



**Langley
Procedural
Requirements**

LPR 8621.1 B
Effective Date: August 19, 2022
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Subject: Langley Research Center Mishap Preparedness and Contingency Plan

Responsible Office: Safety Mission and Assurance Office

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PREFACE

P.1 PURPOSE

- a. In accordance with NPR 8621.1, this LPR establishes the Langley Research Center (Langley) policy and procedural requirements to report, investigate, and document mishaps and close calls. This LPR does not apply to investigations concerning civil, criminal, administrative culpability, or legal liability. Furthermore, the safety investigative process outlined in this LPR shall not be used to direct or justify disciplinary action.
- b. This LPR provides requirements that specify how to respond to any mishap or close call from discovery through corrective action and closure. It contains requirements for classifying mishaps, establishing investigation authorities, and performing investigations. It formalizes notification and reporting obligations, describes roles and responsibilities, and specifies the relationships and interactions with other government agencies.

P.2 APPLICABILITY

- a. This Langley Procedural Requirement (LPR) is applicable to all NASA Langley Research Center (Langley) organizations and all federal civil service personnel on Center.
- b. This LPR is applicable to contractors, grant recipients, or parties to agreements only to the extent specified or referenced in the appropriate contracts, agreements, or grants.
- c. Noncompliance with the requirements of this LPR may result in appropriate disciplinary action against civil service personnel or sanctions against contractors in accordance with the terms of their contracts.
- d. This plan applies to all Langley-funded activities that result in on-site, off-site, in-flight, and in-space incidents defined by NPR 8621.1 as a mishap or close call. This plan encompasses NASA mishaps and close calls that occur at any non-NASA government, contractor, subcontractor, or grantee site as required in existing contracts, grants, and agreements. Project activities that occur on another NASA center or facility shall be covered under that respective NASA center or facility's Center Mishap Preparedness and Contingency Plan (MPCP).
- e. Center operations or program/project activities conducted on-site at Langley are covered under the procedures in this MPCP and are not required to create supplemental procedures or information.

Note: Personnel on official travel to meetings, conferences, or training who are involved in a mishap shall be covered under the requirements of this LPR. The notification and investigation process shall be conducted under the on-site Langley requirements of this LPR.

- f. Center operations or program/project activities conducted off-site shall develop a Project MPCP Supplemental to this LPR when at least one of the following conditions exist:
 - (1) Non-NASA personnel performing work in off-site NASA operations.

- (2) NASA personnel performing work in off-site NASA operations.
- (3) Non-NASA personnel testing NASA property in a Non-NASA facility.

Note: A NASA operation is an activity or process under direct NASA physical, administrative, or contractual control or where 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.

- g. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” denote a discretionary privilege or permission, “can” denotes statements of possibility or capability, “should” denotes a good practice, and is recommended, but not required, “will” denotes expected outcome, and “are/is” denotes descriptive material.
- h. In this directive, all document citations are assumed to be the latest version unless otherwise noted.

P.3 AUTHORITY

- a. Basic Program Elements for Federal Employee Occupational Safety and Health Programs and Related Matters, 29 CFR pt. 1960
- b. Federal Acquisition Regulations System, 48 CFR, NFS pt. 1807
- c. Recording and Reporting Occupational Injuries and Illnesses, 29 CFR pt. 1904.
- d. NPR 3792.1, NASA’s Plan for a Drug Free Workplace.
- e. NPR 7900.3, Aircraft Operations Management.
- f. NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping.
- g. NPR 8715.3, NASA General Safety Program Requirements.

P.4 APPLICABLE DOCUMENTS AND FORMS

- a. 29 CFR § 1904.7, General Recoding Criteria.
- b. LPR 1046.1, Emergency Management Plan (EMP).
- c. LPR 1740.6, Personnel Safety Certification.
- d. LMS-CP-4760, Reporting Injuries, Illnesses, and Compensation Claims.
- e. LMS-CP-8621, Reporting, Investigating, and Recordkeeping for Mishaps, Close Calls, and Previously Unidentified Serious Workplace Hazards.

P.5 MEASUREMENT/VERIFICATION

Verification is conducted through the Agency Institutional, Facilities, Operations Safety Audits.

P.6 CANCELLATION

LPR 8621.1 A-2, dated June 26, 2018

Title

Date

DISTRIBUTION

Approved for public release via the Langley Management System; distribution is unlimited.

CHAPTER 1: GENERAL INFORMATION

1.1 Objectives of Mishap and Close Call Investigations

1.1.1 The objective of mishap and close call investigations is to reduce the quantity and severity of future mishaps through the determination of what happened, where it happened, when it happened, and why it happened with the goal of preventing any future recurrence of a similar event.

1.1.2 The purpose of mishap investigation is to determine the cause(s) and implement effective corrective actions in order to prevent recurrence of similar mishaps; it is not to find blame.

1.1.3 The Safety and Facility Assurance Branch (SFAB) shall ensure that first aid cases are included in an annual report analyzing all injuries to identify potential trends and report those findings to the Safety and Mission Assurance Office (SMAO) Director.

Note: The first aid injuries/illnesses of both civil servants and contractors will not be investigated unless the Langley Safety Manager requests a formal investigation.

1.2 Description of Mishaps and Close Calls (per NPR 8621.1)

1.2.1 A NASA mishap is an unplanned event that results in at least one of the following:

- a. Occupational injury or occupational illness, a fatality, and/or permanent disability to non-NASA personnel caused by NASA operations;
- b. Occupational injury or occupational illness, a fatality, and/or permanent disability 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 projects; and/or
- d. NASA mission failure before the scheduled completion of the planned primary mission.

1.2.2 A close call is an event in which there is no injury or only minor injury requiring first aid, no damage or minor damage (less than \$20,000) to equipment or property, but which possesses the potential to cause a mishap.

1.2.3 Refer to NPR 8621.1 for situations that are not considered NASA mishaps or close calls (e.g., weather events or test-induced damage limited to a test article). The SMAO Director has final decision authority on declaring a non-mishap in accordance with the guidance in NPR 8621.1.

1.3 Mishap Classification Levels and Investigation Types

1.3.1 The Langley Safety Manager shall classify mishaps and close calls in accordance with NPR 8621.1 based on the severity of the personnel injury and the direct cost of the property damage and/or mission failure.

- a. **Type A Mishap:** A mishap resulting in one or more of the following:
 - (1) Occupational injury or illness resulting in a fatality or a permanent total disability.

- (2) Total direct cost of mission failure and property damage of \$2,000,000 or more.
- (3) Crewed aircraft hull loss.
- (4) Unexpected aircraft departure from controlled flight for all aircraft except when departure from controlled flight has been pre-briefed (e.g., upset recovery training, high AOA envelope testing, aerobatics, or Out of Controlled Flight for training) or mitigated through the flight test process inherent at each Center.

- b. **Type B Mishap:** A mishap causing an occupational injury or illness resulting in permanent partial disability; hospitalization for inpatient care of three or more people within 30 workdays of the mishap; or a total direct cost of mission failure and property damage of at least \$500,000, but less than \$2,000,000.

Note: Hospitalization does not include any hospital stay intended only for medical testing, diagnosis, or observation to determine nature or extent of injury or illness.

- c. **Type C Mishap:** A mishap resulting in a nonfatal OSHA-recordable occupational injury or illness causing days away from work, restricted duty, or transfer to another job beyond the day or shift on which the mishap occurred; hospitalization for inpatient care of one or two people within 30 workdays of the mishap; or a total direct cost of mission failure and property damage of at least \$50,000 but less than \$500,000.
- d. **Type D Mishap:** A mishap resulting in a nonfatal OSHA-recordable occupational injury or illness that does not meet the definition of a Type C mishap or a total direct cost of mission failure and property damage of at least \$20,000, but less than \$50,000.

1.3.2 The Aviation Safety Officer (ASO) shall classify mishaps and close calls (for aircrafts or UAVs only) in accordance with NPR 8621.1 based on the severity of the personnel injury and the direct cost of the property damage and/or mission failure.

1.3.3 The Langley Safety Manager and/or the ASO shall initiate or make recommendations to Center management of the type of investigation required based on the classification of the mishap or close call in accordance with NPR 8621.1 and this LPR.

1.4 Emergency Responses to Mishaps and Close Calls

1.4.1 On-center emergency responses shall be performed in accordance with LPR 1046.1.

1.4.2 Once an on-Center emergency is controlled and the site is safe, the mishap scene shall be turned over to the Langley Safety Manager, ASO (aviation only), or Interim Response Team (IRT).

1.4.3 The program/project Mishap Preparedness and Contingency Plan (MPCP) Supplemental shall delineate the processes and procedures for off-Center emergency responses and turning over the handling of the mishap scene to the project IRT.

1.5 The Interim Response Team (IRT)

1.5.1 The IRT shall document, in writing with drawings and photographic evidence, the mishap scene; impound data, voice recordings, and video; collect witness statements; and keep the mishap scene secure until an Investigating Authority (IA) is appointed per NPR 8621.

Note: It is a good practice for the IRT to collect witness statements from witnesses before the witnesses leave the mishap scene, if possible.

1.5.2 For off-site mishaps, the program/project managers shall appoint and fund IRT members to support their program/project. The IRT members shall be documented by position in the program/project MPCP Supplemental.

1.5.3 The IRT Lead shall be a NASA civil service employee.

1.5.4 The IRT members shall meet the training qualification and certification requirements as delineated in LPR 1740.6.

1.6 Program and Project Mishap Preparedness and Contingency Plans

1.6.1 Langley programs/projects shall develop a program/project-specific

1.6.2 MPCP. Langley program/project MPCPs shall be in accordance with their Mission

Directorate MPCP. Mission Directorate MPCPs typically require projects to develop a MPCP Annex or Supplemental.

1.6.3 Programs/projects shall rely upon Center institutional mishap reporting processes and the Center MPCP for activities conducted on NASA property and shall be referenced and/or incorporated into the project MPCP to the extent necessary to ensure proper project response.

1.6.4 A MPCP Annex or Supplemental is also required prior to conducting activities away from NASA property and/or during launch preparations and in-flight or in-space operations.

Note: Software to assist in the development of MPCP Supplementals is available through the NASA Safety Center (NSC) website.

1.6.5 The program/project manager shall be responsible for the implementation, including funding, of the program/project MPCP Supplemental.

1.6.6 The program/project manager shall be responsible for funding any investigation of a mishap related to their program/project.

1.6.7 In the case of a fatality, the program/project manager shall ensure their MPCP notification process includes the Office of Director, SMAO, the Langley Human Resources Office, Office of Procurement, the Public Affairs Office, and the Office of Chief Counsel.

1.6.8 The program/project manager shall forward copies of the program/project MPCP Supplementals to their respective program/project Center Safety Officer (CSO) and the Langley Mishap Manager as soon as the plans are approved.

1.7 Mishap Preparedness and Contingency Plan Practice

1.7.1 The Center MPCP and program/project MPCP Supplemental, including

emergency response where appropriate, shall be practiced at least annually.

CHAPTER 2: NOTIFICATION AND REPORTING REQUIREMENTS

2.1 Langley Personnel on Official Travel

2.1.1 If personnel are on official travel, but not under the coverage of a program/project MPCP, and are involved in a mishap, then the personnel shall contact their supervisor as soon as reasonably possible.

2.1.2 The supervisor shall notify SFAB at 757-864-7233.

2.2 Witnesses to Mishaps and Close Calls

2.2.1 On-Center

2.2.1.1 For an emergency mishap or close call, personnel who witness or are involved in the event shall:

- a. Notify emergency response (911 or designated emergency contact) of the need for assistance as soon as the safety of personnel permits. Personnel may dial 911 from an internal NASA Langley phone or dial 757-864-2222 from any other phone.
- b. Notify their supervisors of the mishap or close call as soon as practicable.
- c. Complete witness statements on request of emergency response or IRT personnel as soon as practicable.

2.2.1.2 For a non-emergency mishap or close call, personnel who witness or are involved in the event shall:

- a. Notify both SFAB at 757-864-7233 and their supervisors of the mishap or close call.
- b. Complete witness statements on request of emergency response or IRT personnel as soon as practicable.

2.2.2 Off-Center

2.2.2.1 For an emergency mishap or close call, personnel who witness or are involved in the event shall:

- a. Notify the emergency authorities described in the program/project MPCP as soon as the safety of personnel permits.
- b. Notify their supervisors of the mishap or close call as soon as practicable.
- c. Complete witness statements on request of emergency response or IRT personnel as soon as practicable.

2.2.2.2 For a non-emergency mishap or close call, personnel who witness or are involved in the event shall:

- a. Notify their supervisor of the mishap or close call as soon as practicable.
- b. Complete witness statements on request of emergency response or IRT personnel.

2.3 Supervisors and Program/Project Managers

2.3.1 For an on-Center mishap or close call, the supervisor shall notify SFAB 757-864-7233 and notify their management chain up to the Director level.

2.3.2 For an on-Center mishap or close call involving a contractor, the contractor's supervisor shall notify SFAB 757-864-7233 and notify the Contracting Officer and/or COR of the contract.

2.3.3 For an off-Center mishap or close call, the supervisor or the program/project manager shall activate the program/project MPCP Supplemental plan and notify SFAB at 757-864-7233.

2.3.4 For aviation mishaps, on- or off-Center, the supervisor, program/project manager, or senior deployed member shall initiate mishap notification as stated in the deployed aviation MPCP Supplemental plan.

2.4 Senior Management

2.4.1 For mishaps that have the potential to be a Type A or B mishap, the Director, or representative, of the organization in which the mishap or close call has occurred shall notify the SMAO Director, and others if required. The notification shall provide available information and potential impacts to the Center's mission.

2.4.2 For emergencies and mishaps that have the potential to be a Type A or B mishap, the SMAO Director shall notify the OD and Directors of organizations that were affected by the mishap. The notification shall provide the information noted in section 2.4.2 and the OD's NASA Headquarters reporting requirements.

2.4.3 The OD shall personally report, by telephone or e-mail, to the NASA 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.

2.5 Safety and Facility Assurance Branch

2.5.1 Within 30 minutes of receiving notification of a Type A, B, or high-visibility mishap, SFAB shall notify the SMAO Director.

2.5.2 Within 60 minutes of receiving notification of a Type A, B, or high-visibility mishap, SFAB shall notify the NASA Office of Safety & Mission Assurance and Office of the Chief Health and Medical Officer (OCHMO) per NPR 8621.1. During this notification, SFAB shall provide the following information:

- a. Center name.
- b. Location of incident.
- c. Time of incident.
- d. Number of fatalities, if known.
- e. Number of hospitalized employees, if known.
- f. Type of injury, if known.
- g. Type and estimate of damage, if known.
- h. Contact person and telephone number.
- i. Brief description of the mishap.

Note: Notification must be acknowledged (verbally and/or email). If initial acknowledgement is verbal, a follow up encrypted electronic notification is required to meet the intent of this requirement.

2.5.3 The Langley Safety Manager shall notify the Area Office of the Occupational Safety and Health Administration (OSHA), or the OSHA central telephone number (1-800-321- 6742) in accordance with the following requirements and 29 CFR §1904.39:

- a. A work-related fatality shall be reported within eight hours.
- b. An in-patient hospitalization, amputation, or eye loss shall be reported within 24 hours of the work-related incident.
- c. Any amputation or loss of an eye within 24 hours if amputation or loss of eye occurs within 24 hours after work-related incident.

2.5.4 The Langley Safety Manager or the Safety Manager's representative shall notify the supervisor and/or Contracting Officer/Contracting Officer Representative (COR) when drug testing should be initiated.

2.5.4.1 Civil servant supervisors shall 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 \$20,000 to Government or private property (see Appendix C for more information). Supervisors may initiate the drug testing request by following the procedures outlined in Appendix C of this LPR.

2.5.4.2 The Contracting Officer/COR shall initiate drug testing for contract personnel according to the contract or applicable agreements.

2.5.5 SFAB shall record the mishap or close call in the NASA Mishap Information System (NMIS) within 24 hours of learning of this mishap.

2.6 Aviation Safety Officer (ASO)

2.6.1 Within 30 minutes of receiving notification of a Type A, B, or high-visibility mishap aviation mishap, the ASO shall notify the Research Services Director, the SMAO Director, and others as required per NPR 8621.1.

2.6.2 The ASO shall notify the supervisor and/or COR/Contracting Officer when drug testing should be initiated per the Aviation FAR requirements.

2.6.2.1 The supervisor shall 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 \$20,000 to Government or private property (see Appendix C for more information).

2.6.2.2 The Contracting Officer/COR shall initiate drug testing for contract personnel according to the contract or applicable agreements.

2.6.3 The ASO or representative shall record the mishap or close call in the NASA NMIS within 24 hours.

CHAPTER 3: MISHAP INVESTIGATION PROCESS

3.1 Safe and Secure On-Center Mishap Site with an Emergency Response

3.1.1 The Incident Commander (IC) and emergency response personnel shall have the authority to take actions to prevent further injury to personnel and/or damage to any property, secure the site, mitigate dangerous conditions, direct emergency response actions, and clean up a hazardous materials release in accordance with LPR 1046.1.

3.1.2 Personnel involved in or witnessing the mishap or close call shall take steps to make safe the mishap site until the emergency responders arrive or upon request from the emergency responders as long as doing so does not pose additional risk to themselves or others.

3.1.3 The IC and emergency response personnel shall clear personnel from the mishap or close call site after the site is safe. Personnel shall not touch or move any items related to the mishap or close call (e.g., equipment, data, videos).

3.1.4 The IC shall transfer responsibility of the mishap site to the Langley Safety Manager, ASO (aviation mishap only), or IRT once the site is considered safe and secure.

3.1.5 The Office of Chief Counsel shall support the IC and the Center Emergency Manager when a fatality occurs on Center to determine the proper jurisdiction for forensic analysis.

3.1.6 The Public Affairs Office shall support the IC and the Center Emergency Manager, upon request.

3.2 Safe and Secure Off-Center Mishap Site with an Emergency Response

3.2.1 Program/project personnel shall initiate emergency response from the local jurisdiction (e.g., town, City, County, Federal Installation) in accordance with the MPCP Supplemental.

3.2.2 Program/project personnel shall provide a copy of their MPCP Supplemental to the local jurisdiction's IC to provide information on hazardous materials and conditions.

3.2.3 The IC shall have the authority to take actions to prevent further injury to personnel and/or damage to any property, secure the site, mitigate dangerous conditions, direct emergency response actions, and/or clean up a hazardous materials release.

3.2.4 Personnel involved in or witnessing the mishap or close call shall take steps to make safe the mishap site until the emergency responders arrive or upon request from the emergency responders as long as doing so does not pose additional risk to themselves or others.

3.2.5 The IC and emergency response personnel shall clear personnel from the mishap or close call site after the site is safe. Personnel shall not touch or move any items related to the mishap or close call (e.g., equipment, data, videos).

3.2.6 The project/program IRT or program/project personnel shall assume control of the mishap scene and objective evidence per their MPCP Supplemental once the area is considered safe and secure and is released by the IC.

3.3 Safe and Secure On-Center Mishaps or Close Calls Site without Emergency Response

3.3.1 Personnel involved in or witnesses to the mishap or close call shall take steps to make safe the mishap site until personnel from SFAB arrive as long as doing so does not pose additional risk to themselves or others.

3.3.1.1 The IC and emergency response personnel shall clear personnel from the mishap or close call site after the site is safe. Personnel shall not touch or move any items related to the mishap or close call (e.g., equipment, data, videos).

3.3.2 SFAB personnel or the Center's IRT shall take control of the site until the type of investigation to be conducted is determined.

3.3.3 For aviation mishaps only, the ASO, or designee, or the Center's IRT shall take control of the site until the type of investigation to be conducted is determined.

3.4 Safe and Secure Off-Center Mishaps or Close Calls Site without Emergency Response

3.4.1 Personnel involved in or witnesses to the mishap or close call shall take steps to make safe the mishap site until the program/project IRT arrive as long as doing so does not pose additional risk to themselves or others.

3.4.1.1 The IC and emergency response personnel shall clear personnel from the mishap or close call site after the site is safe. Personnel shall not touch or move any items related to the mishap or close call (e.g., equipment, data, videos).

3.4.2 The program/project IRT shall take control of the site until the type of investigation to be conducted is determined.

3.5 Initiate Interim Response Team and Investigative Authority

3.5.1 For on-site Type A or B mishaps, the Langley Safety Manager, SMAO Director, or SMAO Deputy Director shall activate the Center's IRT to start an investigation until the IA is appointed.

3.5.2 For aviation Type A or B mishaps, the ASO shall activate an IRT to start an investigation until the IA is appointed.

3.5.2.1 The Langley Safety Manager or ASO shall follow the procedures outlined in LMS- CP-8621 to start an investigation.

3.5.3 For off-site mishaps or close calls, the program/project manager shall activate the program/project IRT and investigation in accordance with its MPCP Supplemental.

3.5.4 The Safety Manager shall appoint a trained, qualified individual to investigate Type C or D mishaps and close calls.

3.6 Objective Evidence Preservation & Impoundment Process

3.6.1 The Langley Safety Manager, ASO (aviation mishaps only) or the IRT Lead shall preserve and impound any objective evidence that may be consider relevant for the investigation of the mishap.

3.6.2 The Langley Safety Manager, ASO (aviation mishaps only) or the IRT shall determine as soon as possible which objective evidence may be considered perishable

or have to be moved; and properly document and/or impound it using photography, sketches, or any other means before the evidence is damaged or moved.

3.6.3 The Langley Safety Manager, ASO (aviation mishaps only) or the IRT Lead shall retain custody of all objective evidence until it is transferred to the IA.

3.6.4 The Langley Safety Manager, ASO (aviation mishaps only) or the IRT Lead shall determine the location where objective evidence (e.g., impounded data, records, and equipment, including electronic media) are stored and secured during an investigation.

3.6.4.1 The IRT Lead shall document how objective evidence (e.g., impounded data, records, and equipment), facilities, and the mishap site will be release to the owners or the IA.

3.7 Notification of Fatalities (On-Center and Off-Center)

3.7.1 The Langley Office of Chief Counsel shall work with Local and Federal authorities to determine the proper jurisdiction in case of any fatalities.

3.7.2 If there is a civil servant fatality, the Langley Human Resources Office shall be responsible for notifying the next of kin.

3.7.3 If there is a contractor fatality, the Langley Office of Procurement shall be responsible for notifying the contractor's management, so they can contact the next of kin. The Langley Office of Procurement shall also notify the Contracting Officer and/or COR of the contract.

3.7.4 SMAO shall inform the Employee Assistant Program point of contact, so that the EAP can prepare to provide their services in response to the fatality event.

3.8 Investigating Authority for Mishap Investigations

3.8.1 The NASA Administrator or designated authority shall appoint the IA for Type A, Type B, and high-visibility mishaps and close calls in a formal appointment letter per NPR 8621.1.

3.8.2 The Center Director has delegated his/her Appointing Official (AO) responsibilities to the SMAO Director to appoint an IA for Type C, Type D, and close calls per NPR 8621.1.

3.8.3 If the investigation is to be conducted by a Mishap Investigation Team (MIT), the SMAO Director shall appoint the IA for Type C and Type D mishaps and close calls (aviation and non-aviation) in a formal appointment letter or by email per NPR 8621.1.

3.8.4 The Langley Safety Manager shall select a trained IA investigator for Type C or Type D **injury** mishaps and close calls (aviation and non-aviation) from a list of preselected trained investigators, who are appointed and approved annually by the SMAO Director. The Langley Safety Manager may request that the SMAO Director appoint a qualified individual who is not on the preselected investigator list to be IA if that individual completes all necessary training before completing the investigation.

3.8.4.1 The Langley Mishap Manager shall send an email to the IA with the following information:

- a. All currently available information of the mishap.

- b. Type of report per section 3.9 of this LPR.

c. Estimated completion date.

3.8.4.2 The SMAO Director, the SMAO Deputy Director, and Langley Safety Manager shall be courtesy copied on the email.

3.8.5 The Langley Safety Manager shall select an IA for Type C or Type D **property damage** mishaps and close calls (non-aviation only) from a list of preselected trained investigators, who are appointed and approved annually by the SMAO Director. The Langley Safety Manager may request that the SMAO Director appoint a qualified individual who is not on the preselected investigator list to be IA if that individual completes all necessary training before completing the investigation.

3.8.5.1 The Langley Mishap Manager shall send an email to the IA with the following information:

- a. All currently available information of the mishap.
- b. Type of report per section 3.9 of this LPR.
- c. Estimated completion date.

3.8.5.2 The SMAO Director, Langley Safety Manager, and the SMAO Deputy Director shall be courtesy copied on the email.

3.8.6 The ASO shall select an IA for Type C or Type D property damage mishaps and close calls (aviation only) from a list of preselected trained investigators, who are appointed and approved annually by the SMAO Director. The ASO may request that the SMAO Director appoint a qualified individual who is not on the preselected investigator list to be IA if that individual completes all necessary training before completing the investigation.

3.8.6.1 The ASO shall send an email to the IA with the following information:

- a. All currently available information available of the mishap.
- b. Type of report per section 3.9 of this LPR.
- c. Estimated completion date.

3.8.6.2 The Langley Safety Manager, Langley Mishap Manager, the SMAO Director, and the SMAO Deputy Director shall be courtesy copied on the email.

3.8.7 For Type C and Type D mishaps and close calls to be conducted by an IA, an ex officio, advisors, and/or consultants shall not be required unless the SMAO Director or the IA requires them to support the investigation.

3.8.8 The IA shall investigate mishaps in accordance with NPR 8621.1, LMS-CP-8621, and this LPR.

3.8.9 The IA shall have access to the proper resources to conduct the investigation, including but not limited to IA charge funding, subject matter experts, office space, storage location, travel, and/or testing.

3.8.10 The IA shall complete all training requirements contained in NPR 8621.1.

Note: Additional training may be required based on the investigator roles in the Mishap Board or Team per NPR 8621.1.

3.9 Mishap and Close Call Reports

3.9.1 Type A and Type B mishap reports shall be done in accordance with NPR 8621.1 and any additional requirements described in the appointment letter and shall include Lessons to Share with Center organizations and personnel.

3.9.2 Type C and Type D mishap reports shall be documented in Microsoft Word or Microsoft PowerPoint and shall include as a minimum the following information:

- a. NMIS Case number;
- b. Type of Mishap;
- c. Narrative Description of Facts (who, what, when, where);
- d. Proximate Cause(s);
- e. Root Cause(s);
- f. Findings;
- g. Corrective Actions, if required;
- h. Recommendations; and
- i. Lessons to Share.

3.9.3 Close Call reports shall be documented in Microsoft Word, Microsoft PowerPoint, or an e-mail and shall include as a minimum the following information:

- a. NMIS Case Number;
- b. Type of Mishap;
- c. Narrative Description of Facts (who, what, when, where);
- d. Findings;
- e. Corrective Actions, if required;
- f. Recommendations; and
- g. Lessons to Share, if applicable.

3.9.4 For Type A and Type B mishaps and high-visibility close calls:

- a. The IA, Langley Safety Manager or ASO (for aviation mishaps only), and the Langley Mishap Manager shall ensure the final report is technically accurate; properly documented; easily understood; and have traceability between facts, findings, and recommendations.
- b. The final report shall be reviewed and signed by the IA, including the ex officio, if applicable.
- c. The Langley Safety Manager, Langley Mishap Manager, and the SMAO Deputy Director shall review and accept the final report and determine if it meets the NPR 8621.1 and LPR 8621.1 requirements.
- d. The final report shall be signed and endorsed in accordance with NPR 8621.1.

3.9.5 For Type C and Type D mishaps and close calls:

- a. The IA, Langley Safety Manager or ASO (for aviation mishaps only), and the Langley Mishap Manager shall ensure the final report is technically accurate; properly documented; easily understood; and have traceability between facts, findings, and recommendations.
- b. The final report shall include the name(s) of the IA.
- c. The Langley Safety Manager, Langley Mishap Manager, and the SMAO Deputy Director shall review and accept the final report and determine if it meets the NPR 8621.1 and LPR 8621.1 requirements.

3.9.6 All required reports for Type A and B mishaps and close calls categorized as high-visibility or involving ITAR/EAR shall be reviewed and authorized for public release by the Center Export Administrator (CEA), the Office of Strategic Analysis, Communications and Business Development (OSACB), and the Office of the Chief Counsel (OCC) in accordance with NPR 8621.1.

3.9.6.1 Although the report may be considered as publicly releasable, the public release of the *information is still dependent on a NASA receipt of a FOIA request* in accordance with NPR 8621.1.

3.9.7 All final reports shall be posted in NMIS per the following rules:

- a. The report has been accepted by the AO.
- b. The report has been reviewed by the Langley Safety Manager, the Langley Mishap Manager, and SMAO Deputy Director, and, when applicable, the CEA, OSACB, and OCC.
- c. A Controlled Unclassified Information (CUI) cover shall be placed on the top of the report stating that the report:
 - (1) Contains investigative records,
 - (2) Is for NASA use only, and
 - (3) Is not for public release unless a Freedom of Information Act (FOIA) request has been received.
 - (4) The CUI cover shall also state the name of the individual who applied the CUI designation.

3.9.8 Section 3.9 does not apply to Safety Concerns and close calls only posted in the Langley Safety Concerns/Close Call database.

3.10 Corrective Action Plans

3.10.1 The AO shall designate a person or team of persons to develop Lessons to Share identified in the mishap report for Type A and Type B mishaps and high-visibility close calls, if deemed necessary.

3.10.1.1 For Type C and Type D mishaps and close calls, the Lessons to Share shall be part of the report and shall be forwarded to the appropriate organizations.

3.10.2 For non-aviation mishaps, the Langley Safety Manager shall identify all the responsible organizations that shall develop and submit a written Corrective Action Plan (CAP) based on the recommendations from the mishap report.

3.10.3 For aviation mishaps, the ASO and the Langley Safety Manager shall identify all the responsible organizations that shall develop and submit a written CAP based on the recommendations from the mishap report.

3.10.4 For all mishaps (i.e., Types A, B, C, and D), the process to develop the CAP is as follows:

3.10.4.1 The Langley Mishap Manager shall generate a list of the mishap report recommendations and provide the list to the responsible organizations.

3.10.4.2 The responsible organization can accept the mishap report recommendations as written or can request to modify or reject the recommendations.

3.10.4.3 If the responsible organization modifies or rejects a recommendation, a justification shall be submitted to the Langley Mishap Manager.

3.10.4.4 The Mishap Manager shall submit the justifications to the AO for approval.

3.10.4.5 The Responsible organizations shall use the approved recommendations to create the CAP. The CAP to the Langley Mishap Manager within 15 days of receiving the mishap report recommendations.

3.10.5 The CAP shall include the following:

- a. Corrective action descriptions and the estimated completion dates for each corrective action.
- b. The responsible organization's point of contact who will complete the corrective action(s).
- c. A matrix or other means of matching corrective actions to all appropriate recommendations in the mishap report.

3.10.6 The Langley Mishap Manager personnel shall monitor corrective actions to determine if they were carried out according to the plan and present a status at the Executive Safety Council.

3.10.7 The Langley Mishap Manager shall verify corrective actions activities were implemented, completed, and closed.

3.10.8 When all corrective actions are closed for a Type A or Type B mishap, the Langley Mishap Manager shall develop and provide a CAP closure statement to the AO, the responsible organization, and the SMAO Director stating that the CAP plan is closed in accordance with NPR 8621.1.

3.10.9 The Langley Mishap Manager shall verify that all the corrective actions are completed and that all other elements of the investigation have been completed and correctly recorded in NMIS.

Note: All the mishap related information, mishap report, and CAP, shall be kept in the Agency NMIS, unless otherwise specified in NPR 8621.1.

APPENDIX A. DEFINITIONS

Appointing Official. The official authorized to appoint the investigating authority for a mishap or close call, to accept the investigation of another authority, to receive endorsements and comments from endorsing officials, and to approve the mishap or close call report per NPR 8621.1.

Center Safety Office. Safety and Facility Assurance Branch, Safety & Mission Assurance Office

Close Call. An event requiring first aid treatment or less, or property damage/mission failure direct cost of less than \$20,000 but has NASA mishap potential considering and documenting either most likely or worst-case estimates by the responsible organization.

Contributing Factor. An event or condition that may have contributed to the occurrence of an undesired outcome; but if eliminated or modified, would not by itself have prevented the occurrence.

Corrective Actions. A systematic approach to discrepancies failures and/or deviations in an attempt to prevent their recurrence. Corrective actions may include but are not limited to 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.

Direct Cost of Mishap or Close Call (for the purpose of mishap classification). The sum of the costs (the greater value of actual or fair market value) of damaged property, destroyed property, or mission failure, 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 fluid that was lost from a ruptured pressure vessel, as well as resultant costs such as environmental decontamination, property cleanup, and restoration, or the best official estimate of these costs).

Event. A real-time occurrence describing one discrete action, typically an error, failure, or malfunction (e.g., pipe broke, power lost, lightning struck, and person opened valve).

Ex Officio. An individual authorized to participate in all investigation proceedings and tasked to ensure that the investigation is conducted in conformance with NASA policy and NPR 8621.1.

Finding. A conclusion, positive or negative, based on facts established during the investigation by the investigating authority (i.e., cause, contributing factor, and observation).

First Aid. Refer to OSHA definition in 29 CFR 1904.7 for the complete list of First Aid treatments.

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, Safety and Mission Assurance (SMA); Center Director; 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.

Hospitalization. The act of taking someone to a hospital and keeping them there for treatment.

Incident. An occurrence of a mishap or close call.

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.

Interim Response Team (IRT). A team that arrives at the mishap scene immediately after an incident; secures the scene; documents the scene using photography, video, sketches, and debris mapping; identifies witnesses; collects written witness statements and contact information; preserves evidence; impounds evidence (at the scene and other NASA locations as needed); collects debris; implements the chain-of-custody process for the personal effects of the injured and deceased; notifies the NASA Public Affairs Officer about casualties, damages, and any potential hazards to the public and NASA personnel; advises the supervisor if drug testing should be initiated; and provides all information and evidence to the investigating authority. The team is considered “interim” because it operates as a short-term response team and concludes its mishap-response activities when the official NASA-appointed investigating authority arrives to the scene and takes control.

Investigating Authority (IA). The individual mishap investigator, mishap investigation team, or mishap investigation board authorized to conduct an investigation for NASA. This includes the mishap investigation board chairperson, voting members, and ex officio, but does not include the advisors and consultants.

Langley Safety Manager. Safety and Facility Assurance Branch Head

Lessons to Share. The written description of knowledge or understanding that is gained by experience, whether positive (such as a successful test or mission), or negative (such as a mishap or failure).

Mishap. An unplanned event or series of events resulting in death, injury, occupational illness, damage to or loss of equipment or property. Mishap types are detailed in section 1.3 of this LPR.

Mishap Investigation Board (MIB). A Langley- or 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 LPR and NPR 8621.1.

Mishap Investigation Team (MIT). A Langley- or 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 LPR and NPR 8621.1.

Mishap Investigator (MI). A trained person 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.

Note: A single mishap investigator may be assigned to a Type B mishap based upon mishap severity and with NASA Headquarters approval.

Mishap Preparedness and Contingency Plan. Pre-approved documents outlining timely organizational activities and responsibilities that must be accomplished in response to emergency, catastrophic, or potential (but not likely) events encompassing injuries, loss of life, property damage, or mission failure.

Mission Failure. A mishap of whatever intrinsic severity that, in the judgment of the program/project manager, or the Chief of SMA, prevents the achievement of primary NASA mission objectives as described in the mission operations report or equivalent document.

NASA Mishap Information System (NMIS). A comprehensive NASA agency-wide web-based system that provides the following: 1) Tracks information on all occupational and non-occupational (personal) injuries and illnesses and 2) Manages information about events or conditions of environmental, health, or safety significance. Functionality includes hazard tracking and “quick incident” reporting (including electronic anonymous reporting and tracking).

Objective Evidence. Physical evidence that someone, when reviewing the documentation, can inspect and evaluate for themselves. It provides compelling evidence that the corrective action or audit was actually performed as indicated and that the criteria was upheld.

Observation. A factor, event, or circumstance identified during the investigation that did not contribute to the mishap or close call, but, if left uncorrected, has the potential to cause a mishap or increase the severity of a mishap; or a factor, event, or circumstance that is positive and should be noted.

Property Damage. Damage to any type of government or civilian property, including, but not limited to, flight hardware, flight software, facilities, ground support equipment, and test equipment.

Proximate Cause. The event(s) that occurred, including any condition(s) that existed immediately before the undesired outcome, directly resulted in its occurrence and, if eliminated or modified, would have prevented the undesired outcome. Also known as the direct cause(s).

Recommendation. An action developed by the investigating authority to correct the cause or a finding identified during the investigation.

Responsible Organization. The organization responsible for the activity, people, operation, or program/project where a mishap occurs, or the lowest level of organization where corrective action shall be implemented.

Root Cause. One of multiple factors (e.g., events, conditions, or organizational factors) that contributed to or created the proximate cause and subsequent undesired outcome and, if eliminated or modified, would have prevented the undesired outcome. Typically, multiple root causes contribute to an undesired outcome.

Safety Concern. Any situation an employee feels is a hazard or has the potential to be a hazard to personnel, equipment, or property.

SATERN. System for Administration, Training, and Educational Resources for NASA at <https://satern.nasa.gov>.

Witness Statements. A verbal or written statement from a witness that describes his/her account including a description of the sequence of events, facts, conditions, and/or causes of the mishap.

APPENDIX B. ACRONYMS

AO	Appointing Official
CAP	Corrective Action Plan
CEA	Center Export Administrator
CFR	Code of Federal Regulations
CO	Contracting Officer
COR	Contracting Officer Representative
CUI	Controlled Unclassified Information
EAR	Export Administration Regulations
FAR	Federal Acquisition Regulation
FOIA	Freedom of Information Act
IA	Investigating Authority
IC	Incident Commander
IRT	Interim Response Team
ITAR	International Traffic Arms Regulations
Langley	Langley Research Center
NASA	National Aeronautics and Space Administration
NSSC	NASA Shared Services Center
MPCP	Mishap Preparedness and Contingency Plan
MI	Mishap Investigator
MIB	Mishap Investigation Board
MIT	Mishap Investigation Team
NFS	NASA Federal Acquisition Regulation Supplement
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
NSC	NASA Safety Center
NSSC	NASA Shared Services Center
OCE	Office of the Chief Engineer
OCHMO	Office of the Chief Health and Medical Officer
OD	Office of Director (Center Director, Deputy Center Director, and Associate Deputy Director)
OSACB	Office of Strategic Analysis, Communications and Business Development

OSHA	Occupational Safety and Health Administration
OSMA	Headquarters Office of Safety and Mission Assurance
POC	Point of Contact
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
SFAB	Safety and Facility Assurance Branch
SMAO	Safety and Mission Assurance Office

APPENDIX C. POST-ACCIDENT DRUG TESTING GUIDE (NSSC GUIDANCE/REQUIREMENTS)

C.1. Testing Criteria

C.1.1. Prior to the Supervisor or, in the absence of a Supervisor, a Responsible Official taking the below steps to request a Post-Accident or Unsafe Practice Test, he/she shall ensure one of the below testing criteria is met.

C.1.2. In accordance with the NASA Procedural Requirements (NPR) 3792.1, "Plan for a Drug-Free Workplace," a NASA Federal employee may be tested when his/her actions are reasonably suspected of having caused or contributed to an accident that meets one of the following criteria:

C.1.2.1. Accident results in a death or personal injury requiring immediate hospitalization.

C.1.2.2. Accident results in damage to Government or private property estimated to exceed \$20,000.

C.2. How to Request a Post-Accident or Unsafe Practice Test

C.2.1. Contact the NSSC Customer Contact Center by phone at 1-877-677-2123 or by e-mail at nssc-contactcenter@nasa.gov.

C.2.2. Inform the Representative that you are requesting a Post-Accident or Unsafe Practice Test.

C.2.3. Provide the NSSC Drug Testing Team Member the following information on the NASA employee(s) to be tested:

C.2.3.1. Number of NASA employee(s) to be tested.

C.2.3.2. Location of the Center's Physical Address.

C.2.3.3. Gate and Physical Address the Collector should enter.

C.2.3.4. Security Phone Number for the Gate the Collector should enter.

C.2.3.5. Name of Escort to take the Collector from the Security Gate to the Collection site.

C.2.3.6. Provide a phone number of the Escort if you are not the contact taking the Collector from the Security Gate to the Collection site.

Note: As soon as possible, the Center Drug Program Coordinator or Supervisor should provide documentation to the NSSC Drug Testing Team containing the below information. This documentation should be sent encrypted via e-mail at nssc@nasa.gov to the attention of the NSSC Drug Testing Team.

- a. Employee(s) Involved in Incident*
- b. Date/Time and Description of Incident*
- c. Source(s) of Information*

- d. *Identify which Testing Criteria is met in the aforementioned Testing Criteria section in accordance with the NPR 3792.1, "Plan for a Drug-Free Workplace," provide proof of concurrence of the Center Director or Center Director Designee*