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SECRETARY OF THE AIR FORCE**

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**SPACE SAFETY INVESTIGATIONS  
AND REPORTS**

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This interim change corrects administrative errors and omissions and clarifies select areas of the original document. All items in this change will be incorporated in the next revision of this document. This change consolidates Air Force pre-launch mishap investigation guidance and implements Air Force Policy Directive 91-2, *Safety Programs*. Major Commands (MAJCOM) may supplement this standard when additional or more stringent safety criteria are required. Lower-level organizations, installation and above, may also supplement this standard. MAJCOMs will approve these supplements. Report conflicts in guidance between this standard, federal standards, or other Air Force directive in writing through MAJCOM space safety offices to Headquarters Air Force Safety Center, Space Safety Division, Space Safety Branch (HQ AFSC/SESS), 9700 G Avenue SE, Suite 120B, Kirtland AFB NM 87117-5670. Ensure that all records created by this AFMAN are maintained and disposed of IAW AFMAN 37-139, "*Records Disposition Schedule*." Requirements in this publication are mandatory, unless indicated otherwise, and apply to all US Air Force organizations, US Air Force Reserve Command (AFRC) units and all Air National Guard (ANG) personnel, with the exception of state employees.

No AFMAN, T.O., or Operating Instruction can possibly address every hazard or potential hazard that may arise from a specific task or combination of tasks. Where situations exist that are not covered by existing directives, use an Operational Risk Management (ORM) process to assess risk associated with those situations and determine adequate safeguards or procedures to manage the risk. Refer to AFPAM 90-902, *Operational Risk Management (ORM) Guidelines and Tools*, for guidance on using the ORM

process. **NOTE:** The ORM process may not be used to violate directives or other regulatory guidance. Normal waiver or variance procedures must be followed in all cases (refer to AFI 91-301).

(AFSPC) This supplement implements and extends the guidance of Air Force Manual (AFMAN) 91-222, *Space Safety Investigations and Reports*. It applies to HQ Air Force Space Command and subordinate units. It does not apply to Air National Guard (ANG) and Air Force Reserve Command (AFRC) units and members. The reporting requirements in this directive are exempt from report control symbol (RCS) licensing in accordance with AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public and Interagency Air Force Information Collections*. The use of the name or mark of any specific manufacturer, commercial product, commodity or service in this publication does not imply endorsement by the Air Force. This publication is consistent with Department of Labor (DOL) Occupational Safety and Health Act (OSHA) standards 29 CFR 1960. Send a copy of NAF/Center and unit supplements to HQ AFSPC/SEC, 150 Vandenberg St., Ste 1105, Peterson AFB CO 80914-4260, for review and approval before publication. Refer recommended changes and questions about this publication to the Office of Primary Responsibility (OPR) using the AF IMT 847, *Recommendation for Change of Publication*; route AF IMT 847s from the field through the appropriate functional’s chain of command. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN37-123 (will convert to AFMAN33-363), *Management of Records*, and disposed of in accordance with Air Force Records Disposition schedule (RDS) located at <https://afirms.amc.af.mil/>.

**SUMMARY OF CHANGES**

This INTERIM CHANGE (IC 2005-1) documents, correct administrative errors, and clarifies references to standards and other portions of this document. Guidance in this change takes precedence over the basic document. Paragraphs listed below replace similarly numbered paragraphs in the basic document, unless otherwise noted. This IC also updates the address list in **Table A3.2.** of AFMAN 91-222 to more accurately reflect the appropriate space organizations and remove addresses not related to space operations for mishap reporting and prevention purposes. In addition, it clarifies the definition of primary and secondary mission. Finally, it identifies the class of mishap for tertiary missions since new technology allows numerous missions to be located on one satellite.

**POSTING INSTRUCTIONS:** Include a copy of this change with any printed copy of AFMAN 91-222. Ensure review of this change prior to referencing any portion of AFMAN 91-222.

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## Chapter 1

### GENERAL INFORMATION

**1.1. General Information:** This manual, in conjunction with AFI 91-204, *Safety Investigations and Reports*, provides guidance for investigating and reporting Air Force space mishaps. The sole purpose of these safety investigations is to prevent future mishaps. Space mishaps do not generally involve DoD aircraft, weapons (conventional, nuclear or directed energy), or nuclear reactors. In special circumstances (i.e. a nuclear reactor aboard a satellite), cross-category involvement may occur. When reporting multiple categories refer to the appropriate AFMANs for additional guidance. Investigations to gather evidence for claims, litigation, disciplinary and adverse administrative actions, and for all purposes other than mishap prevention are not covered by this manual.

### 1.2. Space Mishaps and Events that Require Safety Investigations and Reports.

1.2.1. Report any unplanned occurrence or series of occurrences that meets the definition of a space mishap and can be classified IAW AFI 91-204, Chapter 1.

1.2.2. Investigate and report damage, injury or illness to Air Force space resources as a space mishap. This includes, but is not limited to, the following specific situations:

1.2.2.1. The loss or damage of Air Force space systems during launch or processing on commercially procured launch systems or services.

1.2.2.2. Damage, injury or illness to Air Force space resources that results from government contractor operations. Refer to AFI 91-204 Chapter 4 for additional guidance.

1.2.2.3. The loss or damage of a system that a DoD Component has development and/or procurement responsibility.

1.2.2.4. Injury, illness, or physiological episodes during space system operation or space system processing.

1.2.2.5. Damage or loss of space vehicles in space when caused by natural phenomena for which it was designed to withstand. Don't report the damage or loss if it is the result of unexpected and unavoidable natural phenomena. For example, the loss of a space vehicle due to collision with a large, previously undetected meteoroid would not be reportable.

1.2.2.6. Do not report normal residual damage as the result of a space launch.

1.2.3. Investigate and report damage, injury or illness caused by Air Force space resources as a space mishap. This includes, but is not limited to, the following specific situations:

1.2.3.1. The impact of a space system and its associated debris or hazardous effects outside predicted limit parameters.

1.2.3.2. A non-DoD launch that is adversely affected in any way by Air Force space range personnel or equipment (does not include normal authorized destruct).

1.2.3.3. The failure of Air Force space range safety procedures or processes to adequately protect the public or DoD operations from damage or injury (e.g. loading fuel, testing high pressure equipment).

1.2.4. In the event a space mishap results in a radiological mishap, as defined by AFMAN 91-221, *Weapons and Nuclear Safety Investigations and Reports*, comply with the additional guidance in AFMAN 91-221. Ensure OPREP reports are sent and attach the appropriate flagword to all mishap messages. Continue to investigate and report the space mishap per the instructions in this manual. Additionally, ensure that the investigation and report addresses the radiological mishap.

1.2.5. **(Added-AFSPC)** Spacecraft bus system anomalies which do not meet any of the above criteria, will be reviewed by Wing Safety to determine if they shall be investigated as Class E events and reported as High Accident Potential (HAP) based on their potential of causing mission failures in future occurrences on similar operational capabilities and systems.

### 1.3. Space Mishap Categories. Categorize space mishaps using one of the following:

1.3.1. Space, Pre-Launch: Space mishaps occurring during ground handling, processing and transportation operations.

1.3.1.1. Mishaps limited to components or equipment commonly used in non-space applications, and not specifically configured for space related use, are not space mishaps. Categorize these mishaps as ground and industrial, industrial space IAW AFMAN 91-224, *Ground Safety Investigations and Reports*.

1.3.2. Space, Launch: Space mishaps occurring during launch vehicle operations, including upper stages. This includes payloads that do not obtain orbit and range safety system failures.

1.3.3. Space, Orbit: Space mishaps occurring during spacecraft operations after separation from all launch vehicle components, including upper stages and transfer motors.

1.3.4. Categorize mishaps involving more than one category IAW AFI 91-204 and ensure that the proper cross-category involvement is used from the look-up tables in [Attachment 6](#).

1.3.5. **(Added-AFSPC)** Mishaps dealing with Unique Space Support Equipment shall be investigated as Space Mishaps. This category will be used on space systems that are ground based unique not directly related to space launch and not directly used in support of orbital operations, such as satellite command and control operations. Examples include warning, surveillance, space control, and system integration.

### 1.4. Space Mishap and Event Classifications.

1.4.1. Mishaps. Classify space mishaps according to the total direct mishap cost, the severity of injury and/or the loss of mission capability by an on-orbit asset. Use the definitions in AFI 91-204, Chapter 1, to classify space mishaps as Class A, B, C or D. Use AFI 91-204, Chapter 1, to classify Class E events.

1.4.2. Additionally, for orbital mishaps prior to the end of the design life, use the mishap's effect on primary or secondary mission capability (MC) to classify the mishap as Class A or B. Primary does not necessarily mean just one mission. Satellites could have more than one primary mission as defined by an Operational Requirements Document (ORD). Secondary missions also could include more than one mission as defined by the ORD.

1.4.2.1. Classify permanent loss of primary MC as a Class A mishap.

1.4.2.2. Classify permanent loss of a secondary MC as a Class B mishap.

- 1.4.2.3. Classify the permanent degradation of primary or secondary MC as a Class B mishap.
- 1.4.2.4. In general, a part or system failure that does not affect primary, secondary, or tertiary MC is not a mishap per AFI 91-204.
- 1.4.2.5. Tertiary mission failures include all missions not listed in the ORD as either primary or secondary mission categories. Any permanent failure/degradation of a tertiary mission is classified as a Class C mishap.
- 1.4.2.5. **(AFSPC)** Includes a ride-along system that is not part of the primary or secondary missions. Its failure will not impact primary or secondary missions.
- 1.4.2.6. **(Added-AFSPC)** Additionally, report Space Class, B, and C Mishaps and Class E Events as follows:

Class B - Permanent Degradation of a Mission Capability, payload becomes non MC

Class C - Permanent Degradation of a Mission Capability, payload remains MC

Class E - Preventable temporary Degradation of a Mission Capability.

Class E - Permanent loss of mission data

1.4.2.6.1. **(Added-AFSPC)** Class B - Permanent Degradation of a primary or secondary Mission Capability and the (primary or secondary) payload becomes non Mission Capable. Examples: Class B - Permanent loss of Crosslinks, but alternate path remains. Class B - loss of ability to control antennas, alternate path function remains; but is severely degraded.

1.4.2.6.2. **(Added-AFSPC)** Class C - Permanent Degradation of a Mission Capability, (primary or secondary) but the payload remains Mission Capable. Examples: Class C - Permanent degradation of primary or secondary mission capability, but the payload remains mission capable since "back-up" components are available on the satellite. Class C - Loss of Nuller capability. Alternate path, Crosslinks, and Reportback missions remain functional. Add "Payload has switched to a redundant system." after "...remains Mission Capable."

1.4.2.6.3. **(Added-AFSPC)** Class C - Permanent Failure or Degradation of a tertiary Mission. Example: Loss of Reportback function. Alternate path and Crosslinks remain functional.

1.4.2.6.4. **(Added-AFSPC)** Class E - Temporary Degradation of any Mission Capability in excess of ORD threshold.

1.4.2.6.5. **(Added-AFSPC)** AFSPC units will treat "failing to function properly" in the solar environment as follows:

1.4.2.6.5.1. **(Added-AFSPC)** Satellites bus or payloads that fail to operate in their design environment constitute a mishap or Class E event.

1.4.2.6.5.2. **(Added-AFSPC)** Satellites that fail to operate in environments exceeding their design environments do not constitute mishaps or events.

1.4.3. Events. Classify any hazardous event that has a high potential for becoming a mishap as Class E. These events do not meet other reportable mishap classification criteria. They are deemed important to investigate/report for mishap prevention. As a minimum, report the following:

1.4.3.1. An unplanned creation of orbital debris by an Air Force space system.

1.4.3.2. An unplanned temporary loss or degradation of primary, secondary, or tertiary MC of an on-orbit asset for greater than 48 hours (see AFI 10-206, Operational Reporting, Rule 1R).

1.4.3.2.1. If the loss or degradation is later deemed permanent, upgrade the mishap to the appropriate Class A or B using AFI 91-204, Chapter 1.

1.4.3.2.2. Do not report a temporary loss or degradation of MC due to a component failure after end of design life.

1.4.3.3. A collision avoidance maneuver by an on-orbit Air Force spacecraft. Include the miss distance and time until predicted collision at the point when the maneuver was performed.

1.4.3.3.1. **(Added-AFSPC)** Normal, scheduled station keeping maneuvers by an on-orbit Air Force spacecraft that increase the miss distance are smart operations and not reportable.

1.4.3.3.2. **(Added-AFSPC)** A collision avoidance maneuver by an on-orbit Air Force spacecraft that is necessary to increase the miss distance by burning fuel “down-hill” are reportable as Class E Events.

1.4.3.4. The accidental escape or spillage of dangerous (toxic, caustic, or corrosive) material that results in an individual receiving a precautionary checkup.

1.4.3.5. A failure of a commercial space system also commonly used by the Air Force to capture information on lessons learned.

1.4.4. If required, change mishap classifications IAW AFI 91-204.

## 1.5. Space Mishap Costs.

1.5.1. Determine mishap costs IAW AFI 91-204, Chapter 1.

1.5.2. Contacting the single manager (SM) is generally the most useful place to start for space mishaps. Cost models available from the SAF/FMC web site, <http://www.saffm.hq.af.mil> (AFCaa Tab, Cost Tools button) may be useful.

## Chapter 2

### RESPONSIBILITIES

**2.1. General Information.** Follow guidance listed in AFI 91-204, Chapter 2, with the following additions.

**2.2. MAJCOM Commanders:** Must establish a process to enable timely identification of safety investigation board (SIB) presidents and single investigating officers (SIO) to facilitate effective safety investigations. Ideally, individuals should be identified prior to each launch.

**2.3. Commanders of Air Force Space Launch Ranges.**

**2.3. (AFSPC) Commanders of Air Force Space Launch Ranges.** In AFSPC, the range commanders are the 30 SW Commander and the 45 SW Commander or their designated representative.

2.3.1. Prior to each launch from their range, commanders of Air Force space launch ranges must:

2.3.1.1. Identify and notify organizations that will incur investigation responsibility in the event a mishap were to occur.

2.3.1.2. Identify an Interim Safety Board (ISB) President (regardless of who is conducting the launch).

2.3.1.3. **(Added-AFSPC)** Identify ISB members by name.

2.3.2. Range commanders must notify HQ AFSC/SES and FAA/AST (FAA Combined Operations Center, (202) 267-3333) if a commercial space vehicle is involved in a mishap on their installation.

2.3.2. **(AFSPC)** During launch of a commercial space vehicle from an Air Force facility, the on-site FAA/AST representative will normally fulfill this notification requirement.

2.3.3. **(Added-AFSPC)** Investigating Mishaps Involving Joint National Aeronautical and Space Administration (NASA) and Air Force operations or use of AFSPC ranges. A joint mishap investigation plan will be developed prior to any NASA operation that involves an AFSPC launch facility. HQ AFSPC/SE in conjunction with Space and Missile Center (SMC)/SE or NAF/SE will ensure the plan assigns responsibilities and interfaces with any Memorandum of Agreements (MOA) should a mishap investigation be required. Space Wing Commanders will notify HQ AFSPC/SE through SMC or NAF/SE of any proposed operation that will involve NASA from an AFSPC range.

2.3.3.1. **(Added-AFSPC)** A mishap involving a NASA payload aboard a commercial rocket launched from an AFSPC range will normally be investigated per the NASA mission-specific Contingency Action Plan (CAP).

2.3.3.2. **(Added-AFSPC)** Unless applicable guidance or formal agreements specify otherwise, Civil Space Mishaps not addressed by paragraph **5.17.1. (Added)** will be investigated in accordance with the guidance of paragraph **5.10.**

2.3.4. **(Added-AFSPC)** Space launch mishap investigation accountability will be identified and approved by the Space Wing Commander prior to launch.

2.3.5. **(Added-AFSPC)** Ensure reporting is accomplished in accordance with **Chapter 6** of this instruction; as well as by OPREP-3 if required by AFI10-206, **Operational Reporting.**

**2.4. Unit Commanders:** The commander of the first Air Force organization to become aware of a space mishap will notify the organization with control authority over the affected space system.

**2.5. Interim Safety Board (ISB) President.** The ISB President, under certain circumstances, may have to interface with non-Air Force organizations (NRO, FAA, NTSB, NASA commercial vendors) when a mishap occurs on an Air Force space launch range. Whenever possible, agreements should be put into place before such a launch to define the ISB President's role with respect to wreckage and evidence owned by non-Air Force organizations. As an example, the NTSB will normally not wish for the ISB President to conduct interviews. See AFPAM 91-211, *USAF Guide to Aviation Safety Investigation*, Chapter 2, for a discussion of ISB responsibilities.

2.5.1. **(Added-AFSPC)** This requirement also applies to the SIDC and SMC, and to Space Wings with either on-orbit or ground based space system missions.

2.5.2. **(Added-AFSPC)** The requirement for the ISB president to interact with non-Air Force agencies also applies to Space Wings with space missions, SIDC and SMC when a mishap occurs within these space operations/tests/development missions areas. Whenever possible, agreements should be put into place before the space event occurs to define the ISB President's role with respect to data, wreckage, evidence, etc owned by non-Air Force organizations. As an example, the NTSB or FAA will normally not wish for the ISB President to conduct interviews if the mishap was caused by a commercial FAA/FCC licensed satellite or launch vehicle.

**2.6. 30SW and 45SW Safety Staffs.**

2.6.1. For FAA licensed launches from Air Force ranges, safety staffs will ensure mishap investigation and reporting agreements specify that the Air Force will be invited to participate as an observer on the space system owner's investigation board.

2.6.2. For Air Force launches, safety staffs will ensure contracts specify the requirement to notify the Air Force when Air Force property damage occurs and furnish investigation results and report to the Air Force in the event of a mishap. Additionally, contracts must allow for an Air Force representative to observe the contractor mishap investigation.

## Chapter 3

### PRIVILEGED SAFETY INFORMATION

**3.1. General Information.** Follow the guidance in AFI 91-204, Chapter 3. There is no additional space specific guidance.

## Chapter 4

### DETERMINING INVESTIGATIVE RESPONSIBILITY

**4.1. General Information.** Unless otherwise stated, the mishap owner (as determined IAW AFI 91-204, chapter 4) has investigative responsibility for the mishap. Determine the convening authority IAW AFI 91-204, Chapter 4.

**4.2. Determining Space Mishap Ownership.** Assign ownership of the mishap to the MAJCOM responsible for the space system at the time of the mishap.

4.2.1. For satellites, assign mishap ownership to the MAJCOM with control authority.

4.2.1.1. Control authority for an on-orbit space system, or the debris associated with it, does not end until: reentry and touchdown on Earth; transfer of responsibility to an agency outside of the Air Force; or injection into an Earth-escape trajectory (unless required for mission). Control authority does not end when a space system is placed into a non-operational orbit.

4.2.1.2. For satellites that are no longer functional, the last organization with control authority still owns the mishap.

4.2.2. For launch vehicles, including upper stages, the launch operator is assigned “ownership” for the mishap unless an HQ AFSC approved memorandum of agreement (MOA) is in place specifying transfer of ownership to another agency.

**4.3. Mishaps Involving Commercial Spacelift.** When an Air Force mishap occurs as the result of commercial launch services, assign mishap ownership to the organization owning the damaged Air Force equipment or injured personnel. Refer to AFI 91-204 Chapter 4 for additional guidance.

## Chapter 5

### SAFETY INVESTIGATIONS

**5.1. General Information.** Conduct space mishap investigations using a Safety Investigation Board (SIB) or a Single Investigating Officer (SIO). Conduct these investigations IAW AFI 91-204, Chapter 5, and the following space-specific guidance.

5.1.1. For Class A Space Mishaps, investigate using a SIB. When the mishap is limited to Air Force property damage caused solely by a commercial space system or service a SIO may be used. The investigation must be conducted according to the appropriate mishap investigation and reporting agreements. Contact MAJCOM safety offices for guidance on agreements with the FAA, NTSB, NASA, and the responsible commercial entity.

5.1.2. For Class B and C Space Mishaps, use a SIB or an SIO as appropriate.

5.1.3. For Class E Space Events use an SIO, supported by any accepted anomaly resolution process when factual analysis is required.

5.1.4. Initially investigate orbit mishaps using an anomaly resolution process. When enough information is gathered to classify the event as a mishap, transition to a mishap investigation.

5.1.5. When the primary investigation is conducted by another organization (FAA, NTSB, NASA, space system owner) send an Air Force observer to monitor the investigation.

5.1.6. To ensure the investigation considers all areas, consult AFPAM 91-211, *USAF Guide to Aviation Safety Investigation*.

### 5.2. Space Mishap Investigation Timelines.

5.2.1. All timeline milestones start from the day a mishap is declared. This is normally the same time that the mishap occurs. However, especially for on-orbit systems, there may be a delay between the actual mishap and the determination that a mishap has occurred.

5.2.1. (AFSPC) The wing/center commander advises the AFSPC/CC on when to declare a mishap for all on-orbit mishaps.

5.2.2. The SIB investigation should be completed in less than 90 days for Class A mishaps and 45 days for all other mishaps. This is longer than the time for other mishaps due to the complexity of the data recovery and engineering analysis process of space mishaps. Refer to [Table A3.1](#) for reporting and routing requirements.

5.2.3. If circumstances prevent the SIB from meeting this timeline, the board president may request up to a 90-day extension from the convening authority (IAW AFI 91-204 paragraph 1.2.). If granted the convening authority must notify HQ AFSC/SES. If unique circumstances prevent the SIB from finishing within this timeframe, the convening authority must request a waiver, with an estimated completion date, from HQ USAF/SE.

### 5.3. Investigation Funding for Space Mishaps.

5.3.1. Follow the funding guidance in AFI 91-204, Chapter 5, for most space mishaps.

5.3.2. Funding for Space, Commercial Mishaps.

5.3.2.1. In general, if the commercial launch occurs at a commercial facility that is not located on an Air Force installation, then the host-installation is the home base of the investigating organization and it is responsible for providing and funding local support.

5.3.2.2. Multiple host-installations may be needed to properly investigate these mishaps. The closest Air Force bases to the mishap site, to the contractor's investigation location and to the investigation organization's home location should be prepared to fund and provide in-house support at the request of the board president.

5.3.2.3. MAJCOMs shall provide a fund cite with the orders forming an SIB to expedite the investigation.

5.3.2.4. See AFI 91-204, Chapter 5 (Other Support and Cost Overruns), for expenses that exceed the resources of the host installation.

#### **5.4. Space Mishap Investigation Elements.**

5.4.1. Safety Investigation Board (SIB): Primary vehicle for conducting a formal safety investigation. See Chapter 5 of AFI 91-204 for specific membership requirements and responsibilities. It may be tailored as appropriate by the convening authority. Refer to AFI 91-204, Chapter 5, for additional guidance.

5.4.2. Engineering Analysis Group (EAG): Acts as the engineering authority for the mishap and conducts a technical examination of mishap data. It provides important factual (non-privileged) analysis to the SIB and the AIB and assures that factual information is released as soon as possible to the Commercial Space Industry. See AFI 91-204, Chapter 5, Obtaining and Using Technical Assistance and Laboratory Analysis, for additional guidance.

5.4.3. Anomaly Resolution Process: Conducted to investigate problems associated with an on-orbit space system by the squadron operating the space vehicle. Follow the guidance for conducting an engineering analysis, Chapter 5 of AFI 91-204 to prevent the results of the process from becoming privileged. See paragraph 5.9.1.1. and Figure 5.2. for details on how anomaly resolution interfaces with safety investigations.

5.4.4. Accident Investigation Board (AIB): Convened to gather and preserve evidence for claims, litigation, disciplinary and adverse administrative actions, and for all purposes other than mishap prevention. The safety investigation has priority over the accident investigation. The AIB also functions as a doorway for releasing information to the EAG and the public IAW AFI 51-503, *Aerospace Accident Investigations*.

**5.5. Space Mishap Investigation Composition, Qualifications and Key Responsibilities.** The size and membership of the SIB depend on the category of mishap being investigated and its complexity. As a minimum, the investigation must have an SIO. If a board is convened it must have a Board President (BP) and will include primary and non-primary members.

**5.5. (AFSPC) Space Mishap Investigation Composition, Qualifications and Key Responsibilities.** HQ AFSPC/SES will advise space mishap SIB President to consider adding Space System Safety Engineer to SIB as a primary board member for mishaps with systems engineering implications.

5.5.1. Board President or SIO Qualifications and Responsibilities:

5.5.1.1. For Class A Space mishaps:

- 5.5.1.1.1. Colonel (O-6), GS-15 or higher.
  - 5.5.1.1.2. Board Presidents must be a HQ AFSC Board President Course (BPC) graduate.
  - 5.5.1.1.3. SIO must be trained in mishap investigative techniques (e.g., HQ AFSC Mishap Investigation Non-Aviation (MINA) Course or equivalent).
  - 5.5.1.2. For all other space mishaps:
    - 5.5.1.2.1. Captain (O-3), GS-9, or higher.
    - 5.5.1.2.2. Mishap investigation training or experience highly recommended.
  - 5.5.1.3. Not from the same squadron/organization that experienced the mishap.
  - 5.5.1.4. Serves as the final release authority for all information from the board.
  - 5.5.1.5. Requests technical assistance, if required, through MAJCOM channels.
    - 5.5.1.5.1. **(Added-AFSPC)** Specifically, space operations and systems safety qualified personnel shall be considered for all space mishaps, or shall review mishap reports.
  - 5.5.1.6. Serves as the decision authority for all findings, causes and recommendations.
  - 5.5.1.7. Releases factual information to the AIB President for transmission to the EAG.
  - 5.5.1.8. Interfaces with the AIB and EAG.
  - 5.5.1.9. Requests a waiver of up to 90 days from the convening authority if the investigation will not be completed within the time requirements listed in [Attachment 3](#).
- 5.5.2. Primary SIB Members: A “primary member” is a person authorized to have an equal voice with all other primary members (except the board president) to determine findings, causes, recommendations, and is authorized to submit a minority report.
- 5.5.2.1. Vice President (VP). Required only for Class A Space mishaps. These investigations might require split operations making the VP a vital role.
    - 5.5.2.1.1. Must be Lt Col (O-5), GS-13 or higher.
    - 5.5.2.1.2. BPC graduate and mishap investigation experience highly recommended.
    - 5.5.2.1.3. Must not be from same squadron/organization that experienced the mishap.
    - 5.5.2.1.4. When both AFSPC and AFMC resources are involved in a mishap, the BP should be appointed from the MAJCOM with mishap ownership and the VP should be appointed from the other MAJCOM.
    - 5.5.2.1.5. When the investigation necessitates operating out of more than one location, the VP will direct the operations in one location when requested by the BP.
    - 5.5.2.1.6. The VP aids the BP in developing their findings, causes and recommendations. If the VP disagrees with the BPs conclusions, the VP should create a minority opinion.
  - 5.5.2.2. Investigating Officer (IO). The IO should be trained in mishap investigative techniques (HQ AFSC Mishap Investigation Non-Aviation (MINA) Course or equivalent).
  - 5.5.2.2. **(AFSPC)** IO shall be trained in mishap investigative techniques (HQ AFSC MINA or NAF/Center/Wing developed training).

- 5.5.2.3. HQ AFSC Representative. HQ AFSC will provide a representative to the SIB when requested by the MAJCOM. AFSC representative will have a thorough understanding of AFI 91-204 to discharge the required duty of guiding the SIB process.
  - 5.5.2.4. Space Operations Officer, qualified in the operational use of the space system involved in the mishap.
  - 5.5.2.5. Space Materiel Officer or Acquisition Officer, qualified in the maintenance, engineering or manufacturing of the space system involved in the mishap.
  - 5.5.2.6. Bioenvironmental Engineer, if bioenvironmental health factors are involved.
  - 5.5.2.7. Vehicle Maintenance Officer, if a motor vehicle is involved.
  - 5.5.2.8. AFOTEC Representative, if AFOTEC-managed OT&E asset is involved.
  - 5.5.2.9. Air Force Research Lab (AFRL) Representative, if AFRL-managed R&D asset is involved.
  - 5.5.2.10. Security Forces Officer or NCO, if mishap involves security forces issues.
  - 5.5.2.11. Fire Protection Specialist (at least E-7 or GS-9), if mishap is result of a fire.
  - 5.5.2.12. Weather Officer or Space Environmental Expert, if weather, weather service or space environment is known or suspected to have been a factor in the mishap.
  - 5.5.2.13. Medical member, if human action or inaction were involved in any way, or if injuries or fatalities were present. The medical member must be a medical officer residency trained and board certified in Aerospace Medicine.
  - 5.5.2.14. Vehicle subsystem expert(s).
  - 5.5.2.15. Add the appropriate experts when mishaps involve areas not specified in this list.
- 5.5.3. Non-primary SIB Members: Selected at the convening authority's discretion or as required by AFSC-approved MOAs.
- 5.5.3.1. SIB Recorder: an officer or senior NCO familiar with administrative procedures.
  - 5.5.3.2. Representatives of the SM, or Air Force test organization, at the invitation of the SIB President.
  - 5.5.3.3. Representatives to serve as liaisons, advisors or consultants. This may include NTSB, FAA/AST or joint service observers. Refer to applicable MOAs for specific requirements.
  - 5.5.3.4. Technical personnel with expertise in specific systems or human factors.
  - 5.5.3.5. Flight Safety Evaluation Subgroup. For space launch mishaps occurring at an Air Force space launch range, the wing safety office will assess the performance of the flight termination system and evaluate the effectiveness of debris prediction models and toxics dispersion models. Wing government safety personnel and any direct support contractors performing these analyses will be considered a temporary SIB subgroup while performing this analysis. The subgroup must not serve as an alternate path for the release of information.
  - 5.5.3.6. Additional members as desired

## **5.6. Using an Engineering Analysis Group (EAG).**

5.6.1. The contractor providing the launch will lead the analysis, in accordance with contractual requirements. The SIB may observe and other government-sponsored entities, such as the System Program Office (SPO) or contractors, may participate based on contractual agreements.

5.6.2. Factual mishap data will be passed from the SIB to the AIB and then to the EAG. The EAG will pass the results of its engineering analysis to both the SIB and the AIB as soon as it is available.

5.6.3. Factual information concerning the mishap, including non-privileged engineering analysis results, will be released to the Commercial Space Industry through the AIB as soon as possible.

5.6.4. The engineering analysis if conducted IAW paragraph 5.6. is not privileged. However, it may only be released through the AIB. If the engineering analysis contains classified or proprietary information, it must be clearly marked and controlled appropriately.

5.6.5. The EAG should provide periodic updates to SIB members on the status of the engineering analysis. SIB members may monitor the EAG but will NOT direct or provide input to the EAG.

5.6.6. The EAG will not be used if the convening authority determines that a promise of confidentiality is needed to obtain information for or from the EAG.

**5.7. Obtaining and Using Technical Assistance and Laboratory Analysis.** When the investigation is beyond the expertise of the SIB/SIO, request technical assistance/laboratory analysis in accordance with AFI 91-204, Chapter 5, and the following guidance.

5.7.1. If contractor representatives will only produce a report for Part 2 of a formal report, the SIB president should ask them for a factual, releasable version or ask a government specialist to provide a comparable report for Part 1.

5.7.2. Use the suggested format as specified in AFI 91-204, Figure 5.1.

5.7.3. (~~Added-AFSPC~~) Technical assistance beyond the expertise of the SIB/SIO can include a system safety engineer.

## **5.8. Creating Deficiency Reports**

5.8.1. When the SIB and team members determine through their own teardown that a part is deficient, the SIB will ensure that a deficiency report (DR) is submitted IAW T.O. 00-35D-54, *USAF Deficiency Reporting and Investigating System*.

5.8.2. Instead of performing equipment teardown themselves, the SIB may request priority Teardown Deficiency Reports (TDR) through the SM by submitting a DR.

5.8.2.1. If a TDR is requested, do not attempt field disassembly of the exhibit.

5.8.2.2. Handle and ship exhibits for TDR according to T.O. 00-35D-54.

5.8.3. The SIB or SIO initiates Category I DRs for suspect items involved in Class A and B mishaps.

5.8.4. The investigator initiates Category II DRs for suspect items involved in Class C or E mishaps.

5.8.5. Ensure the mishap event number is referenced in the DR Report Control Number (RCN) line.

5.8.6. Take follow-up action to ensure exhibits were received and TDRs are in progress.

5.8.7. The investigating MAJCOM takes follow-up action if the final safety report was sent before receipt of all TDRs. If final exhibit disposition instructions were not included in the original request for TDR, the MAJCOM will provide them to the SM.

5.8.8. AFMC responds to requests for priority TDRs as required by T.O. 00-35D-54 and command directives.

5.8.9. Do not dispose of Class A exhibits sent for priority TDR without concurrence of AIB president and written approval of AFSLA/JACT. Requests for disposal should be sent through the convening authority SJA IAW AFI 51-503, Chapter 10.7.

5.8.10. All other exhibits (i.e. those from non-Class A mishaps) should be held for a minimum of 1-year following TDR before disposal.

5.8.11. Furnish a preliminary report of priority TDR findings to the field investigator as soon as possible to help with compiling the final safety report.

5.8.11.1. Include the mishap event number in TDRs related to Air Force mishaps.

5.8.11.2. Distribute TDRs as follows:

5.8.11.2.1. One copy to HQ AFSC/SES.

5.8.11.2.1.1. Attach all supporting documents (such as metallurgical analyses, photographs, and test reports) to this copy.

5.8.11.2.1.2. For Class A and B space mishaps, provide the documents as soon as they are available. If the TDR and supporting documents were not previously sent, they may be attached to the Air Logistics Center (ALC) or Product Center endorsement.

5.8.11.2.1.3. For Class E events, send the TDR upon completion. Include the mishap event number from the safety message.

5.8.11.2.2. One copy to the SIB or investigator requesting the TDR. If the SIB has forwarded its final report, send this copy to the investigating MAJCOM safety office.

5.8.11.2.3. One copy to the MAJCOM/DRU/FOA possessing (or gaining) the space system.

5.8.11.2.4. One copy to the Space and Missile Systems Center (SMC)/AXZ, 2420 Vela Way, Suite 1467, El Segundo, CA 90245-4659, if the mishap involved a system or component used by a space system launch vehicle.

5.8.11.2.5. One copy to the SPD with engineering authority for the system or item in question.

5.8.11.2.6. One copy to HQ AFMC/SE for all Class A and B mishaps.

## 5.9. Space Mishap Investigation Process. (See [Figure 5.1.](#) & [Figure 5.2.](#))

5.9.1. Following a mishap, the convening authority will appoint, on special orders, an SIB or SIO, sanction an EAG (in accordance with contractual provisions) and appoint an AIB president (if required). The host installation of the AIB shall be the installation where the SIB or SIO took place. See [Figure A5.2.](#) for an example SIB appointment message template.

5.9.1.1. For an on-orbit space mishap, it is often more difficult to determine whether a mishap has occurred. Generally, analysis results from an anomaly resolution process, or equivalent, provide

the information needed to make the determination. **Figure 5.2.** shows how this process interacts with the safety investigation process.

5.9.2. Once formed, the SIB will relieve the interim safety board (ISB) as soon as possible, take control of the investigation and accept custody of all impounded evidence, lists of potential witnesses, etc.

5.9.3. The SIB must maintain a good working relationship with the AIB and the EAG to assure a thorough safety investigation. The SIB will provide timely and incremental release of necessary factual information through the AIB to the public and commercial space industry manufacturers.

5.9.4. The SIB president, and anyone on the board he believes is relevant, should formally meet with the AB and the EAG at the beginning of the investigation to establish a good working relationship. Do not meet unless the lawyer assigned to the AIB is present. As a minimum, the meeting should:

5.9.4.1. Review the responsibilities of the SIB, the AIB, and the EAG.

5.9.4.2. Review privileged information criteria but do not discuss privileged information with the AIB or the EAG.

5.9.4.3. Determine debris recovery strategy.

5.9.4.4. Review the process for planning, coordinating, approving, and executing tests that may alter or destroy evidence.

5.9.4.5. Review the processes for control of information in order to:

5.9.4.5.1. Protect information from unauthorized release and release appropriate information as soon as feasible.

5.9.4.5.2. Maintain separation of nonprivileged and privileged information.

5.9.4.5.3. Control information access to those with approved access and a valid need.

5.9.4.5.4. Release impounded information and evidence for investigation purposes.

5.9.4.6. Review the process for prioritizing, examining, exonerating, and if cleared, releasing systems and facilities (to minimize impact to day-to-day operations).

5.9.5. The process ends with the completion of a final message and, for Class A and B mishaps, a formal report (**Chapter 6**). Once accepted by the convening authority the investigation is complete and the final message should be released (**Chapter 6**). After a review process, the AFSC reviews the report, places it in the permanent files and for Class A and B mishaps, issues a Memorandum of Final Evaluation (**Chapter 7**).

**5.10. Investigating Space Mishaps.** While the Air Force is always responsible for determining the cause of Air Force mishaps, in certain situations the Air Force may accept the results of a non-Air Force investigation to satisfy Air Force mishap prevention requirements IAW AFI 91-204, Chapter 4. The NTSB, the FAA or the space system owner will usually investigate commercial space mishaps. When possible, the Air Force should make use of these investigations and limit duplicative investigations. However, the Air Force always retains the right to conduct a separate Air Force investigation.

5.10.1. Multiple organizations will have an interest in these mishap investigations. In general, the Air Force, FAA, NTSB and space system owners should cooperate as much as possible with each other to achieve the shared goal of determination of cause and mishap prevention.

- 5.10.2. An NTSB investigation will have priority over all evidence.
- 5.10.3. The Air Force should observe all investigations related to the mishap.
- 5.10.4. When the convening authority determines that a non-Air Force (commercial) investigation has the potential to prevent future mishaps that would pertain to the Air Force, the convening authority will use an Air Force observer (usually a trained SIO) to monitor the non-Air Force mishap investigation (NTSB, FAA/AST, space system owner).
- 5.10.4.1. The Air Force observer reports to the convening authority on the adequacy of the investigation, the validity of the conclusions, and advises on whether the Air Force's mishap prevention needs have been satisfied.
- 5.10.4.2. Based on the Air Force observer's assessment on the adequacy of the non-Air Force investigation report, the convening authority may accept it with a cover letter from the Air Force observer stating acceptance of findings and submit this report as the Air Force final report. The Air Force Observer will ensure the prepared report and cover letter contains nonprivileged information. Alternately, the convening authority may appoint another safety investigation officer to evaluate the report and deliver a full, 2-part Air Force mishap report. In this case, the non-Air Force report should be included in the Air Force report.
- 5.10.4.3. Air Force observers are required to provide 30-day status messages to the convening authority and HQ AFSC. The convening authority, using [Table A3.2](#) as a guide, should determine additional distribution for these messages. Proprietary information may greatly limit the distribution.
- 5.10.4.4. Observers are not formal Air Force safety investigators and are not authorized to offer promises of confidentiality per AFI 91-204, Chapter 3.
- 5.10.4.5. Air Force observers may participate but may not interfere with the investigation they are observing. Air Force observers will refrain from making judgment calls, providing opinions or analysis, or writing any part of the report.
- 5.10.4.6. Air Force observers may not observe multiple investigations simultaneously nor may they participate in any other investigations while still an observer. Observers may transition from an Air Force observer to an Air Force SIB to provide the SIB with continuity, however, once transferred they may no longer serve as an Air Force observer or transfer back to observer status.
- 5.10.4.7. Air Force observers must have mishap investigation training or experience and should have completed the HQ AFSC Board President Course.
- 5.10.4.7. **(AFSPC)** System Safety training is highly encouraged.
- 5.10.4.8. Air Force observers will contact the appropriate MAJCOM Safety office or HQ AFSC/SES for guidance on current agreements with FAA/AST and the responsible commercial entity.
- 5.10.5. If the convening authority determines that the NTSB, FAA/AST and/or contractor investigation will not satisfy or is not satisfying the Air Force's mishap prevention needs then the Air Force must conduct its own investigation within the terms of applicable contracts and agreements.
- 5.10.5.1. MAJCOMs may develop and use tailored investigation processes when Commercial mishaps result in damage to Air Force property and when no Air Force personnel or processes are

involved in the mishap. These tailored processes must meet the requirements for mishap prevention and must be approved by HQ AFSC/SES.

5.10.6. Refer to all applicable MOAs and contracts for additional guidance.

Figure 5.1. Space Mishap Investigation Process.

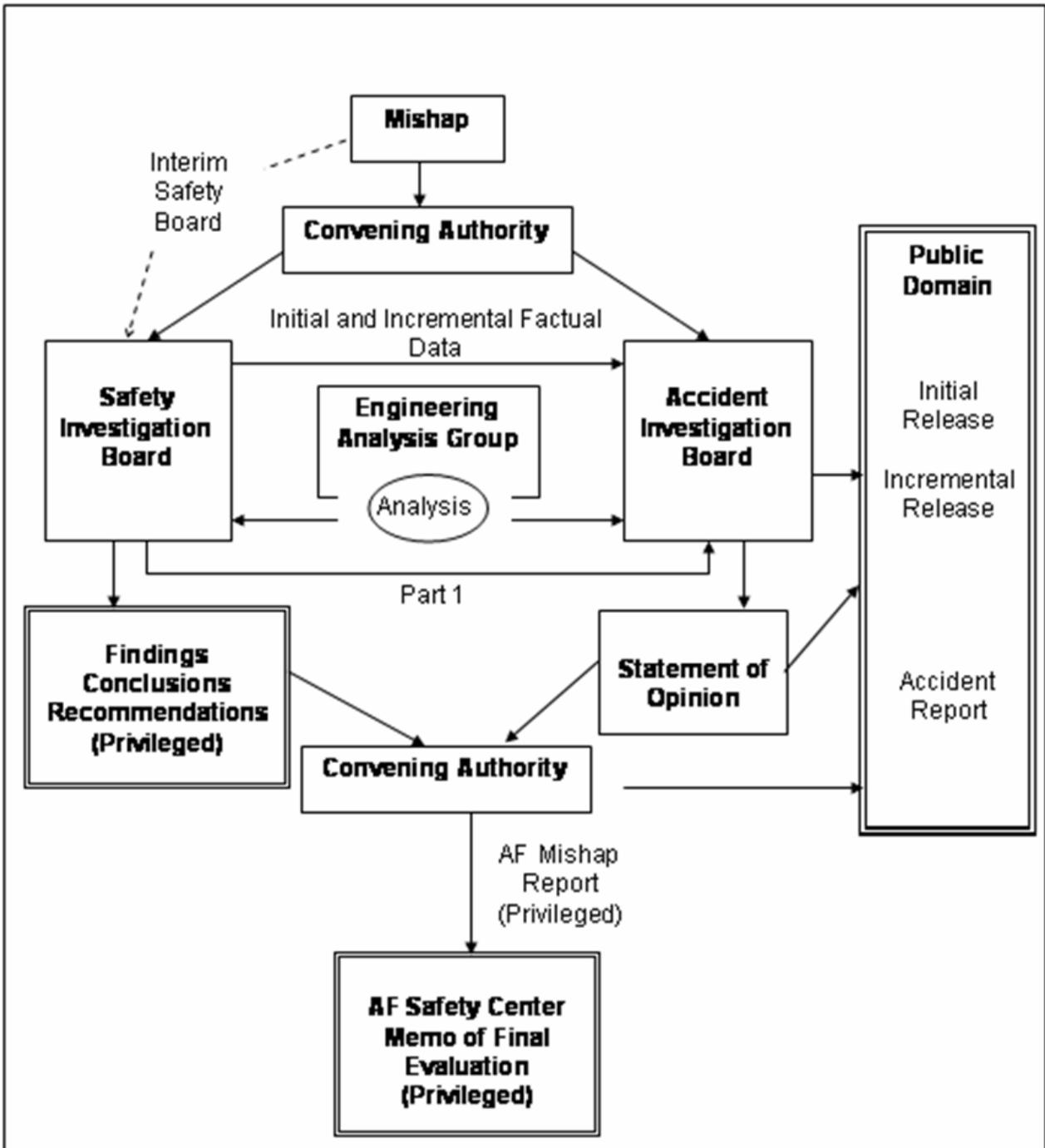
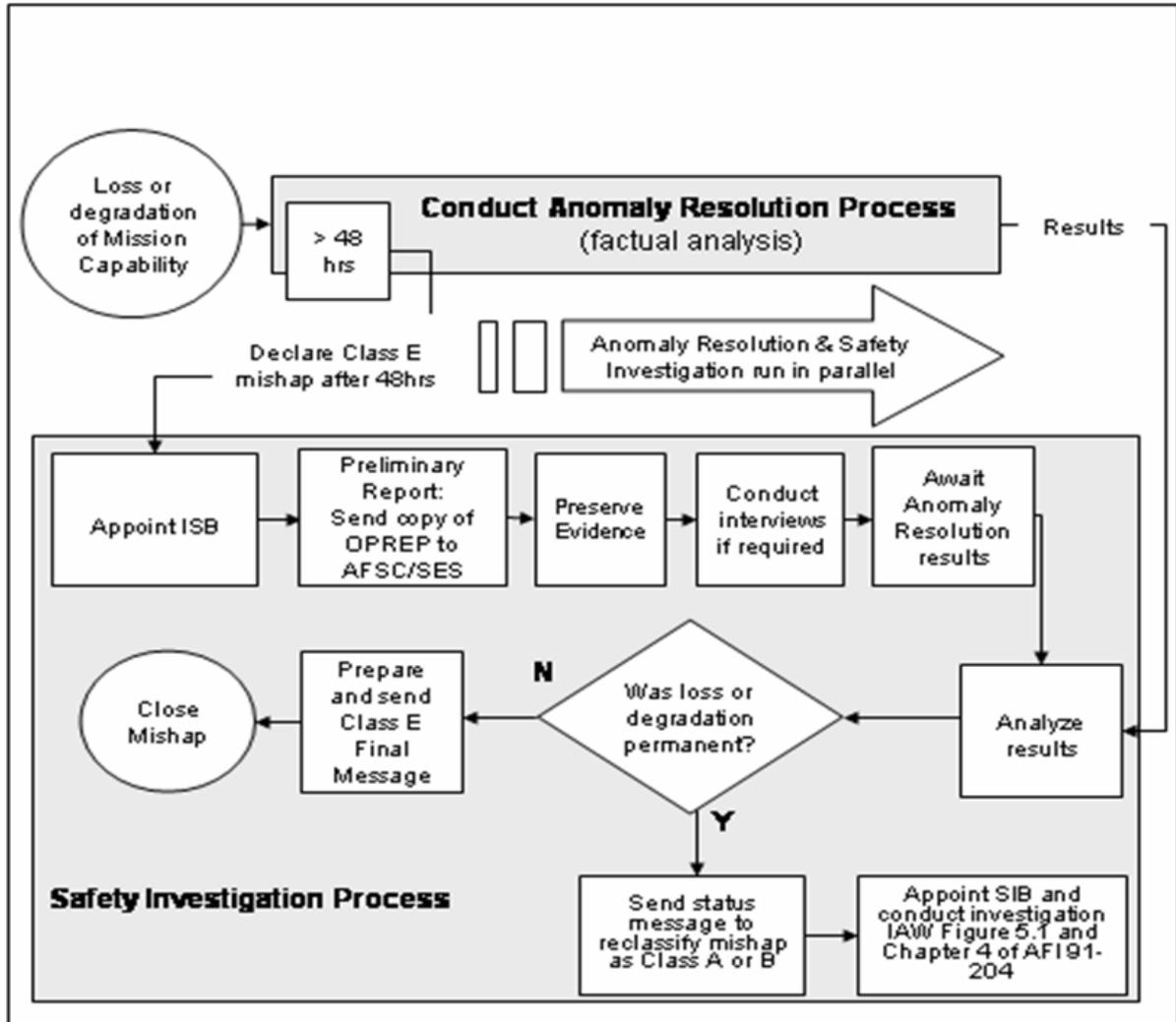


Figure 5.2. On-Orbit Loss or Degradation of Mission Capability Mishap Investigation Process.



5.10.7. The Air Force will maintain a lessons learned database for the space community for pre-launch space system mishaps.

5.10.8. The Air Force will crossflow sanitized lessons learned information to the participating space community.

5.10.9. All space launch contracts shall stipulate that properly designated and trained government officials may lead an investigation or participate in a contractor-led investigation of a pre-launch mishap if Air Force officials determine the need to do so. The need to conduct an investigation is based in part on future mishap prevention and the impact on current and future Eastern and Western range space launch requirements. As prescribed in AFFARS 5223.9001, the contracting officer shall insert the clause at 5352.223-9001, Health and Safety on Government Installations, in solicitations and contracts for space launch contracts which require performance on a Government installation, other than installations under the contractor's sole control. For operations at contractor locations and prior to launch, the Program Manager, in conjunction with contracting personnel, will ensure safety mishap investigation requirements are included in these contracts and stipulate that properly designated and trained officials may investigate or participate in a contractor-led investigation of a pre-launch mishap. The safety requirements may be reflected in a Safety Plan, Appendix C, etc., as appropriate in the contract.

**5.11. Identifying Hazards and Associated Risks.** Identify hazards IAW AFI 91-204, Chapter 5.

**5.12. Determining and Documenting Findings.** Determine findings IAW AFI 91-204, Chapter 5.

**5.13. Determining and Documenting Causes (Causal Findings).** Determine findings IAW AFI 91-204, Chapter 5.

**5.14. Determining and Documenting Recommendations.** Determine findings IAW AFI 91-204, Chapter 5.

**5.15. Determining and Documenting Other Findings (OFS) and Recommendations of Significance (ORS).** Determine OFS and ORS IAW with AFI 91-204, Chapter 5.

**5.16. Determining and Documenting Minority Opinions.**

5.16.1. The primary members help the BP determine findings, causes, and recommendations.

5.16.2. Primary members that disagree with the results may submit minority reports.

5.16.3. Minority reports must include reasons for the disagreement, any suggested findings, causes, and recommendations if different from those contained in the report.

5.16.4. Sign the minority report and place it as the last item in Tab T and include it as part of the final mishap message.

**5.17. (Added-AFSPC) Investigating Civil Space Mishaps.** Civil Space Mishaps involve U.S. Government, non-DoD payloads that are launched aboard expendable rockets where the mission is not licensed by the FAA/AST.

5.17.1. **(Added-AFSPC)** Unless applicable guidance or formal agreements specify otherwise, Civil Space Mishaps not addressed by paragraph **5.17.1. (Added)** will be investigated in accordance with the guidance of paragraph **5.10.** above.

5.17.2. **(Added-AFSPC)** In the case of mishaps which include serious explosive and chemical agent accidents, the requirements outlined in DOD Standard 6055.9, *Explosives Safety Management and the DoD Explosives Safety Board*, Chapter 13 must also be met.

## Chapter 6

### REPORTS AND BRIEFINGS

**6.1. General Information.** Report space mishaps in accordance with AFI 91-204, Chapter 6, and the following space-specific guidance:

6.1.1. Safety reports include both message reports and formal reports.

6.1.2. Class A and B Space Mishaps require both message reports and formal reports.

6.1.3. Report Class C, D, and E Mishaps by message report only.

For the Class E mishaps specified in AFI 91-204, Chapter 1, use a copy of the OPREP-3, required by AFI 10-206, to accomplish preliminary reporting. This is the only situation where an OPREP message satisfies the requirements for preliminary reporting.

6.1.4. When a non-Air Force organization report exists that fulfills the requirements of an Air Force final report, it may be used by the convening authority as the official final mishap investigation report.

6.1.5. Determining Mishap Event Number (MEN) for Space Mishaps. The MEN is the mishap's single common worldwide identifier. Include the mishap event number in the subject line of all messages and refer to it in all related correspondence. Prepare the MEN IAW the following space specific guidance.

6.1.5.1. Date of Mishap [eight digits (YYYYMMDD)]. Use the local date, not the Zulu or Coordinated Universal Time (CUT) day.

6.1.5.2. Installation Code [four digits].

6.1.5.2.1. For launch mishaps, use the base where the vehicle was launched.

6.1.5.2.2. For orbital mishaps, use the base from which the satellite was controlled.

6.1.5.2.3. For mishaps that did not occur on a military base or property, use the base of the unit that experienced the loss.

6.1.5.3. Unit Control Number [four digits]. Use separate sets of four-character combinations (three digits and one letter) for unit control numbers. Assign the numbers consecutively for each mishap for each fiscal year. MAJCOMs may assign block numbers for those disciplines requiring them.

6.1.6. **(Added-AFSPC)** Forward copies of anomaly investigation results to HQ AFSPC/SEC for incorporation in the Space Safety database and lessons-learned dissemination.

6.1.7. **(Added-AFSPC)** Use HQ AFSPC/SE Safety Guide SE-001 as a guide for reporting space launch mishaps.

### 6.2. Marking Messages, Reports, Documents, and Other Safety Materials.

6.2.1. Space mishap messages and safety reports are subject to limited distribution, may contain privileged, classified, FOUO, or proprietary information and must be controlled appropriately.

6.2.2. Mark classified pages in messages, reports, or other safety documents with the proper security classification marking from AFI 31-401, *Information Security Program Management*, and omit the notation “FOR OFFICIAL USE ONLY.”

6.2.3. For materials containing privileged information follow the guidance in AFI 91-204, Chapter 3. Place the Privilege Warning statement IAW AFI 91-204, Figure A3.1, at the foot of each page that contains privileged information. Don’t place the Privilege Warning on unclassified, non-privileged pages, on preliminary messages, or on other factual-only material.

6.2.4. The contractor must place an appropriate proprietary information warning at the foot of each page that contains proprietary information. This warning must identify the extent of the protection required (i.e. Government only, Air Force only, etc.).

**6.3. Guidance for Space Mishap Safety Messages.** Prepare messages IAW AFI 91-204, Chapter 6, and the following space specific guidance.

6.3.1. Route messages to the addressees listed in [Table A3.2](#). and IAW the schedule in [Table A3.1](#). The convening authority will release the final message unless this responsibility is delegated to the BP or SIO.

6.3.2. Prepare preliminary messages in the format shown in [Figure A2.1](#).

6.3.3. Prepare Class E final messages in the format shown in [Figure A2.3](#).

6.3.4. Prepare all other status and final message reports in the format shown in [Figure A2.2](#).

6.3.5. Addressees are listed in [Table A3.2](#). based on their need to know. Use of [Table A3.2](#). helps to prevent inadvertent release of privileged safety information outside the Air Force.

6.3.5.1. Commands may supplement this instruction by adding internal organizations, with a need to know, to the addressee list.

6.3.5.2. Use Address Indicator Groups (AIG) to include addressees within the command as recipients of selected safety messages.

6.3.5.2.1. When using AIGs, list the addressees in [Table A3.2](#). first, followed by the appropriate space system AIG.

6.3.5.2.2. Do not place addressees outside the command on command AIG listings without HQ AFSC/JA approval.

6.3.5.3. Ensure all Department of the Air Force agencies identified as OPRs for mishap recommendations are included in the addressee list. For OPRs outside the Air Force, MAJCOM safety offices should consult with HQ AFSC/JA on the appropriate means of conveying the tasking.

**6.4. Guidance for Space Mishap Formal Reports.**

6.4.1. Formal safety reports present detailed information, both factual and analytical, about mishaps. Prepare them IAW AFI 91-204, Chapter 6, and the following guidance.

6.4.2. Format formal reports IAW [Attachment 4](#). Privileged reports should include all tabs. If certain Tabs do not add to the report due to the mishap’s circumstances, insert a page at the tab that states “Tab Not Used.”

6.4.3. The SIB or SIO is responsible for writing the following areas of the formal report:

- 6.4.3.1. Executive Overview.
- 6.4.3.2. Mishap Sequence.
- 6.4.3.3. Investigation and Analysis.
- 6.4.3.4. Findings and Causes.
- 6.4.3.5. Recommendations
- 6.4.3.6. Other Findings and Recommendations of Significance.
- 6.4.4. Distribute space mishap formal reports IAW [Table A3.3](#). and AFI 91-204, Chapter 6.
  - 6.4.4.1. Minimize the number of hard copies. As a minimum, create two: one for the convening authority and one, the master copy, for HQ AFSC/SES. Prepare all other copies electronically (CD-R or diskette).
  - 6.4.4.2. Distribution of privileged safety reports is generally restricted to Air Force personnel with appropriate access and a need to know. See AFI 91-204, Chapter 3 for guidance and a list of persons authorized access.
  - 6.4.4.3. Use the distribution memorandum, [Figure A5.1](#), to list all addressees receiving copies, extracts or attachments to the report. See [Attachment 4](#) for details.
  - 6.4.4.4. Send copies of the formal report to all Air Force agencies or organizations tasked in the recommendations.

## 6.5. Authenticating Formal Reports

- 6.5.1. Type each primary SIB member's name, grade, and position on the last page of the tab containing board analysis and conclusions.
- 6.5.2. Have each concurring member, including Primary Members from other services on Joint Investigations, sign above it for authentication of the report or for any changes to the report.
- 6.5.3. If the formal SIB report needs to be changed after it is authenticated, all primary members of the SIB shall be physically reconvened and the authentication updated.

## 6.6. Briefing the Investigation Results.

When the formal report is complete and the final message has been drafted, brief the results to the convening authority IAW AFI 91-204, Chapter 6.

- 6.6.1. **(Added-AFSPC)** SMC/CC will attend the briefing along with the SMC program manager and system safety manager if the mishap involved a SMC procured system. SIDC/CC will attend the briefing along with the SIDC program manager if the mishap involved a SIDC system in test. Schedule mishap briefings with HQ AFSPC/SE based on an estimated completion date of the formal report.

## 6.7. Accepting the Final Report.

The convening authority (CA) validates and accepts the final report. The CA accepts the report IAW AFI 91-204, Chapter 6. Once accepted by the CA, the SIB or investigating officer sends the final message and the investigation is considered complete. Before accepting the final report and releasing the final message, the CA, with the help of their safety staff, should:

- 6.7.1. Ensure the investigators' conclusions are included in the final message and that enough information is presented to reasonably lead to the conclusions presented.

6.7.2. Validate the recommendations and verify the correct action agencies are designated.

**6.8. Notifying Person(s) Found Causal in Privileged SIB Reports.** Perform notifications IAW AFI 91-204, Chapter 6.

## Chapter 7

### FOLLOW-UP ACTIONS

**7.1. General Information.** Follow-up actions begin after the final message is released. Perform follow-up actions IAW AFI 91-204, Chapter 7, and the following guidance.

**7.2. Review Process.** Conduct the review process IAW AFI 91-204, Chapter 7, to ensure that final reports (final messages and formal reports) are complete, accurate and fulfill the purpose, intent and requirements of the mishap prevention program.

**7.3. Memorandum of Final Evaluation (MOFE).** HQ AFSC prepares a MOFE for each Class A and Class B mishap. Refer to AFI 91-204, Chapter 7, for more details on this process.

**7.4. Tracking Recommendations.** Manage corrective actions, with or without a MOFE, IAW with AFI 91-204, Chapter 7.

**7.5. Supplemental Information.** HQ AFSC will consolidate all supplemental information, created after SIB completion, in the HQ AFSC mishap master file. Ensure all material is marked and protected appropriately. This file may include:

- 7.5.1. Comments to the Final Message.
- 7.5.2. Memorandum of Final Evaluation.
- 7.5.3. Investigation Reports from Other Organizations.
- 7.5.4. Significant additional information received after the MOFE.

GREG ALSTON, SES  
Acting Chief of Safety

(AFSPC)

CHRISTOPHER B. HALE, Col, USAF  
Director of Safety

**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DODD 3150.8, *DOD Response to Radiological Accidents*

DODR 5400.7/Air Force Supplement, *DOD Freedom Of Information Act Program*

DODI 6055.7, *Accident Investigation, Reporting and Record Keeping*

DOD 6025.18-R, *DOD Health Information Privacy Regulation*

CJCSM 3150.01A, *Joint Reporting Structure General Instructions*

CJCSM 3150.03A, *Joint Reporting Structure Event and Incident Reports*

Joint Federal Travel Regulations, Volume 1, *Uniformed Service Members*

Joint Travel Regulations, Volume 2, *Department of Defense Civilian Personnel*

Air Standard 85/02A, *Investigation of Aircraft/Missile Accidents/Incidents*

NATO STANAG 3101, *Exchange of Safety Information Concerning Aircraft and Missiles*

NATO STANAG 3102, *Flight Safety Co-operation in Common Ground/Air Space*

NATO STANAG 3318, *Aeromedical Aspects of Aircraft Accident/Incident Investigation*

NATO STANAG 3531, *Safety Investigation and Reporting of Accident/Incidents Involving Military Aircraft and/or Missiles*

NATO STANAG 3750, *Reporting and Investigation of Traffic Incidents*

AFPD 10-9, *Lead Operating Command Weapon Systems Management*

AFI 10-206, *Operational Reporting*

AFI 10-220(I), *Contractor's Flight And Ground Operations*

AFI 10-601, *Mission Needs and Operational Requirements Guidance and Procedures*

AFI 10-2501, *Full Spectrum Threat Response (FSTR) Planning and Operations*

AFI 11-215, *Flight Manuals Program (FMP)*

AFI 11-401, *Flight Management*

AFI 13-202, *Overdue Aircraft*

AFI 31-401, *Information Security Program Management*

AFI 32-2001, *The Fire Protection Operations and Fire Prevention Program*

AFMAN 32-4004, *Emergency Response Operations*

AFI 33-212, *Reporting COMSEC Deviations*

AFI 33-324, *The Information Collections and Reports Management Program; Controlling Internal, Public, and Interagency Air Force Information Collections*

AFI 34-217, *Air Force Aero Club Program*

AFMAN 34-232, *Aero Club Operations*

AFI 34-242, *Mortuary Affairs Program*

AFI 34-1101, *Assistance to Survivors of Persons Killed in Air Force Aviation Mishaps and Other Incidents*

AFPD 35-1, *Public Affairs Management*

AFI 36-3002, *Casualty Services*

AFMAN 37-123, *Management of Records*

AFI 37-138, *Records Disposition-Procedures and Responsibilities*

AFMAN 37-139, *Records Disposition Schedule*

AFI 40-201, *Managing Radioactive Materials in the US Air Force*

AFI 44-120, *Drug Abuse Testing Program*

AFI 48-125, *The US Air Force Personnel Dosimetry Program*

AFI 51-503, *Aerospace Accident Investigations*

AFI 63-1201, *Assurance of Operational Safety, Suitability, & Effectiveness*

AFI 65-503, *US Air Force Cost and Planning Factors*

AFI 65-601 Volume 1, *Budget Guidance and Procedures*

AFI 65-601 Volume 2, *Budget Management for Operations*

AFPD 91-2, *Safety Programs*

AFI 91-101, *Air Force Nuclear Weapons Surety Program*

AFI 91-109, *Air Force Nuclear Reactor Program*

AFI 91-110, *Nuclear Safety Review and Launch Approval for Space or Missile Use of Radioactive Material and Nuclear Systems*

AFI 91-202, *The US Air Force Mishap Prevention Program*

AFJI 91-206, *Participation in a Military or Civil Aircraft Accident Safety Investigation*

AFPAM 91-210, *Contract Safety*

AFPAM 91-211, *USAF Guide to Aviation Safety Investigation*

AFPAM 91-212, *Bird/Wildlife Aircraft Strike Hazard (BASH) Management Techniques*

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*

AFI 99-151, *Air-Launched Missile Analysis Group (ALMAG)*

TO 00-5-1, *AF Technical Order System*

TO 00-35D-54, *USAF Deficiency Reporting and Investigating System.*

TO 1-1-638, *Repair and Disposal of Aerospace Vehicles*

***Abbreviations and Acronyms***

**A&AS**—Advisory & Assistance

**AF**—Air Force

**AFCESA**—Air Force Civil Engineer Support Agency

**AFFN**—Air Force Foreign Nationals

**AFFOR**—Air Force Forces

**AFFSA**—Air Force Flight Standards Agency

**AF/SE**—Air Force Chief of Safety

**AF/SEI**—Issues Division, Office of the Chief of Safety

**AFI**—Air Force Instruction

**AFIP**—Armed Forces Institute of Pathology

**AFJI**—Air Force Joint Instruction

**AFLSA**—Air Force Legal Services Agency

**AFLSA/JACT**—Air Force Legal Service Agency Tort Claims and Litigation Division

**AFMAN**—Air Force Manual

**AFMC**—Air Force Materiel Command

**AFOSH**—Air Force Occupational and Environmental Safety, Fire Protection, and Health

**AFOTEC**—Air Force Operational Test and Evaluation Center

**AFPAM**—Air Force Pamphlet

**AFPD**—Air Force Policy Directive

**AFRC**—Air Force Reserve Command

**AFSAS**—Air Force Safety Automated System

**AFSC**—Air Force Safety Center or Air Force Specialty Code

**AFSCN**—Air Force Satellite Control Network

**AFSC/JA**—Assistant for Legal Matters

**AFSC/SEF**—Aviation Safety Division

**AFSC/SEG**—Ground Safety Division

**AFSC/SEP**—Plans and Programs Division

**AFSC/SES**—Space Safety Division

**AFSC/SEW**—Weapons Safety Division

**AFSPC**—Air Force Space Command

**AIB**—Accident Investigation Board  
**AIG**—Addressee Indicator Group  
**AM**—Airfield Management Personnel  
**AMIC**—Aircraft Mishap Investigation Course (AMIC)  
**ANG**—Air National Guard  
**AOR**—Area of Responsibility  
**APU**—Auxiliary Power Unit  
**ARC**—Air Reserve Component  
**ATC**—Air Traffic Control  
**BASH**—Bird/Wildlife Aircraft Strike Hazard  
**BP**—Board President  
**CA**—Convening Authority  
**CC**—Commander  
**CD-R**—Compact Disk-Recordable  
**CDI**—Commander Directed Investigation  
**CFR**—Code of Federal Regulations  
**CMA**—Controlled Movement Area  
**COMAFFOR**—Commander, Air Force Forces  
**CONTRIB**—Contributing  
**CONUS**—Continental United States  
**COP**—Continuation Of Pay  
**COS**—Chief of Safety  
**CPO**—Civilian Personnel Office  
**CSAF**—Chief of Staff, United States Air Force  
**CVR**—Cockpit Voice Recorder  
**DAACO**—Drug and Abuse Control Officer  
**DAF**—Department of the Air Force  
**DB**—Data Base  
**DCG Disaster**—Control Group  
**DCMA**—Defense Contract Management Agency  
**DD FORM**—Department of Defense Form  
**DED**—Directed Energy Device

**DEW**—Directed Energy Weapon  
**DMS**—Defense Message System  
**DO**—Doctor of Osteopathy  
**DOD**—Department of Defense  
**DODD**—Department of Defense Directive  
**DODI**—Department of Defense Instruction  
**DODR**—Department of Defense Regulation  
**DOT**—Department of Transportation  
**DR**—Deficiency Report  
**DRU**—Direct Reporting Unit  
**DSN**—Defense Switched Network  
**DTRA**—Defense Threat Reduction Agency  
**EAG**—Engineering Analysis Group  
**ECM**—Electronic Countermeasures  
**ECP**—Engineering Change Proposal  
**ENJJPT**—Euro NATO Joint Jet Pilot Training Program  
**EPA**—Environmental Protection Agency  
**EPAF**—European Participating Air Forces  
**EPU**—Emergency Power Unit  
**FA**—First Aid  
**FAA**—Federal Aviation Administration  
**FAA/AST**—Federal Aviation Administration/Associate Administrator of Space Transportation  
**FAX**—Facsimile Machine  
**FDR**—Flight Data Recorder  
**FEBA**—Forward Edge of the Battle Area  
**FFRDC**—Federally Funded Research & Development Centers  
**FOA**—Field Operating Agency  
**FOD**—Foreign Object Damage  
**FOIA**—Freedom of Information Act  
**FOUO**—For Official Use Only  
**FSAT**—Full Scale Aerial Target  
**FSNCO**—Flight Safety Non Commissioned Officer

**FSO**—Flight Safety Officer  
**FT**—Fatal (injury)  
**FY**—Fiscal Year  
**GAO**—General Accounting Office  
**GMV**—Government Motor Vehicle  
**GS**—General Schedule  
**GSA**—General Services Administration  
**GSU**—Geographically Separated Unit  
**GVO**—Government Vehicle Other  
**HATR**—Hazardous Air Traffic Report  
**HE**—High Explosive  
**HIPPA**—Health Insurance Portability and Accountability Act  
**HMMWV**—High Mobility Multipurpose Wheeled Vehicle  
**HO**—Historian  
**HRO**—Human Resources Office  
**HQ**—Headquarters  
**IAW**—In Accordance With  
**ICAO**—International Civil Aviation Organization  
**ID**—Identification  
**IFSD**—In Flight Shutdown  
**IG**—Inspector General  
**IO**—Investigating Officer  
**ISB**—Interim Safety Board  
**JA**—Judge Advocate  
**LT**—Lost Time (case)  
**MAAF**—Mishap Analysis and Animation Facility  
**MAJCOM**—Major Command  
**MC**—Mission Capability  
**MDS**—Mission Design Series  
**MD**—Medical Doctor  
**MEN**—Mishap Event Number  
**MFOQA**—Military Flight Operations Quality Assurance

**MGCS**—Missile Guidance Control Set  
**MINA**—Mishap Investigation Non-Aviation  
**MK**—Mark  
**MOA**—Memorandum of Agreement  
**MOFE**—Memorandum of Final Evaluation  
**MOU**—Memorandum of Understanding  
**MRP**—Mishap Review Panel  
**MSE**—Missile Support Equipment  
**NAF**—Nonappropriated Fund or Numbered Air Force  
**NASA**—National Aeronautics and Space Administration  
**NATO**—North Atlantic Treaty Organization  
**NDA**—National Defense Area  
**NGB**—National Guard Bureau  
**NGB/CF**—Director, Air National Guard  
**NL**—No Lost Time (case)  
**nm**—Nautical Mile  
**NRO**—National Reconnaissance Office  
**NTSB**—National Transportation Safety Board  
**NWCA**—Nuclear Weapons and Counter Proliferation Agency  
**OBA**—Operating Budget Authority  
**OCR**—Office of Collateral Responsibility  
**OMB**—Office of Management and Budget  
**OPCON**—Operational Control  
**OPR**—Office of Primary Responsibility  
**OPREP**—Operational Report  
**ORS**—Other Recommendations of Significance  
**OSC**—On-Scene Commander  
**OSI**—Office of Special Investigation  
**OSHA**—Occupational Safety and Health Administration  
**OSS&E**—Operational Safety, Suitability, and Effectiveness  
**OT&E**—Operational Test and Evaluation  
**OWCP**—Office of Workers' Compensation Program

**PA**—Public Affairs  
**PCS**—Permanent Change of Station  
**PDO**—Publishing Distribution Office  
**PEO**—Program Executive Offices  
**PH**—Public Health  
**PME**—Professional Military Education  
**PMV**—Private Motor Vehicle  
**PP**—Permanent Partial (disability)  
**PPE**—Personal Protective Equipment  
**PT**—Permanent Total (disability)  
**QA**—Quality Assurance  
**R&D**—Research and Development  
**RAV**—Risk Assessment Values  
**RCN**—Remote Control Number  
**RCS**—Report Control Symbol  
**RDS**—Records Disposition Schedule  
**ROA**—Remotely Operated Aircraft  
**ROTC**—Reserve Officer Training Corps  
**RPV**—Remotely Piloted Vehicle  
**SAF**—Secretary of the Air Force  
**SAS**—Safety Automated System  
**SCCS**—Space Command and Control Systems  
**SE**—Chief of Safety  
**SECAF**—Secretary of the Air Force  
**SES**—Senior Executive Service  
**SIB**—Safety Investigation Board  
**SIO**—Single Investigation Officer  
**SJA**—Staff Judge Advocate  
**SM**—Statute Mile or Single Manager  
**SORTS**—Status of Resources and Training System  
**SPO**—System Program Office  
**SRU**—Shop Replacement Unit

**SSE**—Space Support Equipment  
**SSN**—Social Security Number  
**STANAG**—Standardization Agreement  
**STAN/EVAL**—Standardization/Evaluation  
**TCTO**—Time Compliance Technical Order  
**TDPFO**—Temporary Duty Pending Further Orders  
**TDR**—Teardown Deficiency Report  
**TDY**—Temporary Duty  
**TED**—Transfer Effective Date  
**TO**—Technical Order  
**UAV**—Unmanned Aerial Vehicle  
**UCAV**—Unmanned Combat Aerial Vehicle  
**UCMJ**—Uniform Code of Military Justice  
**UR**—Unsatisfactory Report  
**URL**—Universal Resource Locator  
**US**—United States  
**USA**—United States Army  
**USAF**—United States Air Force  
**USAFR**—United States Air Force Reserve  
**USC**—United States Code  
**USCENTAF**—United States Central Command Air Forces  
**USCG**—United States Coast Guard  
**USMC**—United States Marine Corps  
**USN**—United States Navy  
**USSOUTHCOM**—United States Southern Command  
**VP**—Vice President  
**WB**—Wage Board  
**YOP**—Youth Opportunity Program

### ***Terms***

**AERO CLUB AIRCRAFT**—These are all aircraft assigned to the respective Aero Club. The Aero Club through, purchase, lease, or loan from the government may have acquired these aircraft. Aero Clubs are authorized excess DOD and General Service Administration (GSA) aircraft on a loan basis.

**AEROSPACE VEHICLES**—DOD aircraft, UAVs, missiles, and space vehicles.

**AFLOAT MISHAP**—An Air Force mishap occurring on board, or as the result of, a DOD vessel. This also includes DOD diving or swimmer operations. This term includes mishaps occurring while loading and/or off-loading or receiving services at dockside and mishaps occurring up to the high water mark during amphibious or inshore warfare training operations. It applies also to all injuries to DOD personnel occurring on board, whether or not job-related. Fatalities and/or injuries occurring on board that result from shipyard, repair facility, or private contractor operations are not afloat mishaps.

**AIRFIELD OPERATIONS PERSONNEL**—Air traffic control (ATC) and airfield management (AM) personnel.

**AIR FORCE AT LARGE**—Used for recording losses. Mishaps involving exchange students, military members in a non-pay status while waiting for appellate review if they have no written or verbal orders to return to an Air Force installation, prior service personnel on leave before reporting to initial permanent duty assignment, etc., are recorded to the Air Force at large. Also used for recording losses of non-accepted Air Force aerospace vehicles (paragraph 4.9.2.) and aerospace vehicles leased to a non-DOD organization for modification, maintenance, repair, test, contract training, or experimental project for a DOD component, when the Government has assumed ground and flight risk (paragraph 4.9.3.).

**AIR FORCE LAUNCH**—Any space launch operation conducted with significant oversight or insight by the Air Force and not subject to licensing requirements of 14 CFR Part 415. The Air Force may or may not be the space system owner.

**AIR RESERVE COMPONENTS (ARC)**—All units, organizations, and members of the ANG and AFRC (10 U.S.C. 261) on active duty, on active duty for training, or in drill status, and ANG and AFRC technicians; include ANG and AFRC property and equipment. Military status starts upon beginning duty for military pay and ends when duty stops. All references to Air Force military personnel and property also apply to ARC military personnel and property.

**AIRCRAFT FLIGHT MISHAP**—Any mishap in which there is intent for flight and reportable damage to a DOD aircraft. Explosives and chemical agents or guided missile mishaps that cause damage in excess of \$20,000 to a DOD aircraft with intent for flight are categorized as aircraft flight mishaps to avoid dual reporting. This is the only aviation mishap subcategory that contributes to the flight mishap rate.

**AIRCRAFT FLIGHT-RELATED MISHAP**—Any mishap in which there is intent for flight and no reportable damage to the DOD aircraft itself, but the mishap involves a fatality, reportable injury, or reportable property damage. A missile or UAV that is launched from a DOD aircraft, departs without damaging the aircraft, and is subsequently involved in a DOD mishap is reportable as a guided missile mishap or UAV, respectively.

**AIRCRAFT GROUND OPERATIONS MISHAP**—Any mishap in which there is no intent for flight and which results in damage to a DOD aircraft, a fatality, reportable injury, or reportable property damage. Damage to an aircraft when it is being handled as cargo or as aircraft components when not attached to the airframe is a ground and industrial, industrial aviation mishap.

**AVIATION MISHAP**—An Air Force mishap involving a DOD aircraft or DOD UAV.

**BROKEN ARROW**—Accidental, unauthorized, or unexplained events and the following: accidental or unauthorized launching, firing, or use by US forces or US supported allied forces of a nuclear capable weapons system; an accidental, unauthorized, or unexplained nuclear detonation; non-nuclear detonation

(no nuclear yield) or burning of a nuclear weapon or nuclear component; radioactive contamination; public hazard, actual or perceived; jettisoning of a nuclear weapon or nuclear component.

**CAUSAL FINDING**—Causal findings are those, which, singly or in combination with other causal findings, logically result in damage or injury. They are identified with the word “CAUSE” at the start of the text of the finding.

**CAUSE**—A cause is a deficiency, which if corrected, eliminated, or avoided, would likely have prevented or mitigated the mishap damage or significant injury.

**CHEMICAL AGENTS**—A chemical compound intended for use in military operations to kill, seriously injure, or incapacitate persons through its chemical properties. Excluded are riot control agents, chemical herbicides, smoke, and flame producing devices. Pesticides, insecticides, and industrial chemicals, unless selected by the DOD Components for chemical warfare purposes, are also excluded.

**CHEMICAL AGENT MISHAP**—Any unintentional or uncontrolled release of a chemical agent when: reportable damage to property from contamination or costs are incurred for decontamination; or individuals exhibit physiological symptoms of agent exposure; or the agent quantity released to the atmosphere is such that a serious potential for exposure is created by exceeding the applicable maximum allowable concentration-time levels for exposure of unprotected workers or the general population or property.

**COMBAT TRAINING MISHAP**—Mishaps involving property damage or reportable injury during participation in base exercises, combat simulated exercises, obstacle/confidence courses, and inspector general exercise that test combat capability.

**COMPETENT MEDICAL AUTHORITY**—Allopathic (MD), osteopathic (DO), and chiropractic practitioners, as well as podiatrists, optometrists, dentists, and clinical psychologists. The term competent medical authority includes these medical practitioners only to the extent of their operations within the scope of their practice as defined by state law and subject to regulation by the Secretary of Labor. Competent medical authority also includes nurse practitioners and physician assistants under supervision of licensed medical practitioners.

**CONTRACTOR MISHAP**—A mishap resulting from contractor operations that involves injury to DOD personnel and/or damage to DOD resources.

**CONTROLLED MOVEMENT AREA**—Any portion of the airfield requiring aircraft, UAV, vehicles, and pedestrians to obtain specific air traffic control approval for access (normally via two-way radio contact with the control tower). Controlled Movement Areas include, but are not limited to, areas used for takeoff, landing and as required for taxiing of aircraft.

**CONVENING AUTHORITY**—The individual who has the authority to order a safety investigation.

**CRITICAL PROFILE**—A mission profile exceeding system limitations based on system specifications or other program documentation.

**DEPARTMENT OF DEFENSE AIRCRAFT**—All manned weight-carrying devices supported in flight by buoyancy or dynamic action and are owned or leased by the DOD Components (including Reserve forces and National Guard) that are, as follows: operated and exclusively controlled or directed by a DOD Component; furnished by the Government, loaned, or on bailment to a non-DOD organization for modification, maintenance, repair, test, contractor training, or experimental project for a DOD Component, when the Government has assumed ground and flight risk. Includes aircraft under test by a

DOD Component. (This includes aircraft furnished by a contractor or another Government Agency when operated by a DOD aircrew in official status and a DD Form 250, *Material Inspection and Receiving Report*, has been executed to certify that the Department of Defense has accepted the aircraft.) Excludes aircraft leased, on bailment, or loaned to contractors, commercial airlines, other Government Agencies, or foreign governments, when the lessee has assumed risk of loss. Excludes civil aircraft owned by civil operators and accomplishing contract air missions for the DOD Components. Excludes factory-new production aircraft until successful completion of the post-production acceptance flight (mishaps that involve such aircraft are reported as contractor mishaps). Excludes flying club aircraft or privately owned aircraft on DOD installations.

**DEPARTMENT OF DEFENSE CIVILIAN PERSONNEL**—DOD Civil Service System employees (including Reserve component military technicians (dual status), unless in a military duty status), non-dual status technicians, and non-appropriated fund employees. To avoid dual reporting this excludes military personnel working part-time; Corps of Engineers Civil Works employees; Youth or Student Assistance Program employees; foreign nationals employed by the DOD Components; and Army-Air Force Exchange Service employees.

**DEPARTMENT OF DEFENSE MILITARY PERSONNEL**—All US military personnel on active duty or Reserve status under the provisions of 10 U.S.C. (reference (m)). National Guard personnel under the provisions of 32 U.S.C. (reference (n)); Service Academy cadets; Reserve Officer Training Corps cadets when engaged in directed training activities; foreign national military personnel assigned to the DOD Components.

**DEPARTMENT OF THE AIR FORCE (DAF) CIVILIAN PERSONNEL**—Includes Senior Executive Service (SES), general schedule (GS), and wage board (WB) employees, including ANG and AFRC technicians, unless in military duty status. Includes non-appropriated fund (NAF) employees who are not military personnel working part time. Includes Youth Opportunity Program (YOP) and Student Assistance Program employees. Includes foreign-national civilians employed by Air Force in direct or indirect hire status (Air Force Foreign Nationals (AFFN)). Foreign-national, direct-hire employees are the same as DAF civilian employees. Foreign-national, indirect-hire employees are the same as DAF civilian employees only when the Air Force has supervisory or work performance control. This includes Air Force responsibility for any compensation claims arising from employment injury.

**DEPARTMENT OF THE AIR FORCE (DAF) MILITARY PERSONNEL**—These are Air Force personnel on active duty with the Air Force or ANG and AFRC personnel on military duty status. Includes Air Force Academy cadets and Reserve Officer Training Corps (ROTC) cadets engaged in directed training activities. Includes members of other US military services serving on extended active duty with the Air Force or foreign-national military personnel assigned to the Air Force.

**DESTROYED AIRCRAFT/UAV**—Aircraft/UAV will be considered destroyed when the man-hours required to repair the aircraft/UAV exceed the maximum stated in the “major repair man-hours” column of TO 1-1-638, *Repair and Disposal of Aerospace Vehicles*. A damaged aircraft/UAV not repaired is not automatically a “destroyed” aircraft/UAV. The decision not to return a damaged aircraft/UAV to service is independent of the mishap class. When the aircraft/UAV will not be returned to service, classify the mishap damage according to the total estimated repair cost as if it had been returned to service. The SIB must submit detailed repair cost estimates through MAJCOM channels to HQ AFSC/SEF for validation if an aircraft/UAV will not be returned to service but is not considered destroyed.

**DIRECTED ENERGY**—An umbrella term covering technologies that relate to the production of a beam of concentrated electromagnetic energy or atomic or subatomic particles.

**DIRECTED ENERGY DEVICE**—A system using directed energy primarily for a purpose other than as a weapon. Directed-energy devices may produce effects that could allow the device to be used as a weapon against certain threats; for example, laser rangefinders and designators used against sensors that are sensitive to light. In this instance, characterize the mishap as a Directed Energy Device since the primary purpose of the mishap object was NOT as a weapon.

**DIRECTED ENERGY DEVICE MISHAP**—A mishap involving a directed energy device. An example would be damage to an optical device by an aircraft laser range finder.

**DIRECTED ENERGY MISHAP**—A directed energy weapon mishap or a directed energy device mishap.

**DIRECTED ENERGY WEAPON**—A system using directed energy primarily as a direct means to deny, disrupt, damage or destroy enemy equipment, facilities, and personnel.

**DIRECTED ENERGY WEAPON MISHAP**—A mishap involving a directed energy weapon and/or unique directed energy weapon support equipment.

**DISABILITY**—See permanent partial disability or permanent total disability.

**EJECTION ATTEMPT**—Completion of the action by the aircrew to initiate the ejection system, regardless of the outcome. For single motion systems, this only requires pulling the handle. For dual motion systems, both raising the sidearm and squeezing the trigger must be accomplished.

**EJECTION SYSTEM**—A mechanical device designed to forcefully separate the crew from the aircraft and return them to the earth's surface. Examples are an ejection seat, and extraction system, or a crew module.

**ENGINE-CONFINED MISHAP**—Applies when an aircraft or UAV turbine engine experiences reportable damage (\$20,000 or more), and damage is confined to the engine and integral engine components. Damage is considered confined to the engine if there is less than \$20,000 damage external to the engine. If the total cost of all damage external to the engine exceeds \$20,000, then the mishap is not Engine-Confined, regardless of the comparative extent of engine damage cost.

**ENGINE FOD MISHAP**—When objects external to the engine cause damage, the mishap is an Engine FOD mishap. When the damage is caused by an internal engine failure (including liberation of internal engine components such as bolts, rivets, bonded coatings, blades, vanes, abradable coatings, honeycomb seals, etc.), the mishap is not an Engine FOD mishap.

**EVENT**—An unplanned occurrence, or series of occurrences, that does not meet the reporting criteria of a mishap.

**EXPLOSIVES**—All items of ammunition; propellants (solid and liquid); pyrotechnics; explosives; warheads; explosive devices; and chemical agent substances and associated components presenting real or potential hazards to life, property, or the environment. Excluded are wholly inert items and nuclear warheads and associated devices, except for considerations of storage and stowage compatibility; and for considerations of blast, fire, and non-nuclear fragment hazards associated with the explosives.

**EXPLOSIVES AND CHEMICAL AGENTS MISHAP**—An Air Force mishap involving an explosive or chemical agent.

**EXPLOSIVES MISHAP**—Mishaps resulting in damage or injury from: an explosion or functioning of explosive materials or devices (except as a result of enemy action); inadvertent actuation, jettisoning, and releasing or launching explosive devices; impacts of ordnance off-range.

**FAA LICENSED LAUNCH**—Any commercial launch that is not indemnified by the government and has been issued a license by FAA/AST.

**FATAL INJURY**—Injuries resulting in death, either in the mishap or at a later time, to include within 30 days subsequent to the medical discharge, retirement, or separation from the service, due to complications arising from mishap injuries.

**FINDINGS**—Findings are the conclusions of the safety investigator. They are statements, in chronological order, of each significant event or condition sustaining the sequence leading to the mishap.

**FIRE MISHAP**—A mishap with reportable damage to real property or equipment or reportable injury to Air Force personnel resulting from fire, but does not involve a DOD aircraft or DOD UAV weapon system, or explosives. This mishap subcategory also includes non-Air Force personnel when Air Force property or equipment fires cause injury.

**FIRST AID CASE**—For military members, any initial one-time treatment and any follow-up visit for observation of minor scratches, cuts, burns, and splinters, etc., that does not ordinarily require medical care. Such one-time treatment and follow-up visit for observation is considered first aid, even though provided by a physician or medical professional.

For DOD civilians, any initial one-time treatment and any follow-up visit for observation of minor scratches, cuts, burns, and splinters, etc., that does not ordinarily require medical care. Such one-time treatment and follow-up visit(s) for observation are considered first aid, even though provided by a physician or medical professional, as long as no leave or continuation of pay (COP) is charged to the employee and no medical expense is incurred.

**NOTE:** Use Office of Management and Budget (OMB) Bulletin 1220-0029, *Record Keeping Guidelines for Occupational Injuries and Illnesses*, as a guide for determining whether medical treatment or first aid was rendered.

**FRIENDLY FIRE**—A circumstance in which members of a US or friendly military force are mistakenly or accidentally killed or injured in action by US or friendly forces actively engaged with an enemy or who are directing fire at a hostile force or what is thought to be a hostile force.

**GOVERNMENT MOTOR VEHICLE (GMV)**—A motor vehicle that is owned, leased, or rented by a DOD Component (not individuals); primarily designed for over-the-road operations; and whose general purpose is the transportation of cargo or personnel. Examples of GMVs are passenger cars, station wagons, sport utility vehicles, vans, ambulances, buses, motorcycles, trucks, tractor-trailers, rental vehicles authorized by official travel orders, and General Service Administration (GSA) vehicles. Vehicles on receipt to, and operated by, non-DOD persons or agencies and activities such as the US Postal Service or the American Red Cross are not GMVs. Includes Air Force owned motor vehicles not identified as GVOs and General Services Administration (GSA) vehicles leased on a long- or short-term basis.

**GOVERNMENT MOTOR VEHICLE (GMV) MISHAP**—A motor vehicle mishap involving the operation of a GMV as defined in this instruction.

**GOVERNMENT VEHICLE OTHER (GVO)**—Vehicles designed primarily for off-the-highway operation such as construction tracked vehicles, forklifts, road graders, agricultural-type wheeled tractors, and aircraft tugs. Includes military combat/tactical vehicles; e.g., tanks, self-propelled weapons, armored personnel carriers, amphibious vehicles ashore, HMMWV, and off-highway motorcycles.

**GOVERNMENT VEHICLE OTHER (GVO) MISHAP**—A motor vehicle mishap involving the operation of a GVO as defined in this instruction, but not involving a GMV.

**GROUND AND INDUSTRIAL MISHAP**—An Air Force mishap that does not meet the mishap category definition of nuclear, space, aviation, guided missile, explosives and chemical agents, directed energy, afloat, motor vehicle, or off-duty military as defined by this instruction.

**GROUND MISHAP**—For the purposes of this instruction, a mishap that falls into one of the following mishap categories: afloat, motor vehicle, off-duty military, or ground and industrial. NOTE: A ground mishap may involve materiel/equipment that is not traditionally thought of as happening on the ground (e.g., an off-duty military person flying a private plane).

**GUIDED MISSILE**—All missiles propelled through air or water that are unmanned, guided by internal or external systems, and self-propelled. This term includes individual major missile components such as stages, guidance and control sections, payloads other than nuclear reentry vehicles; system equipment required to place the missile in an operational status while at the launch or launch control facility or on the launching aircraft; and system equipment required to launch and control the missile. Examples are intercontinental ballistic missiles; surface-to-air, air-to-air, and air-to-surface guided missiles; and torpedoes. This term includes all missiles that are: owned in whole or in part by a DOD Component; operationally controlled by a DOD Component; on bailment or loan to a non-DOD Agency for modification, testing, or as an experimental project for a DOD Component; Under test by a DOD Component.

**GUIDED MISSILE MISHAP**—An Air Force mishap involving guided missiles or unique missile support equipment. Missiles that are damaged or destroyed after launch from an aircraft but cause no aircraft damage, will be classified as a guided missile mishap.

**HAZARD**—Any real or potential condition that can cause injury or occupational illness to personnel; damage to or loss of a system, equipment or property; or damage to the environment.

**HIGH ACCIDENT POTENTIAL (HAP) EVENT**—Any hazardous occurrence that has a high potential for becoming a mishap that does not fit the definition of a HATR.

**IN-FLIGHT SHUTDOWN (IFSD)**—Any engine shutdown in-flight, either due to an engine malfunction or by the aircrew following flight manual procedures.

**ILLNESS AND/OR DISEASE**—A non-traumatic physiological harm or loss of capacity produced by systemic, continued, or repeated stress or strain; exposure to toxins, poisons, fumes, etc., or other continued and repeated exposures to conditions of the environment over a long period of time. For practical purposes, an occupational illness and/or disease is any reported condition that does not meet the definition of injury.

**INDUSTRIAL AVIATION MISHAP**—Mishaps occurring in the industrial environment that: involve a DOD aircraft or UAV when being handled as cargo; or involve DOD aircraft or UAV component not attached to the fuselage/airframe. Additionally, use this subcategory as a cross

category for aviation mishaps where maintenance or operations in the industrial environment result in a reportable mishap.

**INDUSTRIAL MISHAP**—A ground and industrial mishap that occurs in the work environment that does not meet the mishap subcategory definition of fire, combat training, physical and athletic conditioning, contractor, natural phenomena, industrial space, industrial aviation, or industrial weapons as defined by this instruction. The work environment, as defined in 29 Code of Federal Regulations 1960, is “The establishment and other locations where one or more Air Force employees are working or are present as a condition of their employment; this would include those areas or locations where persons are TDY for training purposes. The work environment includes not only physical locations, but also the equipment or materials used by the employee during the course of his or her work.”

**INDUSTRIAL SPACE MISHAP**—Mishaps occurring in the industrial environment that involve space systems (pre-launch) or unique space support equipment. As defined in paragraph 1.6.1.2., these mishaps will always be classified as space mishaps. Use this subcategory for cross-categorization to ground and industrial only.

**INDUSTRIAL WEAPONS MISHAP**—Mishaps occurring in the industrial environment that involve weapons (i.e., nuclear, guided missile, explosives and chemical agents, or directed energy) or associated unique support equipment. Examples include bomb fin damage during handling or injury to a worker during a MJ-1 bomb lift operation.

**INJURY**—A traumatic wound or other condition of the body caused by external force or deprivation (fractures, lacerations, sprains, dislocations, concussions, compressions, drowning, suffocation, exposure, cold injury, and dehydration), including stress or strain, which results from an unplanned event. The injury is identifiable as to the time and place of occurrence and member or function of the body affected, and is caused by a specific event or incident or series of events or incidents in a single day or work shift.

**INTENT FOR FLIGHT**—Intent for flight is considered to exist when aircraft/UAV brakes are released and/or takeoff power is applied for commencing an authorized flight. Intent for flight continues until either the fixed-wing aircraft/UAV taxis clear of the runway or, for helicopters and/or vertical takeoff and landing aircraft, the aircraft has alighted and the aircraft weight is supported by the landing gear. Clear of the runway means the entire aircraft/UAV is physically off the active runway. Hover taxi is considered flight.

**JOINT SERVICE MISHAP**—A single mishap involving two or more Services in which one or more Services experiences reportable injuries or damages.

**LAUNCH MISHAP**—Space mishaps occurring during launch vehicle operations, including upper stages. This includes payloads that do not obtain orbit and range safety system failures.

**LAUNCH OPERATOR**—A person or entity who conducts or proposes to conduct the launch of a launch vehicle. AFSPC often refers to a launch operator as one of its range users.

**LOST TIME CASE**—A nonfatal traumatic injury that causes any loss of time from work beyond the day or shift it occurred, or a nonfatal non-traumatic illness and/or disease that causes disability at any time.

**MAJCOM**—The term “MAJCOM ” as used in this instruction includes ANG, DRUs, and FOAs.

**MISHAP**—A mishap is an unplanned occurrence, or series of occurrences, that results in damage or injury and meets Class A, B, C, or D mishap reporting criteria IAW paragraph 1.8. Damage or injury includes: damage to DOD property; occupational illness to DOD military or civilian personnel; injury to DOD military personnel on- or off-duty; injury to on-duty DOD civilian personnel; damage to public or private property, or injury or illness to non-DOD personnel caused by Air Force operations.

**MISHAP COSTS**—Direct mishap costs ONLY include property damage costs (DOD and Non-DOD) and environmental cleanup costs.

**MISSILE SUPPORT EQUIPMENT(MSE)**—Any component of ground launched missile systems used to handle or transport missiles or missile components. MSE includes, but is not limited to, system unique vehicles, such as, payload transporters, transporter-erectors, missile guidance control set (MGCS) support trucks, emplacements, and Type I and Type II transporters (includes all equipment below grade in the launch facility).

**MISSION CAPABILITY**—This term encompasses the purpose and functions of the space system (sensors, transponders, etc.) throughout its intended system mean mission duration (the expected life of the space vehicle).

**MOTOR VEHICLE MISHAP**—An Air Force mishap involving the operation of a motorized land vehicle operated by Air Force personnel. An Air Force mishap involving the operation of a DOD-owned or leased motorized land vehicle by non-Air Force personnel while operationally controlled by a DOD component. Fatalities or injuries to pedestrians or bicyclists involving moving motor vehicles are included in this category. This category does not include ground and industrial mishaps such as injuries occurring while loading or unloading, mounting or dismounting a non-moving vehicle; cargo damaged by weather; damage to a properly parked DOD vehicle, unless caused by an operating DOD vehicle. Additionally, damage to an Air Force vehicle caused by objects thrown or propelled into it by weather or natural phenomena, or by fire when no collision occurred; or damage to an Air Force vehicle when it is being handled as cargo and not operating under its own power and is properly parked, are not categorized as motor vehicle mishaps. Motor vehicle mishaps are divided into the following subcategories: Government Motor Vehicle (GMV), Government Vehicle Other (GVO), and Private Motor Vehicle (PMV).

**NATURAL PHENOMENA MISHAP**—Mishaps resulting from wildlife or environmental conditions of such a magnitude that they could not have been predicted or prepared for or for which all reasonable preparations had been taken. Do not report natural phenomena ground and industrial mishaps where adequate preparation, forecasting, and communication actions were taken and there were no injuries. However, report military and civilian injuries resulting from these mishaps as ground and industrial mishaps.

**NO LOST TIME CASE**—A nonfatal injury or illness and/or disease that does not meet the definition of a lost time case (usually created by a compensation claim for medical expense) or first aid case.

**NON-ACCEPTED EQUIPMENT/VEHICLES**—Non-delivered equipment/vehicles for which the Government has assumed responsibility; DD Form 250, *Material Inspection and Receiving Report*, HAS NOT been executed.

**NON-DAF CIVILIAN PERSONNEL**—Persons employed by host-nation agencies, and doing work such as public works or general engineering on Air Force installations, are not Air Force employees. Their employer is the host-nation agency paying them, supervising them, and handling employee

benefits. Indirect-hire employees are not the same persons as DAF civilian employees when a host government has supervisory control. This includes the host government's responsibility for insurance, compensation costs, and the like.

**NON-RECOVERABLE IN-FLIGHT SHUTDOWN**—Any engine shutdown in-flight, either due to an engine malfunction or by the aircrew following flight manual procedures whereby: the engine is unable to restart, or further investigation determines that a restart attempt would not have been successful, or further investigation determines that continued operation would have caused the engine to fail, or the aircraft cannot maintain level flight at a safe altitude as determined by the situation.

**NONFATAL CASES WITHOUT LOST WORKDAYS**—These are cases other than lost workday cases where, because of injury or occupational illness, Air Force personnel were transferred to another job, required medical treatment greater than first aid, lost consciousness, or were diagnosed as having an occupational illness.

**NUCLEAR CAPABLE UNIT**—A unit or an activity assigned responsibilities for employing, assembling, maintaining, transporting, or storing war reserve nuclear weapons, their associated components and ancillary equipment.

**NUCLEAR MISHAP**—An Air Force mishap involving radioactive materiel.

**NUCLEAR WEAPON**—A complete assembly, in its intended ultimate configuration which, upon completion of the prescribed arming, fusing, and firing sequence, is capable of producing the intended nuclear reaction and release of energy. For the purpose of mishap categorization, also include unique support equipment associated with nuclear weapons.

**NUCLEAR WEAPON COMPONENTS**—Weapon components composed of fissionable or fissionable materials that contribute substantially to nuclear energy release during detonation.

**NUCLEAR WEAPON MISHAP**—A mishap that involves destruction of, or serious damage to, nuclear weapons, nuclear weapons systems, or nuclear weapons components resulting in an actual or potential threat to national security or life and property. Reportable nuclear surety violations and damage to support equipment unique to a nuclear weapon system will be reported under this subcategory.

**NUCLEAR WEAPONS SURETY**—Materiel, personnel, and procedures which contribute to the security, safety, and reliability of nuclear weapons and to the assurance that there will be no nuclear weapons mishaps, incidents, unauthorized weapon detonations, or degradation performance at the target.

**NUCLEAR WEAPON SYSTEM**—A combat delivery vehicle with its nuclear weapon or weapons and associated support equipment, non-combat delivery vehicles, facilities, and services.

**NUCFLASH**—Includes accidental, unauthorized, or unexplained occurrences meeting any of the following criteria: accidental, unauthorized, or unexplained actual or possible nuclear detonation by US forces or US-supported allied forces; accidental or unauthorized launch of a nuclear-armed or nuclear-capable missile by US forces or US-supported allied forces; unauthorized flight or deviation from an approved flight plan by a nuclear-armed or nuclear-capable aircraft of US forces or US-supported allied forces that could be perceived as a hostile act.

**OBSERVATION AND/OR DIAGNOSTIC PROCEDURE**—Hospitalization or restriction from assigned work activities for observation or diagnosis is not a "lost time case," "no lost time case," or

"first aid case" provided no treatment or medication is given for the suspected injury or occupational illness, and competent medical authority determines the individual could have returned to his or her normal job without impairment or disability. This classification applies also where an individual is temporarily restricted from regularly assigned duties to prevent exceeding time-weighted exposure limits. This is not reportable if a competent medical authority provides no treatment or medication for the suspected injury or occupational illness or finds the person could have returned to normal assigned duties without impairment or disability.

**OCCUPATIONAL ILLNESS**—Any reported condition that does not meet the definition of injury. Any abnormal physical condition or disorder, other than one resulting from an occupational injury, resulting in adverse consequences and caused by occupational factors associated with employment. Includes all confirmed cases of acute and chronic illnesses or diseases caused by inhalation, absorption, ingestion or direct contact with suspect substances.

**OFF-DUTY**—DOD personnel are off-duty when they are not on-duty (see on-duty definition). Personnel participating in base team sporting activities or in a permissive temporary duty (TDY) status are off-duty. Reserve and National Guard personnel performing inactive duty training (drill) will be considered off-duty: when traveling to or from the place at which such duty is performed; or while remaining overnight, immediately before the commencement of inactive-duty training; or while remaining overnight between successive periods of inactive-duty training, at or in the vicinity of the site of the inactive-duty training, if the site of the inactive-duty training is outside reasonable commuting distance of the member's residence. NOTE: This definition is for mishap reporting purposes only and has no relation to compensability or line-of-duty determination.

**OFF-DUTY MILITARY MISHAP**—An Air Force mishap that results in a fatality or injury to off-duty DOD military personnel whether or not on a DOD installation, excluding private motor vehicle (PMV) mishaps. NOTE: A mishap involving on- and off-duty military personnel will not be categorized as an off-duty military mishap.

**ON-DUTY**—DOD personnel are on-duty when:

Physically present at any location where they are to perform their officially assigned work. Officially assigned work includes organization-sponsored events an employee is permitted to attend, regardless of location. This includes those activities incident to normal work activities that occur on DOD installations, such as lunch, coffee, or rest breaks, and all activities aboard military vessels. NOTE: Personnel walking to and from work place parking areas at the start and end of the duty day are in an on-duty status.

Being transported by DOD or commercial conveyance to perform officially assigned work. (This includes travel in PMVs or commercial conveyances while performing official duty, but not routine travel to and from work.)

On temporary duty. Personnel on assignment away from the regular place of employment are covered 24 hours a day for any injury or occupational illness that results from activities essential or incidental to the temporary assignment. Essential or incidental activities include travel between places of business or lodging and eating establishments, drugstores, barbershops, places of worship, cleaning establishments, bowling centers, officer and enlisted clubs, gymnasiums, and similar on-base non-appropriated fund (NAF) facilities and similar places required for the health or comfort of the member, are considered on-duty. However, when personnel deviate from the normal incidents of the trip and become involved in activities, personal or otherwise, that are not reasonably incidental to the

duties of the temporary assignment contemplated by the employer, the person ceases to be considered on-duty for investigation and reporting purposes of injuries or occupational illnesses. Injuries or occupational illnesses to personnel resulting from activities unrelated to the temporary duty assignment or non-commander directed sports and recreation activities (e.g. jogging, golfing, basketball) will be reported as off-duty mishaps.

Military members are working in part-time Non-appropriated Fund (NAF) positions. NOTE: Use the NAF position series (instead of the military Air Force Specialty Code (AFSC) for safety reporting.

Taking part in compulsory physical fitness training, sporting events, and physical fitness evaluation activities (including cycle ergometric testing when permitted). On-duty compulsory fitness training and activities include directed sports activities at professional military education (PME) and formal training courses such as Basic Military Training, Technical Training Schools, Airman Leadership School, Squadron Officer School, and the Air Force Academy. These activities are considered on-duty when a superior directs participation at a specific location and time. This includes supervision-directed physical conditioning activities when a mandatory location and time are designated. Air Force civilian employees authorized to participate in physical fitness activities during normal duty hours are also on-duty.

**NOTE:**The definitions above are for mishap reporting purposes only and have no relation to compensability or line-of-duty determination.

**ORBIT MISHAP**—Space mishaps occurring during spacecraft operation after separation from all launch vehicle components, including upper stages and transfer motors.

**PERMANENT PARTIAL DISABILITY**—An injury or occupational illness that does not result in death or permanent total disability, but in the opinion of competent medical authority, results in permanent impairment through loss or loss of use of any part of the body. **EXCEPTIONS:** Loss of teeth, fingernails, toenails; loss of fingertips or toe tips without bone involvement; repairable inguinal hernia; disfigurement; sprains or strains that do not cause permanent limitation of motion.

**PERMANENT TOTAL DISABILITY**—Any nonfatal injury or occupational illness that, in the opinion of competent medical authority, permanently and totally incapacitates a person to the extent that he or she cannot follow any gainful occupation and results in a medical discharge, retirement, separation. The loss, or the loss of use of both hands, both feet, both eyes, or a combination of any of those body parts as a result of a single mishap will be considered as a permanent total disability. For purposes of this instruction, any mishap resulting in injury severe enough for an individual to be in a non-medically induced coma is a permanent total disability. (NOTE: Upgrade injury to a fatal mishap if death occurs within 30 days of medical discharge, retirement, or separation from service due to complications arising from the mishap injury).

**PHYSICAL AND ATHLETIC CONDITIONING MISHAP**—Mishaps involving injuries that occur during participation in some form of duty related athletic or recreational sport activities designed to develop an Air Force member's physical ability or to maintain or increase individual/collective combat and/or peacekeeping skills. Examples are: firefighter injured during weight-lifting or basketball game to maintain physical conditioning; Air Force fitness testing, compulsory sport exercises, unit formation activities, physical fitness activities during professional military education courses, or individual physical workout to meet Air Force physical fitness standards.

**PRE-LAUNCH MISHAP**—Space mishaps occurring during ground handling, processing, and transportation operations.

**PRIVATE MOTOR VEHICLE (PMV)**—A non-commercial vehicle that is neither a GMV nor GVO. A vehicle normally registered for highway use.

**PRIVATE MOTOR VEHICLE (PMV) MISHAP**—A motor vehicle mishap, regardless of the identity of the operator, that does not involve a GMV or GVO, but results in a fatality or lost time case injury (involving days away from work) to military personnel on- or off-duty or to on-duty civilian personnel, or reportable damage to DOD property. Fatalities and injuries to bicyclists and pedestrians in the traffic environment are included in this category.

**PROPERTY DAMAGE**—Damage to facilities, equipment, property, materiel, or resources. If the occurrence meets mishap reporting criteria, then the cost of environmental cleanup shall be included in property damage costs. NOTE: For mishap reporting purposes, inadvertent releases of ozone depleting substances are reported when they meet mishap reporting criteria.

**RADIOLOGICAL MISHAP**—See reactor and radiological mishap.

**REACTOR AND RADIOLOGICAL MISHAP**—Mishaps involving fissile materiel used in a self-supporting chain reaction (i.e., nuclear fission) to produce heat and/or radiation for both practical application and research and development.

**REACTOR SYSTEM**—A nuclear reactor with any associated nuclear or non-nuclear systems.

**RECOMMENDATIONS**—Recommendations are feasible and effective solutions to eliminate identified hazards, or if the hazard cannot be eliminated, to mitigate the hazard's potential consequences. Actions likely to prevent a similar mishap or reduce its effects.

**REMOTELY PILOTED VEHICLES (RPV)**—An unmanned vehicle whose primary maneuvering control is normally provided from a source external to the vehicle itself. An RPV may be used as a target, attack, reconnaissance, Electronic Countermeasures (ECM), or test bed-carrying vehicle. Full-scale RPVs are aircraft modified to the remotely piloted configuration. Sub-scale RPVs are RPVs that are not full scale. RPVs are UAVs (see definition of UAV).

**SAFETY INVESTIGATOR**—An individual authorized and qualified to investigate a safety occurrence. Examples include members of an ISB or SIB, an SIO, and members of a safety staff.

**SAFETY REPORT**—Safety reports include message reports (preliminary, status, and final), formal reports, and injury and occupational illness forms and logs.

**SINGLE MANAGER**—The single individual specifically designated, under the integrated weapon system management architecture, to be responsible for the life cycle management of a system or end-item. The Single Manager is the program manager vested with full authority, responsibility, and resources to execute and support an approved Air Force program. A list of the Single Manager organizations and MDSs is available at: <http://afsafety.af.mil/AFSC/RDBMS/Flight/SIB-Support/Formal%20Report%20Files/TableA31andMDSLlists.xls>

**SPACE ANOMALY**—An on-orbit malfunction of a space system, or a deviation from what is consistent with normal operations, that does not meet the criteria of a mishap. An anomaly will be initially investigated using the anomaly resolution process.

**SPACE BOOSTER**—A space vehicle designed to propel or carry another space vehicle from the earth's surface or from orbit to a desired point and velocity in space. This term includes engines, rocket motors, upper stages, fuel tanks, and guidance and control sections.

**SPACE COMMAND AND CONTROL SYSTEMS (SCCS)**—Systems required to provide telemetry, tracking, commanding, mission data dissemination, data processing, communication and range support for space vehicles. SCCS examples include the common user Air Force Satellite Control Network (AFSCN) and other program-dedicated networks.

**SPACE MISHAP**—An Air Force mishap involving a space system and/or unique space support equipment.

**SPACE SYSTEMS**—Any system used for space operations or support. Space system is a generic term used to encompass all ground, space and link segment systems and their components. This includes space vehicles, unique space support equipment, and space command and control systems.

**SPACE VEHICLE**—A vehicle designed to orbit or travel beyond the earth's atmosphere or a system designed to lift other space vehicles into orbit. Examples of space vehicles include boosters (launch vehicles), spacecraft (satellites, orbiters, payloads) and reusable spacecraft. Intercontinental Ballistic Missiles are not considered space vehicles.

**SPACECRAFT**—A space vehicle designed to operate in space and launched by a booster. The term includes satellites, orbiters and payloads and their associated subsystems.

**SPORTS AND RECREATION MISHAP**—Mishaps involving injuries that occur during participation in some form of sporting or recreational activity. Examples of sports and recreational activities include softball, weight lifting, handball, golf, football, sight seeing, dancing, auto racing, bicycling, motorcycles driven off-road, off-duty parachuting/sky diving, and flying private planes, ultra lights, and gliders.

**TOXOID**—A toxin that has been treated (commonly with formaldehyde) as to destroy its toxic property but that still retains its antigenicity, i.e., the toxin still has the capability of stimulating the production of antibodies and thus of producing an active immunity.

**TRAINING RELATED DEATH**—A death associated with a non-combat military exercise or training activity that is designed to develop a military member's physical ability or to maintain or increase individual/collective combat and/or peacekeeping skills, and is due to either a mishap or the result of natural causes occurring during or within one hour after any training activity where the exercise or activity could be a contributing factor. NOTE: The cause of death must be attributed to the mandatory physical exercise as determined by a competent medical authority.

**UNIQUE SPACE SUPPORT EQUIPMENT (SSE)**—Systems, equipment and facilities required for processing, handling or transporting space systems and their components. SSE examples include space-unique support vehicles, payload or launch vehicle ground transporters, vehicle assembly equipment, launch pad facility and its associated equipment, equipment required for test and checkout, and equipment for space system recovery. Components or equipment commonly used in non-space applications, and not specifically configured for space related use, are not considered SSE.

**UNMANNED AERIAL VEHICLE (UAV)**—All unmanned DOD weight-carrying devices supported in flight by buoyancy or dynamic action and are owned or leased by the DOD

Components, including aerostat balloons, that are, as follows: operated and exclusively controlled or directed by a DOD Component; furnished by the Government or on bailment to a non-DOD organization for modification, maintenance, repair, test, contract training, or experimental project for a DOD Component, when the Government has assumed ground and flight risk; under test by a DOD Component. (This includes UAVs furnished by a contractor or another Government Agency when operated by a DOD crew in official status and a *DD Form 250, Material Inspection and Receiving Report*, has been executed to certify that the DOD has accepted the vehicle.) UAVs covered by this instruction include, but are not limited to, the following: Tactical UAVs, such as the RQ-1 Predator or RQ-4 Global Hawk; Full Scale Aerial Target Remotely Piloted Vehicles (FSAT RPVs), such as the QF-4; Subscale RPVs, such as the BQM-34 Firebee or MQM-107 Streaker; Buoyant UAVs, such as a tethered aerostat; Remotely Operated Aircraft (ROA), and Unmanned Combat Aerial Vehicles (UCAV). When an FSAT RPV is carrying a person, it is a DOD aircraft, not a UAV.

**UNMANNED AERIAL VEHICLE MISHAP**—Any mishap involving a DOD UAV as defined in this instruction, but not involving a DOD aircraft. Damage to a DOD UAV, when it is being handled as a commodity or cargo, is a ground and industrial, industrial aviation mishap. See AFI 99-151, *Air-Launched Missile Analysis Group (ALMAG)*, for additional guidance on investigating specific types of air-launched missile anomalies and failures.

**WEAPONS MISHAP**—For the purposes of this instruction, a mishap that falls into one of the following mishap categories: nuclear, guided missile, explosives and chemical agents, or directed energy. NOTE: A weapons mishap may involve materiel/equipment that is not traditionally thought of as a weapon (e.g., fissile materiel used in a self-supporting chain reaction to produce heat for practical application).

**Attachment 1 (AFSPC)****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

DODS 6055.9, *Explosives Safety Management and the DoD Explosives Safety Board*

***Terms***

**DOWN-HILL**—When used in reference to orbiting spacecraft, this term refers to the opposite direction normally associated with the direction of maneuvers in routine station keeping.

## Attachment 2

## MISHAP MESSAGE FORMATS

**A2.1.** Use the format in [Figure A2.1.](#) for preliminary space mishap messages required by [Table A3.1.](#) These preliminary (8-hour) messages must not contain privileged information.

**A2.2.** Use the format in [Figure A2.2.](#) for Class A, B, C, and D status and final messages required by [Table A3.1.](#)

**A2.3.** Use the format in [Figure A2.3.](#) for Class E final messages required by [Table A3.1.](#)

**A2.4.** For all entries marked with an asterisk (\*) you must use the key words in the look up tables of [Attachment 6.](#) Use of these words enhances HQ AFSC database integrity and eases data recovery for all users.

**Figure A2.1. Preliminary Message Format.**

FROM: (Originator)

TO: (See [Table A3.2.](#))

UNCLAS

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FOR OFFICIAL USE ONLY (used for the expressed purpose as an example)

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SUBJECT: Type Space System, Mishap Class, \*Category, \*Sub-Category, \*Cross-Category Involvement, Preliminary Report, Mishap Event Number

[Example: Titan IVB-32, Class A, Space, Pre-Launch, Radiological Involvement, Preliminary Report, 20030914XUMU002A]

**1. Date and Time of Mishap.** Give date (YYYYMMDD), local time (24 hour clock), and whether (day or night). If exact time is not known, use best estimate.

**2. Nearest Base to Mishap.** Name base, include base code and indicate if mishap was on-base or off-base. For launch mishaps, use the base from which the launch took place. For on-orbit mishaps the base controlling the asset is the nearest base. If base submitting report is different from nearest base, also state reporting base name. [*Example: Vandenberg AFB CA (XUMU), On-base, Reporting base: Schriever AFB CO.*]

**3. Location of Mishap.** If on a military base, give specific location (e.g. launch complex 17, building 555 or launch control complex). If off base, use street and highway references, as well as distance and direction from nearest military base. For a space vehicle impacting off base or off range, give location by magnetic direction and distance in nautical miles from nearest military base (e.g. 25 NM ESE of Patrick AFB FL). If mishap occurs on-orbit, list the type of orbit (e.g. partial, LEO, GEO, etc.) as the location. If an item is dropped from a vehicle and not recovered, list location as "in flight" with an approximation of

location. Include latitude and longitude of mishap in minutes and degrees to 2 decimal places (if available and applicable).

**4. Narrative of Circumstances.** Give brief description of mishap. Provide abbreviated, factual information. Do not include information implying cause or containing material gained through testimony from team members or other witnesses. Describe extent of damage, e.g., “Building destroyed by fire or explosion,” “Launch vehicle destroyed,” etc. Summarize injury and fatality information. Include mission information, including mission type and mishap weather.

**5. Object information.**

5.1. Nomenclature: Air Force equipment or facilities identification. For space, include the mission-design-series (MDS) and system serial number (add whatever information needed to identify the system as precisely as possible). For ground vehicles and equipment, list nomenclature and serial numbers. For facilities, list building number and principal purpose.

5.2. \*MAJCOM with Mishap Ownership (of equipment or personnel).

5.2.1. Unit/Organization with Mishap Ownership (Squadron, etc.).

5.3. Was mishap within 10 NM of base? (Y or N)

5.4. Was object destroyed? (Y or N) If “N,” summarize damage assessment, including loss of mission capability.

**6. Personnel Information.** Include known information about fatalities and injuries. Do not include names due to next of kin notification considerations. Do not include SSNs on preliminary messages. Include information on team members and bystanders. Replace x in paragraph number with sequential unique numbers for each involved party. If information is unknown, state what is unknown, e.g., age unknown, degree of injury unknown, etc.

6.x.1. \*Grade and AFSC

6.x.2. \*Injury Class and Type

6.x.3. Qualifications (when applicable)

**7. Damage and Injury Cost Estimates.** Estimate costs to the extent they can be determined in the time available. Report Air Force damage cost, Air Force injury cost, non-Air Force damage cost and total mishap cost separately.

**8. Miscellaneous Information.** Give status of on-going rescue and recovery operations, hazard containment and security. Provide information on the level of media interest. Specify if anomaly resolution was conducted.

**9. Contacts.** Name Interim Board President and provide Office Symbol, telephone number (DSN and commercial) and email (if available). Name any other key contacts and provide their contact information.

**Figure A2.2. Status and Final Message Format.**

FROM: (ORIGINATOR)

TO: (See [Table A3.2.](#))

(Security Classification)

SUBJECT: Type Space System, Mishap Class, \*Category, \*Sub-Category, \*Cross-Category Involvement, Type Report, Mishap Event Number

[Example: GPS IIA, Class A, Space, Orbit, Final Report, 19960307CPRL001A]

**NOTE:** For classified reports see AFI 31-401, *Information Security Program Management*.

**NOTE:** Include a Privacy Act Warning Statement if Social Security Numbers or other personal information protected by the Privacy Act is included in the message.

**PRIVACY ACT WARNING**

**THIS MESSAGE CONTAINS INFORMATION PROTECTED**

**FROM RELEASE BY FEDERAL STATUTE**

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FOR OFFICIAL USE ONLY. (used for the expressed purpose as an example)

THIS CONTAINS PRIVILEGED, LIMITED-USE SAFETY INFORMATION. UNAUTHORIZED USE OR DISCLOSURE CAN SUBJECT YOU TO CRIMINAL PROSECUTION, TERMINATION OF EMPLOYMENT, CIVIL LIABILITY, OR OTHER ADVERSE ACTIONS. SEE AFI 91-204, CHAPTER 3 FOR RESTRICTIONS. DESTROY IN ACCORDANCE WITH AFMAN 37-139 WHEN NO LONGER NEEDED FOR MISHAP PREVENTION PURPOSES.

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**NOTE:** For classified messages add the proper security classification marking from AFI 31-401 and omit the quotation “FOR OFFICIAL USE ONLY.”

**1. Location and Time of Mishap:**

1.1. Military Base: List name of base or military property (such as Cape Canaveral Air Station) on which mishap occurred—include the 4 letter Home Location Code from SORTS. If mishap occurred off base, state “off military property.” Courtesy reporting should be accomplished by the nearest Air Force installation. If mishap occurred on-orbit, state “on-orbit.”

1.2. Duty Status: on duty or off duty.

1.3. State and Country of Mishap. If mishap did not occur in a country provide the general location (i.e. “mid-Atlantic Ocean”).

1.4. Altitude, Latitude and Longitude of Mishap. For launch mishaps, provide the altitude and the ground subpoint of the mishap location in degrees and minutes to within 2 decimal places (if available). Also include the impact location of any debris if more than one mile from the subpoint. For on-orbit mishaps report the orbital element set (if available).

1.5. Date of the Mishap. If exact date is not known, use best estimate.

1.6. Local Time. If exact time is not known, use best estimate.

1.7. Descriptive Location. If on a military base, give specific location (e.g. launch complex 17, building 555 or launch control complex). For a space vehicle impacting off base or off range, give location by magnetic direction and distance in nautical miles from nearest military base (e.g. 25 NM ESE of Patrick AFB FL). If mishap occurs on-orbit, list the type of orbit (e.g. partial, LEO, GEO, etc.).

## **2. Mishap Ownership:**

2.1. \*MAJCOM.

2.2. Numbered Air Force, Product Center, Wing, Group, Squadron, Unit (or equivalent).

2.3. Base code of unit. (Use the 4-letter Home Location Code from SORTS).

**3. Narrative.** Give a concise, chronological description of the facts and circumstances leading to the mishap. Include a discussion of any pertinent space vehicle movement or attitude, orbit ephemeris, maneuvers involved, space environment (weather) etc. Briefly describe any damage or injury that occurred. For areas not factors in the mishap, give details in narrative not included elsewhere in the report. Include enough information in final reports to show SIB or investigating officer reasoning in reaching findings and recommendations. In all cases, continue the sequence through point of occurrence (or discovery) until the event ends. For technical assistance on this item, contact HQ AFSC/SES: DSN 246-6059, commercial (505) 846-6059.

**4. Findings and Causes.** See paragraphs **5.12.** and **5.13.** for general information concerning findings and causes. Repeat entries 4.1 through 4.X for the required number of findings and causes. Findings must not address new information that was not previously discussed in the narrative.

**5. Recommendations.** See paragraph **5.14.** for general information on determining recommendations. List as Recommendation 1, Recommendation 2, etc. Do not list Other Recommendations of Significance in this paragraph. Number entries 5.1 through 5.X. as necessary.

**6. Other Findings and Recommendations of Significance (OF&RS).** See paragraphs **5.15.** for general information on determining and documenting other findings and recommendations of significance. List any OFSs as OFS 1, OFS 2, etc., and ORSs as ORS 1, ORS 2, etc. Place any ORS immediately after the OFS to which it is related. Number entries 6.1 through 6.X as necessary.

**7. Preventive Action Recommended or Taken.** Repeat entries 5.1 through 5.X as necessary.

## **8. Environmental factors:**

8.1. Was weather a factor? (Y or N).

8.2. Day or night?

8.3. Did mishap involve fire or explosion? (Y or N).

8.4. Was Space Environment a factor (Y or N).

8.5. Briefly describe weather or space environment if it was a factor.

**9. Damage and Injury Cost Estimates.** List costs in dollars. Include item title in front of cost figure.

9.1. Air Force Damage Cost: Cost of damage to Air Force property, including labor and materiel.

9.2. Air Force Injury Cost: Cost of injuries Air Force personnel, including military and civilian.

9.3. Non-Air Force Damage Cost: Cost estimate of damage to non-Air Force property, including other DoD and non-DoD property.

9.4. Total Mishap Cost: Sum of items 9.1 through 9.3.

**10. Personnel Involved:** Give the following data on each person involved. If more than one person is involved, provide information in subparagraphs entitled "Person 1," "Person 2" etc. Repeat entry 10.1 through 10.13 for each person involved in the mishap. Number as 10.X.1 through 10.X.13 replacing X with the person number.

10.1. Gender.

10.2. Age.

10.3. \*Grade.

10.4. Duty AFSC or job series. List both code and text title.

10.5. Time on duty prior to mishap. Give time to nearest 10th of the hour from the time the individual reported to work until he or she was involved in the mishap.

10.6. \*Role in event.

10.7. \*Activity at time of mishap.

10.8. \*Functional area.

10.9. Organization assigned.

10.9.1. \*MAJCOM.

10.9.2. Numbered Air Force, Wing, Group, Squadron, Unit (or equivalent).

10.9.3. Base.

10.9.4. \*Component.

10.10. TOX testing (positive, negative, pending, or not accomplished). If positive or not accomplished, explain in narrative. TOX test information must be identified in all mishaps.

10.10.1. \*Substance type.

10.10.2. Substance level.

10.11. \*Injury class.

10.11.1. \*Part of body injured.

10.11.2. \*Type injury.

10.12. Was individual training a factor in the mishap (Y or N)? Types of training include traffic safety, job task, life support, etc. If training was factor, answer following six questions:

10.12.1. Was individual trained and, if required, certified to perform task (Y or N)?

10.12.2. Was training program, as designed, adequate to perform task (Y or N)?

10.12.3. Did training, as administered, comply with established training program (Y or N)?

10.12.4. Were written instructions available (checklist, TO, etc.) (Y or N)?

10.12.5. Were written instructions used (Y or N)?

10.12.6. Were written instructions satisfactory (Y or N)?

10.13. Safety equipment. Identify if safety equipment was used (maximum of three) and if it was used (Y or N) and if it worked (Y or N). Use following format: seat belts/yes/yes; parachute/yes/no/; helmet/no/(blank).

**11. Property Data.** Give the following data on each space system and piece of property damaged or integrally involved. If more than one object is involved, provide information in subparagraphs entitled "Object 1," "Object 2," etc. Repeat entry 11.1 thru 11.12 for each item if more than one item or property type is involved. Number as 11.X.1 through 11.X.12 replacing X with the Object number.

11.1. \*Property Component.

11.2. Mission-design-series (MDS).

11.3. \*Property Description.

11.4. Vehicle or equipment serial number.

11.5. Organization assigned. If the organization is same as paragraph 2, state "same as paragraph 2."

11.5.1. \*MAJCOM.

11.5.2. NAF, wing, group, squadron, unit (or equivalent).

11.6. \*Object or vehicle activity at time of mishap.

11.7. Was object destroyed (Y or N)?

11.8. Cost to repair or replace.

11.9. \*Major system failing.

11.10. Parts information. Repeat entries 11.9.1 through 11.9.7 as required for all failed parts. Number as 11.X.9.Y through 11.X.9.Y.7 where X is the Object number and Y is the failed part number per object.

11.10.1. Failed part:

11.10.2. Failed part description.

11.10.3. Failed part number.

11.10.4. Failed part manufacturer.

11.10.5. How malfunction code (see Dash 6 TO).

11.10.6. Work unit code (see Dash 6 TO).

11.10.7. Report control number from DR report.

11.11. Lot number (if applicable).

**12. Miscellaneous Information.** Update status of on-going rescue and recovery operations, hazard containment and security until these actions are complete. Revise the level of media interest if it changes. Specify if anomaly resolution was conducted. Specify if an EAG was formed and provide estimated completion and report when EAG is complete.

**13. Accident Investigation Board (AIB).** Specify if an AIB investigation was or was not convened and identify the AIB President and the specific MAJCOM conducting the AIB investigation.

**14. Investigating Official.** Provide name, unit, office symbol, e-mail address and telephone number (DSN and commercial) and specify whether they are a SIB president or Single Investigating Officer.

**Figure A2.3. Class E Final Message Format.**

FROM: (ORIGINATOR)

TO: (See [Table A3.2.](#))

CLASSIFICATION

*NOTE:* For classified reports, see AFI 31-401, *Information Security Program Management.*

SUBJECT: Type Space System, Class E, \*Category, \*Sub-Category, Type Report, Mishap Event Number

[Example: GPS IIA, Class E, Space, Orbit, Final Report, 19960307CPRL001A]

*NOTE:* The following Privileged marking applies to most mishaps. Use the phrase “For Official Use Only” on non-privileged reports, but do not use the remainder of the Privileged advisory. If a security classification is used, “For Official Use Only” does not apply.

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FOR OFFICIAL USE ONLY. (used for the expressed purpose as an example)

THIS CONTAINS PRIVILEGED, LIMITED-USE SAFETY INFORMATION. UNAUTHORIZED USE OR DISCLOSURE CAN SUBJECT YOU TO CRIMINAL PROSECUTION, TERMINATION OF EMPLOYMENT, CIVIL LIABILITY, OR OTHER ADVERSE ACTIONS. SEE AFI 91-204, CHAPTER 3 FOR RESTRICTIONS. DESTROY IN ACCORDANCE WITH AFMAN 37-139 WHEN NO LONGER NEEDED FOR MISHAP PREVENTION PURPOSES.

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- 1. Date and time of event.** Give date in format YYYYMMDD, followed by local time (L) using 24-hour clock.
- 2. Nature of Event.** State the event that requires this report.
- 3. Space System Information.** Provide sufficient information to uniquely identify the system.
  - 3.1. \*Property Component.
  - 3.2. \*Major System That Failed.
- 4. Location.** Give specific location. If the mishap occurs on-orbit, list the type of orbit (e.g. partial, LEO, GEO, etc.) and provide the orbital element set (if available).
- 5. Narrative.** Give a concise, chronological description of the facts and circumstances leading to the mishap event. Include a discussion of any pertinent space vehicle attitude, maneuvers involved, space environment (weather), etc. Continue the sequence until the mishap event ends. Describe any damage, which occurred. Include enough information to show the reasoning used in reaching conclusions and recommendations. For technical assistance on this item, contact HQ AFSC/SES at DSN 246-6059 or commercial (505) 846-6059.
- 6. Conclusions.** Describe any investigation conducted and state any conclusions regarding the causes of the event. The Findings and Causes format may be used if desired.

**7. Recommendations.** List preventive actions taken or recommended. List as Recommendation 1, Recommendation 2, etc. Number the entries 7.1 through 7.x as necessary.

**8. Mishap Ownership:**

8.1. \*MAJCOM.

8.2. NAF, group, wing, squadron, unit (or equivalent).

8.3. Base code of unit. (Use the four letter Home Location Code from SORTS)

**9. Failed Parts Information.** State descriptive name of failed component parts if applicable. Do not list parts that failed or were damaged as a result of the failure of another component part. Replace X in the paragraph number with a sequential unique number for each failed part. Repeat entries 9.X.1 through 9.X.4 as required for all failed parts.

9.x.1. Failed part number and (if applicable) serial number.

9.x.2. Failed part manufacturer.

9.x.3. Brief description of failure.

9.x.4. Report control number from deficiency report (DR).

**10. Cognizant official.** Provide name, unit, office symbol, e-mail address and telephone number (DSN and commercial) and specify whether they are a SIB president or Single Investigating Officer.

**11. Anomaly Resolution Report.** Attach the results of the anomaly resolution process if performed.

[**NOTE:** If the anomaly resolution report contains an executive summary that provides the information required in Items 5, 6, 7, and 9 then list “see attached report” as the entry for those items.]

## Attachment 3

## SPACE MISHAP REPORTING AND ROUTING REQUIREMENTS

Table A3.1. Reporting and Briefing Schedule for Space Mishaps.

Reports required by this table are in addition to OPREP-3 reports required by AFI 10-206 (NOTE 1 & 9)				
	If mishap/event is	then submit/brief	not later than	using format in
1	Class A, B or any investigation requiring a formal report	Preliminary message (note 1)	8 hours post-mishap	Figure A2.1.
2		Initial Status message (note 2)	10 days post mishap	Figure A2.2.
3		Status message (note 3)	Every 30 days post-mishap or as required.	
4		Formal report	90 days post-mishap (note 5)	Attachment 4
		Convening Authority briefing (if required)	15 days after completing investigation	AFI 91-204, para 6.4.
5		Final message (note 4)	3 days after briefing convening authority	Figure A2.2.
6		Comments message for MOFE process	30 days after transmittal of final message	
7	Class C, D	Preliminary message	8 hours post-mishap	Figure A2.1.
8		Status message (note 3)	30 days post-mishap and as required (note 5)	Figure A2.2.
9		Final message (note 4)	45 days post-mishap (note 5)	
10	Class E	Preliminary message	As soon as possible or within 8 hours of OPREP-3 (note 6)	Figure A2.1. or OPREP-3 (note 6)
11		Final message (note 4)	Within 45 days (note 5)	Figure A2.3.

**NOTES:**

1. Orbital mishap timing starts the day the MAJCOM Commander declares a mishap—see AFI 91-204, Chapter 2.
2. Include new information discovered since the preliminary report and identify SIB members. Remember to place the safety privilege statement at the beginning of the message.
3. Include information not previously reported in the initial or preliminary report. It is not necessary to use the entire Figure A2.2. format for subsequent status reports. Only add information not previously reported. Use Figure A2.2. format when modifying a previously transmitted initial, status, or final report.

4. Do not delay final reports awaiting testing results. If the results from testing significantly change the outcome of a final report, reconvene the SIB (if necessary) and send a status report describing the changes.
5. The convening authority may approve up to a 90-day extension of the due date. HQ AFSC must approve subsequent extensions.
6. For Class E events as defined in AFI 91-204 Chapter 1 use the required OPREP-3 (AFI 10-206) as the preliminary report by forwarding a copy to HQ AFSC/SES.

**Table A3.2. Addressees for Space Mishap Message Reporting.**

	<b>A</b>	<b>B</b>	<b>C</b>
	<b>Organization (see notes 1, 2, and 3)</b>	<b>Office Sym</b>	<b>For</b>
1	HQ USAF KIRTLAND AFB NM	SE	All space mishaps
2	HQ USAF WASHINGTON DC	SEI	All space mishaps
3	HQ AFSC KIRTLAND AFB NM	SES	All space mishaps
4	HQ AETC RANDOLPH AFB TX	SE	All space mishaps
5	SMC LOS ANGELES AFB CA	SE	Send to applicable System Program Office (SPO) or Single Manager
6	HQ AFSPC PETERSON AFB CO	XO	Send as "info copy"
7	HQ AFMC WRIGHT PATTERSON AFB OH	SE	Send as "info copy"
8	14 AF VANDNEBERG AFB CA	CC	All space mishaps
9	HQ AFSPC PETERSON AFB CO	SE	All space mishaps
10	50 SPACE WING SCHRIEVER AFB CO	SE	All space mishaps
11	30 SPACE WING VANDENBERG AFB CA	SE	All space mishaps
12	45 SPACE WING PATRICK AFB FL	SE	All space mishaps
13	21 SPACE WING PETERSON AFB CO	SE	All space mishaps
14	460 SPACE WING BUCKLEY AFB CO	SE	All space mishaps
15	Home base of operator (if other than the Organization submitting the report)	SE	All space mishaps
16	Military base of departure	SE	All space mishaps
17	AFRL KIRTLAND AFB NM	DS/VS	All space mishaps
18	HQ AFMC WRIGHT-PATTERSON AFB OH	DR	All mishaps involving material deficiencies, Tech Order changes, or Air Force Policy changes
19	AFWA SCOTT AFB IL	SE/XOO	Mishaps involving weather events or services
20	OO-ALC HILL AFB UT	SEW/LME	All mishaps involving systems or components common to both space and ballistic missile systems
21	HQ AFOTED KIRTLAND AFB NM	SE	Class A space and all OT&E mishaps
22	COMNAVSAFECEN NORFOLK NAS VA		Mishaps involving US Navy personnel or Facilities and mishap involving systems common to USAF and USN
23	COMNAVAIRSYSCOM		Mishaps involving systems common to USAF and USN

	A	B	C
	Organization (see notes 1, 2, and 3)	Office Sym	For
24	CDRUSASC FT RUCKER AL	CSSC-SE	Mishaps involving US Army personnel or facilities and mishaps involving systems common to USAF and USA
25	COMDT COGARD WASHINGTON DC		Mishaps involving US Coast Guard personnel or facilities and mishaps involving systems common to USAF and USCG
26	SECDEF WASHINGTON DC	USD (A&T) (ES) SH	Preliminary report for mishaps involving fatality, in-patient hospitalization of three or more persons, or property damage of \$1,000,000 or more
27	SAF WASHINGTON DC	IEE	Preliminary and final report for Class A and B mishaps
28	AFIP WASHINGTON DC	OAFME	Preliminary and final report for Class A and B mishaps involving injury or death
29	HQ AFCESA TYNDALL	CEXF	Preliminary and final report for mishaps involving fire suppressin or crash and rescue operations
30	DET 63 ASC INDIAN HEAD MD	CC	Mishaps involving EOD operations or activities
31	DEPT OF DEFENSE EXPLOSIVES SAFETY BOARD ALEXANDRIA VA	KT/IK	Class A, B, and C space launch vehicle mishaps
32	USSTRATCOM OFFUTT AFB NE	J416	Mishaps resulting in degraded mission capabilities
33	WR-ALC DET KELLY FLD TX	SE	Mishaps involving fuels or related products

**NOTES:**

1. Include System Program Director (SPD) or equivalent as an addressee.
2. Include MAJCOMS that are common users of the mishap materiel (space systems, equipment, launch vehicles, ordnance devices, explosives, etc.) as message addressees when exchange of information would enhance mishap prevention efforts.
3. Safety offices are responsible for revalidating addressee lists prior to each message transmission. Do not send privileged messages to addressees at line 28 at any time.
4. For commercial space mishaps, notify the FAA Combined Operations Center, (202) 267-3333. (FAA/AST, 400 7th Street, SW, Room 5402A, Washington DC 20590).

**Table A3.2. (AFSPC) Addressees for Space Mishap Message Reporting.**

	<b>A</b>	<b>B</b>	<b>C</b>
	<b>Organization (see notes 1, 2, and 3)</b>	<b>Office Sym</b>	<b>For</b>
14	460 SPACE WING BUCKLEY AFB CO	SE	All space mishaps (See Note 5)
34	Space Warfare Center Schriever AFB	SE	

**NOTE: 5. (Added)** All NAFs and centers.

**Table A3.3. Routing of Formal Space Mishap Reports.**

	<b>A</b>	<b>B</b>	<b>C</b>
	<b>Forward</b>	<b>To</b>	<b>For (see note 3)</b>
1	Original hard copy & one soft copy by priority mail	HQ AFSC/SES 9700 G Avenue, S.E. Kirtland AFB, NM 87117-5670	Review, appropriate corrective action and file
2	One soft copy by priority mail	HQ USAF/SEI 1400 Air Force Pentagon Washington, DC 20330	Review appropriate action.
3	One soft copy each	Organization to which person who had mishap is assigned (see note 6)	Review, appropriate corrective action, and file at wing or equivalent and their organizational level safety office. MAJCOMs specify Endorsement requirements suspense dates. They may grant extensions when warranted.
4		Organization that possessed or controlled mishap asset if different from organization in line 3	
5		Intermediate commands of units specified in lines 3 and 4	
6		MAJCOM concerned	
7	One soft copy each	Responsible MAJCOM if developmental asset involved	Review, appropriate corrective action, and file. Endorse transmittal correspondence to HQ AFSC/SES within 90 days of mishap. Provide copies of Endorsement to each formal report addressee.
8		Gaining MAJCOM if developmental asset involved	
9		System Program Director, Air Logistics or Product Center, as specified in TO 00-25-115 for aircraft, missiles and explosives involved (see notes 1 and 4)	
10		Each agency or organization tasked in the recommendations (note 6)	Review, appropriate corrective action, and file.
11		HQ AFMC/SE Wright Patterson AFB OH 45433 (see note 2)	Review and take appropriate corrective action, Endorsement concurrence will be in DB-10. If HQ AFMC disagrees with ALC or non-concurs, endorsement will be provided to each formal report addressee and to HQ AFSC/SES within 90 days of mishap

	<b>A</b>	<b>B</b>	<b>C</b>
	<b>Forward</b>	<b>To</b>	<b>For (see note 3)</b>
12		HQ ACC/SE Langley AFB VA 23665-2786 if helo ops deficiencies involved	Review, appropriate corrective action, and file. Endorse transmittal of correspondence to HQ AFSC/SES within 90 days of mishap, and provide copies of the endorsement to each formal report addressee
13		HQ AFOTEC/SE Kirtland AFB NM 87117	
14		OO-ALC/WMCS Hill AFB UT 84406 if ammunition and explosives materiel other than nuclear involved (see note 4)	
15		SMC/AXZ 2420 Vela Way, Suite 1467 El Segundo, CA 90245-4659	Review, appropriate corrective action, and file.
16		HQ AFSPC/SE Peterson AFB CO 80914 (see note 7)	
17		ESC/SE Hanscom AFB MA 01731 if ground electronics subsystem involved	
20		HQ AFMOA/SGPA Bolling AFB DC 20332-6188 (see note 5)	
21		Armed Forces Institute of Pathology Washington DC 20305 If fatality occurred (see note 6)	

**NOTES:**

Do not send any reports to an agency outside the USAF. Requests can be made directly to HQ AFSC/SES to be processed through the appropriate FOIA channels.

1. ALC action correspondence is not required unless the safety report contains findings or recommendations involving materiel failure or malfunction, depot-level maintenance, design deficiencies, or technical order deficiencies.
2. For all mishaps requiring an action by an AFMC organization, send one copy to HQ AFMC/SE, Wright Patterson AFB OH 45433-5006, as well as the tasked agency.
3. Air Force Directory (AFDIR) 33-131, Message Address Directory was rescinded. Reference: <http://www.nctc.navy.mil/dpvs/dpvs.html/dpvs.html> for current message addresses.
4. When routing formal reports to Air Logistics Centers, send the reports to the Safety Offices at the applicable ALC for internal distribution and tracking. Use the following addresses:  
OC-ALC/SE Tinker AFB OK 73145  
OO-ALC/SE Hill AFB UT 84056

WR-ALC/SE Robins AFB GA 31098-1864

WR-ALC DET/SE Kelly Fld TX 78241

**NOTE:** SPM and ALC support may not be collocated.

5. In mishaps with significant medical contribution or resulting in a medical condition or physical injury, send a copy of the formal report.
6. Do not send a report to an agency outside the USAF. Prepare those copies of the report and send them to HQ AFSC/SES for forwarding.
7. HQ AFSPC/SE will forward copies of launch-related mishap reports to 30/45 SW/SE.

## Attachment 4

### FORMAL SAFETY REPORTS

**A4.1. General Information.** This attachment contains instructions for completing formal reports and provides general briefing guidelines. Formal safety reports and briefings present detailed information, both factual and analytical, about mishaps.

**A4.2. General Composition of Formal Reports.** The formal report may have one or two parts. All formal privileged safety reports must have two parts: Part 1, *Factual Information and Releasable Material*; and Part 2, *Board Conclusions and Non-Releasable Material*. Results of Follow-up Actions, even if filed with the formal report, are not part of the formal report.

A4.2.1. Part 1 contains factual information and non-privileged information. Create a Part 1 classified annex for classified non-privileged information as needed.

A4.2.2. Part 2 contains the privileged portions of the formal report.

A4.2.3. Both one and two-part reports must use the appropriate AF Form 711 (Tab B). All forms in the AF Form 711-series are licensed as "Safety Investigation Reports" (RCS: HAF-SE(AR) 9404).

A4.2.4. Only include information and exhibits if they add to the report.

### **A4.3. General Guidance for the Narrative Portion.**

A4.3.1. Clearly show the scope of the investigation (evidence examined) and analyze the evidence presented (thought process and conclusions).

A4.3.2. Explain why certain possibilities are eliminated, but others are retained.

A4.3.3. Do not identify involved personnel by name, classified or personal call sign in the narrative. "Involved personnel" are those personnel who had an active role in the mishap, were injured in it, or whose actions or inactions initiated or sustained the mishap sequence.

A4.3.4. When a formal report includes supporting documents (records, photos, statements, technical reports, and the like), consider referring to the tabs and page numbers of the exhibits rather than repeating the supporting material in the narrative portion.

A4.3.5. The investigation and analysis should be written so the reader clearly understands the relationship of how the findings and causes were determined.

A4.3.6. Discuss the logic used to choose the recommendations.

A4.3.7. Analyze data collected from witness statements, testimony, technical evaluations, and other information.

A4.3.8. Describe each area investigated and discuss its significance.

A4.3.9. Extensively analyze areas important in explaining the mishap.

A4.3.10. Omit factors not applicable and add others as necessary to analyze the mishap.

A4.3.11. Documenting Human Factors.

A4.3.12. Consider human factors from both individual human performance and from environmental, mission, and supervisory influence perspectives (to include training and work practices).

A4.3.13. When human action or inaction contributed to the mishap sequence, medical members, drawing heavily on each SIB member's individual area of expertise, accomplish the human performance narrative. Terminology should be consistent with the Human Factors taxonomy as presented in AFPAM 91-211, USAF Guide to Aviation Safety Investigation, Attachment 8.

A4.3.14. The SIB or SIO must rate the identified human factors by the degree of their contribution to the mishap sequence: 4 - causal contributing factor; 3 - major contributing factor; 2 - minor contributing factor; 1 - minimal contributing factor; 0 - present but did not play a role in the mishap sequence.

A4.3.15. Summarize conclusions at the end of this section before going on to the findings.

**A4.4. Distribution Memorandum.** The Distribution Memorandum lists all addressees receiving copies of, or extracts from, or attachments to, the report.

A4.4.1. Number and account for all copies of privileged reports by listing each addressee (see [Table A3.3.](#)), including office symbol and copy number, in the "Distribution List" attachment to the Distribution Memorandum.

A4.4.1.1. If the SIB president keeps a copy of the formal report (for briefing purposes) list this copy on the memorandum.

A4.4.2. Include a statement, signed by the SIB president, certifying that the number of copies listed are the only copies of the SIB report produced.

A4.4.3. The Distribution Memorandum goes before all Tabs in Part 1 of the report.

**A4.5. AF Form 711A, USAF Safety Report Checklist and Index.** Use this form to ensure reports are uniform and complete. Place an "X" for each item in the columns "Not Applicable," "Applicable Not Attached," or "Attached."

A4.5.1. When checking the "Applicable Not Attached" block, explain why in the "Remarks" section. Estimate the date the missing attachment will be sent for inclusion in the report.

A4.5.2. If an attachment will be sent later, insert a page with the proper lettered tab in the report. When the attachment is sent to recipients of the report, they can put it in the report at the proper tab.

A4.5.3. Place AF Form 711A between the Distribution Memorandum and Tab A.

**A4.6. PART 1—FACTUAL INFORMATION & RELEASABLE MATERIAL :**

A4.6.1. **TAB A :** Distribution Memorandum and Safety Investigator Information. Include the following:

A4.6.1.1. Orders: Include one copy of the orders appointing the SIB or investigating officer. The orders must contain the full name; rank/grade, organization, and complete official mailing address for each appointed person. Unless required for safety purposes, do not include SSNs on a document that is provided to the AIB.

A4.6.1.2. Include contact information for all investigation members.

A4.6.2. **TAB B** : USAF Mishap Report (AF Form 711B). Complete an AF Form 711B for each Space mishap requiring a formal report and place it here. In most cases, the instructions on the form explain the required entries.

A4.6.3. **TAB C** : Preliminary Message Report. Include the fully releasable preliminary message. Place the Final Report message in Tab Z. All other message traffic should be placed at the end of Tab W.

A4.6.4. **TAB D** : Maintenance Report, Records, and Data.

A4.6.4.1. Include copies of space system maintenance forms, if they add to the report.

A4.6.4.2. Include copies of AFTO 781 Forms (if applicable).

A4.6.4.2.1. AFTO 781A, *Maintenance Discrepancy and Work Document*.

A4.6.4.2.2. AFTO Form 781h, *Aerospace Vehicle Flight Status and Maintenance Document*

A4.6.4.2.3. AFTO Form 781k, *Aerospace Vehicle Inspection, Engine Data, Calendar Inspection and Delayed Discrepancy Document*

A4.6.4.2.4. Any other AFTO 781 series form (or applicable space system maintenance forms), if they add to the report.

A4.6.4.3. Include records from pre-flight checkout.

A4.6.4.4. Include records and data from launch processing.

A4.6.4.5. If these forms and records are not included the Investigation Officer or Maintenance Member will provide a summary of the information contained in them.

A4.6.5. **TAB E** : Reserved. For space safety use this tab for:

A4.6.5.1. Flight Termination System Performance Assessment. For space launch mishaps occurring at an Air Force space launch range, the wing safety office will assess the performance of the flight termination system and evaluate the effectiveness of debris prediction models and toxics dispersion models. Include their report here.

A4.6.5.2. The SIB may use this tab for other special interest items which are pertinent to the mishap but don't fit under any other tabs.

A4.6.6. **TAB F**: Weather and Environmental Records and Data.

A4.6.6.1. Include weather forecast, weather support briefing and weather assessment.

A4.6.6.2. Include space environment assessment.

A4.6.7. **TAB G** : Personnel Records.

A4.6.7.1. Include a copy of current training records and evaluations.

A4.6.7.2. Include a copy of proficiency/qualification currency.

A4.6.8. **TAB H** : Egress, Impact and Crashworthiness Analysis. This tab is not normally used for space mishaps but may be used when appropriate or at the SIB's discretion.

A4.6.9. **TAB I** : Deficiency Reports.

A4.6.9.1. Include all types of deficiency reports (materials, software, etc.) including Product Quality Deficiency Reports (PQDR), submitted in conjunction with the mishap investigation.

A4.6.9.2. Include a copy of the submitted PQDR report containing the following information: Report Control Number (RCN), Cognizant Official, name of part (nomenclature), and part number.

**A4.6.10. TAB J : Releasable Technical Reports and Engineering Evaluations.**

A4.6.10.1. Include the results of the Engineering Analysis Group here. The EAG results should be non-privileged and releasable. Ensure any proprietary information has been clearly marked by the contractor and control it appropriately. Contact HQ AFSC/JA for guidance concerning contractor proprietary information.

A4.6.10.2. If DoD experts provide written reports or submit on-scene evaluations, include them here. Use the format in AFI 91-204, Figure 5.1. for these reports and do not provide a promise of confidentiality to DoD personnel.

A4.6.10.3. Include factual reports or information provided by a contractor, which the contractor's representative has determined does not require the promise of confidentiality, followed by a memorandum of acknowledgment.

A4.6.10.4. Include Joint ALC and contractor factual reports.

A4.6.10.5. Any analysis referring to privileged information (e.g., witness testimony, board conclusions, etc.) should be included in Tab W.

**A4.6.11. TAB K : Mission Records and Data. Include a copy of any pertinent mission record.**

A4.6.11.1. For launch mishaps include:

A4.6.11.1.1. The flight approval letter, or equivalent.

A4.6.11.1.2. The mission profile.

A4.6.11.1.3. Launch commit and go/no-go criteria.

A4.6.11.2. For on-orbit mishaps, include the ephemeris data.

A4.6.11.3. Include a copy of the clearance form.

**A4.6.12. TAB L : Data From On-Board Recorders.** Include any relevant, releasable, telemetry data or other data recorded from the space vehicle that can be used to analyze the mishap. For space mishaps this includes ground recorded telemetry which originated from an onboard sensor.

**A4.6.13. TAB M : Data from Ground Radar and Other Sources.** When available, include any data recorded from ground radar or other sources that is relevant to the investigation.

**A4.6.14. TAB N : Transcripts of Voice Communications.**

A4.6.14.1. Include written transcripts of recorded voice communications.

A4.6.14.2. Begin the transcript as early in the mishap sequence as is practical and end the transcript when all damage and injury has occurred.

A4.6.14.3. Because these communications are factual data, they often provide a basis for information in the factual summary of circumstances.

A4.6.15. **TAB O** : Any Additional Substantiating Data and Reports.

A4.6.15.1. This is supporting data not otherwise defined. It can include local operating instructions (OI), directives, and other forms.

A4.6.15.1.1. If the SIB cites a brief document (such as a three-page local OI), place it within this tab. Do not mark, highlight, or extract a particular page to show the SIB's exact area of interest (Highlighted pages are placed at Tab V or T).

A4.6.15.1.2. For lengthy documents, it is sufficient to show a listing of documents or records reviewed by the SIB and their effective dates.

A4.6.15.1.3. Include any TCTOs or TOs in this tab. However, if the publication is protected under the Arms Export Control Act (Title 22, U.S.C. Sec. 2751 et seq.) or the Export Administration Act of 1979, as amended (Title 50, U.S.C., App. 2401 et seq.) then contact the OPR to ascertain whether the material can be publicly released (i.e. Part 1). If not publicly releasable and still required for the report place the information in Tab V or T as required. Regardless, the publication may be released to the AIB.

A4.6.16. **TAB P** : Damage and Injury Summaries.

A4.6.16.1. Include a summary of any injuries sustained by government personnel.

A4.6.16.2. Include a Certificate of Damage (see [Table A4.1](#) for an example) that lists the total damage to all government property, materiel, and equipment.

A4.6.16.2.1. Provide a detailed statement that includes acquisition, replacement or repair costs (as applicable) for all property, material or equipment damaged.

A4.6.16.2.2. Referring to AFI 91-204, Chapter 1, for damage cost guidelines may be helpful. Generally, for space mishaps the best source of cost information is the SPO and manufacturer.

A4.6.16.2.3. Include nomenclature and national stock number (NSN) if available.

A4.6.16.3. Include a statement of damage to civilian personnel and private property if applicable.

A4.6.16.3.1. Limit the statement to a brief description of the type and extent of damage (do not include dollar estimates of damage or use descriptive words such as "destroyed").

A4.6.16.3.2. Describe the damage incurred (e.g. 20' x 30' x 15' deep crater in NW corner of property, 5 acres of grasslands affected, etc.).

A4.6.16.3.3. Do not state the cause of the property damage (e.g. 5 acres of grassland destroyed by post impact fire).

**Table A4.1. Certificate of Damage (Notional Example).**

Item (Stock Number if applicable)	Cost
Titan Booster	172,500,000.00
Centaur Upper Stage	63,200,000.00
Integration, Launch Processing, Operations & Support, etc.	197,400,000.00
MILSTAR Satellite	750,000,000.00
Total Direct Costs	1,183,100,000.00

A4.6.17. **TAB Q** : Accident Investigation Board (AIB) Transfer Documents. Include a letter from the SIB President to the AIB President transferring responsibilities.

A4.6.18. **TAB R** : Releasable Witness Testimony.

A4.6.18.1. Include all releasable statements (statements made without promises of confidentiality) made by witnesses or persons involved. Ensure no privileged or protected information is included here.

A4.6.19. **TAB S** : Releasable Photographs, Videos, and Diagrams.

A4.6.19.1. Include all visual media that depict the actual mishap sequence or mishap scene and don't contain any privileged safety material.

A4.6.19.2. List the photographs, videotapes, films and diagrams on an index page and give the originals to the AFI 51-503 Accident Investigation Board (AIB).

A4.6.19.3. Photographs and Videos.

A4.6.19.3.1. Well-defined photographs help in mishap analysis. Use them to show damage, impact areas, metal fractures, flight path, vehicle travel, etc.

A4.6.19.3.2. Include an index of photographs to aid reviewers. Do not refer to privileged safety information on the page captions or in comments on the index.

A4.6.19.3.3. Only include photographs that aid in understanding the mishap and reference them in the analysis in Tab T.

A4.6.19.3.4. Use of scanned or color copies for reproduction in the formal report is preferred over pasting of actual photographs.

A4.6.19.3.5. Do not include photographs of deceased or injured personnel in the safety report.

A4.6.19.3.6. Photographs arranged based on a given set of assumptions made by the SIB or described in witness testimony are staged photographs. Place them in Part 2, Tab X.

A4.6.19.3.6.1. Pointing with a finger or other device at a portion of wreckage does not make the photograph staged.

A4.6.19.3.6.2. Assembling or reconstructing damaged parts or aligning parts to show fire patterns or impact marks are examples of staged photographs.

A4.6.19.3.7. When investigators include privileged safety information on a transparent overlay, place the photograph with the overlay in Tab W and the photograph without the overlay here.

A4.6.19.3.8. Hold all photographs and videotapes taken by the SIB, except those staged for analysis, which are privileged, for use by the AIB.

A4.6.19.3.9. Video or computer animations or reenactments of a mishap prepared totally from factual data sources, and without SIB guidance or direction, are not privileged. Include them here. Include privileged videos and animations in Part 2, Tab X.

#### A4.6.19.4. Diagrams.

A4.6.19.4.1. Ensure diagrams are self-explanatory.

A4.6.19.4.2. Include only those diagrams that add to the report such as debris patterns, impact areas, or trajectory. Indicate direction with a northward pointing arrow on each diagram. If practical, indicate scale.

A4.6.19.4.3. Ensure the diagrams do not depict the location of human remains. Such diagrams should be placed in Part 2, Tab Y to protect the privacy interests of the decedent's family.

### **A4.7. PART 2—BOARD CONCLUSIONS & NON-RELEASABLE MATERIAL:**

#### A4.7.1. **TAB T** : Investigation, Analysis, and Conclusions.

A4.7.1.1. This is the most important part of the report. It draws on all other portions of the report to provide a complete picture of what happened. It is a thorough analysis of all evidence and presents the board's conclusions (findings, causes, recommendations, and other findings and recommendations of significance). It either accepts or rejects all scenarios or theories in the report. Only in the case of a minority report are there differing conclusions.

A4.7.1.2. The SIB's conclusion that a particular paragraph of a document was or was not a mishap factor is privileged. Include highlighted pages or publication extracts revealing the deliberative process of the board. Include copies of submitted AFTO Form 22s or AF Form 847s as attachments to Tab W.

A4.7.1.3. Life sciences recommendations related to causal findings will be included here with the other SIB recommendations.

A4.7.1.4. Whenever findings or recommendations involve deficiencies in or changes to technical orders, flight manuals, checklists, or directives, include the documents in Tab V and include the applicable portions of the original publications in here.

A4.7.1.5. The layout should be:

A4.7.1.5.1. Executive Summary - provide a condensed version of the mishap report that encapsulates the mishap sequence, analysis, and the board's conclusions.

A4.7.1.5.2. Mishap Sequence.

A4.7.1.5.3. Investigation and Analysis.

A4.7.1.5.4. Conclusions (per **Chapter 5**).

A4.7.1.5.4.1. Findings and Causes.

A4.7.1.5.4.2. Recommendations.

A4.7.1.5.4.3. Other Findings and Recommendations of Significance.

A4.7.1.5.5. Report Authentication & Minority Reports. Include an Authentication page and any minority reports here.

A4.7.2. **TAB U** : Witness Testimony Provided Under a Promise of Confidentiality.

A4.7.2.1. Only include statements that are provided under a promise of confidentiality.

A4.7.2.2. Select only meaningful statements and testimony to include in this tab. It is not necessary to publish every statement taken from every individual interviewed.

A4.7.2.3. Place the statements and testimony of each individual together in chronological order with the earliest on top to make it easier to compare the individual's impressions.

A4.7.2.4. A promise of confidentiality may be given to any witness whom the SIB determines should be extended such a promise. However, a promise of confidentiality shall not be given on a blanket basis to every potential witness.

A4.7.2.5. The promise of confidentiality must be clearly understood by those witnesses extended the promise.

A4.7.2.6. When a promise of confidentiality has been extended, Investigators must read the advisory listed in AFI 91-204, Figure A3.3. to the witness. It must also be read onto any tape recording of the interview and must attach it to any transcript of the interview. In cases where witness testimony is summarized by the interviewer, it must be clear that the witness was advised of and understood this advisory.

A4.7.2.7. Where a promise of confidentiality has been extended, AFI 91-204, Figure A3.2. provides a sample witness statement format for use with written privileged witness statements.

A4.7.2.8. Where a promise of confidentiality has not been extended, AFI 91-204, Figure A3.4. provides a sample witness statement format for use with written, non-privileged witness statements. Include these statements in Part 1, Tab R of the report.

A4.7.2.9. All statements and testimony included here should be analyzed in Tab T.

A4.7.3. **TAB V** : Other Supporting Privileged Products

A4.7.3.1. Include privileged supporting data, reports, and products not covered by other tabs.

A4.7.3.2. Statements of persons cited in findings. Include the original and endorsed notification memorandums and any statements provided by persons found causal in a privileged safety investigation.

A4.7.3.3. Unless these products mark, highlight, or otherwise provide insight to the SIBs analysis thought process or areas of interest they should be placed in Part 1.

A4.7.3.4. Include AF Form 711D, *Nuclear Accident/Incident Report*, if nuclear power systems, radioactive material, or radioactive sources were involved in the space mishap.

A4.7.4. **TAB W** : Technical Reports and Engineering Evaluations Provided Under a Promise of Confidentiality

A4.7.4.1. If a contractor who built, designed, or maintained the equipment provides an engineering analysis under a promise of confidentiality, include the evaluation in this tab.

A4.7.4.2. Include memorandums of acknowledgment on protection of privileged safety data signed by these contractors when their evaluations are included in privileged formal reports. Use the format in AFI 91-204, Figure A3.7.

A4.7.4.3. If provided by the contractor, include a factual summary in Part 1, Tab J.

**A4.7.5. TAB X : Privileged Photographs, Videos, and Diagrams.**

A4.7.5.1. Place films, videotapes, or diagrams depicting the actual mishap sequence and containing privileged safety material that are part of the formal report with this tab.

A4.7.5.2. Prepare and include an index page that lists all exhibits.

A4.7.5.3. Refer to the instructions under Tab S for general guidance.

A4.7.5.4. Video or computer animations or reenactments of a mishap prepared for or by the SIB are generally part of the SIB's analysis of the mishap.

A4.7.5.4.1. Include the video simulation with the copy of the report sent to HQ AFSC/CC.

A4.7.5.4.2. All other copies of the video simulation should be destroyed when no longer needed by the SIB for analysis or briefing.

A4.7.5.4.3. HQ USAF/SE may authorize use of these SIB video simulations for mishap prevention purposes.

A4.7.5.4.4. If the animation is created totally from factual data sources, and without SIB guidance or direction, then the animation is not privileged and should be included in Part 1, Tab S.

**A4.7.6. TAB Y : Life Sciences and Medical Reports. Typical contents include:**

A4.7.6.1. Life Science Narratives, Part A and Part B. Part A provides a thorough discussion of all human factors contributing to the mishap and a discussion of all significant life support, egress, survival and rescue issues. Part B provides a discussion of factors investigated and found not to be relevant in the mishap, and any other negative findings that the medical investigator determines should be discussed to show how they were logically ruled out. Part B also contains a discussion of significant factors found to be present but did not contribute to the mishap sequence.

A4.7.6.2. Electronic LSR (Save following program directions). Print for inclusion in formal report and provide electronic .LSR file to AFSC/SES and AFSC/SEFL.

A4.7.6.3. Life Science consultant reports when available.

A4.7.6.4. 72 hr and 14 day histories for individuals found to be part of the mishap sequence. Refer to AFPAM 91-211, *USAF Guide to Aviation Safety Investigation* for assistance with these histories.

A4.7.6.5. Include physicals for individuals involved in the mishap sequence, for those injured or if otherwise determined appropriate by the medical investigator. Physicals should be documented on a SF88 or a SF 506. Include an injury pattern analysis. Only place physicals in the report sent to HQ AFSC.

A4.7.6.6. All other reports obtained by the medical investigator, e.g., TOX tests, x-rays, autopsy reports, post mishap exam results, etc., that support findings or recommendations made by the medical investigator (include only in the report sent to HQ AFSC).

A4.7.6.7. TOX tests, x-rays made prior to the mishap, autopsy and coroner's reports are all provided to the AIB as they are not privileged. However, they are placed in Part 2 to help ensure the privacy of the NOK.

A4.7.6.8. Send all saved files to HQ AFSC/SES on a 3.5-inch disc or CD-ROM when final. Label the discs with the name, location, and date of the mishap and the name, duty station, and telephone number of the medical officer.

#### A4.7.7. **TAB Z** : SIB Final Products.

A4.7.7.1. Final Report Message.

A4.7.7.2. A copy of the Board President's Briefing.

A4.7.7.3. Copies of any letters sent to individuals named in the report.

A4.7.7.4. SIB Proceedings. Include:

A4.7.7.4.1. Investigation problems experienced and any lessons learned.

A4.7.7.4.2. Recommendations for improving reporting and investigating procedures.

A4.7.7.4.3. Comments on technical assistance coordinated through HQ AFSC.

A4.7.7.4.4. Place all privileged status messages and the final CMR in this Tab.

### **A4.8. ASSEMBLING THE FORMAL REPORT.**

A4.8.1. Assemble the report in a three ring binder. Use standard dividers labeled A through Z.

A4.8.2. Type/print on both sides of 8.5 by 11 inch paper. Use Arial, 12 point, for text documents. Vary the font size as needed for the 711 Series Forms.

A4.8.3. Under Page Setup in Microsoft Word (for other word processing programs follow the intent of these guidelines):

A4.8.3.1. Set Top and Bottom margins to one inch.

A4.8.3.2. Select "Mirror Margins" and set "inside" to 1.5 inches, "outside" to 1.0 inch. Set "gutter" to zero. (If you do not have a duplex printer, this will set the margins correctly for front-back reproduction. If you have a duplex printer this is the same as setting the left margin to 1.5 inches and deselecting "Mirror Margins").

A4.8.4. Set header margin to .5 inches, set font to 10 point, Times New Roman italics and center the following on each page of the report in the header block: "Space System or Type, mission or identifying number and mishap event number" (e.g. Titan IVB-32, 19990430DBEH003A or GPS-IIA, SVN 28, 19960411GLEN508A). Exclude the header from the cover page.

A4.8.5. Place warning statement from AFI 91-204, Figure A3.1. in the footer on each page in Part 2 of privileged safety reports.

A4.8.6. Arrange the tabs in alphabetical order, with Tab A on top. Number all pages in order within the tab (for example, A-1, A-2, X-1, X-2, Y-1). Center page numbers at the bottom of each page.

A4.8.7. For bulky two-part reports, place Parts I and II in separate binders. For non-privileged reports, place all of the report in one binder of an appropriate size.

**Attachment 5****ADDITIONAL FIGURES****Figure A5.1. Sample Distribution Memorandum.**

MEMORANDUM FOR SEE DISTRIBUTION LIST

FROM: Safety Investigation Board

SUBJECT: Class A Mishap Final Report, (MDS), (Serial Number), (Mishap Date), (Involved Wing), and (Location).

1. The Safety Investigation Board (SIB) forwards this report IAW AFI 91-204.
2. The SIB provided the originals for the material found in Part 1 of the report to the AFI 51-503 Accident Investigation Board President.
3. I have retained one copy for briefing purposes and certify that these (Total Number) copies are the only copies produced by the SIB.

(SIB President), (Rank), USAF

Safety Investigation Board President

DISTRIBUTION:

See Attached

*(Sample Attachment)*

## DISTRIBUTION LIST

HQ AFSC/CC 9700 G Avenue, Suite 278 Kirtland AFB NM 87117-5670	Copy 1-3 of x
MAJCOM/SE Organizational Address	Copy 4 of x
NAF/SE Organizational Address	Copy x of x
Mishap Unit/SE Organizational Address	Copy x of x

**Figure A5.2. Example SIB Appointment Message Template.**

FOUO (used for the expressed purpose as an example)

FM HQ CONVENING MAJCOM AND LOCATION//CC//

OR IAW AFMAN 91-222, **Table A3.2.**

HQ AFSC KIRTLAND AFB NM//CC/SEW/SEE//

HQ USAF WASHINGTON DC//SE/SEI//

HQ AFMC WRIGHT PATTERSON AFB OH//SE//

USSTRATCOM OFFUTT AFB NE//DO/DR/LG/SE/PA/FM//

USSPACECOM PETERSON AFB CO//DO/DR/LG/SE/PA/FM//

HQ AFSPC PETERSON AFB CO//DO/DR/JA/LG/SE//

HQ AFOTEC KIRTLAND AFB NM//SE//

AAC (APGM) EGLIN AFB FL//WM//

14 AF VANDENBERG AFB CA//SE//

20 AF FE WARREN AFB WY//SE//

30 SW VANDENBERG AFB CA//CC/DO/LG/SE//

45 SW PATRICK AFB FL//CC/DO/LG/SE//

90 SW FRANCIS E. WARREN AFB CA//CC/DO/LG/SE//

HQ SWC LOS ANGELES AFB CA//AXZ//

FOUO (used for the expressed purpose as an example)

SUBJECT: Appointment of Safety Investigation Board (SIB) President for the XXXX Mishap

1. CONVENING MAJCOM APPOINTS THE FOLLOWING INDIVIDUAL AS SAFETY INVESTIGATION BOARD PRESIDENT FOR THE XXXX SPACE MISHAP:

COLONEL XXXX

ORGANIZATION

SSN

2. CONDUCT INVESTIGATION IAW AFI 91-204 AND AFMAN 91-222. SIB PRESIDENT IS RESPONSIBLE FOR IDENTIFYING THE ROOT CAUSE OF THE MISHAP AND MAKE RECOMMENDATIONS TO PREVENT RECURRENCE. THIS RESPONSIBILITY IS PRIMARY DUTY UNTIL COMPLETED. BEGIN INVESTIGATION AS SOON AS POSSIBLE. IF SIB EXPECTS IT WILL TAKE LONGER THAN XX DAYS, REQUEST A WAIVER IAW AFMAN 91-222. IF ADDITIONAL INVESTIGATIVE EFFORTS ARE REQUIRED, CONVENING MAJCOM SAFETY

OFFICE WILL ASSIST IN MAKING ADDITIONAL ASSETS AVAILABLE IN COORDINATION WITH THE CONVENING AUTHORITY.

3. INVESTIGATION IS PROTECTED BY SAFETY PRIVILEGE. AUTHORIZATION IS GRANTED TO OFFER CONFIDENTIALITY TO WITNESSES. TESTIMONY, DELIBERATIONS, AND FINDINGS, CAUSES, AND RECOMMENDATIONS CAN ONLY BE USED FOR THE PURPOSE OF MISHAP PREVENTION. PRIVILEGED INFORMATION USE, DISSEMINATION, AND RELEASE IS STRICTLY CONTROLLED BY GUIDELINES IN CHAPTER 3, AFI 91-204.

4. APPROPRIATE CONTRACTOR WILL CONDUCT A NON-PRIVILEGED ENGINEERING ANALYSIS TO PROVIDE SIB TECHNICAL ANALYSIS OF THE EVIDENCE AND DATA. SIB SHOULD NOT DIRECT THIS ANALYSIS. CONVENING MAJCOM WILL ALSO CONVENE AN ACCIDENT INVESTIGATION BOARD (AIB) THAT WILL INVESTIGATE FOR THE PURPOSE OF LITIGATION AND PUBLIC RELEASE. SIB INVESTIGATION TAKES PRIORITY OVER ALL OTHER INVESTIGATIONS OF THE MISHAP. SIB SHOULD MAKE ALL FACTUAL EVIDENCE AND DATA AVAILABLE TO THE AIB FOR RELEASE TO THE ENGINEERING ANALYSIS TEAM AS EXPEDIENTLY AS POSSIBLE. AIB PRESIDENT WILL TAKE RESPONSIBILITY FOR ALL PUBLIC STATEMENTS AND RELEASES. AFTER RECEIVING THE ENGINEERING ANALYSIS REPORT, SIB MAY DIRECT FURTHER INVESTIGATIONS AND ANALYSES IF SIB BELIEVES REPORT IS INCOMPLETE. HOWEVER, THESE ADDITIONS WILL BECOME A PRIVILEGED PART OF SIB INVESTIGATION.

5. IAW AFI 91-204 AND AFMAN 91-222, THE HOST BASE WILL ASSIST WITH LOGISTICAL AND ADMINISTRATIVE SUPPORT. HOST BASE HAS APPOINTED AN INTERIM SAFETY BOARD TO PERFORM INITIAL RECOVERY ACTIONS, SAFEGUARD EVIDENCE AND ASSIST SIB IN COORDINATING BILLETING, OFFICE SPACE, AND OTHER SUPPORT. CONTACT MAJCOM SAFETY OFFICE IF ALTERNATE HOST BASE SUPPORT IS REQUIRED. INTERIM SAFETY BOARD PRESIDENT CAN BE REACHED THROUGH THE HOST BASE WING COMMANDER'S OFFICE.

6. SHOULD SIB ENCOUNTER ANY SAFETY-CRITICAL INFORMATION DURING YOUR INVESTIGATION THAT REQUIRES IMMEDIATE RELEASE TO AF AGENCIES OR INDUSTRY, SIB SHOULD PROMPTLY INFORM THE CONVENING AUTHORITY IAW AFI 91-204.

7. EACH MEMBER'S ORGANIZATION WILL FUND TRAVEL AND BILLETING USING AN ESP CODE SUPPLIED BY MAJCOM SAFETY OFFICE. TRAVEL ORDERS SHOULD BE ISSUED LOCALLY AND SHOULD AUTHORIZE VARIATIONS IN TRAVEL FOR ALL MEMBERS OF THE SIB. MEMBERS NOT ASSIGNED TO CONVENING MAJCOM SHOULD RECEIVE A CONVENING MAJCOM FUNDS CITE FROM CONVENING MAJCOM SAFETY OFFICE.

8. SIB WILL PREPARE MESSAGES AND A FINAL REPORT FOR CONVENING AUTHORITY REVIEW AND APPROVAL. SIB IS ALSO REQUIRED TO BRIEF CONVENING AUTHORITY ON SIB FINDINGS, CAUSES, AND RECOMMENDATIONS WHEN SIB INVESTIGATION IS COMPLETE.

9. REFERENCED DOCUMENTS AND OTHER INVESTIGATIVE GUIDANCE AND CONTACTS MAY BE FOUND AT MAJCOM SAFETY OFFICE HOME PAGE- "[HTTPS://MIDWAY.PETERSON.AF.MIL/2LETTERS/SE/](https://midway.peterson.af.mil/2letters/se/)". SIB MAY CONTACT MY STAFF FOR ANY QUESTIONS REGARDING YOUR APPOINTMENT.

10. HQ convening authority, POC IS xxxx (DSN: xxx-xxxx), EMAIL: xxxxxxxx

## Attachment 6

## MESSAGE VALUES LOOK-UP TABLES

Table A6.1. Message Values Common to All Mishap Categories.

MAJCOM	
ACC (Air Combat Command)	AAG (AF Audit Agency)
AET (Air Education & Training Command)	AIA (Air Intelligence Agency)
AFE (US Air Forces in Europe)	APC (AF Personnel Center)
AFR (AF Reserve Command)	AWS (Air Force Weather Agency)
	BDA (AF Base Conversion Agency)
AMC (Air Mobility Command)	CBT (AF Operations Group)
ANG (Air National Guard)	CCE (AF Cost Analysis Agency)
MTC (Air Force Materiel Command)	CFH (AF History Support Office )
PAF (Pacific Air Forces)	CMC (AF Communications Agency)
SAJ (US Strategic Command)	CSA (AF Studies and Analysis Agency)
SOC (AF Special Operations Command)	EEC (AF Center for Environmental Excellence)
SPC (AF Space Command)	ESC (AF Civil Engineering Support Agency)
	FSA (AF Flight Standards Agency)
ZEC (AFELM US Central Command)	FMC (AF Frequency Management Agency)
ZLA (AFELM US Atlantic Command)	HRC (AF Historical Research Agency)
ZPA (AFELM US Pacific Command)	ICT (AF News Agency)
ZSA (AFELM US Southern Command)	ISC (AF Inspection Agency)
ZSD (AFELM US Transportation Command)	LCT (AF Legal Services Agency)
ZVA (AFELM US Special Operations Command)	LMA (AF Logistics Management Agency)
	MEA (AF Mgmt Engineering Agency)
ACD (Air Force Academy)	MOA (AF Medical Operations Agency)
DOC (AF Doctrine Center)	MSA (AF Medical Support Agency)
ESW (11th Wing)	MWR (AF Services Agency)
TEC (AF Operational Test & Eval Center)	OSI (AF Office of Special Investigations)
USL (USAF At Large)	OSP (AF Security Police Agency)
	PCA (AF Pentagon Comm Agency)
	POA (AF Personnel Operations Agency)
	REA (AF Real Estate Agency)
	RBO (AF Review Boards Agency)
	RPC (Air Reserve Personnel Center)
	SFT (AF Safety Center)
	SSE (Joint Services SERE Agency)

<b>GRADE</b>	
<b>NOTE:</b> This is not a true look-up table but a guide to the type of grade structures used.	
AFFN – FN1 (wage grade equivalent)	OSI (OSI agent)
FN2 (administrative)	PS1-PS19 (patron service)
FN3 (management)	ROTC (ROTC cadet)
AS1-AS19 (administrative service)	SES1-SES6 (senior executive)
CDT (academy cadet)	UA1-UA9 (universal/annual)
E1-E9 (enlisted)	UNK (unknown)
GM13-GM15 (general manager)	W1-W4 (warrant officer)
GS1-GS15 (general schedule)	WB1-WB19 (wage board)
NA1-NA15 (trades and crafts)	WG1-WG19 (wage grade)
NL1-NL15 (trades and crafts work leader)	WL1-WL19 (wage leader)
NS1-NS15 (trades and crafts supervisor)	WS1-WS19 (wage supervisor)
O1-O10 (officer)	Non-DoD (civilian)
CC1-CC5 (trades and crafts child development)	
<b>COMPONENT</b>	
AFFN (foreign civilian employee)	NAF (non-appropriated fund civilian)
CIV (non-Air Force civilian)	OTHER
DAFC (DAF civilian employee)	USAF (military)
DoD (non-Air Force military)	YOP (youth opportunity program & student assistance program employees)
FMIL (foreign military assigned to AF)	
<b>SUBSTANCE TYPE</b>	
Alcohol	None
Drugs, OTC (over-the-counter)	Other
Drugs, Other	Unknown
Drugs, Rx (prescription)	
<b>INJURY CLASS</b>	
FT (Fatal)	OT (Other)
LT (Lost Time)	PP (Perm partial)
LW (Lost Workday(s))	PT (Perm total)
NL (No Lost Time)	TR (Treated and Released)
NO (None)	

<b>BODY PARTS INJURED</b>		
Abdomen	Face	Mouth/Teeth
Ankle	Finger	Neck
Arm, lower	Foot	Ribs
Arm, upper	Hand	Shoulder
Back	Head	Throat, lungs
Body, all	Hip	Thumb
Chest	Knee	Toe
Elbow	Leg, lower	Wrist
Eye	Leg, upper	Other

<b>TYPE INJURY</b>		
Abrasion	Dislocation	Laceration
Amputation	Drown/Suffocate	Poisoning/ Toxic Exposure
Bruise	Electric Shock	Puncture
Burn	Electrocution	Rupture
Collapsed Lung	Fracture	Sprain
Concussion	Gunshot	Strain
Contusion	Internal Injury	Unknown
Crush		Other

**Table A6.2. Message Values for Space Mishaps.**

<b>CATEGORY: SPACE</b>					
<b>SUBCATEGORY</b>			<b>CROSS CATEGORY</b>		
Pre-Launch			Aviation	Directed Energy	
Launch			Guided Missiles	Motor Vehicle	
Orbit			Explosives and Chemical Agents	Ground and Industrial, space	
<b>SPACE - VEHICLE/OBJECT</b>					
<b>PROPERTY COMPONENT</b>	<b>MAJOR SYSTEM THAT FAILED</b>		<b>PROPERTY DESCRIPTION</b>	<b>OBJECT/VEHICLE ACTIVITY AT TIME OF MISHAP</b>	
Launch Vehicle	Propulsion Guidance Control	Flight Termination Payload	Use Air Force publications property description nomenclature when appropriate	Pre-launch	De-orbit/recovery
Spacecraft	Attitude Control Thermal Control Electrical Power Payload	Telemetry, Tracking & Control (TT&C) Structures		Launch	Test
Support Equip	Insert an entry as needed. No look-up table is available or required			Insertion	Other
Command & Control	Insert an entry as needed. No look-up table is available or required			Orbit	
Other					

SPACE - PERSONNEL				
ROLE	PERSONNEL ACTIVITY AT TIME OF MISHAP		FUNCTIONAL AREA	SAFETY EQUIPMENT
Operator	Assembling	Other	Assembly/Checkout	Insert an entry as needed. No look-up table is available or required
Other	Testing	Storing	Factory	
Range Safety Officer	De-orbiting	Surveilling	Launch Site	
Msn Flt Control Ofc	Launch	Transporting	Other	
Spectator	Orbiting		Range Impact	
Team Chief			Recovery Site	
Team Member			Storage	

**Table A6.2. (AFSPC) Message Values for Space Mishaps.**

**CATEGORY: SPACE**

SUBCATEGORY	CROSS CATEGORY
Pre-Launch	Aviation Directed Energy
Launch	Guided Missiles Motor Vehicle
Orbit	Explosives and Chemical Agents Ground and Industrial space
De-orbit and Recovery	Ground Based Space Systems Space Systems

**Attachment 7****IC 2005-1 TO AFMAN 91-222,  
SPACE SAFETY INVESTIGATIONS AND REPORTS, 6 JUL 2004**

9 August 2005

This interim change corrects administrative errors and omissions and clarifies select areas of the original document. All items in this change will be incorporated in the next revision of this document. This change consolidates Air Force pre-launch mishap investigation guidance and implements Air Force Policy Directive 91-2, *Safety Programs*. Major Commands (MAJCOM) may supplement this standard when additional or more stringent safety criteria are required. Lower-level organizations, installation and above, may also supplement this standard. MAJCOMs will approve these supplements. Report conflicts in guidance between this standard, federal standards, or other Air Force directive in writing through MAJCOM space safety offices to Headquarters Air Force Safety Center, Space Safety Division, Space Safety Branch (HQ AFSC/SESS), 9700 G Avenue SE, Suite 120B, Kirtland AFB NM 87117-5670. Ensure that all records created by this AFMAN are maintained and disposed of IAW AFMAN 37-139, "*Records Disposition Schedule*." Requirements in this publication are mandatory, unless indicated otherwise, and apply to all US Air Force organizations, US Air Force Reserve Command (AFRC) units and all Air National Guard (ANG) personnel, with the exception of state employees.

No AFMAN, T.O., or Operating Instruction can possibly address every hazard or potential hazard that may arise from a specific task or combination of tasks. Where situations exist that are not covered by existing directives, use an Operational Risk Management (ORM) process to assess risk associated with those situations and determine adequate safeguards or procedures to manage the risk. Refer to AFPAM 90-902, *Operational Risk Management (ORM) Guidelines and Tools*, for guidance on using the ORM process. **NOTE:** The ORM process may not be used to violate directives or other regulatory guidance. Normal waiver or variance procedures must be followed in all cases (refer to AFI 91-301).

***SUMMARY OF REVISIONS***

This INTERIM CHANGE (IC 2005-1) documents, correct administrative errors, and clarifies references to standards and other portions of this document. Guidance in this change takes precedence over the basic document. Paragraphs listed below replace similarly numbered paragraphs in the basic document, unless otherwise noted. This IC also updates the address list in **Table A3.2.** of AFMAN 91-222 to more accurately reflect the appropriate space organizations and remove addresses not related to space operations for mishap reporting and prevention purposes. In addition, it clarifies the definition of primary and secondary mission. Finally, it identifies the class of mishap for tertiary missions since new technology allows numerous missions to be located on one satellite.

**POSTING INSTRUCTIONS:** Include a copy of this change with any printed copy of AFMAN 91-222. Ensure review of this change prior to referencing any portion of AFMAN 91-222.

1.4.2. Additionally, for orbital mishaps prior to the end of the design life, use the mishap's effect on primary or secondary mission capability (MC) to classify the mishap as Class A or B. Primary does not necessarily mean just one mission. Satellites could have more than one primary mission as defined by an Operational Requirements Document (ORD). Secondary missions also could include more than one mission as defined by the ORD.

1.4.2.4. In general, a part or system failure that does not affect primary, secondary, or tertiary MC is not a mishap per AFI 91-204.

1.4.2.5. Tertiary mission failures include all missions not listed in the ORD as either primary or secondary mission categories. Any permanent failure/degradation of a tertiary mission is classified as a Class C mishap.

1.4.3.2. An unplanned temporary loss or degradation of primary, secondary, or tertiary MC of an on-orbit asset for greater than 48 hours (see AFI 10-206, Operational Reporting, Rule 1R).

1.5.2. Contacting the single manager (SM) is generally the most useful place to start for space mishaps. Cost models available from the SAF/FMC web site, <http://www.saffm.hq.af.mil> (AFCaa Tab, Cost Tools button) may be useful.

**5.10. Investigating Space Mishaps.** While the Air Force is always responsible for determining the cause of Air Force mishaps, in certain situations the Air Force may accept the results of a non-Air Force investigation to satisfy Air Force mishap prevention requirements IAW AFI 91-204, Chapter 4. The NTSB, the FAA or the space system owner will usually investigate commercial space mishaps. When possible, the Air Force should make use of these investigations and limit duplicative investigations. However, the Air Force always retains the right to conduct a separate Air Force investigation.

5.10.7. The Air Force will maintain a lessons learned database for the space community for pre-launch space system mishaps.

5.10.8. The Air Force will crossflow sanitized lessons learned information to the participating space community.

5.10.9. All space launch contracts shall stipulate that properly designated and trained government officials may lead an investigation or participate in a contractor-led investigation of a pre-launch mishap if Air Force officials determine the need to do so. The need to conduct an investigation is based in part on

future mishap prevention and the impact on current and future Eastern and Western range space launch requirements. As prescribed in AFFARS 5223.9001, the contracting officer shall insert the clause at 5352.223-9001, Health and Safety on Government Installations, in solicitations and contracts for space launch contracts which require performance on a Government installation, other than installations under the contractor's sole control. For operations at contractor locations and prior to launch, the Program Manager, in conjunction with contracting personnel, will ensure safety mishap investigation requirements are included in these contracts and stipulate that properly designated and trained officials may investigate or participate in a contractor-led investigation of a pre-launch mishap. The safety requirements may be reflected in a Safety Plan, Appendix C, etc., as appropriate in the contract.

**Table A3.2. Addressees for Space Mishap Message Reporting.**

	<b>A</b>	<b>B</b>	<b>C</b>
	<b>Organization (see notes 1, 2, and 3)</b>	<b>Office Sym</b>	<b>For</b>
1	HQ USAF KIRTLAND AFB NM	SE	All space mishaps
2	HQ USAF WASHINGTON DC	SEI	All space mishaps
3	HQ AFSC KIRTLAND AFB NM	SES	All space mishaps
4	HQ AETC RANDOLPH AFB TX	SE	All space mishaps
5	SMC LOS ANGELES AFB CA	SE	Send to applicable System Program Office (SPO) or Single Manager
6	HQ AFSPC PETERSON AFB CO	XO	Send as "info copy"
7	HQ AFMC WRIGHT PATTERSON AFB OH	SE	Send as "info copy"
8	14 AF VANDNEBERG AFB CA	CC	All space mishaps
9	HQ AFSPC PETERSON AFB CO	SE	All space mishaps
10	50 SPACE WING SCHRIEVER AFB CO	SE	All space mishaps
11	30 SPACE WING VANDENBERG AFB CA	SE	All space mishaps
12	45 SPACE WING PATRICK AFB FL	SE	All space mishaps
13	21 SPACE WING PETERSON AFB CO	SE	All space mishaps
14	460 SPACE WING BUCKLEY AFB CO	SE	All space mishaps
15	Home base of operator (if other than the Organization submitting the report)	SE	All space mishaps
16	Military base of departure	SE	All space mishaps
17	AFRL KIRTLAND AFB NM	DS/VS	All space mishaps
18	HQ AFMC WRIGHT-PATTERSON AFB OH	DR	All mishaps involving material deficiencies, Tech Order changes, or Air Force Policy changes
19	AFWA SCOTT AFB IL	SE/XOO	Mishaps involving weather events or services
20	OO-ALC HILL AFB UT	SEW/LME	All mishaps involving systems or components common to both space and ballistic missile systems
21	HQ AFOTED KIRTLAND AFB NM	SE	Class A space and all OT&E mishaps
22	COMNAVSAFECEN NORFOLK NAS VA		Mishaps involving US Navy personnel or Facilities and mishap involving systems common to USAF and USN
23	COMNAVAIRSYSCOM		Mishaps involving systems common to USAF and USN

	A	B	C
	Organization (see notes 1, 2, and 3)	Office Sym	For
24	CDRUSASC FT RUCKER AL	CSSC-SE	Mishaps involving US Army personnel or facilities and mishaps involving systems common to USAF and USA
25	COMDT COGARD WASHINGTON DC		Mishaps involving US Coast Guard personnel or facilities and mishaps involving systems common to USAF and USCG
26	SECDEF WASHINGTON DC	USD (A&T) (ES) SH	Preliminary report for mishaps involving fatality, in-patient hospitalization of three or more persons, or property damage of \$1,000,000 or more
27	SAF WASHINGTON DC	IEE	Preliminary and final report for Class A and B mishaps
28	AFIP WASHINGTON DC	OAFME	Preliminary and final report for Class A and B mishaps involving injury or death
29	HQ AFCESA TYNDALL	CEXF	Preliminary and final report for mishaps involving fire suppressin or crash and rescue operations
30	DET 63 ASC INDIAN HEAD MD	CC	Mishaps involving EOD operations or activities
31	DEPT OF DEFENSE EXPLOSIVES SAFETY BOARD ALEXANDRIA VA	KT/IK	Class A, B, and C space launch vehicle mishaps
32	USSTRATCOM OFFUTT AFB NE	J416	Mishaps resulting in degraded mission capabilities
33	WR-ALC DET KELLY FLD TX	SE	Mishaps involving fuels or related products

**NOTES:**

1. Include System Program Director (SPD) or equivalent as an addressee.
2. Include MAJCOMS that are common users of the mishap materiel (space systems, equipment, launch vehicles, ordnance devices, explosives, etc.) as message addressees when exchange of information would enhance mishap prevention efforts.
3. Safety offices are responsible for revalidating addressee lists prior to each message transmission. Do not send privileged messages to addressees at line 28 at any time.
4. For commercial space mishaps, notify the FAA Combined Operations Center, (202) 267-3333. (FAA/AST, 400 7th Street, SW, Room 5402A, Washington DC 20590).