</p>
<p>2.5.2</p>	<p>2.5.2 The Center safety office shall involve itself in acquisition strategy meetings per NFS Part 1807, Acquisition Planning, to assure that the appropriate mishap and close call reporting, investigating, and evaluation criteria are incorporated into contracts</p>	<p>1.3.5.2</p>	<p>1.3.5.2 The Office of Procurement shall consult the cognizant Safety Office in the acquisition strategy planning activities for proposed contracts as detailed in NASA Federal Acquisition Regulation (FAR) Supplement (NFS) pt. 1807, Acquisition Planning.</p>
<p>2.6.1 a.-b.</p>	<p>2.6.1 The Chief/OSMA with the support of the Center safety office shall provide the necessary training to ensure that at least one member of each investigating authority and the ex officio has, at a minimum, the following: a. Knowledge of the NASA mishap investigation policy and process as demonstrated via test. Note: The NASA "Introduction to Mishap" course provides the training to meet this requirement. b. Knowledge and skills to secure the site; preserve the mishap scene; interview witnesses; collect and impound data, records, equipment and facilities; create time lines; document facts; generate fault trees; perform barrier analysis; perform change analysis; create event and causal factor trees; obtain forensic analysis; integrate evidence; draw conclusions; generate recommendations; and generate mishap reports</p>	<p>1.4.2.1 1.4.2.2</p>	<p>1.4.2.1 All IA members shall have completed training in and been tested on the NASA mishap investigation policy and process. Note: The series of NASA online courses meets this requirement: SMA-002-07 Overview of Mishap Investigations; SMA-002-008 Mishap Investigation Roles and Responsibilities; SMA-002-009 Completing the Investigation and Mishap Report; SMA-002-11 Interim Response Team Training, and SMA-002-10 Introduction to Root Cause Analysis (within the last 2 years). 1.4.2.2 At least one voting member and the ex officios shall have completed training in: a. The content of this NPR. b. Conducting witness interviews. c. Creating timelines; documenting facts; generating fault trees; performing barrier analysis; conducting change analysis; creating event and causal factor trees; obtaining forensic analysis; integrating evidence; determining findings; generating recommendations; and producing mishap investigation reports.</p>
<p>2.6.2</p>	<p>2.6.2 The Chief/OSMA, with the support of the Center safety office, shall provide the necessary training to ensure that the human factors mishap investigator has the following: a. At a minimum, knowledge (as demonstrated via test or on-the-job training) of the method to identify unsafe acts and errors, identify types of errors, identify causal and contributing factors for errors, identify performance shaping factors, interview witnesses, analyze data, create timelines, perform fault tree analysis, perform barrier analysis, create event and causal factor trees, draw conclusions, and generate recommendations that will reduce human error or mitigate the negative consequence of human actions. b. Basic knowledge of physical and psychological processes, capabilities, skill levels, and limitations of humans, such as the science and practical application of cognitive psychology, human reliability, anthropometrics, biomechanics, and human factors engineering applications to design.</p>	<p>1.4.2.3</p>	<p>1.4.2.3 Human Factors members and ex officios shall have completed training in: a. Human Factors Mishap Investigation Principles and Practices. Note: The online course SMA-001-07 Introduction to Human Factors in Mishap and Close Call Investigation meets this requirement for all IA members except Human Factors investigator and ex officio. Classroom training SMA-SAFE-OSMA-4004 Human Factors in Mishap Investigation, or degree equivalent, is also required for Human Factors members and ex officio (refer to b.). b. Basic knowledge of physical and psychological processes, capabilities, skill levels, and limitations of humans, such as the science and practical application of cognitive psychology, human reliability, anthropometrics, biomechanics, and human factors engineering applications to design. Note: SMA-SAFE-OSMA-4004 Human Factors in Mishap Investigation (within the last 5 years) meets this requirement. The Agency Mishap Investigation Program Executive or assignee may approve educational study or degree in Human Factors as equivalent</p>
<p>3.1.2</p>	<p>3.1.2 Upon notification of a mishap, the Center safety office shall initiate the Center Mishap Preparedness and Contingency Plan</p>	<p>2.1.2 a.</p>	<p>2.1.2 The Cognizant Safety Office shall: a. Upon notification of a mishap or close call that triggers the initiation of the MPCP (as defined in the applicable MPCP), initiate the Center MPCP and support the program/project as the Program/Project MPCP is initiated.</p>

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<p>3.1.4 In accordance with the Center Mishap Preparedness and Contingency Plan, the incident commander, with support from the responsible organization, IRT, Center safety office, Center security office, emergency response personnel, and supervisor, shall take immediate action to prevent further injury to personnel and/or damage to any property and secure the site</p> <p>3.1.4 3.5.1</p>	<p>2.1.4</p>	<p>2.1.4 The Center Office of Protective Services (OPS) shall support the incident commander, cognizant Safety Office, and IRT in securing the site and impounding data, records, equipment, and facilities.</p>
<p>3.3 Deploy IRT In accordance with the Center or program/project Mishap Preparedness and Contingency Plan, the Center safety office or other designee shall deploy the IRT to initiate and support the investigation until a determination can be made as to the need for, and selection of, an investigating authority</p> <p>3.3</p>	<p>2.1.2 b.</p>	<p>2.1.2 The Cognizant Safety Office shall: b. Deploy the IRT to support the investigation in accordance with the Center or Program/Project MPCP.</p>
<p>3.5.3 In the event that a fatality occurred, a Federal employee that is part of the IRT (preferably a medical professional) or the physician that serves as a member of the investigating authority shall coordinate and consult with the Office of General Counsel and the coroner or medical examiner to determine medical jurisdiction and arrange for forensic analysis (i.e., autopsy)</p> <p>3.5.3</p>	<p>1.2.1 n.</p>	<p>1.2.1 Mishap Preparedness and Contingency Plans (MPCPs) should address the following elements: n. Medical jurisdiction for fatalities that may occur on NASA property. Note 1: NASA Office of the General Counsel and local coroner may need to be consulted to determine jurisdiction and arrangements for forensic analysis. Note 2: Certain religious denominations forbid autopsies.</p>
<p>3.6.1 The Center safety office, with the support of the IRT, Center security office personnel, and supervisor, shall impound all appropriate data, records, equipment, and facilities that may be involved in the mishap to prevent their unauthorized use or modification</p> <p>3.6.1</p>	<p>2.1.5 d.</p>	<p>2.1.5 The IRT shall: d. Collect and impound, with cognizant Safety Office, supervisors, and OPS support, appropriate data, records, equipment, witness statements, and facilities that may be involved in the mishap.</p>
<p>3.6.2 The Center safety office shall control access to all impounded items until they are released by the investigating authority per the procedures in the Center Mishap Preparedness and Contingency Plan</p> <p>3.6.2</p>	<p>4.2.1</p>	<p>4.2.1 After arriving at the mishap site, the IA shall: b. Confirm evidence has been preserved and impounded, which includes the following: (1) Relevant perishable evidence has been collected, photographed, and documented or impounded or both. (2) All necessary data, records, and equipment have been impounded and stored in a secure site. c. Take custody of all evidence gathered at the scene and all data pertaining to the investigation including impounded records; determine the status of impounded records and equipment; and develop a record of the actions taken by the IRT, the cognizant Safety Office, emergency response, and protective services personnel.</p>
<p>3.8 Collect Witness Statements a. All written witness statements obtained within the first 24 hours of the occurrence of a mishap or close call shall be considered privileged and protected (Requirement 44455). Where possible, written witness statements should be collected on a NASA form that includes the statement of privilege as shown in Figure 6.</p> <p>3.8 a.</p>	<p>2.1.5 a. Notes 1 and 2</p>	<p>2.1.5 The IRT shall: a. Preserve potential evidence, document the scene, obtain witness statements, and collect debris. Note 1: Written witness statements obtained within the first 24 hours of a mishap or close call are privileged and protected if collected by a federal employee. If needed, federal employee IRT members can also grant privilege anytime thereafter. Note 2: Where possible, written witness statements should be collected on a NASA form that includes the statement of privilege (Figure 1).</p>
<p>b. All verbal witness statements and written statements given after 24 hours as part of a NASA mishap investigation, where the witness was explicitly informed that his/her account will not be released, shall be considered privileged and protected</p> <p>3.8 b.</p>	<p>2.1.5 a. Note 3</p>	<p>Note 3: Written and verbal witness statements given after 24 hours of a mishap or close call as part of a NASA mishap investigation, where witnesses are informed their accounts will not be released, are privileged and protected.</p>
<p>3.8 Collect Witness Statements c. When privilege has been granted by the IRT, Center safety office, or investigating authority, NASA shall make every effort to keep witness testimony (both written and verbal) confidential and privileged to the greatest extent permitted by law. This privileged information will be strictly limited to only the information provided directly by the witness for the safety investigation.</p> <p>3.8 c.</p>	<p>3.2.5 h. 4.3.2 b.</p>	<p>h. With the IA legal advisor assistance, refer allegations and evidence of criminal activity identified in the course of an investigation to the OIG and General/Chief Counsel. Privileged witness statements will be protected to the extent provided by law and all OIG requests for privileged information should be processed through NASA HQ.</p>
<p>d. The witness shall not be given a copy of the privileged written statement or transcripts of verbal witness statements given in the course of a NASA mishap investigation. (If witness statements or transcripts of witness testimony are provided to a witness, NASA cannot ensure that it remains privileged and confidential.)</p> <p>3.8 d.</p>	<p>2.1.5 b.</p>	<p>3.2.5 The IA Chairperson shall: b. Refrain from giving witnesses a copy of privileged written statements or transcripts of verbal witness statements. If witness statements or transcripts of witness statements are provided to witnesses, NASA cannot ensure privilege and confidentiality.</p>
<p>e. The Center safety office, with the support of the IRT, shall either request initial written statements from all persons who were involved in or witness to the mishap or document verbal accounts from such persons</p> <p>3.8 e.</p>	<p>2.1.2 c.</p>	<p>2.1.2 The Cognizant Safety Office shall: c. Assist the IRT with the collection of witness statements</p>
<p>f. Before a verbal witness statement is taken or an interview begins, the IRT, Center safety office, or investigating authority shall tell the witness whether the information gathered during the interview is confidential and privileged or not confidential and not privileged</p> <p>3.8 f.</p>	<p>4.3.1 d.</p>	<p>4.3.1 The IA shall: d. Before an interview begins, inform the interviewee if the information to be gathered during the interview is privileged.</p>
<p>g. When conducting privileged witness interviews, the NASA investigating authority shall only have Federal employees present at the interview (with the exception of the interviewee), unless a contractor has been hired specifically to support interviews or provide technical guidance to the Board during the interviews and has signed a nondisclosure agreement prepared by General Counsel prior to participating in the interviews</p> <p>3.8 g.</p>	<p>4.3.1 b.</p>	<p>4.3.1 The IA shall: b. When conducting privileged witness interviews, permit only federal employees to be present at an interview with the exception of the interviewee and contractors hired specifically to support interviews.</p>
<p>h. When it is expected that an external investigating body will be the sole mishap investigation authority (e.g., for catastrophic vehicle failure such as Space Shuttle or International Space Station loss, or airplane loss), NASA shall not grant privilege to witnesses for either written witness statements or verbal witness statements, even when those statements are taken within the first 24 hours after the mishap</p> <p>3.8 h.</p>	<p>2.1.5 a. Note 4</p>	<p>Note 4: NASA will not grant privilege to witnesses for written or verbal witness statements when an external investigating body is expected to be the sole mishap IA (e.g., catastrophic aerospace vehicle failure or airplane loss).</p>
<p>i. When the IRT, Center safety office, or investigating authority decides to take a verbal statement or interview a witness and keep that witness interview confidential, the interviewer shall read the statement in Figure 6 of this NPR and inform the witness that: (1) The oral statement (taken during interview) and/or written statement will be retained as part of the investigation report background files but will not be released as part of the mishap report. (2) NASA will make every effort to keep the testimony privileged to the greatest extent permitted by law.</p> <p>3.8 i.</p>	<p>4.3.2</p>	<p>4.3.2. In the event the IA decides to conduct an interview in which the discussion is kept privileged, the interviewer shall read the statement in Figure 1 of this NPR and inform the interviewee of the following provisions: a. The witness oral or written statement will be retained as part of the investigation report background files, but will not be released as part of the mishap investigation report. b. NASA shall make every effort to keep the witness statements privileged to the greatest extent permitted by law</p>
<p>3.9.1.2 The CD or ED/OHO shall coordinate release of all information to the press and the public via the Center PAO</p> <p>3.9.1.2</p>	<p>2.2.5.2 b.</p>	<p>2.2.5.2 The AA/OCOM, or designee, shall: b. As warranted and with the assistance of the cognizant Safety Office, IRT, and CD or ED/OHO, release interim public affairs status reports about the investigation to the media through the Center Public Affairs Office (PAO).</p>
<p>3.9.1.3 The Center PAO shall, as appropriate, disseminate any preliminary information, video, and imagery to the public relating to the mishap</p> <p>3.9.1.3</p>	<p>2.2.5.3 a.</p>	<p>2.2.5.3 The Center PAO shall: a. Prior to the appointment of an IA and in coordination with AA/OCOM as warranted, identify and disseminate any preliminary information, video, and imagery related to the mishap that is suitable for public release.</p>
<p>3.9.3.1 NASA Employee Casualties. When a NASA employee is killed or receives a permanent disability within the confines of a Center, the Center PAO shall promptly announce to the public that a mishap has taken place and injuries or fatalities have occurred</p> <p>3.9.3.1</p>	<p>2.2.5.3 b.</p>	<p>2.2.5.3 The Center PAO shall: b. When a fatality or injury (permanent disability) has occurred to a NASA employee involved in a Center work-related activity, coordinate with AA/OCOM and then promptly announce the incident to the public.</p>
<p>3.9.3.1 NASA Employee Casualties. a. In the case of a fatality, the CD or ED/OHO or appropriate Headquarters Official-in-Charge, shall ensure that notification of the family has been made prior to release of the victim's name. b. All initial announcements shall include what is known at the time, including the injuries or fatalities that have occurred and when additional information is expected to be available. c. In the case of fatalities, release of the victim's name(s) shall be made as soon as possible after the notification of the next of kin</p> <p>3.9.3.1 a.-c.</p>	<p>2.2.5.4</p>	<p>2.2.5.4 The CD or ED/OHO shall ensure that: a. In the case of Federal fatalities, release of victim names will be made through Center PAO at the earliest possible time after CD or ED/OHO, and AA/OCOM concurrence that next of kin notification has been accomplished with CD or ED/OHO protocols. b. Initial announcements should include what is known at the time, the injuries or fatalities that have occurred, and when additional information is expected to be available.</p>
<p>3.9.3.3 Contractor and Grantee Employee Casualties. NASA does not assume responsibility for the release of information concerning mishaps involving contractor or grantee employees, except as follows: a. When a Type A mishap or Type B mishap occurs on a Center or at Headquarters or involves a NASA-managed program managed by that Center, the CD or ED/OHO, in coordination with the Center PAO/Headquarters PAO, shall announce as soon as possible that a mishap has occurred, as well as the number of known fatalities and/or injured. b. The CD or ED/OHO shall not announce the identity of contractor or grantee personnel involved. c. When a mishap occurs at a contractor's/grantee's plant engaged in NASA work, NASA has no responsibility to release information concerning the mishap and shall not issue statements as to the cause and extent of injury or damage.</p> <p>3.9.3.3</p>	<p>2.2.5.5</p>	<p>2.2.5.5 Resident contractor and grantee employee casualties. NASA does not assume responsibility for the release of information concerning mishaps involving resident contractor or grantee employees except when a Type A injury or illness mishap occurs onsite at a Center or at HQ or involves a NASA-managed program administered by that Center. In this instance, the CD or ED/OHO, in coordination with the Center PAO and HQ OCOM, shall announce within 1 hour that a mishap has likely occurred and, at the earliest possible time, the specific facts regarding the injury or illness. Note: Neither the CD nor the ED/OHO will announce the identity of non-NASA personnel involved.</p>
<p>3.9.3.5 Overseas Mishaps. When a Type A mishap or Type B mishap occurs overseas, for example, at a tracking station or during an overseas rocket or balloon campaign involving NASA personnel, the Official-in-Charge shall release mishap information through the U.S. consular office in accordance with policies and procedures established by that office. a. If the program involves foreign participation, the release of information shall be coordinated with the foreign entities sponsoring and participating in the program. b. The Official-in-Charge shall notify, by the most expeditious means, the Chief/OSMA and the appropriate MDAA that a mishap has occurred overseas. c. The MDAA shall notify, by the most expeditious means, the AA that a mishap has occurred overseas. d. The AA shall immediately notify the Administrator, the Deputy Administrator, the AA/OPA; the Assistant Administrator, Office of External Relations; the Office of the General Counsel, as well as other appropriate staff that a mishap has occurred overseas</p> <p>3.9.3.5 a.-d.</p>	<p>2.2.4.2 2.2.4.3 2.2.4.4</p>	<p>2.2.4.2 When a Type A or Type B mishap occurs outside the United States, for example, at a tracking station or during an aircraft, rocket, or balloon launch operation involving NASA personnel, the official in charge, in coordination with the AA/OCOM and the AA/OIIR, shall release factual details, limited to the same details outlined in this NPR, through the U.S. Embassy or Consular Office in the locale of the mishap, in accordance with policies and procedures established by that office. 2.2.4.3 The MDAA shall notify, by the most expeditious means, the Associate Administrator (AA) that a mishap has occurred on foreign territory or in international waters. 2.2.4.4 The AA shall notify, by the most expeditious means, the Administrator; the Deputy Administrator; AA/OCOM; the Office of the General Counsel; and other appropriate staff that an international mishap has occurred.</p>
<p>3.10 Notify OSHA 3.10.1 Within 8 hours of a work-related mishap involving death of a Federal employee, or the hospitalization for inpatient care of three or more employees (provided at least one is a Federal employee), the Center safety office shall notify OSHA per paragraph 1.5.4 of this NPR. 3.10.2 OSHA notification is required for any fatality and for three or more hospitalizations for inpatient care that occur up to 30 workdays after the respective mishap.</p> <p>3.10</p>	<p>2.2.2 e.</p>	<p>2.2.2 The Cognizant Safety Office shall: e. Report to the Occupational Safety and Health Administration (OSHA) in accordance with 29 CFR pt. 1904.</p>

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4.1.1	4.1.1 The Chief/OSMA or the AA shall contact the Administrator within 1 hour of the initial notification of the Type A mishap to determine if the Administrator wishes to exercise appointment authority	3.1.1 a.	3.1.1 The Administrator shall: a. Serve as the AO for Type A mishaps or delegate authority to the AA, MDAA, CD, or other designee (see section 3.1.5 for exceptions regarding mishaps involving human test subjects).
4.1.2	4.1.2 Within 48 hours of a mishap or close call, the appointing official, as specified in Figure 5, shall appoint the investigating authority		
4.1.2	4.2.6 For Type C mishaps, Type D mishaps, and close calls, the CD or ED/OHO, or designee, shall seek advice concerning investigating authority membership from the Center safety office.	3.2.1 a.	3.2.1 The AO shall, for Type A and Type B mishaps and high-visibility mishaps and close calls: Note: For Type C and Type D mishaps and close calls, IA appointment is documented in the MPCP. a. Within 48 hours of mishap, provide a provisional list of IA appointees to the OSMA Mishap Investigation Program Executive for concurrence.
4.2.6	a. The MDAA [or designee] shall seek advice concerning investigating authority membership from OSMA/SARD for NASA Type C mishaps, Type D mishaps, and close calls that involve Mission Directorate programs/projects/activities where the mishaps or close calls have occurred outside the Center's gates and are not managed by a Center, program, or project		
4.2.1	4.2.1 The appointing official shall select the members of the investigating authority, the chairperson, the executive secretary (when needed), and the support staff.		
4.2.2	4.2.2 The MDAA shall request concurrence from the Chief/OSMA and the Chief Engineer on the proposed MIB membership for Type A mishaps, high-visibility mishaps, and high-visibility close calls in which he/she is the appointing official.	3.2.1 c.-d.	3.2.1 The AO shall, for Type A and Type B mishaps and high-visibility mishaps and close calls: c. Within 7 workdays of mishap, appoint the members of the IA in accordance with Table B and section 3.5 of this NPR with concurrence from NASA Chief/OSMA, Office of the Chief Engineer (OCE), the OCHMO, and AMD when warranted by the undesired outcome. d. Designate the IA chairperson.
4.2.3	4.2.3 For Type A mishaps and Type B mishaps, the investigating authority membership shall be determined with the advice of the Office of the General Counsel or the Office of the Chief Counsel, as appropriate.		
4.2.4	4.2.4 For Type A mishaps and Type B mishaps, high-visibility mishaps, and high-visibility close calls involving aircraft, the investigating authority membership shall be determined with the advice of the AD.		
4.2.5	4.2.5 The Chief/OSMA shall concur with the selection of MIB membership for Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls		
4.2.7 a.	4.2.7 The appointing official shall use the following requirements to determine the composition of the investigating authority: a. All members of the investigating authority (including the chairperson) and the executive secretary must be Federal personnel.	3.2.1 g. (1)	g. Compose the IA following these requirements: Note: Refer to Table C for breakdown of IA functions by mishap classification. (1) IA members and the executive secretary shall be Federal personnel.
4.2.7 b.-c., h.-i.	b. The severity and complexity of the mishap to be investigated shall dictate the total number of members. c. The investigating authority shall consist of an odd number of voting members (including the chairperson). h. The MIB and MIT shall be composed of a chairperson, members, and an ex officio. i. The MIB shall have at least five members for a Type A mishap and at least three members for a Type B mishap. (1) The number of MIB members for high-visibility mishaps and high-visibility close calls shall be determined by the appointing official.	3.2.3 a.-b.	3.2.3 The IA composition shall: a. Consist of an odd number of voting members including the chairperson, members, and, when required, an ex officio, at a minimum. b. Have at least five members for Type A mishaps and at least three members for Type B mishaps and high-visibility incidents.
4.2.7 d.-f.	d. The majority of the members of the investigating authority shall be independent from (have no responsibilities for) the operation or activity. e. Members and the chairperson shall have the requisite security clearances as identified in the Center and/or program/project Mishap Preparedness and Contingency Plans. f. The chairperson for the investigating authority shall be independent of the program or facility that experienced the mishap or close call	3.2.1 g. (2-3)	g. Compose the IA following these requirements: Note: Refer to Table C for breakdown of IA functions by mishap classification. (2) The majority of IA members shall be independent from or have no responsibility for the operation or activity associated with the mishap or close call. (3) IA members, the executive secretary, advisors, and consultants shall have the requisite security clearances as identified in the Center or Program/Project MPCPs.
4.2.7 k.	k. For all Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls involving aircraft, the MIB shall have a member knowledgeable in aircraft operations, a member knowledgeable in aircraft maintenance, and a member knowledgeable in aviation safety	3.2.3 c.	c. Have a member knowledgeable in aircraft operations and maintenance or a member knowledgeable in aviation safety for all Type A and Type B mishaps and high-visibility mishaps and close calls involving aircraft.
4.2.7 l.	l. The MIB and MIT shall include a safety officer and a human factors mishap investigator as members	3.2.3 d.	d. For Type A and Type B mishaps and high-visibility mishaps and close calls, include a safety and a human factors professional as members.
4.2.7 n.	n. The investigating authority shall have at least one member that has completed all the NASA mishap investigation training listed in paragraph 2.6.1.a in the last 12 months and paragraph 2.6.1.b in the last five years	1.4.2.2	1.4.2.2 At least one voting member and the ex officios shall have completed training in: a. The content of this NPR. b. Conducting witness interviews. c. Creating timelines; documenting facts; generating fault trees; performing barrier analysis; conducting change analysis; creating event and causal factor trees; obtaining forensic analysis; integrating evidence; determining findings; generating recommendations; and producing mishap investigation reports.
	4.3 Select the Ex Officio		
	4.3.1 For any mishap or close call, the Chief/OSMA may serve as the ex officio or appoint, at his/her discretion, the ex officio; otherwise that selection shall be made by the senior SMA official in the appointing official's organization.		
4.3	4.3.2 For Type C mishaps, Type D mishaps, and close call investigations, the ex officio shall be at a level consistent with the authority level of the MIT chair. Note: For investigations completed by a single mishap investigator, an ex officio is not required. 4.3.3 The ex officio shall be a Federal employee selected from personnel who have completed the NASA mishap investigation training or equivalent and have received refresher training in the last five years (if training was acquired more than five years ago). 4.3.4 For Type C level investigations and below, the ex officio function may be fulfilled by a professional from the Center safety office who participates in the investigation activities he or she deems appropriate and approves the mishap report demonstrating assurance that the conditions in paragraph 1.4.12.d of this NPR have been met. 4.3.5 Only one ex officio shall be appointed to an investigating authority	3.2.4	3.2.4 The Ex Officio shall: a. Be a non-voting participant in all investigation deliberations. b. Participate in all investigation proceedings as he or she deems appropriate. c. Ensure the investigation conforms to NASA policy and this NPR and the investigation process is impartial, independent, and non-punitive. Note: When available, an OSMA mishap investigation specialist is the preferable choice as ex officio for Type A and Type B mishaps and high-visibility mishaps and close calls investigations.
4.4.1	4.4.1 For all mishaps, the appointing official shall request that the appropriate mission support office appoint advisors to the investigating authority	3.3.1	3.3.1 For Type A and Type B mishaps and high-visibility mishaps and close calls, the IA shall have a legal advisor and a public affairs advisor. Note 1: The IA chairperson may request a medical doctor as an advisor or consultant if one is not an IA member. The AO may appoint other advisors to provide specialized expertise or liaison. Note 2: The AO will designate advisors for Type C, D, and close calls in accordance with the MPCP.
4.4.2	4.4.2 For Type A, Type B, and Type C mishaps, the investigating authority shall have a legal advisor, a public affairs advisor, an import/export control advisor, and (where appropriate) an external relations advisor		
4.4.3	4.4.3 The advisors shall be NASA civil service employees selected from the respective mission support offices and be authorized to represent their mission support office's interests in the investigation	3.3.3	3.3.3 The IA Advisors shall: a. Be NASA federal employees.
4.6.1	4.6.1 The appointing official shall arrange for administrative, logistical, and information technology support to the investigating authority via the appointment letter or by contacting the appropriate CD or the ED/OHO, as appropriate. Administrative support may include, but is not limited to, meeting rooms, clerical help, photographic support, records management assistance, and laboratory analysis.	3.5.1 f.	f. Point of contact for matters relating to the appointment and investigation including administrative, logistical, and information technology support functions at a minimum. Note: For Type C and Type D mishaps and close calls, the IA appointment document will be in accordance with Center policy or Program/Project MPCP, whichever takes precedence.
4.6.2	4.6.2 The responsible organization, the Center safety office, and the CD or ED/OHO shall provide support as deemed necessary by the investigating authority	3.1.4 d.	d. Consign formal authority to approve IA travel, resource acquisitions, or responsible organization corrective actions, when delegating AO responsibilities for Type C and D mishaps and close calls.
4.7.1	4.7.1 For Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls, the appointing official shall prepare an appointment letter to communicate the selection of the investigating authority members, the chairperson, the ex officio, and the advisors. (For Type C mishaps, Type D mishaps, and close calls, the appointment orders can be less formal and communicated via a Center process.)		
4.7.2	4.7.2 The appointment letter shall identify the chairperson, membership (including ex officio), the legal advisor, the Headquarters public affairs advisor, import/export control advisor, the external relations advisor (where appropriate), the scope of the investigation, and the projected completion date.	3.5.1 a.-e.	3.5.1 For Type A and Type B mishaps and high-visibility mishaps and close calls, the IA appointment letter will contain: a. IA member identification (chairperson, ex officio, and advisors). b. Scope of the investigation including undesired outcome. c. Projected completion date in accordance with this NPR. Note: The designated person with authority to classify an event as a NASA mishap may not become aware of the event or exposure until long after its occurrence. For example, exposure to asbestos, noise, or toxins may not be known to reach potentially disabling levels for months. In such cases, the AO should note the start of the investigation from the signature date of the appointing letter instead of the date of occurrence. d. IA relief from collateral duties statement for the appointment period. e. Expected cooperation of Center and program personnel regarding IA requests for information relevant to the investigation.
4.7.3	4.7.3 The appointment letter/appointment orders shall relieve the investigating authority chairperson and members from other duties while they are engaged in investigation activities.		
5.1.1	5.1.1 The investigating authority shall use a structured technique to collect and review all available data, construct a timeline of events, conduct witness interviews, reconstruct the mishap or close call, and analyze the mishap occurrence to determine what happened, when it happened, and why it happened	4.1.1 a.-b.	4.1.1 The IA shall: a. Determine what happened, when it happened, and why it happened with the goal of preventing incident recurrence and similar incident occurrence. b. Use a structured analysis technique to establish elements in 4.1.1.a.
5.1.2	Figure 7 illustrates the typical steps that the investigating authority shall perform during the mishap investigation.	4.2.1	4.2.1 After arriving at the mishap site, the IA shall: a. Verify the mishap site is safe and secured. b. Confirm evidence has been preserved and impounded, which includes the following: (1) Relevant perishable evidence has been collected, photographed, and documented or impounded or both. (2) All necessary data, records, and equipment have been impounded and stored in a secure site. c. Take custody of all evidence gathered at the scene and all data pertaining to the investigation including impounded records; determine the status of impounded records and equipment; and develop a record of the actions taken by the IRT, the cognizant Safety Office, emergency response, and protective services personnel
5.2 a.	The investigating authority shall perform the following activities prior to arrival at the mishap site or shortly thereafter: a. Mishap investigation overview training. (1) The Investigating Authority members and advisors shall take the NASA "Introduction to Mishap Investigation Training" upon their assignment to the investigation to familiarize themselves with NASA mishap investigation policies and procedures and root cause analysis. (Investigating authority members and advisors may opt out of the training if they have taken it within the last 12 months.)	1.4.2	1.4.2 IA Training. Note: It is recommended that IA members complete the total training in section 1.4.2. 1.4.2.1 All IA members shall have completed training in and been tested on the NASA mishap investigation policy and process. Note: The series of NASA online courses meets this requirement: SMA-002-07 Overview of Mishap Investigations; SMA-002-008 Mishap Investigation Roles and Responsibilities; SMA-002-009 Completing the Investigation and Mishap Report; SMA-002-11 Interim Response Team Training, and SMA-002-10 Introduction to Root Cause Analysis (within the last 2 years).

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5.2.d.	d. Establishment of member duties, meeting times, and investigation schedules	3.2.5	3.2.5 The IA Chairperson shall: a. Manage and coordinate all aspects of the mishap investigation including, but not limited to, the following tasks: assign group leaders; coordinate document and information gathering activities; interview witnesses; reconstruct the mishap or close call; identify facts; identify causal (proximate, intermediate, and root) and contributing factors; generate recommendations; and complete the mishap investigation report.
5.3.1.1	5.3.1.1 Upon arrival, the chairperson shall verify the site is safe and secured	4.2.1 a.	4.2.1 After arriving at the mishap site, the IA shall: a. Verify the mishap site is safe and secured.
5.3.2.1	5.3.2.1 The chairperson shall ensure that all the appropriate perishable evidence has been collected, photographed, documented, and/or impounded.	4.2.1 b.	b. Confirm evidence has been preserved and impounded, which includes the following: (1) Relevant perishable evidence has been collected, photographed, and documented or impounded or both. (2) All necessary data, records, and equipment have been impounded and stored in a secure site.
5.3.2.2	5.3.2.2 The chairperson shall ensure that all the necessary data, records, and equipment have been impounded and are being stored in a secure site.		
5.3.2.3	5.3.2.3 The IRT, Center safety office personnel, emergency response personnel, and Center security office personnel shall provide the investigating authority with all evidence gathered at the scene; all data pertaining to the investigation, including impounded records; a status of impounded records/equipment; and a description of the actions taken.	4.2.1 c.	c. Take custody of all evidence gathered at the scene and all data pertaining to the investigation including impounded records; determine the status of impounded records and equipment; and develop a record of the actions taken by the IRT, the cognizant Safety Office, emergency response, and protective services personnel.
5.4	5.4 Gather Physical Evidence and Facts 5.4.1 The investigating authority should evaluate three general sources of data (material, personnel, and records) during the investigation. The material area includes all parts, components, and support facilities directly or indirectly involved. The personnel area includes all persons associated with the activities immediately surrounding the mishap, such as the flight crew, launch complex personnel, maintenance personnel, test personnel, operations personnel, range safety personnel, management and supervisory personnel, and witnesses and their associated training records, certification, e-mail, notes, and other records. The records data, regardless of format, include all records, telemetry, recordings, analyses, inspections, and historical data associated with the specific equipment, operations, and operating personnel. 5.4.2 The investigation should not be limited to data and records generated concurrently with, or as a result of, the mishap. It should also include historical, environmental, operational, psychological, and other factors bearing on the situation. 5.4.3 Lack of physical evidence. If there is no recoverable physical evidence available, the investigating authority shall use existing program and/or mission documentation, any collected mission data, and applicable analytical techniques to determine the probable proximate cause(s) and probable root cause(s) of the mishap.	4.3.1 a.	4.3.1 The IA shall: a. Collect, to the extent needed, and evaluate all available data and records relevant to the mishap. These data and records are not limited to those generated concurrently or as a result of the mishap, but also include relevant information such as historical, environmental, operational, and other information.
5.5.2	5.5.2 The investigating authority shall interview mishap witnesses with two basic objectives in mind: a. To find out what the witness observed or did. b. To find out the witness's opinion of potential cause(s) of the mishap.	4.3.1 c.	c. Interview witnesses with two basic objectives in mind: (1) Determine witness observations or actions. (2) Elicit witness opinions of possible causes of the mishap
5.6.1	5.6.1 The investigating authority shall determine the sequence of events and document them in a timeline.	4.4.1 a.	4.4.1 The IA shall: a. For Type A and Type B mishaps and high-visibility mishaps and close calls, determine the sequence of events and conditions and document them in a timeline.
5.6.2	5.6.2 The investigating authority shall create a fault tree, or perform an equivalent analysis, to identify all potential cause(s) and contributing factor(s) to the mishap and the relationships among them. Note: A fault tree should be used by the MIB to demonstrate that all potential causes of the mishap have been evaluated. An event and causal factor tree should be used to represent all the events that did occur, and the relationship between the proximate, intermediate, and root causes.		
5.6.3	5.6.3 The investigating authority shall analyze all potential cause(s), including both technical and human cause(s).	4.4.1 b.	b. Determine relationships, supported by facts, of events and conditions to the undesired outcome.
5.7.1	5.7.1 The investigating authority shall evaluate all information collected during the course of the investigation, including, but not limited to, physical evidence, witness statements and testimony, and analytical results from testing and analysis; draw conclusions concerning what happened and why it happened; and document these as investigation findings.		
5.7.2	5.7.2 All findings shall be supported by facts.		
5.8.1	5.8.1 At a minimum, the investigating authority shall develop recommendations that address both the proximate cause(s) and the root cause(s) to prevent recurrence of the mishap or close call or similar mishaps and close calls	4.5.1 a.	4.5.1 The IA shall: a. Develop recommendations to prevent incident recurrence and similar or like incident occurrence.
5.8.2	5.8.2 The investigating authority shall verify that the recommendations are clear, verifiable, achievable, and traceable to at least one significant finding.	4.5.1 b.	b. Confirm the recommendations are clear, verifiable, achievable, measurable, and traceable to at least one significant finding.
5.8.5	5.8.5 The appointing official shall communicate recommendations outside his/her authority to the responsible NASA organization or external body for implementation of corrective measures.	4.5.2	4.5.2 The AO shall: a. Assess recommendations according to their effectiveness in reducing likelihood and consequence of causal factor recurrence. b. Communicate recommendations outside his or her authority to the responsible NASA organization or external body for implementation of corrective action.
5.10.1	5.10.1 Only the investigating authority shall release the mishap site for post-investigation cleanup or other activities.		
5.10.2	5.10.2 Only the investigating authority shall release impounded data, records, equipment, or facilities.	4.8.1	4.8.1 Only the IA chairperson is authorized to release the mishap site, and impounded data, records, equipment, or facilities with concurrence of legal advisor.
5.10.3	5.10.3 The investigating authority shall not release data and records unless copies of the documents are made and retained with mishap investigation records	4.8.2	4.8.2 The IA shall not release original data and records.
5.11	5.11 Status Reports 5.11.1 For NASA Type A, Type B, and high-visibility mishaps and close calls: Every 30 work days (minimum) from the time the appointment letter is signed until the mishap investigation report is signed, the investigating authority shall develop a publicly releasable status, using the template provided on the NASA mishap investigation Web site at https://nscn.nasa.gov and provide the signed document to the appointing official, responsible Center safety office, and the NASA Safety Center through the regional mishap support specialist.	4.6	4.6.1 The IA shall: a. Develop a publicly releasable investigation status report for NASA Type A and Type B mishaps and high-visibility mishaps and close calls every 30 workdays from the time the appointment letter is signed until the mishap investigation report is signed. The template obtained from the MISO regional support specialist will be used. Note: The AO may require status information at other intervals from the IA. b. Distribute the approved status report to the AO, responsible Center or Program Chief Safety Officer, OSMA, and Agency SMA personnel through an approved distribution list. c. Post 30-day status report to the mishap record in NMIS. 4.6.2 The status report shall address facts on the investigation status to date.
5.12	5.12 Mishap Warning-Action-Response (MWAR) 5.12.1 At any time during the investigation when the investigating authority identifies a safety finding that requires immediate action and could impact one or more Centers, the investigating authority shall develop a MWAR using the template provided on the NASA mishap investigation Web site at https://nscn.nasa.gov and provide the signed document to the appointing official, responsible Center safety office, and the NASA Safety Center through the regional mishap support specialist.	4.4.2.1 4.4.2.2	4.4.2 Mishap Warning-Action-Response (MWAR). 4.4.2.1 The IA shall: a. Provide an MWAR to OSMA (using the template obtained from OSMA) at any time during the investigation when the IA identifies a safety finding requiring immediate action and could impact one or more Centers or when NASA-wide implications are present. b. Obtain MWAR approval from the IA legal and public affairs advisors or by local policy. 4.4.2.2 OSMA will distribute the MWAR electronically to Agency SMA personnel.
5.13	5.13 Distribution 5.13.1 The NASA Safety Center Mishap Investigation Support Office (MISO) will maintain the distribution list for the status reports and the MWARS, distribute the status reports and MWARS electronically, and place the MWARS on the NASA mishap investigation Web site at https://nscn.nasa.gov and the NASA Safety Center Web site at http://nsc.nasa.gov . Status reports will be stored in the same locations as the MWAR.	4.4.2.3	4.4.2.3 OSMA maintains the distribution lists for status reports (section 4.6) and MWARS and makes them available on the NASA Mishap Investigation Web site.
6.1.1	6.1.1 The investigating authority shall develop a mishap report that contains the information as specified in paragraph 1.7 and Figure 5 in this NPR.	5.1.1 a.	5.1.1 The IA shall: a. Complete a mishap investigation report that contains the information as specified in Table D.
6.1.2	6.1.2 Witness statements, witness names, and names of those involved in the mishap or related activities shall not be included as a part of the mishap report.	Table D	Note: Witness statements, witness names, and names of those involved in the mishap or related activities are not to be included in the mishap investigation report.
6.1.3	6.1.3 The mishap report shall be technically accurate; properly documented; easily understood; have traceability between facts, findings, and recommendations; and include the products required in Figure 5 in this NPR, in the following order: a. Section 1: Signature page(s), list of consultants, executive summary, and OSHA summary (when applicable). Note: The OSHA summary goes in Section 1. The OSHA 301 Form or equivalent should be placed in the Appendix rather than Section 1 with the summary. b. Section 2: Narrative description and facts (what, when, where, how). c. Section 3: Type of data gathered and data analysis (level of detail and products dependent upon Figure 5 in this NPR). d. Section 4: Finding(s). e. Section 5: Recommendation(s). f. Section 6: Minority Report(s)	5.1.2	5.1.2 Type A and Type B mishaps and high-visibility mishaps and close calls investigation reports shall include the products shown in Table D in the following order: a. Section 1: Signature pages, list of consultants, executive summary, and OSHA form 301 questions 14 through 17 information (for reportable occupational injury or illness). b. The executive summary should include a public-releasable description of the activity leading to the mishap and the findings and recommendations in the report. c. Section 2: Narrative description and facts (what, when, where, how). d. Section 3: Type of data gathered and data analysis. e. Section 4: Findings. f. Section 5: Recommendations. g. Section 6: Minority Report, if applicable.
6.1.4	6.1.4 The investigating authority shall include the mishap classification level (e.g., Type A, Type B, Type C, Type D, or close call) and the IRIS/NAARS case number, the incident date, and the report date on the mishap report title page and the report executive summary	5.1.1 b.	b. Include the mishap classification level (i.e., Type A and Type B mishaps and high-visibility mishaps and close calls) and NMIS event number, the incident date, and the report date on the mishap investigation report title page and in the report executive summary.
6.1.5	6.1.5 The investigating authority shall describe, in the mishap report, the type of property damage, type of the mission failure, and/or describe the personal injury(ies)/illness(es).	5.1.1 c.	c. Describe in the mishap investigation report the type of property damage or mission failure and the severity of injuries or illnesses.
6.1.6	6.1.6 The investigating authority shall describe, in the mishap report, the actual direct cost of the mishap or if the actual direct cost is not available, the estimate of the direct cost of the mishap.	5.1.1 d.	d. Describe in the mishap investigation report the actual direct cost of the mishap or an estimate if the actual direct cost is not available.
6.1.9	6.1.9 All investigating authority members shall sign the completed mishap report.	5.1.1 e.	e. Sign the completed mishap investigation report.

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6.1.10	<p>6.1.10 The ex officio shall sign the completed mishap report attesting to the following:</p> <ol style="list-style-type: none">The investigation was conducted in conformance with NASA policy and this NPR.The investigation process was fair, independent, and nonpunitive.The mishap report contains all the required elements.The mishap report accurately identifies the proximate cause(s), root cause(s), and contributing factor(s).Adequate facts have been gathered and analyzed to substantiate the findings.The recommendations reasonably address the causes and findings.Each recommendation is associated with (traceable to) at least one significant finding. <p>Note: Each finding does not require a recommendation except as required in paragraph 5.8.1.</p> <p>h. If these conditions have not been met, the ex officio shall describe the mishap report's deficiencies in writing and sign and attach this description to the mishap report in lieu of signing the report</p>	5.1.3	<p>5.1.3 The Ex Officio shall:</p> <ol style="list-style-type: none">Serve as the authorized representative of the Chief/OSMA.Sign the completed mishap investigation report for Type A and Type B mishaps and high-visibility mishaps and close calls attesting to the following: Note: Ex officio requirements for Type C and Type D mishaps and close calls will comply with Center or Program policy. (1) The investigation was conducted in conformance with NASA policy and this NPR. (2) The investigation process was impartial, independent, and non-punitive. (3) The mishap investigation report contains all the required elements. (4) The mishap investigation report accurately identifies the proximate causes, root causes, and contributing factors. He or she should verify that the process was followed and the causes were identified and labeled correctly. (5) Adequate facts have been gathered and analyzed to substantiate the findings. (6) Recommendations reasonably address the causes and findings. (7) Each recommendation is associated with or traceable to at least one significant finding. <p>c. If the conditions in section 5.1.3 b. have not been met, describe the mishap investigation report's deficiencies in writing and sign and attach this description to the mishap investigation report in lieu of signing the report.</p>
6.1.11 a., c.	<p>6.1.11 Each NASA advisor shall sign the mishap report stating that he/she has reviewed the mishap report, that it meets NASA policies and procedures in his/her functional area and:</p> <ol style="list-style-type: none">The export control advisor's signature indicates that any ITAR information and EAR information has been identified and marked as non-releasable to the public (e.g., NASA Sensitive But Unclassified).The legal advisor's and public affairs advisor's signature indicates that any privileged or proprietary information, ITAR information, EAR information, or material subject to the Privacy Act has been identified and marked as nonreleasable to the public (e.g., NASA Sensitive But Unclassified); and that volumes/appendices that are releasable to the public are marked releasable.	5.1.4 a.-b.	<p>5.1.4 NASA advisors shall sign the mishap investigation report for Type A and Type B mishaps and high-visibility mishaps and close calls stating that each has reviewed the report, and it meets NASA policies and procedures in the advisor's functional area. The following also applies to advisor signatures:</p> <ol style="list-style-type: none">The export control advisor's signature indicates that any ITAR and EAR information has been identified and marked as non-releasable to the public.The legal and public affairs advisors' signatures indicate that any privileged or proprietary information, or material subject to the Privacy Act has been identified and marked as non-releasable to the public (e.g., NASA SBU); and releasable volumes and appendices are marked publically releasable. The public affairs advisor is not responsible for identifying such information because this knowledge is outside the scope of the public affairs advisor's functional area; however, the public affairs advisor shall be responsible for verifying the
6.1.12	<p>6.1.12 The names of the consultants may be listed in the mishap report; however, the consultants shall not sign the mishap report.</p>	5.1.5	<p>5.1.5 The names of the consultants will be listed in the mishap investigation report; however, the consultants should not sign the mishap investigation report.</p>
6.1.13	<p>6.1.13 Within 75 workdays of the mishap or close call, the investigating authority shall submit the completed and signed mishap report to the appointing official.</p>	5.1.1 f.	<p>5.1.1 The IA shall: f. Submit the completed and signed mishap investigation report to the AO within the specified time frame.</p>
6.1.14	<p>6.1.14 If the investigating authority needs additional time to complete the investigation and/or the mishap report, they may submit a verbal or written request to the appointing official.</p>	5.1.1 g.	<p>g. Submit a request for additional time to complete the investigation or the mishap investigation report and include the rationale for the extension. The IA chairperson should make the request to the AO or designee.</p>
6.2	<p>6.2 Release Investigating Authority Upon receiving the signed mishap report, verifying that the mishap report fulfills the requirements of the appointment letter, and verifying that all records retention activities have been completed, the appointing official shall inform the investigating authority that they have fulfilled their requirements and are released from duty.</p>	5.2	<p>5.2 Investigating Authority Release Upon receiving the completed mishap investigation report for Type A and Type B mishaps and high-visibility mishaps and close calls, the AO shall first verify it fulfills the appointment letter and then inform the IA that its responsibilities have been fulfilled.</p>
6.3.1	<p>6.3.1 Upon receipt of the signed mishap report, the appointing official shall request the appropriate officials to review and endorse the mishap report (see Figure 5 of this NPR for endorsing officials).</p>	5.3.1	<p>5.3.1 Upon receipt of the signed mishap investigation report for Type A and Type B mishaps and high-visibility mishaps and close calls, the AO shall: a. Schedule an Endorsement Review with appropriate officials to review and endorse the mishap investigation report. Note: Refer to Table E for breakdown of Endorsing Officials by mishap classification. b. Deliver a copy of the mishap investigation report a minimum of 5 workdays prior to conducting the Endorsement Review. Note: During the 5-day period, the endorsing official's technical experts will review the report for compliance with requirements stated in sections 5.3.2 and 5.3.3. Lower level mishaps and close calls are reviewed and endorsed according to Center or Program policy.</p>
6.3.2	<p>6.3.2 The review and endorsement process should verify, at a minimum, the following:</p> <ol style="list-style-type: none">The mishap report content is technically accurate and complete.Proper analysis techniques were selected and completed correctly.The mishap report adequately describes proximate cause(s), root cause(s), and contributing factor(s).There are adequate facts to substantiate the findings.Recommendations are associated with (traceable to) at least one significant finding. <p>Note: Each finding does not require a recommendation except as required in paragraph 5.8.1.</p> <ol style="list-style-type: none">Recommendations are practical, feasible, achievable, and will, in the opinion of the reviewer, prevent recurrence of similar mishaps or close calls.Proprietary information, ITAR information, EAR information, material subject to the Privacy Act, or privileged information that should not be released has been identified	5.3.3	<p>5.3.3 On Endorsement Review, endorsing officials shall:</p> <ol style="list-style-type: none">Verify the mishap investigation report content is technically correct and complete in addressing facts and circumstances associated with the mishap.Concur the mishap investigation report describes causal and contributing factors.Concur that the recommendations as practical, feasible, achievable, and will, in the opinion of the reviewer, prevent the occurrence of similar mishaps or close calls.Concur that proprietary, ITAR, or EAR information; material subject to the Privacy Act; or privileged information has been properly identified and protected.
6.3.4	<p>6.3.4 Within 30 workdays, the endorsing officials will provide their signed endorsement, recommendation for mishap report approval or rejection, and (when applicable) comments related to amplification or disagreement with elements of the report to the appointing official. (These endorsements and comments (when applicable) shall be attached to the mishap report and become part of the permanent record)</p>	5.3.4	<p>5.3.4 Upon conclusion of the Endorsement Review, the endorsing officials shall sign the Endorsement Review Record, signifying mishap investigation report concurrence or nonconcurrence, and when applicable, provide comments related to concurrence or disagreement with elements of the report.</p>
6.3.5	<p>6.3.5 Within 5 workdays, the appointing official shall attach all endorsements and comments (including his/her own) to the mishap report, review the comments, and determine if the report is approved or rejected based on the review and comments/direction from endorsing officials.</p>	5.3.5 5.3.7 a.	<p>5.3.5 The Endorsement Review Record and comments will be attached to the mishap investigation report and become part of the permanent record. 5.3.7 The AO shall: a. Serve as final authority for acceptance or rejection of mishap and close call investigation reports in which he or she holds the AO's position.</p>
6.3.6	<p>6.3.6 If the appointing official rejects the mishap report, he/she must provide a written description of the deficiencies that warrant this rejection, attach this to the mishap report, send the report to the Center safety office (or OSMA for Type A mishaps, Type B mishaps, high visibility mishaps, and high-visibility close calls) for records retention, and charter a new investigation.</p>	5.3.7 e.	<p>e. If the AO rejects the mishap investigation report, he or she shall provide a written description of the deficiencies warranting the rejection, and direction going forward. Options include assigning the same IA to re-do part or all of the investigation; or dismissing the original IA and appointing a new IA with instructions in section 3.5; or releasing the IA in favor of a collateral investigation.</p>
6.4	<p>6.4 Authorize Mishap Report for Public Release</p>		
6.4	<p>6.4.1 If the mishap report is approved, the appointing official shall immediately send the approved report with endorsements/comments to the Export Administrator, the Center PAO, Office of Protective Services, and then to OPA, Procurement, and legal counsel for review.</p>		
6.4.5	<p>6.4.2 Within 10 workdays of the request, the Export Administrator, OPA, Office of Protective Services, Procurement, and legal counsel shall review the mishap report and specify in writing which sections of the mishap report are authorized for public release.</p>	5.4.5	<p>5.4.5 If an FOIA request is made and FOIA rules require mishap investigation report redaction, the redacted report shall not be distributed to the public except through the FOIA process.</p>
6.5.5	<p>6.5.5 Generally, the appropriate public affairs officer shall make the news release on the mishap report available simultaneously at Headquarters and the appropriate Center.</p>		
6.5.6	<p>6.5.6 The appropriate public affairs officer shall make the mishap report available to the public at the same time.</p>		
6.5.1	<p>6.5.1 Upon receipt of notification that the mishap report is authorized for public release, the appointing official shall send the approved mishap report with authorization comments to OSMA/SARD and the Center safety office (dependent upon level of investigation).</p>	5.4.1	<p>5.4.1 Upon notification from the Center or mission directorate representatives that the mishap investigation report is authorized for public release, the designated FOIA officer shall send the approved mishap investigation report with authorization comments to the AO, OSMA, and the cognizant Safety Office (dependent on level of investigation).</p>
6.5.4	<p>6.5.4 The AA/OPA shall determine whether a mishap report, whatever its origin, shall be issued from Headquarters or the Center.</p>	5.4.4	<p>5.4.4 The AA/OCOM shall determine whether a mishap investigation report, whatever its origin, will be issued from HQ or the Center.</p>
6.5.7	<p>6.5.7 For aircraft mishaps, final submittal of the NASA mishap reports to the NTSB will be made by the Office of Institutions and Management. The Office of Institutions and Management will ensure that the NTSB submission meets the essential information required by the NTSB and may reformat and streamline the approved NASA report as necessary to meet that need without changing the report's causes, findings, and conclusions.</p>	5.4.6	<p>5.4.6 For aircraft mishap investigations delegated to NASA by NTSB, OSI shall submit the approved NASA mishap investigation report to the NTSB ensuring it meets the NTSB's required information. The NTSB may reformat and streamline the investigation report as necessary to meet its requirements without changing the report's causal and contributing factors, recommendations, and findings.</p>
6.5.8	<p>6.5.8 Within 48 hours of a mishap or close call, NASA shall provide all NASA employees and contractors access to information that is releasable to the public via a database including date, location, and brief description of the event.</p>	5.4.7	<p>5.4.7 The Cognizant Safety Office shall ensure the information recorded in the NMIS is updated.</p>
7.1.1	<p>7.1.1 Immediately after the mishap report has been authorized for public release, the appointing official shall direct the responsible organization or program/project to develop a CAP for those recommendations approved by the endorsing officials.</p>	6.1.1	<p>6.1.1 The AO shall, after the mishap investigation report has been endorsed and at the earliest opportunity, direct the responsible organization or program/project to develop a CAP for those recommendations approved by the AO.</p>
7.1.3	<p>7.1.3 Within 15 workdays from being tasked, the responsible organization or program/project shall develop and submit the CAP to the appointing official.</p>	6.1.2	<p>6.1.2 The responsible organization or program/project manager shall, within 15 workdays from being tasked, submit the CAP to the AO for approval and then implementation.</p>
7.2.1 a.-c.	<p>7.2.1 The CAP shall include the following:</p> <ol style="list-style-type: none">A description of the corrective actions along with a designation of the organization(s) responsible for implementing the corrective actions and a completion date for each corrective action.Which NASA organization, contractor organization, or grantee organization (to the lowest level) is responsible for ensuring the corrective action is completed.A matrix or other means of matching corrective actions to all findings and recommendations.	6.2.1 a.-c.	<p>6.2.1 The CAP shall include the following:</p> <ol style="list-style-type: none">Corrective actions description and the estimated completion dates for each corrective action.The lowest-level NASA organization responsible for completing the corrective actions.A matrix or other means of matching corrective actions to all findings and recommendations.
7.3.2	<p>7.3.2 Based on the results of these reviews and his/her own review, the appointing official shall either accept or reject the CAP.</p>	6.3.2 a.	<p>6.3.2 The AO shall: a. Accept or reject the CAP.</p>
7.3.3	<p>7.3.3 If the plan is rejected, the appointing official shall return the CAP, with comments, to the responsible organization or program/project for revision and resubmission.</p>	6.3.2 b.	<p>b. Return a rejected CAP with comments to the responsible organization or program/project for revision and resubmission.</p>
7.3.4	<p>7.3.4 The appointing official shall determine the timeframe for resubmission of the CAP,</p>		

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7.4.1	7.4.1 The responsible organization shall implement the corrective actions as directed by the appointing official and as documented in the approved CAP.	6.4.1 a.	6.4.1 The responsible organization shall: a. Implement the corrective actions.
7.4.2	7.4.2 The responsible organization shall track the corrective action performance and completion in IRIS and inform the appointing official of the status of the actions at intervals determined by the appointing official.	6.4.1 b.	b. Track the corrective action performance and completion in NMIS and provide the AO with a status at intervals determined by the AO.
7.4.4	7.4.4 The Center safety office shall assist the responsible organization, if needed, to enter updates into IRIS, as described in the Center Mishap Preparedness and Contingency Plan.	6.4.2 a.	6.4.2 The Cognizant Safety Office shall: a. Assist the responsible organization, if needed, to enter updates into NMIS as described in the Center MPPC.
7.4.5	7.4.5 The Center safety office shall enter into IRIS the actual direct cost of the mishap or if the actual direct cost is not available, the estimate of the direct cost of the mishap.	6.4.2 b.	b. Enter into NMIS the actual direct cost of the mishap or the estimated direct cost, if the actual direct cost is not available.
7.4.6	7.4.6 Should a need arise to change the CAP after it has been approved (because the actions are deemed unwise or not feasible), the responsible organization shall submit the change to the appointing official for approval, similar to the process used for the original plan approval.	6.5.1 b.	6.5.1 The responsible organization shall: b. Submit changes to the CAP after it has been approved (i.e., actions considered unwise or not feasible) to the cognizant Safety Office or Program for review. After this review, the requested changes will be sent to the AO for approval.
7.4.7	7.4.7 The appointing official shall assess and, if warranted and desired, approve any changes to the CAP.	6.5.2 a.	6.5.2 The AO shall: a. Assess and, if warranted, approve any changes to the CAP.
7.4.8	7.4.8 The appointing official shall send approved changes to the responsible organization and the Center safety office.	6.5.2 b.	b. Send approved changes to the responsible organization and the cognizant Safety Office.
7.5.1	7.5.1 The applicable Center safety office shall monitor corrective action activities to determine if they were carried out according to the plan and report non-compliance to the appointing official.	6.5.3 a.	6.5.3 The Cognizant Safety Office shall: a. Track corrective action activities to verify they are carried out according to plan and report non-compliance to the AO.
7.5.2	7.5.2 When the corrective actions are closed, the appointing official shall develop and provide a CAP closure statement to the supporting Center safety office and the responsible organization to notify them that the corrective action plan is closed.	6.5.2 c.	6.5.2 The AO shall: c. Once corrective actions for Type A and Type B mishaps and high-visibility mishaps and close calls are fulfilled, provide a CAP closure statement to the supporting cognizant Safety Office and responsible organization advising the CAP has been closed.
7.5.3	7.5.3 The Center safety office shall verify that the CAP is complete and all elements of the investigation have been completed and correctly recorded in IRIS (or NAARS for aviation close calls using NAARS in lieu of IRIS).	6.5.3 b., d.	6.5.3 The Cognizant Safety Office shall: b. Verify corrective actions activities were implemented, completed, and closed. d. Verify the mishap investigation report, endorsements, approved CAP and CAP closure statement, and mishap activities completion statements are complete and correctly recorded in NMIS.
7.6.2	7.6.2 The individual or team shall develop lessons learned that, at a minimum, include the executive summary, findings, and recommendations from the mishap report that are authorized for public release.	6.6.2 a.	6.6.2 The individual or team tasked to develop lessons learned shall: a. Generate lessons learned comprising, at a minimum, the mishap investigation report's executive summary, findings, and recommendations authorized for public release.
7.6.4	7.6.4 Within 10 workdays of being tasked, the person or team assigned to develop lessons learned shall submit the prepared lessons learned to the appointing official.	6.6.2 b.	b. Within 10 workdays of being tasked, submit prepared lessons learned to the AO.
7.7.1	7.7.1 The appointing official shall submit the mishap activities completion statement to the responsible organization, OSMA/SARD (For Type A mishaps, Type B mishaps, high-visibility mishaps, and high-visibility close calls), the Center safety office, and other appropriate organizations indicating that the investigation was performed; the CAP was developed, implemented, and closed; and the lessons learned have been entered into the NASA LLIS.	6.7.1 a.	6.7.1 The AO shall: a. Submit the mishap investigation activities completion statement to the responsible organization, OSMA (for Type A and Type B mishaps and high-visibility mishaps and close calls), the cognizant Safety Office, and other appropriate organizations indicating the investigation was performed; the CAP was implemented, completed, and closed; and the lessons learned were entered into the NASA LLIS (as determined appropriate by Center or mission authorities).
7.7.2	7.7.2 Once the appointing official has delivered the mishap activities completion statement, his/her duties for the mishap investigation are concluded, and the mishap file is closed.	6.7.1 b.	b. The AO's mishap investigation obligations are fulfilled with the delivery of the mishap activities completion statement, and the mishap file is closed (i.e., all activities associated with the mishap have been completed).
7.8.1	7.8.1 The final CAP and approved lessons learned shall be filed with the official approved mishap report in a location specified in the Center Mishap Preparedness and Contingency Plan.	6.8.4	6.8.4 The final CAP and approved lessons learned should be filed with the official approved mishap investigation report in a location specified in the Center MPPC.
7.8.3	7.8.3 The CAP, lessons learned, and witness statements, plus other records documenting the investigation, shall be managed and dispositioned by the Center safety office in accordance with NPR 1441.1, NASA Records Retention Schedule. Such records, regardless of format, include, but are not limited to, mishap reports and associated records; relevant notes and e-mail messages of the IRT and investigation authority; meeting agendas, minutes, and other documentation of the investigation process; and copies of all data and records that are used in evaluation and analysis of the mishap.	6.8.5	6.8.5 The CAP, lessons learned, and witness statements, and other records documenting the investigation, should be managed and suitably disposed by the cognizant Safety Office in accordance with NPR 1441.1 and NASA Records Retention Schedules (NRRS) 1441.1.
7.8.4	7.8.4 Ensure that NASA information is protected and handled in accordance with the requirements of NPR 1600.1, NASA Security Program Procedural Requirements; NPR 2190.1, NASA Export Control Program; and NPR 2810.1, Security of Information Technology.	6.8.6 b.	6.8.6 The Chief/OSMA or designee shall: b. Handle and protect NASA information according to the requirements of NPR 1600.1, NASA Security Program Procedural Requirements; NPR 2190.1, NASA Export Control Program; and NPR 2810.1, Security of Information Technology.
Appendix A. Terms and Definitions	Cause. An event or condition that results in an effect. Anything that shapes or influences the outcome.	Appendix A. Terms and Definitions	Cause. An event or condition resulting in an effect. Anything that shapes or influences the outcome. A cause must precede and be necessary and sufficient on its own to bring about the undesired outcome of a mishap.
Appendix A. Terms and Definitions	Center Safety Office. The Center or Headquarters safety organization responsible for reporting and recording mishaps.	Appendix A. Terms and Definitions	Center Safety Office. The Center safety organization responsible for reporting and recording mishaps.
Appendix A. Terms and Definitions	Close Call. An event in which there is no injury or only minor injury requiring first aid and/or no equipment or property damage, or minor equipment or property damage of less than \$20,000, or not injury or only minor injury requiring first aid, but which possesses a potential to cause a mishap.	Appendix A. Terms and Definitions	Close Call. An event in which there is no or minor injury requiring first aid, or no or minor equipment or property damage (less than \$20,000), but which possesses a potential to cause a mishap.
Appendix A. Terms and Definitions	Condition. Any as-found state, whether or not resulting from an event, that may have safety, health, quality, security, operational, or environmental implications.	Appendix A. Terms and Definitions	Condition. A single as-found state.
Appendix A. Terms and Definitions	Corrective Actions. Changes to design processes, work instructions, workmanship practices, training, inspections, tests, procedures, specifications, drawings, tools, equipment, facilities, resources, or material that result in preventing, minimizing, or limiting the potential for recurrence of a mishap.	Appendix A. Terms and Definitions	Corrective Action. Any change that results in preventing, minimizing, or limiting the potential for occurrence of an incident (e.g., design processes, work instructions, workmanship practices, training, inspections, tests, procedures, specifications, drawings, tools, equipment, facilities, resources, material, and so on).
Appendix A. Terms and Definitions	Ex Officio. An individual authorized to participate in all investigation proceedings and tasked to assure that the investigation is conducted in conformance with NASA policy and this NPR.	Appendix A. Terms and Definitions	Ex Officio. An individual tasked to ensure the investigation conducted conforms to NASA policy and this NPR.
Appendix A. Terms and Definitions	Executive Summary. A very top-level summary of the circumstances of a mishap that includes who, what, when, where, and why, including a description of the proximate cause(s) and root cause(s).	Appendix A. Terms and Definitions	Executive Summary. A top-level summary, which is part of the mishap investigation report, describing the circumstances of a mishap including who, what, when, where, and why, and a description of the proximate and root causes. The executive summary should be worded where possible to meet NASA Office of Communications criteria for public release.
Appendix A. Terms and Definitions	High Visibility (Mishaps or Close Calls). Those particular mishaps or close calls, regardless of the amount of property damage or personnel injury, that the Administrator, Chief/OSMA, CD, ED/OHO, or the Center SMA director judges to possess a high degree of programmatic impact or public, media, or political interest including, but not limited to, mishaps and close calls that impact flight hardware, flight software, or completion of critical mission milestones.	Appendix A. Terms and Definitions	High-Visibility Mishap or Close Call. A mishap or close call, regardless of the amount of property damage or personnel injury, that the Administrator, Chief, Safety and Mission Assurance, Office of Safety and Mission Assurance; Center Director, Executive Director, Office of Headquarters Operations; Aircraft Management Division Director; or Center Safety and Mission Assurance Director judges to possess a high degree of safety risk, programmatic impact or public, media, or political interest including, but not limited to, mishaps and close calls affecting flight hardware or software, or completion of critical mission milestones.
Appendix A. Terms and Definitions	Mishap Investigation Board (MIB). A NASA-sponsored board that: a. Is appointed for a Type A mishap, Type B mishap, high-visibility mishap, or high-visibility close call. b. Requires concurrence from the Chief/OSMA and the Chief Engineer on membership. c. Consists of an odd number of Federal employees (including the chairperson) where the majority of the members are independent from the operation or activity in which the mishap occurred. d. Has a minimum of five voting members for Type A mishaps and three voting members for Type B mishaps. e. Includes a safety officer and a human factors mishap investigator. For all Type A mishaps involving injury, illness, or fatality, also includes an occupational health physician (or flight surgeon for aircraft-related mishaps) as a member. f. Is tasked to investigate the mishap or close call and generate the mishap report per the requirements specified in this NPR.	Appendix A. Terms and Definitions	Mishap Investigation Board. A NASA-sponsored board tasked to investigate the mishap or close call and to generate the mishap investigation report in accordance with the requirements specified in this NPR.
Appendix A. Terms and Definitions	Mishap Investigation Team (MIT). A NASA-sponsored team that: a. Is appointed by the CD or ED/OHO, or designee, for a Type C mishap, Type D mishap, or close call. b. Does not require concurrence from the Chief/OSMA or the Chief Engineer on team membership. c. Consists of an odd number of Federal employees (including the chairperson) where the majority of the members are independent from the operation or activity in which the mishap occurred. (The actual number of members is chosen at the discretion of the appointing official.) d. Includes a safety officer and a human factors mishap investigator as members. e. Is tasked to investigate the mishap or close call and generate the mishap report per the requirements specified in this NPR.	Appendix A. Terms and Definitions	Mishap Investigation Team. A NASA-sponsored team tasked to investigate a mishap or close call and generate the mishap investigation report in accordance with the requirements specified in this NPR.
Appendix A. Terms and Definitions	Mishap Investigator (MI). A Federal employee who has expertise and experience in mishap or close call investigation; has knowledge of human error analysis in mishaps; serves as the sole investigator for a Type C mishap, Type D mishap, or close call; and is tasked to investigate the mishap or close call and generate the mishap report per this NPR.	Appendix A. Terms and Definitions	Mishap Investigator. A federal employee who serves as sole investigator for a mishap or close call and generates the mishap investigation report in accordance with the requirements specified in this NPR.

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Appendix A. Terms and Definitions	<p>NASA Mishap. An unplanned event that results in at least one of the following:</p> <ul style="list-style-type: none">a. Injury to non-NASA personnel, caused by NASA operations.b. Damage to public or private property (including foreign property), caused by NASA operations or NASA-funded development or research projects.c. Occupational injury or occupational illness to NASA personnel.d. NASA mission failure before the scheduled completion of the planned primary mission.e. Destruction of, or damage to, NASA property except for a malfunction or failure of component parts that are normally subject to fair wear and tear and have a fixed useful life that is less than the fixed useful life of the complete system or unit of equipment, provided that the following are true: 1) there was adequate preventative maintenance; and 2) the malfunction or failure was the only damage and the sole action is to replace or repair that component.	Appendix A. Terms and Definitions	<p>NASA Mishap. A NASA mishap is an unplanned event resulting in at least one of the following:</p> <ul style="list-style-type: none">a. Occupational injury or occupational illness to non-NASA personnel caused by NASA operations.b. Occupational injury or occupational illness to NASA personnel caused by NASA operations.c. Destruction of or damage to NASA property, public or private property, including foreign property, caused by NASA operations or NASA-funded research and development projects.d. NASA mission failure before the scheduled completion of the planned primary mission.
Appendix A. Terms and Definitions	<p>NASA Operation. Any activity or process that is under NASA direct control or includes major NASA involvement.</p>	Appendix A. Terms and Definitions	<p>NASA Operation. An activity or process under direct NASA physical, administrative, or contractual control or where significant NASA resources are dedicated to accomplishing an objective common to NASA and other independent organizations. This does not include non-NASA contracted or funded activities conducted at a common location or environment with NASA resources.</p>
Appendix A. Terms and Definitions	<p>Root Cause. An event or condition that is an organizational factor that existed before the intermediate cause and directly resulted in its occurrence (thus indirectly it caused or contributed to the proximate cause and subsequent undesired outcome) and; if eliminated or modified, would have prevented the intermediate cause from occurring, and the undesired outcome. Typically, multiple root causes contribute to an undesired outcome.</p>	Appendix A. Terms and Definitions	<p>Root Cause. An event or condition, primarily associated with organizational factors, which existed before the intermediate cause and directly resulted in its occurrence (indirectly caused or contributed to the proximate cause and subsequent undesired outcome) and, if eliminated or modified, would have prevented the intermediate cause from occurring and the undesired outcome. Typically, multiple causes contribute to an undesired outcome. In the absence of a prevalent organizational factor, the root cause may be identified as undetermined.</p>
Appendix A. Terms and Definitions	<p>Serious Workplace Hazard. A condition, practice, method, operation, or process that has a substantial probability that death or serious physical harm could result and the employer did not know of its existence or did not exercise reasonable diligence to control the presence of the hazard.</p>	Appendix A. Terms and Definitions	<p>Serious Workplace Hazard. A condition, practice, method, operation, or process having substantial probability of death or serious physical harm.</p>