



Goddard Procedural Requirements (GPR)

DIRECTIVE NO. GPR 8621.4A **APPROVED BY Signature:** Original Signed By
EFFECTIVE DATE: September 24, 2019 **NAME:** Eric K. Isaac
EXPIRATION DATE: September 24, 2024 **TITLE:** Director, Safety and Mission Assurance

COMPLIANCE IS MANDATORY

Responsible Office: 360/Safety Division

Title: GSFC Mishap/Close Call Preparation and Response

PREFACE

P.1 PURPOSE

This directive establishes procedures and requirements for reporting, processing, and investigating mishaps and close calls at the Goddard Space Flight Center (GSFC). This includes the establishment of investigation authorities and the development, implementation, and evaluation of corrective actions and lessons learned. The purpose of mishap and close call investigations is to identify root cause(s) in order to prevent recurrence and reduce the number and severity of future mishaps and close calls. This directive is the GSFC implementation of NPR 8621.1.

P.2 APPLICABILITY

- a. This directive is applicable to all activities that could generate a NASA mishap or close call, as defined per NPR 8621.1. This includes NASA organizations conducting work onsite or at offsite facilities owned or controlled by GSFC. It is also applicable to offsite operations that are NASA-controlled or involve NASA-owned instruments or spacecraft. It is applicable to NASA GSFC contractors as specified in their contracts or grants, and other organizations as specified in written operating agreements. Mishaps or close call investigations involving local operations or remote deployments at or by WFF are managed by the Wallops Safety Office. This document does not address processing, reporting, or investigation of anomalies or non-conformances. This directive does not apply to investigations concerning civil, criminal, or administrative culpability or legal liability. The safety investigative process will not be used to direct or justify disciplinary action.
- b. In this directive, all document citations are assumed to be the latest version unless otherwise noted.
- c. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” or “can” denote discretionary privilege or permission; “should” denotes a good practice and is recommended but not required; “will” denotes expected outcome; and “are/is” denotes descriptive material.

P.3 AUTHORITY

NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping

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<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

P.4 APPLICABLE DOCUMENTS AND FORMS

- a. NPR 3792.1, NASA Plan for a Drug-Free Workplace
- b. NPR 7120.5, NASA Space Flight Program and Project Management Requirements
- c. NPR 8715.2, NASA Emergency Management Program Procedure Requirements
- d. GPR 8710.2, GSFC Emergency Management Program Plan
- e. NTSB 6120, Pilot/Operator Aircraft Accident Report
- f. NASA Shared Services Center Service Delivery Guide, NSSC-HR-SDG-0002
- g. NFS 1852.223-70 NASA FAR Supplement
- h. 803-PLAN-0003, Emergency Operations Plan for Wallops Flight Facility
- i. GSFC Form 23-89, GSFC Mishap/Close Call Investigation Report
- j. GSFC Form 23-96A, Witness Statement

P.5 CANCELLATION

GPR 8621.4-, GSFC Mishap Preparedness and Contingency Plan

P.6 SAFETY

N/A

P.7 TRAINING

Training will be in accordance with NPR 8621.1, Appendix D, Mishap Required Training.

P.8 RECORDS

Record Title	Record Custodian	Retention
NASA Mishap Information System (NMIS) Report	Safety Division, Code 360	NRRS 8/103 Permanent - Cut off records at close of program/project or in 5-year blocks. Destroy/delete between 0 and 30 years after program/project cutoff.
Case file of all Type A, B, and High Visibility records from an investigation, including Closeout Letter and Report, hard copy files.	Safety Division, Code 360	*NRRS 1/122 Permanent – Retire to Federal Records Center when 2 years old. Transfer to National Archives when 20 years old.
SATERN/Records of Root Cause & other mishap related training	NASA Shared Services Center	*NRRS 3/33 C – Destroy or delete 5 years after separation of employee or when no longer needed, whichever comes first.

**NRRS 1441.1 – NASA Records Retention Schedules*

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P.9 MEASUREMENT/VERIFICATION

The appropriate Safety Organization will gather metrics and lessons learned from mishap event, such as trends, numbers of events, etc.

Additional metrics will be identified and utilized as appropriate. These metrics will be reported to management and safety committees on a periodic basis or as requested.

PROCEDURES

INTRODUCTION

This document describes the mishap management program for the Goddard Space Flight Center and its component facilities.

This document provides requirements that specify expectations for the following:

- a. preparing for the possibility of mishaps;
- b. responding to events that occur;
- c. reporting, investigating, and documenting mishaps or close calls;
- d. determining and tracking resulting corrective actions;
- e. promoting “lessons learned” through these activities.

The purpose of this activity is to reduce the risk of future work-related injury, property damage, or mission failure by determining causal factors and implementing corrective actions.

Mishap and close call type classifications are defined in NPR 8621.1, Paragraph 2.4, and in paragraph 4.1 of this document.

1. Roles and Responsibilities

All GSFC entities will follow the roles and responsibilities that are defined in NPR 8621.1 and NPR 3792.1. The following are in addition to the NPR requirements:

1.1 The GSFC Center Director shall:

- a. Delegate the initial classification of the mishap to the appropriate safety organization;
- b. Delegate the role of Appointing Official for investigation of Type C mishaps, Type D mishaps, close calls, as defined in NPR 8621.1.

1.2 Directors shall:

- a. Support Interim Response Team (IRT) or investigating authority needs by providing subject matter experts, equipment, contractor support, and other needed resources; and

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b. Appoint investigating authority for Type C mishaps.

1.3 Managers shall:

Appoint investigating authority for Type D mishaps and close calls.

1.4 Appointing Official will:

- a. Determine the type of investigating authority MIB, MIT, or MI that will investigate a mishap or close call or 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 when a mishap resulted from the actions of an outside source that was not involved in NASA operations;
- c. Appoint the mishap investigating authority in accordance with NPR 8621.1;
- d. Ensure that the investigation is conducted in accordance with NPR 8621.1; and
- e. Serve as an endorsing official for mishaps and close calls for investigation reports for which he/she is the appointing official.

1.5 Human Resources Office, Code 110, will:

- a. Coordinate appropriate notifications to families of civil servants in the case of a fatality or serious injury; and
- b. Notify the NASA Shared Services Center (NSSC) when drug testing services are required for mishaps and close calls.

1.6 Office of Communications, Code 130, will:

- a. Prepare emergency information for the media, when necessary;
- b. Handle inquiries from the media and the public; and
- c. Coordinate and disseminate information to GSFC employees, as appropriate;

1.7 Facilities Management Division, Code 220, will:

- a. Provide a skilled damage-assessment team who will assist in determining extent of damaged area if the mishap is facilities-related;
- b. Evaluate the effect of damage on GSFC facilities and facilitate long-range recovery planning;
- c. Determine recovery times of any affected utility systems; and
- d. Assist in returning the facility to operational status, including but not limited to removing debris, restoring electrical and water service, and condemning unsafe structures.

1.8 In addition to emergency response, recovery and mitigation actions detailed in GPR 8710.2, the Incident Commander (IC), Code 240, shall:

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- a. Preserve the scene to the greatest extent possible so that mishap investigation activities can commence;
- b. Notify appropriate safety organization through the emergency notification process
- c. Support the appropriate Safety Organization with impounding data, records, equipment and facilities;
- d. Relinquish site transfer command to the Interim Response Team after all incident management, including rescue and law enforcement activity efforts are completed and it has been determined that there is no evidence of any criminal activity. Note: if recovery/mitigation activities are required following response to a major emergency, a unified command may be established by the Incident Commander to allow recovery/mitigation to occur simultaneously with IRT activities. If no recovery/mitigation required, IRT may take over;
- e. Provide all evidence gathered at the scene or related to the incident to the IRT or investigating authority; and

During emergency events, the ultimate responsibility for the safe conduct of emergency operations rests with the IC and field supervisors at all levels of incident management, and if activated, the Emergency Operations Center (EOC) Manager. For off-site operations, the IC role will be local emergency response. Not all mishap incidents will involve emergency response, but for those that do the Incident Commander is completely in charge until such time that the scene is turned over to the IRT.

1.9 Information and Logistics Management Division, Code 270, will:

Provide urgent logistical (including, but not limited to photographic, administrative, stenographer, and/or graphics) support for the IRT and the investigating authority, when requested.

1.10 The Safety Division, Code 360, shall:

- a. Provide for oversight and development of the GSFC mishap management program;
- b. Serve as the GSFC NMIS administrator,
- c. Coordinate with directorates in order to facilitate the availability of mishap-related training as needed to maintain a pool of employees for participating on a mishap-investigation authority.
- d. Coordinate the establishment of GSFC IRT for GSFC mishaps and close calls at Greenbelt. For those projects that have an approved Program/Project Mishap Preparedness Contingency Plan (MPCP) in place, the MPCP should be considered in support of this GPR during any mishap response at Greenbelt.
- e. Assist the GSFC Director with determining the type of investigating authority that will investigate a mishap or close call and determine whether NASA will accept the investigation and report of another competent authority having jurisdiction;
- f. Generate the board appointment memorandum for signature by the appointing official for Type A mishaps, Type B mishaps, and high-visibility mishaps and high-visibility close call investigations;
- g. Notify GSFC Center Director of any mishap or close call, and make other notifications as detailed in paragraph 3.3 of this document;

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- h. Coordinate with the appropriate directorate POCs who will initiate the investigative process if the event is other than a Type A or B mishap, high-visibility mishap or high visibility close call investigations;
- i. Support Investigating Authority (IA) needs by serving as Center IRT, and providing subject matter experts, equipment, contract support and other needed resources;
- j. Verify that NASA contractors and grantees conduct mishap investigations and provide mishap reports as specified in their contracts and in NFS 1852.223-70;
- k. Assist the Investigating Authority in recommending what administrative, logistical, and information technology support may be needed for an IRT response;
- l. Review preliminary mishap investigating authority reports for compliance with NPR 8621.1 requirements;
- m. Ensure that Center-managed flight project-related mishaps and close calls are investigated per this document and NPR 8621.1; and
- n. Disseminate “Lessons Learned” related to mishap and close call events.

1.11 Information Technology and Communications Directorate, Code 700, will :

Provide IT resources to the investigating authority, when requested.

1.12 The Wallops Safety Office, Code 803, shall:

- a. Ensure that NMIS access requests are approved/disapproved appropriately;
- b. Notify GSFC management of a mishap or close call, as detailed in paragraph 3.3 of this document;
- c. Contact the appropriate appointing official who will initiate the investigative process if the event is other than a Type A or B mishap, high-visibility mishap or high visibility close call investigation;
- d. Provide guidance to WFF mishap investigation authorities;
- e. Coordinate board appointments, activities and logistics requirements with Code 360 for Type A or B mishaps and high-visibility mishap or close call investigations;
- f. Coordinate the establishment of IRTs for mishaps and close calls at WFF, and at remote sites for WFF-managed activities;
- g. Support IRT or Investigating Authority needs by providing subject matter experts, equipment, contract support and other needed resources;
- h. Verify that NASA contractors and grantees conduct mishap investigations and provide mishap reports as specified in their contracts and in NFS 1852.223-70;
- i. Assist the Investigating Authority in recommending what administrative, logistical, and information technology support may be needed to support the IRT response and investigation;
- j. Provide initial capability and support for the IRT to function until an Investigating Authority is established; and
- k. Notify the National Transportation Safety Board (NTSB) of mishaps and close calls involving aircraft. This notification will be made by the GSFC Chief of Aircraft Operations. In addition, NTSB Form 6120 should be completed in accordance with NPR 8621.1 and NTSB requirements.
- l. Generate Lessons Learned as appropriate to share information in order to prevent recurrence of similar incidents

1.13 Each Interim Response Team (IRT) will:

- a. Maintain communication status with the incident commander to ensure the flow of critical information, the securing of the mishap site, and the avoidance of further damage or injuries;
- b. Provide liaison and coordination with other entities;
- c. Identify witnesses and collect witness statements. It is recommended that GSFC form 23-96A, Witness Statement, be used for this. Verbal statements should be promptly written down;
- d. Support the Office of Communications, the appropriate safety organization, and the GSFC Director in the release of information regarding known hazards and their potential effects and provide instructions to mitigate risk and harm;
- e. Preserve potential evidence, document the scene, retain and control witness statements, and collect debris; and
- f. Relinquish control of the site command to the investigating authority or chairperson of the appropriate safety organization upon request.

1.14 Programs and Projects will:

- a. Assist the appropriate safety organization with determining the classification of an incident;
- b. Develop Program/Project MPCPs in accordance with NPR 8621.1 and NPR 7120.5;
- c. Establish a trained IRT to respond to an off-Center event, and provide support to any on-Center IRT response as requested
- d. In the event of a mishap or close call involving their program or project, programs/projects will activate the MPCP for activities not located at a GSFC Facility. If the mishap or close call occurs at a GSFC-managed facility, the project MPCP will be supportive of a GSFC IRT response;
- e. Halt operations/testing, as soon as possible after a mishap/close call, at a point where no additional hazard will be created. Notify their supervisor or individual within their management chain and the appropriate safety organization as soon as possible. If directly affecting project hardware, notification to project safety/management should be provided. Operations shall not resume until authorized by the appropriate safety organization, IRT, or investigating authority;
- f. Provide funding and support for investigations within their program jurisdiction or involving their hardware and facilities;
- g. Provide technical support (as necessary) to mishap or close call investigations;
- h. Track Program/Project-owned corrective actions through implementation and closure; and
- i. Generate Lessons Learned as appropriate to share information in order to prevent recurrence of similar incidents.

1.15 Contracting Officers will:

- a. Coordinate with Contracting Officer's Representative (COR) to initiate drug testing protocols after an event, if contractually required;
- b. Ensure that the contract project manager is notified when their employees are involved in an incident;

- c. Ensure contractors report mishaps, close calls, emergencies, and unsafe or potentially unsafe conditions, in the workplace; and
- d. Ensure contractors investigate all mishaps/close calls in accordance with the respective contract.

1.16 Supervisors will:

- a. Require and encourage employees to report mishaps, close calls, emergencies, and unsafe or potentially unsafe conditions in the workplace;
- b. Notify the appropriate safety organization of mishaps or close calls;
- c. Notify the appropriate Facility Operations Manager if the mishap or close call is facility-related;
- d. Ensure that mishaps and close calls are reported in NMIS;
- e. Ensure employees involved in mishap investigations or IRTs are trained in accordance with NPR 8621.1 requirements and this document. It is recommended that CERTrak be utilized for maintaining training and OJT records; and
- f. Appoint the Investigating Authority for Type D mishaps and close calls.
- g. Share lessons learned with their employees for awareness and in order to prevent recurrence of similar incidents.
- h. Coordinate with the Human Resources Office to obtain drug testing if necessary.

1.17 Employees will:

- a. Immediately report emergencies at GSFC Greenbelt by calling 911 from any GSFC phone, or (301)286-9111 from a cellular phone. At WFF, call 911 or x1333 from a land line. Consult local procedures for all other facilities.
- b. Report unsafe or potentially unsafe conditions, mishaps and close calls to supervisor, Facility manager, NMIS database, or through any other valid channel.
- c. Safe the scene and/or halt operations or testing if an unsafe condition arises (unless ceasing operations would create greater danger), and notify the supervisor. Operations shall not resume until authorized by the appropriate safety organization, IRT, or investigating authority;
- d. Take action to limit further property damage or personnel injury if it can be done safely;
- e. Remain on the scene in a safe location until all necessary information is provided to emergency responders and/or the investigating authority; and
- f. Cooperate with IRT and/or investigating authority.

2.0 Pre-Mishap Planning

2.1 MPCPs

a. Project MPCPs

- (1) Programs/Projects will develop MPCPs for any NASA-owned instrument or higher assembly that will be located off Center. At WFF MPCPs are required for onsite Range and Aircraft operations.

- (2) Projects will ensure that these plans definitively address notification, response, investigation, recording, and preparedness procedures for mishaps that occur offsite, as defined in NPR 8621.1 and in line with program/project expectations.
- (3) Programs/Projects will provide a final copy of approved MPCP to 360 Mishap Program Manager or the WFF Mishap Program Manager (as applicable) no later than 30 days prior to shipment.
- (4) Mishap Program Manager will forward a copy of approved Project MPCP to OSMA Mishap Investigation Program Executive as soon as received.
- (5) MPCPs are intended for open distribution, and will not contain data that require restrictions (i.e., proprietary, export-controlled, or SBU markings).

b. Center MPCP

- (1) The MPCP for Greenbelt operations is Appendix C.
- (2) The institutional plan for WFF is 803-GS-PLN-INST-01F Institutional Mishap Preparedness and Contingency Plan.

2.1.1 MPCPs for programs/projects programs/projects formed and governed under the authority of NPR 7120.5 or NPR 7120.8, and managed by GSFC, will:

- a. Be utilized to provide additional program/project information, i.e., hazards, contact lists, agreements, etc. The plan should stand alone for offsite mishaps and should include information regarding mishaps occurring at offsite contractor locations;
- b. Be approved by the program/project manager as well as the project chief safety and mission assurance officer (CSO) or appropriate safety organization. Concurrence of the Program Executive is also required for all missions prior to shipment to the launch site;
- c. Have initial draft readied by Preliminary Design Review, and be completed prior to the Program/Project Critical Design Review (CDR) or other appropriate readiness review;
- d. Be evaluated and updated as necessary prior to Pre-Ship Review (PSR) and Safety and Mission Success Review (SMSR), when applicable; and
- e. Be submitted to OSMA Mishap Program Manager once fully approved to be posted on the OSMA secure mishap website. The Mishap Program Manager will facilitate this submittal.

2.1.2 Programs, Projects and Instrument developers not required to have an MPCP by NPR 7120.5 or NPR 7120.8 will follow the mishap response requirements of this document and NPR 8621.1.

2.1.3 The MPCP, including emergency response, will be practiced at regular intervals as well as during contingency simulations that occur prior to major test, launch, or activity for ongoing programs with repeated activities, the Program Mishap Preparedness and Contingency Plan will be exercised through a simulated response every 18 months or at a frequency established by the program/project MPCP.

The Program/Project Chief Safety and Mission Assurance Officer (CSO), Project Safety Manager (PSM) or Project Safety Engineer (PSE) will coordinate with the Project Manager to schedule these simulations and tabletop reviews. The PSM will provide feasible scenarios to use for these simulations. The simulations and tabletop reviews should take place prior to key project events. Mishap Program Manager will be available to support all tabletop exercises.

2.1.4 Prior to key project events the Program/Project Interim Response Team (IRT) will do the following:

- a. Meet and discuss each person’s roles and responsibilities as a member of the IRT;
- b. Evaluate need for ‘go kits,’ and arrange to have them ready in time to support project event. These kits should be assembled and maintained by the program/project. Suggestions for what to include in a ‘go kit’ are listed in Appendix C, but each project should evaluate specific needs.
Note: go-kits should not include items that require specialized training/expertise for use (such as respirators, gas detection devices, etc.) or that would be used for activities that are not the responsibility of the program/project (such as traffic control devices);
- c. Obtain all forms (evidence log, evidence voucher, written witness statement);
- d. Ensure that required training has been taken by IRT members;
- e. Ensure Project creates and maintains a list of project personnel supervisor, contracting officers, and contractor drug testing agreements (for the purpose of potential drug testing); and
- f. Report the outcome(s) of the discussion to Project Management, noting any deficiencies and the actions needed to correct them.

2.2 Interim Response Team (IRT) Appointment

2.2.1 The Safety Division (Code 360) and the WFF Safety Office (Code 803) shall appoint the Center IRT for their respective locations. Programs/Projects follow the process defined in the Program MPCP for IRT appointment, and illustrated below in Figures 2.2-1 and 2.2-2:

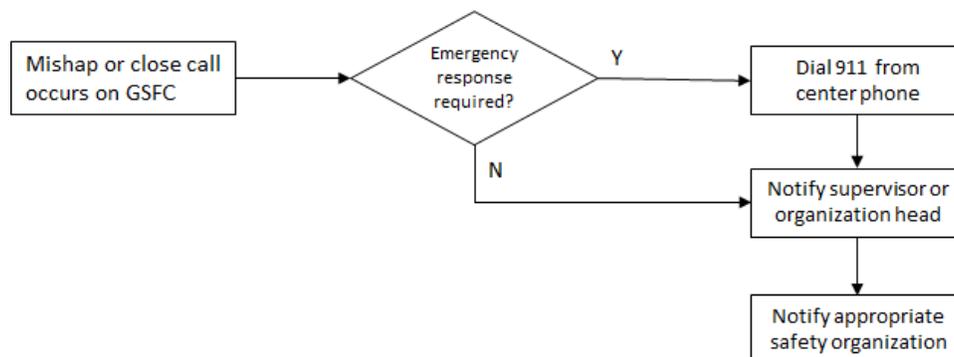


Figure 2.2-1: Response for on-Center mishap

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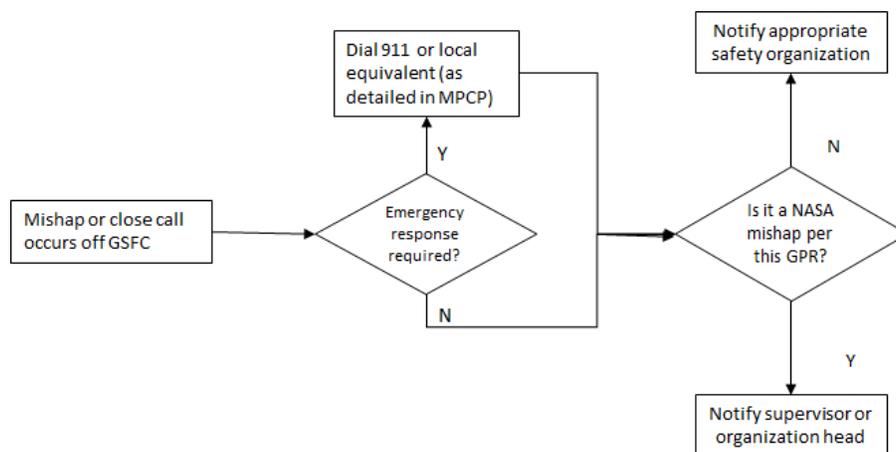


Figure 2.2-2: Response for off-center mishap

2.2.2 All IRT members will take the IRT training as required by NPR 8621.1, Appendix D.

2.2.3 GSFC will maintain an IRT in accordance with Appendix C (Greenbelt), and 803-GS-PLN-INST-01F Institutional Mishap Preparedness and Contingency Plan (WFF), as well as any existing Program/Projects MPCPs. IRT members will function in various roles following a mishap until the investigation is turned over to an investigation authority. The IRT will be formed based on the nature of the mishap and may consist of any of the following roles:

- a. IRT Lead – Civil servant in charge of all IRT activities. Assumes control of mishap site from Incident Commander and remains in control of scene and evidence. Maintains control of evidence/data;
- b. Deputy IRT Lead – Civil servant in charge of IRT activity coordination in the absence of the IRT lead;
- c. Mishap Scene Security Coordinator – Individual designated to ensure that the mishap scene is secured after the mishap occurs. This will usually be a member of the Protective Services Division;
- d. Written Witness Statement Coordinator – Civil servant designated to coordinate the process of having identified persons fill out witness statements of the incident and/or events leading up to it;
- e. Handling and Impoundment Coordinator (HIC) – Civil servant designated to coordinate all activities pertaining to hardware, documentation and debris impounding. The individual designated to be in charge of secure storage for impounded material;
- f. Chain of Custody Custodian – Civil servant designated to coordinate the securing of sensitive and personal items of injured or ill victims of a mishap;

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- g. Photographic Support – Individual designated to take official pictures of the scene and debris sites;
- h. Office of Communications Advisor – Individual from the Office of Communications that will release mishap related information to the public. Responsible for responding to media/press releases or inquiries;
- i. Office of Chief Counsel Advisor – Individual from the Office of Chief Counsel that will advise the IRT on legal matters pertaining to the mishap;
- j. Directorate Safety Representatives: Individuals from each directorate that will assist IRT; and
- k. Project Safety Representatives: Individuals from any project involved in an on-Center mishap, who will provide project-specific information to the IRT.

2.4 Training Requirements

2.4.1 Minimum training will be in accordance with NPR 8621.1.

In addition to the NPR-required training, each Center activity, 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, blood-borne pathogens, confined space, etc.

3.0 Mishap Management

3.1 Actions Required as a Result of an Incident

The following actions should be carried out by employees in the event of an incident:

- a. The initial response by personnel in the area when an incident occurs is very critical. The first priority is to take whatever immediate actions are necessary to minimize the risk of loss of life, injury, and property damage. This often may include the need to promptly get help. If an employee is involved in or witnesses a mishap that needs ambulance or fire department response, call 911 from an on-site phone. From an off-site or mobile phone: at Greenbelt dial (301) 286-9111; at Wallops dial (757) 824-1333. In the case of a fire, explosion, or other situations making evacuation of the building appropriate (e.g., release of flammable or toxic gasses), also activate the building fire alarm;
- b. GPR 8710.2 shall be the authority document for onsite incidents when the emergency systems have been activated (i.e., 911 is called);
- c. If imminent danger is not present, employees should perform emergency shutdown procedures, safe the area, notify the appropriate supervisor, and notify the appropriate safety organization;
- d. Employees should remain on the scene in a safe location until all necessary information is provided to emergency responders and/or the investigating authority; and
- e. If an injury has occurred and emergency care is not necessary, the injured employee should report to the Health Unit (civil servants or contractors). Once an area has been secured, employees should not enter that area until it is released by the incident commander.

3.2 Securing the Mishap Site

- a. The site shall be secured to the extent possible in order to preserve the mishap evidence for the investigation without hampering essential rescue operations. When an event does not require the need for an incident commander, the official in charge of the area will secure the site until the appropriate safety organization or interim response team takes control of the scene;
- b. The incident commander, official in charge, or appropriate safety organization shall determine if there are any hazards (e.g., hazardous materials and chemicals, radiation, blood-borne pathogens, etc.) present and ensure needed precautions are taken to safe the scene;
- c. The IRT or appropriate safety organization with other support (e.g., supervisor, safety, and security) shall impound appropriate records, equipment, and/or facilities involved in the mishap and hold until released to the Investigating Authority. The data to be impounded include, but is not limited to, the following: recorded photographic, video, and test data, records, work orders, design drawings, training records, and procedures;
- d. The storage location of impounded items will be dependent on incident conditions, i.e., large items can be secured in place, while location of pertinent records is coordinated with the organization directly responsible for the facility or operation; and
- e. The IRT or appropriate safety personnel will obtain, document, and secure witness statements. Only witness statements taken by civil servants on the IRT within the first 24 hours of the incident are considered privileged information. Contractors may obtain witness statements, but may not confer privilege.

3.3 Management Notification

- a. The supervisor shall immediately notify the appropriate Safety Organization and their supervisor of the mishap or close call; and
- b. The appropriate safety organization will ensure that all other notifications are made per the table in NPR 8621.1, Appendix E. The Headquarters notification in NPR 8621.1 Appendix H will require the following information:
 - (1) the Center name;
 - (2) location of the incident;
 - (3) date and time of the incident;
 - (4) number of fatalities;
 - (5) number of hospitalized employees;
 - (6) type of injury;
 - (7) type of damage;
 - (8) contact person and phone number; and
 - (9) brief description of mishap.
- c. For situations involving medical emergencies, the appropriate safety organization shall coordinate the notification protocols to the supervisor, organization head, Contracting Officer, or COR. Only the GSFC Medical Director is authorized to contact medical facilities to obtain medical information on a patient;

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- d. The appropriate safety organization will ensure the Occupational Safety and Health Administration (OSHA) area office is notified within 8 hours of any fatality or hospitalization of 3 or more civil service employees as a result of a mishap. OSHA must also be notified within 24 hours of an in-patient hospitalization, amputation or eye loss; and
- e. Within 24 hours of the incident, the supervisor shall ensure that the incident is entered into the NASA Mishap Information System (NMIS) at the following link: <https://nmis.sma.nasa.gov>. Select "Report an Event" to report the details of the mishap or close call. A user name and password are not required to use NMIS for reporting a mishap or close call. NMIS will automatically notify the appropriate Safety Organization when a mishap or close call is reported.

3.4 Drug Testing

Drug testing shall be conducted in accordance with NPR 8621.1 and NPR 3792.1 when a mishap results in a fatality or personal injury requiring immediate hospitalization or in damage estimated to be equal to or greater than \$10,000 to government or private property. It is recommended that testing be completed within 4 hours; however, attempts should be abandoned if not done within 32 hours. If the mishap meets the drug testing criteria, the civil service supervisor should call NSSC at 1-877-677-2123. The NSSC-HR-SDG-0002, can be used as a reference. If the mishap meets the drug testing criteria and the contractor is involved, the supervisor/manager shall contact the Contracting Officer.

3.5 Impound Process

The impound process shall be strictly controlled. Impoundment procedures may only be performed by civil service employees.

3.5.1 Data and Equipment Impoundment

Ground support equipment, test equipment, flight hardware and pertinent data involved in a mishap or high visibility close call shall be secured and subject to impoundment, and tagged and cataloged prior to impoundment. Examples of data subject to impoundment include but are not limited to the items shown below:

- a. check-out logs;
- b. test and check-out record charts;
- c. launch records;
- d. weather information;
- e. telemetry tapes;
- f. audio and video tapes;
- g. time cards;
- h. training records;
- i. inspection records;
- j. problem reports;
- k. notes;

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- l. e-mail messages;
- m. automated log-keeping systems and procedures;
- n. computer data and databases;
- o. audio/video media that records the events;
- p. maintenance records/work orders;
- q. design drawings (e.g., facilities, equipment, spacecraft);
- r. spacecraft and launch readiness data packages;
- s. spacecraft team personnel records (training, time cards, certifications);
- t. configuration-controlled presentations, documents, drawings, Work Order Authorizations, etc.;
- u. photographic and video graphic records for the building, integration, and testing of the flight hardware (spacecraft and components);
- v. science instrument design drawings (e.g., equipment, facilities);
- w. science instrument team personnel records (training, time cards, certification);
- x. assembly, integration and operational procedures that were used;
- y. instrument and telemetry data; and
- z. Mission Operations Control Center data.

3.5.2 Information Technology Support

The IRT shall obtain support from an information technology (IT) professional to support the collection, maintenance, and security of IT data that have been impounded and collected. No one except a trained IT professional may remove data from servers and/or encrypted files. When the investigation is transitioned from the IRT to the Investigating Authority, the IT professional will continue his/her support as needed.

3.5.3 Impound Storage

Storage should be based on the mishap and location. The storage site of impounded equipment is dependent on the size and mobility of the equipment as well as the availability of an appropriate storage area (e.g., clean room, warehouse). The impounded data should be stored in a secured location or in a locked container such as a file cabinet or storage cabinet. Access to the location/container is to be controlled by the IRT. The key to the storage area and container(s) is to remain in the possession of the handling and impoundment coordinator until another person is designated as custodian or the items/ data are transferred to the investigating authority.

3.5.4 Chain of Custody Process

The chain of custody process will be used for all impounded articles, including but not limited to, personal effects and sensitive information related to injured or deceased individuals. The IRT Chain of Custody Custodian shall be responsible for the tagging, securing and release of the impounded items.

4.0 Mishap Investigation

4.1 Mishap classification:

Mishap classification shall be in accordance with NPR 8621.1

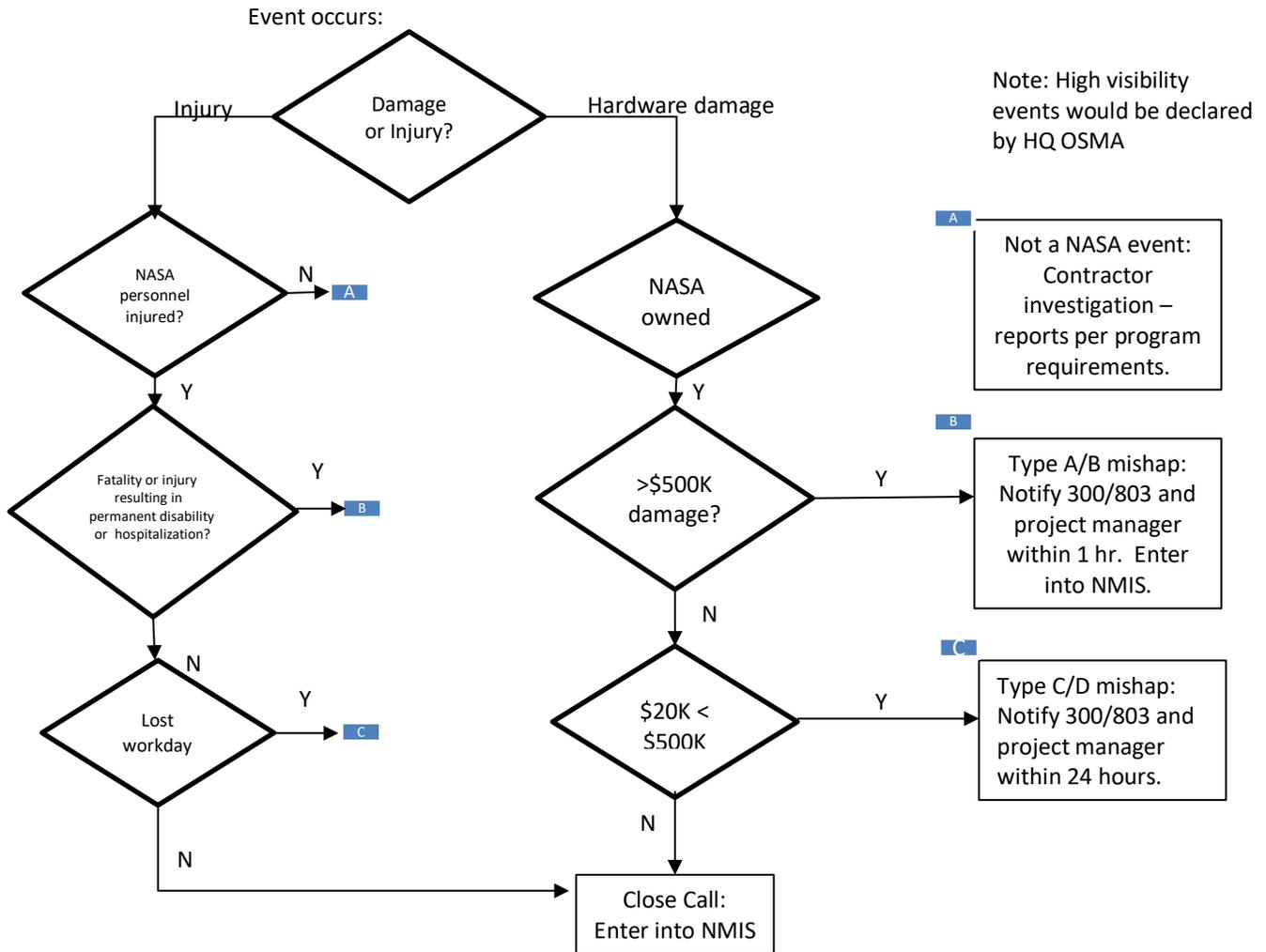


Figure 4.1-1: Decision tree for categorizing mishap or close call event

4.2 Appointing the Investigating Authority

4.2.1 The Appointing Official should appoint the Investigating Authority within 48 hours of the mishap or close call. The appointment notification will define duties and responsibilities and include the WBS charge number for the investigation. The mishap classification or level of investigation can be elevated by the Administrator, Assistant Administrator (AA), Mission Directorate Assistant Administrator

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(MDAA), GSFC Director, Chief/OSMA, or Chief Health and Medical Officer (CHMO) if the mishap is identified as High Visibility.

4.2.2 The GSFC Director delegates appointment authority 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 to the responsible organization. The GSFC Director may require a higher-level Investigating Authority at their discretion. At WFF the 803 Safety Office reserves the right to appoint the IA.

4.2.3 The Investigating Authority is responsible for investigating the mishap or close call and providing the report to the Appointing Official. The Investigating Authority may consist of:

- a. Civil service employees as voting members;
- b. Civil service advisor support (e.g., public affairs, import/export control), as determined by the mishap circumstances;
- c. Contractor employees as nonvoting consultants, as determined necessary by the mishap circumstances; and
- d. Civil service *ex officio* assigned to each GSFC mishap investigation (see Section 4.1.9. (c) for exception) to ensure the requirements of NPR 8621.1 and this GPR are followed.

All members will complete training as per section 2.4.1.

4.2.4 For Type A mishaps, Type B mishaps, high visibility mishaps, and high visibility close calls, the investigating authority will be a mishap investigation board (MIB), which is a NASA-sponsored board that:

- a. Requires concurrence on membership from the NASA Chief/OSMA, Office of the Chief Engineer (OCE), the OCHMO (Office of the Chief Health and Medical Officer), and AMD (Aircraft Management Division) when warranted by the undesired outcome;
- b. Consists of an odd number of Federal employees, who are independent from the mishap operation;
- c. Requires 3-5 members for Type A-B, or high visibility mishaps or close calls; and
- d. Provides a Safety officer and Human Factors Mishap Investigator, as voting members.

4.2.5 For Type C mishaps, Type D mishaps, and close calls, the investigating authority may be a mishap investigator (single individual) or a mishap investigation team, as specified by the appointing official. A mishap investigator or investigation team shall have:

- a. Knowledge of NASA mishap investigations policy, requirements and processes;
- b. Knowledge of witness interview techniques, data collection processes, human error analysis and root cause analysis techniques, and generation of recommendations; and
- c. Training, in accordance with section 2.4.1.

4.2.6 A contractor mishap board, team, or investigator will be determined by the contractor per the requirements of their contract; however, NASA can convene a NASA Investigating Authority if desired.

4.2.7 The Appointing Official, with the assistance of the appropriate security office, will ensure that the investigating authority members, chair, and *ex officio* have the requisite clearances to investigate a mishap.

4.2.8 The Safety Division (Code 360) will prepare a letter of appointment for the investigating authority for Type A mishaps, Type B mishaps, high-visibility mishaps and high-visibility close calls.

4.2.9 The Appointing Official shall document (by memorandum or official announcement) the members of the investigating authority, its charter, and a due date for the mishap report.

4.3 Investigation

The purposes of the mishap investigation are to determine proximate and root cause(s) of the mishap or close call and to develop recommendations to prevent recurrence. The investigation may also identify positive or negative observations, which highlight specific factors that may impact future mishap risk but that are not deemed causal to the event itself.

At the start of the investigation, the IRT will turn over all evidence to the Investigating Authority. At that time, the IRT's responsibilities end.

4.3.1 Mishap investigations will be conducted in accordance with the requirements in NPR 8621.1 and other requirements defined in the appointment letter.

- a. For Type A mishaps, Type B mishaps, and high-visibility mishaps/close calls, or other investigations delegated to the GSFC by NASA Headquarters, there may be additional instructions in the letter of delegation regarding the MIB, MIT or MI membership, activities, or other procedures to be followed.
- b. These instructions take precedence over the corresponding processes established by this directive.
- c. For less complicated Type C, D, or close call investigations, GSFC form 23-89 may be used in lieu of an investigation report at the discretion of the Appointing Official.

4.3.2 The investigating authority will be responsible for the release of the mishap site for post-investigation cleanup or activity as well as for the release of impounded data, records and equipment. Upon release, facts pertaining to resuming operations (e.g., constraints, precautions, etc.) should be issued by the investigating authority. As the investigation progresses the information should be updated as needed.

4.3.3 The investigation is not completed until the Mishap Report is approved by the Appointing Official.

4.4 Mishap Investigation Reports

4.4.1 The investigating authority will prepare its report in accordance with the requirements of NPR 8621.1.

4.4.2 Extensions to the report deadline should be addressed by appointing official. Requests for extension may be sent via letter or email to the Appointing Official and Mishap Program Manager.

4.4.3 The mishap report will be reviewed within 14 working days of receipt by the appointing official. The appointing official will initiate an endorsement review within 30 working days, if endorsements are required.

4.4.4 The investigating authority will take appropriate actions to disposition comments. For Type A and Type B mishaps, a presentation will be prepared by the investigating authority for briefing the appointing official and responsible organizations.

4.4.5 If there is a minority opinion or dissenting view held by investigating authority members or the *ex officio*, it will be attached to the report.

4.4.6 The investigating authority will present investigation findings to the appointing official in communication that includes the responsible organizations, appropriate safety organizations, and others previously identified. It is recommended that this be accomplished by an out brief meeting that summarizes the event as well as findings, observations, and recommendations.

4.4.7 If the report is rejected, a new investigating authority shall be appointed by the Appointing Official within 48 hours, and will be provided with specific instructions as to the remaining duties and responsibilities with respect to concluding the investigation.

4.4.8 Approved investigation reports of Type A mishaps, Type B mishaps, and high-visibility mishaps/close calls will be sent to the appropriate-level NASA legal official, NASA import/export control official, NASA public affairs official, and any other NASA program or policy official(s) as required, for their review and reply within 10 work days.

4.5 Corrective Action Plan

The responsible organization will receive a copy of the mishap report as part of coordination activities. The Corrective Action Plan (CAP) will be prepared by the responsible organization in accordance with NPR 8621.1 and include the recommended corrective action(s), the action(s) to be implemented, and the projected completion date(s). The CAP is due to the Appointing Official within 15 working days unless otherwise specified in writing. The appointing official may provide the CAP to the investigating authority, applicable safety organization, and other selected offices as is deemed appropriate for review.

Each item on Corrective Action Plans will be entered into NMIS as soon as the plans are completed and approved by the AO, including due dates and the name of the individual responsible for completing the action.

Responsible Organizations for each corrective action will update the NMIS record corrective action tracking details and provide regular tracking status to the AO, at a frequency determined by the AO, until all corrective actions are completed. The Mishap Program Manager will assist in NMIS data entry as requested. For Mishap Type A & B, and high visibility mishaps and close calls, regular tracking status will also be provided to the Mishap Program Manager. The Responsible Organization will continue to track all Corrective Action Plans until all items are implemented and closed.

NMIS record will not be closed until all listed corrective actions are either closed and verified, or transferred to another approved system (such as SHETrak) for tracking and closure.

When the owner of a NMIS record submits an item for closure, the Mishap Program Manager will review corrective actions and verify that the responsible organization has performed the following:

- a. At least one corrective action is identified for every finding on the record, where practical;
- b. That corrective action is demonstrated to be an adequate control for the finding; and
- c. The responsible organization has closed each corrective action, and provided either verification that it has been implemented (and attached evidence to the record) or provided details of transfer of the item to alternate closed-loop tracking system. The Mishap Program Manager will independently gauge whether attached verification is sufficient to justify NMIS record closure.

Any NMIS record submitted for closure that does not meet these minimum requirements will be rejected by the Mishap Program Manager, and returned to “open” state.

Mishap Program Manager will report status of open corrective actions to the GSFC Safety committee, based on latest available data in NMIS, as requested.

A flow chart of the process is below:

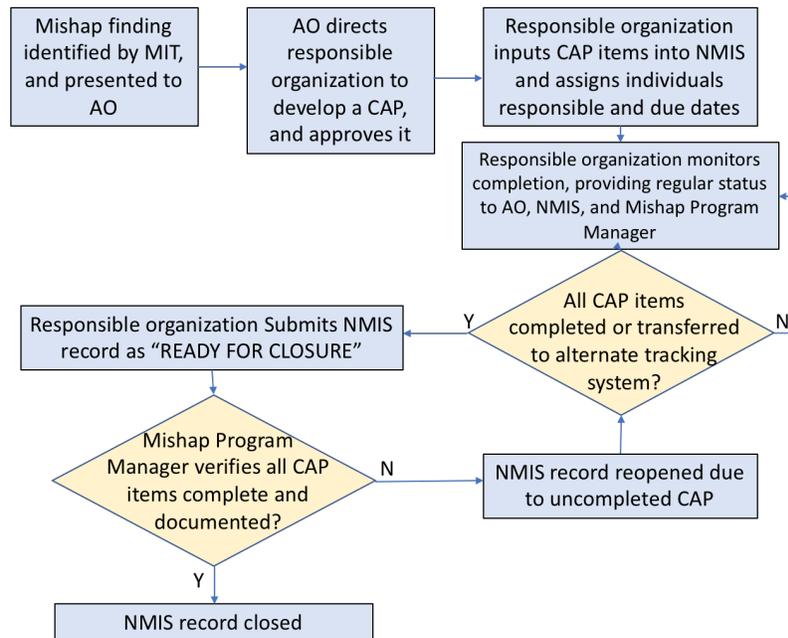


Figure 4.5-1: Process for closure of NMIS record

4.5.1 The appointing official will task the responsible organization to develop, finalize, and submit a CAP and the lessons learned if warranted by the event. If a draft CAP is included with the report, it can be used as a starting point or as guidelines for forming a CAP.

4.5.2 A CAP will be developed for all mishaps and close calls by the responsible organization and submitted to the appointing official within 15 working days of receipt of the mishap investigation report. The appointed official may extend this deadline upon written request from the responsible organization.

4.5.3 The CAP will address the recommendations in the mishap investigation report, including actions to correct the situation that caused the mishap or close call and prevent the same or similar mishap from reoccurring. The major objective is to address and correct the root causes for the mishap or close call.

4.5.4 The CAP will include:

- a. A description of the corrective actions necessary to eliminate the causes, with direct connections made between corrective actions and the investigation findings they ameliorate;
- b. Who is responsible for performing the action, or which NASA organization is responsible for ensuring the action is completed (if the action is to be performed for the responsible organization by a contractor or other NASA organization);
- c. An estimated completion date for each action provided by the performing organization.

4.5.5 If the responsible organization disagrees with the recommendation, the concern/issue should be addressed in the CAP and the appointing official will make the determination as to how to address the recommendation.

4.5.6 If the CAP is rejected, it will be returned with comments to the responsible organization for revision and re-submittal. The appointing official will determine the timeframe for re-submittal of the CAP.

4.5.7 If the CAP is accepted, the appointing official will:

- a. Direct the responsible organization(s) to implement the plan; and
- b. Provide the plan to the appropriate safety organization for distribution. The final CAP will be completed and filed with the official approved report. Mishap lessons learned, if identified, should be submitted to the GSFC lessons learned system. Either the responsible organization or the appropriate safety organization can enter the approved corrective actions into NMIS for tracking.

4.6 Corrective Action Plan Implementation

4.6.1 Upon receipt of the CAP, organizations with assigned actions will implement the approved CAP as directed by the appointing official.

4.6.2 The responsible organization(s) will implement corrective actions as soon as possible and communicate completion to the appointing official and the appropriate safety organization.

4.6.3 The status of the CAP will be tracked monthly by the appropriate safety organization.

4.7 Mishap Follow-Up

- a. All investigation reports will be posted and retained in NMIS. The Safety Division (Code 360) will facilitate this for all GSFC mishap investigation reports with the exception of WFF mishap investigation reports. The Wallops Safety Office (Code 803) will manage all WFF mishap investigation reports.
- b. In the case of dissent, the Appointing Official will be responsible for ensuring resolution of issues between the Investigating Authority and the responsible organization.

4.8 Conclusion of Mishap Activities

4.8.1 The appropriate safety organization will verify that the CAP is complete and all elements of the investigation have been completed and correctly recorded in NMIS.

4.8.2 The appropriate safety organization will generate a completion statement in accordance with NPR 8621.1, Section 6.7.

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4.8.3 All data related to the mishap investigation will be prepared for archive by the Appointing Authority, and turned over to the Mishap Program Manager at the conclusion of the investigation.

At the conclusion of the investigation, the IA will ensure that all data should be properly marked and organized in an orderly fashion.

The Mishap Program Manager will retain these data for archive per requirements of this document. At WFF the Mishap Program Manager does not retain all data. NMIS is the prime storage location. Cognizant project and safety offices retain their own investigation records.

4.9 Hazards

Hazards may be reported by anyone using the NMIS tool. When a hazard is reported, the Mishap Program Manager will assign the record to a responsible party. If the hazard is deemed to indicate imminent risk to personnel, immediate action will be taken to mitigate that risk by either the Mishap Program Manager or designee.

Documentation of the resolution of any reported hazards condition will be recorded in NMIS by the owning directorate, and the hazard record closed. This resolution may either document elimination/control of the hazardous condition, or transfer of the concern to another tracking system (such as SHETrak).

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Appendix A – Definitions

- A.1 Appropriate Safety Organization** - The Safety Organization that has oversight responsibility for mishap/close call management. At Greenbelt it is the Safety Division (Code 360) for all GSFC sites with the exception of WFF. At WFF, it is the WFF Safety Office (Code 803).
- A.2 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 report.
- A.3 Cause** - An event or condition that results in an effect. Anything that shapes or influences the outcome.
- A.4 Close Call** - 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.
- A.5 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.
- A.6 Corrective Action Plan (CAP)** - A plan addressing each finding of investigations with emphasis on correcting the proximate and root cause(s) of the mishap.
- A.7 CAP Closure Statement** - A final statement made by the appointing official that documents that all corrective actions have been completed and the CAP is closed.
- A.8 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.
- A.9 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 the fluid that was lost from a ruptured pressure vessel), as well as resultant costs such as environmental decontamination, property cleanup, and restoration, or the estimate of these costs.
- A.10 Drug Testing Worksheet** - Worksheet to be used by official in charge to identify the individuals involved in operations for determining individuals to be drug tested.
- A.11 Endorsing Official** - An official who reviews the signed mishap investigation report and provides a signed written endorsement, comments, and, when not the appointing official, a recommendation for the report approval or rejection by the appointing official.
- A.12 Ex Officio** - An individual tasked to ensure the investigation conducted conforms to NASA policy and the NPR.
- A.13 First Aid** - Any one-time treatment of minor scratches, cuts, burns, splinters, etc., which do not ordinarily require medical care, and any follow-up visit(s) for the purpose of observation. Such one-time treatment, and follow-up visit(s) for the purpose of observation, is considered first aid even if provided by a physician or registered professional.
- A.14 Flight related mishaps** – all mishaps/close calls involving flight hardware or software.

- A.15 High Visibility (Mishap or Close Call), Agency-** Those particular mishaps or close calls, regardless of the amount of property damage or personnel injury, that the Administrator, Chief/OSMA, GSFC Director, Executive Director, Office of Headquarters Operations (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.
- A.16 Human Factors Mishap Investigator** - An investigator with expertise in human factors engineering and mishap causation who has the primary responsibility to assist in the collection and analysis of data, determine how human factors caused or contributed to the mishap or close call, evaluate relevant human error and determine its root cause(s), and generate recommendations that eliminate or reduce the occurrence of the error or minimize the negative effects of the error to prevent the recurrence of the mishap.
- A.18 Incident** - An occurrence of a mishap or close call.
- A.19 Incident Commander** - security individual in charge of the scene of a mishap or close call.
- A.20 NASA Mishap Information System (NMIS)-** The NASA mishap web-based system which contains mishap investigation data and provides tools to report Close Calls and Mishaps, track CAPs to completion, submit status and closure data to NASA Headquarters, and perform mishap trend analyses.
- A.21 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.
- A.22 Investigating Authority** - 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 not the advisors and consultants.
- A.23 Lessons Learned** - 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).
- A.24 Lost Workdays** - The number of days (consecutive or not) after, but not including, the day of injury or illness during which the employee would have worked but could not do so; i.e., could not perform all or any part of his/her normal assignment during all or any part of the workday or shift because of the occupational injury or illness. Includes days away, restricted duty, or transfer to another job. Total number includes weekends and holidays occurring during the lost workday period.

- A.25 Mishap Investigation Board (MIB)** - A NASA-sponsored board that is appointed for a Type A, Type B, or high-visibility mishap or close call; requires concurrence from the Chief/OSMA and the Chief Engineer on membership; consists of an odd number of Federal employees where the majority of the members are independent from the operation or activity in which the mishap occurred; has a minimum of five voting members for Type A mishaps and three voting members for Type B mishaps. Includes a Safety Officer, Human Factors Mishap Investigator, and for all Type A mishaps involving injury, illness and fatality also includes an Occupational Health Physician (or flight surgeon for aircraft-related mishaps) as members. Is tasked to investigate a mishap or close call and generate a mishap report in accordance with NASA and GSFC requirements.
- A.26 Mishap Investigation Team (MIT)** - A NASA-sponsored team that is appointed by the Center Director for a Type C mishap, Type D mishap, or close call; consists of an odd number of Federal employees with the majority of members independent of the mishap operation; and includes a Safety Officer and human factors mishap investigator as members. Is tasked to investigate a mishap or close call and generate a mishap report in accordance with NASA and GSFC requirements.
- A.27 Mishap Investigator (MI)** - A civil servant who has expertise and experience in mishap or close call investigation; has knowledge of human error analysis and mishaps; serves as the sole investigator for a Type C mishap, Type D mishap, or close call, and generates a mishap report in accordance with NASA and GSFC requirements.
- A.28 Mishap Preparedness and Contingency Plans (MPCP)** - 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.
- A.29 NASA Mishap** - An unplanned event that results in at least one of the following: injury to non-NASA personnel caused by NASA operation; damage to public or private property caused by NASA operations or NASA-funded development or research projects; occupational injury or illness to NASA personnel; NASA mission failure before scheduled completion of the planned primary mission; or destruction or damage to NASA property.
- A.30 Mission Failure** - A mishap of whatever intrinsic severity that prevents the achievement of the mission's minimum success criteria or minimum mission objectives as described in the mission operations report or equivalent document.
- A.31 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.
- A.32 Official in Charge** - The civil service individual in charge of the operations, tasks, processes, activities, or program when the mishap occurs.
- A.33 Organizational Factor** - Any operational or management structural entity that exerts control over the system at any stage in its life cycle, including, but not limited to, the system's concept development, design, fabrication, test, maintenance, operation, and disposal, e.g., budget, policy, management decisions.

- A.34 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 direct cause(s).
- A.35 Quick Incident Report** - Electronic submittal for initial mishap entry into NMIS that can be used without requiring a password.
- A.36 Responsible Organization** - The organization responsible for the activity, people, or operation/program where a mishap occurs or the lowest level of organization where corrective action shall be implemented.
- A.37 Root Cause** - One of typically multiple factors (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.
- A.38 Serious Workplace Hazard** - A condition, practice, method, operation, or process having substantial probability of death or serious physical harm.
- A.39 Witness Statement** - 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

AA	Assistant Administrator
AMD	Aircraft Management Division
CAP	Corrective Action Plan
CDR	Critical Design Review
COR	Contracting Officer Representative
CHMO	Chief Health and Medical Officer
ED/OHO	Executive Director, Office of Headquarters Operations
GISS	Goddard Institute for Space Studies
GPR	Goddard Procedural Requirement
GSFC	Goddard Space Flight Center
HIC	Handling and Impoundment Coordinator
HQ	Headquarters
IRT	Interim Response Team
IT	Information Technology
KJIV&V	Katherine Johnson Independent Verification and Validation
MDAA	Mission Directorate Assistant Administrator
MI	Mishap Investigator
MIB	Mishap Investigation Board
MIT	Mishap Investigation Team
MPCP	Mishap Preparedness and Contingency Plan
NASA	National Aeronautics and Space Administration
NFS	NASA Far Supplement
NMIS	NASA Mishap Information System
NPR	NASA Procedural Requirement
NRRS	NASA Records Retention Schedule
NSSC	NASA Shared Services Center
NTSB	National Transportation Safety Board
OCE	Office of the Chief Engineer
OCHMO	Office of the Chief Health and Medical Officer
OS&H	Occupational Safety & Health
OSHA	Occupational Safety and Health Administration
OSMA	Office of Safety and Mission Assurance
SARD	Safety and Assurance Requirements Division
SATERN	System for Administration, Training, and Educational Resource for NASA
SBU	Sensitive But Unclassified
SHetrak	Safety Health and Environmental Tracking (SHetrak) Database
SMA	Safety and Mission Assurance
SMSR	Safety and Mission Success Review
PLN	Plan
PSR	Pre-Ship Review
WBS	Work Breakdown Structure

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WFF Wallops Flight Facility
WSC White Sands Complex
WI Work Instruction

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APPENDIX C: Greenbelt Mishap Preparedness and Contingency Plan

1. Preface

1.1 Purpose of Mishap Preparedness and Contingency Plan

The purpose of this plan is to specify IRT response in the case of a mishap or close call event that occurs on the Greenbelt campus. The GSFC Center IRT will be established to respond to mishap or close call events on GSFC property. The purpose of the IRT is to ensure that data and hardware relating to a mishap event are preserved in order to support a mishap investigation.

1.2 Applicability of Mishap Preparedness and Contingency Plan

The following applies only to GSFC Greenbelt campus. WFF and IV&V IRT activity is addressed by their own emergency management plans.

2. Mishap Preparedness

2.1 Summary of Center Approach to Mishap Preparedness

GSFC Greenbelt mishap preparedness is a responsibility shared across the Center, and led by the Safety Division. Mishap Preparedness responsibilities dovetail with the Center's Emergency Management Plan, ensuring mishap readiness is built into planning and exercises.

Through a combination of requirements, training, and exercises, GSFC maintains a population ready and able to support any GSFC mishap, to execute an effective IRT response, and to investigate and implement corrective actions targeted to reduce the risk of future recurrence.

2.2 Description of NASA Mishap/Close Calls

GSFC utilizes the definitions of mishaps and close calls in NPR 8621.1, with the addition of a classification of Center-level "high impact" event, defined in this document.

2.3 Center Background, Organization and Authorities

GSFC Center roles and responsibilities are established in Section 1 of this document.

Primary responsibility for mishap preparedness and on-Center IRT response is held by the Safety division, specifically Mishap Program Manager. The Mishap Program Manager is supported by

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representatives from each directorate, whose role is to manage those mishap and close call events that are assigned to their particular directorate.

In addition, each project is assigned a Project Safety Manager, who is the focal point for mishap preparedness activities within their project.

2.4 Funding for IRT/IA Activities

Center IRT responses will be funded as part of normal Safety Division tasks.

Prolonged or project-specific IRT responses will be funded by the owning organization. This will be managed on a case-by-case basis as IRT activity progresses.

IA activities will be funded by the responsible organization.

2.5 Logistics

2.5.1 Impoundment Locations

The primary location for evidence impounded by the IRT will be within the Mishap Program Manager’s office. When this space is inadequate for the data and hardware impounded, the Mishap Program Manager will work with the Responsible Organization to secure an alternate location that may be controlled in accordance with the requirements of NPR 8621.1.

Building	Room	Comments
006 - B-SPACE SCIENCES LAB BLDG	Safety Division offices	Multiple office, selected based on need

2.5.2 Impoundment Authorities

Ground support equipment, test equipment, flight hardware and pertinent data involved in a mishap or high visibility close call will be secured and subject to impoundment, and tagged and cataloged prior to impoundment, per Section 3 of this document

2.5.3 Interim Response Team Staging/Deployment

When notified of a significant event, the Center IRT lead will respond to the location of the incident if an IRT response is deemed to be warranted. After assessing the nature of the event, the IRT lead will identify members of the Center IRT team that should respond.

In the case of a project-related event, the Center IRT lead will request support from the Project Safety Manager. The Center IRT may also request support from IRT members from affected directorate.

A Go-kit is stored in the Mishap Program Manager's office, B006 S036. This kit includes materials that have been collected to support IRT activities. IRT responders should collect this go-kit and carry it to the scene of the event.

2.6 Training Requirements

Training for IAs and IRTs will be in accordance with NPR 8621.1

2.7 Mishap Simulations and Schedules

An annual mishap simulation tabletop exercise will occur on an annual basis for the Center IRT. Mishap Program Manager will be responsible for scheduling and conducting these exercises, and will track completion for Center IRT members.

A tabletop exercise for all projects will occur prior to the time that a project MPCP becomes active (such as shipment off-site or transfer of ownership to NASA). These exercises will be facilitated by the Mishap Program Manager, but scheduling must be initiated by the project. Record of training for project exercises is the responsibility of each project.

These exercises will be in addition to Center Emergency Management exercises conducted per NPR 8710.2, NASA GSFC Emergency Management Plan.

2.8 Interim Response Team Go Kits

A “go kit” containing tools and materials will be maintained in order to facilitate IRT response. The kit may contain the following items:

- a. Carry-on Suitcase
- b. Evidence Bags
- c. Do Not Enter tape
- d. Camera with Extra Batteries, Flash and Memory Cards
- e. Tape Measure
- f. Witness Statement Forms
- g. Pens/Pencils/Note books
- h. Safety Glasses
- i. Tags with tie string
- j. Marking flags
- k. NASA Mishap Investigation Evidence and Property Custody Document
- l. NASA GSFC Witness Statement forms and envelopes

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<http://gdms.gsfc.nasa.gov> TO VERIFY THAT THIS IS THE CORRECT VERSION PRIOR TO USE.

- m. Evidence Log
- n. Flashlights and floodlights
- o. Manila envelopes
- p. Gloves Latex & Leather
- q. Labels, Self-adhesive
- r. Vest, reflective safety
- s. Tyvek coveralls
- t. Battery bank (to recharge cell phones)

This kit is located in the office of the Mishap Program Manager, B6 S026. The Mishap Program Manager is responsible for maintaining contents of the kit and ensuring all components remain ready for use.

3. Mishap Response

3.1 Personnel

3.1.1 Individuals

Title	Response
Mishap Program Manager	Center IRT lead
Occupational Safety SMEs	Center IRT lead backup and support
Directorate Safety Representatives	Supports IRT for facilities and directorate-related issues
Project Safety Representative	Supports IRT for project-specific issues

The following 360 personnel will comprise the Center Interim Response Team (IRT):

Center IRT lead: 360 Mishap Program Manager:

The Center IRT Lead will respond, in person, or direct backup to respond when notified of a significant mishap. Center IRT lead may be notified by 360 Initial responder (emergency phone process). Center The notified Center IRT lead will determine need for other IRT members to respond and notify them by phone. The Center IRT Lead or delegate will arrive on the scene and coordinate with Incident Command, and will take actions for NPR 8621.1-required mishap notifications. The Center IRT lead will assess the need for project/directorate support and request assistance as warranted. The Center IRT Lead will interface with Legal and the Office of Communications as appropriate, or delegate. Will maintain go-kit for local response (in B6, S026)

Deputy IRT lead: 360 Designated Civil Servant

Will respond to mishap when contacted by emergency phone holder or IRT Lead. Will take on duties of IRT Lead when delegated to or when IRT lead is unavailable.

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Initial responder/backup:

Normal business day – Occupational Safety Office

Contact 911 or 301-286-9111(cell phone) if it is an emergency

Safety Division numbers

301-286-6296

301-286-5605

Off hours -- Occupational Safety Emergency Response

When a significant mishap even occurs on center (A or B level, or with potential for Center or Agency “high visibility” designation), the initial responder will notify the IRT lead/deputy by phone and coordinate immediate response. The IRT initial responder will interface with Incident Command during the emergency response, and will work with Protective Services, FOM, and others to secure scene until the Center IRT lead arrives.

360 Safety Division after hours contact numbers

301 356-3224

301-356-1088

Roles that will be assigned at time of incident from pool of trained personnel: (including from all directorates, civil servant and contractor personnel)

Photographer:

Will photograph/video scene when requested to do so by IRT lead. Will coordinate with center photography resources as needed for additional data. Photographer will be familiar with equipment in local response go-kit

Witness statement coordinator: civil servant only

Will take witness statements when directed to do so by IRT lead/deputy. Will collect and keep statements secure.

Directorate/project support interface:

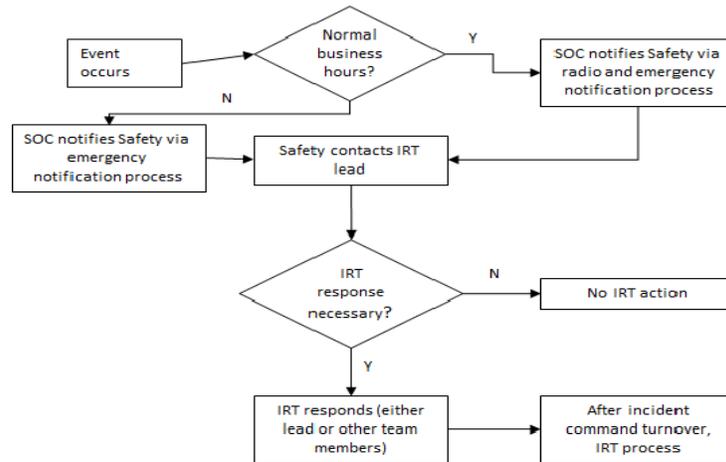
IRT-trained representatives from directorates and specific projects that will be called to support Center IRT as determined by IRT lead. This will normally be directorate mishap representative, or the PSM for projects.

Impound coordinator/chain of custody: Civil servant only

Will establish secure impound locations, and initiate data and hardware impound. Will maintain security of impound and follow chain-of-custody protocols.

3.1.2 Organizational response

The following flowchart depicts the expected response in event of a mishap event:



3.2 Agency Requirements

3.2.1 Mishap Classification Protocol

Mishap classification will be in accordance with NPR 8621.1

3.2.2 Mishap Notification Protocol

All serious mishap or close call events will be reported to the safety office via emergency notification process (contact on-center 911 (301 286-9111 from cell phones). The SOC will contact the Safety Division, who will then contact the Mishap Program Manager or designee, who will then be responsible for making all additional notifications in accordance with NPR 8621.1

3.3 Transition from IRT to IA

The IRT will maintain control of all evidence, tracked by impound logs, until the time that a Mishap Investigation Team is assigned for the investigation. At that point, all evidence is transferred to the MIT chair who will maintain control of it throughout the investigation.

If practicable, the IRT will maintain the scene of the mishap or close call event until the MIT chair can make the decision to release the scene for normal operation.

4. Mishap reporting

Post-investigation document production, endorsement, and release will be in accordance with section 4.3 of this document.

It is desired that mishap reports will be acceptable for general release at the conclusion of the investigation. If this is not feasible, then the MIT will prepare a releasable executive summary that highlights the causes of the event and the recommendations of the board

Impounded evidence will be released at the discretion of the MIT chair, during the investigation and at its conclusion. If there are reasons to retain evidence past the duration of the investigation, the MIT will make provisions to do so.

Appendix D of this document illustrates how NMIS is used at Greenbelt.

5. Corrective Action (Post-Investigation)

5.1 Corrective Action Plan

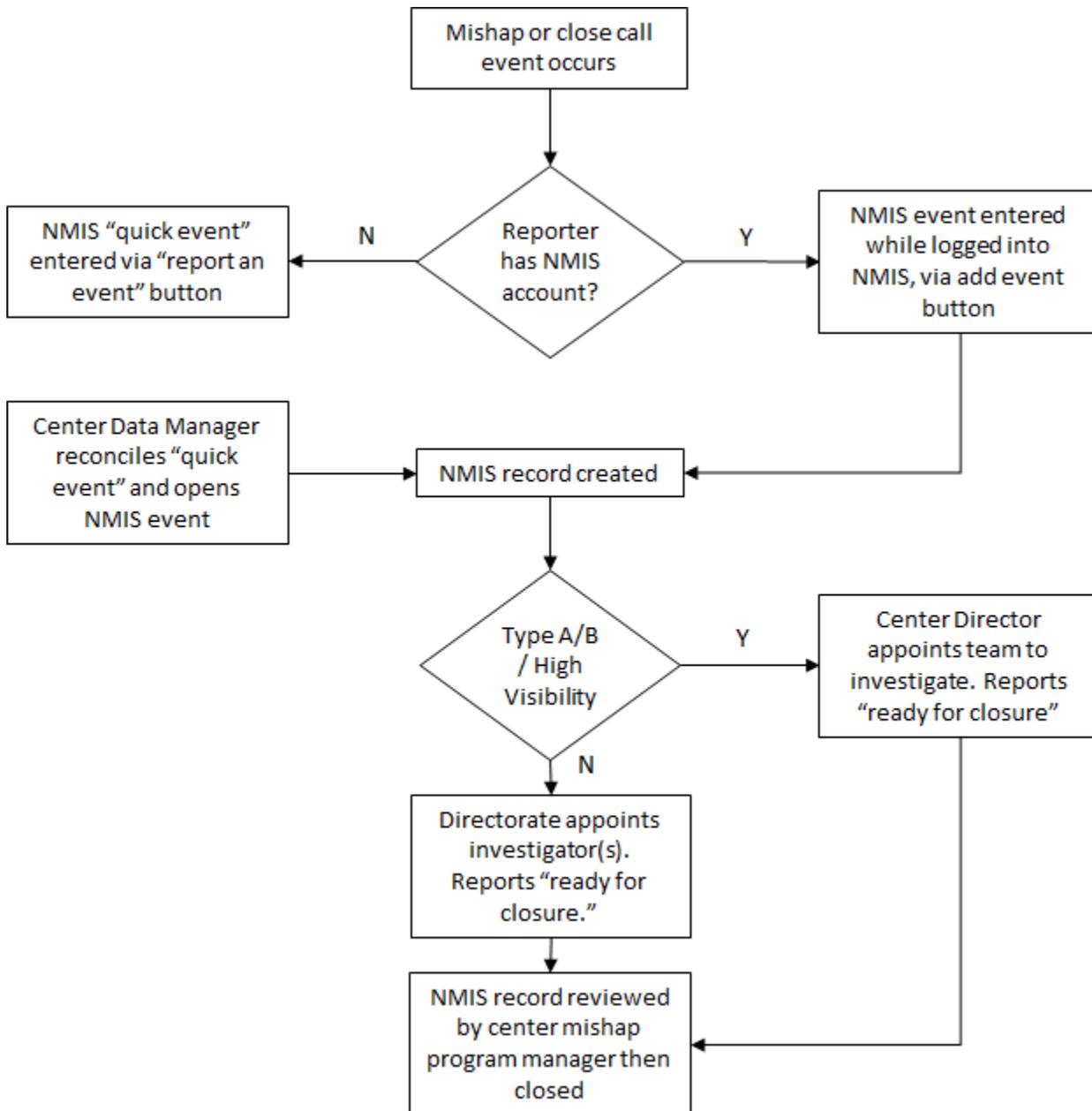
Corrective Action Plans will be executed in accordance with Section 4.5 of this document

5.2 Records Retention

Mishap-related records will be retained in accordance with Paragraph 8 of this document

APPENDIX D: NMIS Event Flow Chart

The following flow chart depicts the standard data flow from the initial occurrence of an event until the event is closed in NMIS:



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CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	1/9/2012	Initial Release
	1/5/2017	Administratively Changed and Extended to update the Responsible Office Code, Organization Title and organization name throughout the document. Updated training retention schedule from NRRS 33G1 to NRRS 33C. Also extended for 1 year from original expiration date.
A	09/24/2019	Updated to reflect recent changes to NPR 8621.1C, as well as additional minor process improvements.

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