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SECRETARY OF THE AIR FORCE**

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SAFETY

**WEAPONS SAFETY INVESTIGATIONS AND
REPORTS**

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This Manual provides weapons unique guidance to support AFI 91-204, Safety Investigation and Reports. It directs procedures specific to investigating and reporting USAF weapons mishaps and events. It implements Air Force Policy Directive (AFPD) 91-2, Safety Programs. This publication is consistent with AFPD 13-5, *Nuclear Enterprise*. It applies to commanders, managers, supervisors, and safety staffs at all levels, all persons who investigate and report Air Force mishaps, and those persons who handle such reports. This publication applies to the Air National Guard (ANG) and to Air Force Reserve (AFR) units. Send major command (MAJCOM) supplements to AF/SE, HQAFSCSEW@Kirtland.af.mil 9700 G Avenue SE, Kirtland AFB NM 87117-5670, for coordination before publication. Refer recommended changes and questions about this publication to the Office Of Primary Responsibility (OPR) using the AF Form 847, Recommendation for Change of Publication: route AF Form 847 from the field through the appropriate functional's chain of command. This instruction requires collecting and maintaining information protected by the Privacy Act of 1974 authorized by title 10, U.S.C., Section 8013. System of Record notice FO33 AF B, Privacy Act Request File, applies. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, Management of Records, Maintain records created as a result of prescribed processes IAW AFMAN 33-363, Management of Records, and disposed of in accordance with Air Force Information Management System (AFRIMS) Records Disposition Schedule (RDS) located at <https://www.my.af.mil/gcss-af61a/afirms/afirms/>.

SUMMARY OF CHANGES

This Interim Change (IC) adds new verbiage in chapter 1 to align reporting procedures with that of Class A mishap reporting procedures. Additionally, the IC adds a paragraph to address limited-life components and eliminate confusion between contamination reporting requirements of Bent Spear and Broken Arrow events. Finally, this IC adds new definitions to make this publication consistent with DoE definitions.

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Chapter 1

GENERAL INFORMATION

1.1. General. This Manual, in conjunction with AFI 91-204, provides guidance for investigating and reporting nuclear, guided missile, explosives and chemical agents, and directed energy mishaps. The sole purpose of these safety investigations is to prevent future mishaps. 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.

1.1.1. Nuclear Accidents and incidents

1.1.1.1. Nuclear accidents and incidents will be reported using flagwords only (BROKEN ARROW, BENT SPEAR). There is no associated mishap class (i.e. A, B, C, D) with a BROKEN ARROW or BENT SPEAR mishap report.

1.1.1.2. When investigating BENT SPEAR or BROKEN ARROW events follow Class A mishap procedures for board composition, mishap reporting timelines and investigation procedures in accordance with this manual and AFI 91-204.

1.1.2. Guided missiles, explosives and chemical agents, and directed energy mishaps will be reported and classified IAW AFI 91-204 Class A, B, C, D, and E criteria.

1.2. Mishap Category. Reference [Figure 1.1](#) to determine if the mishap should be reported IAW this Manual.

1.3. Mishap Severity Classification. Once it is determined that a non-nuclear mishap is reportable, classify mishap by total direct mishap cost and the severity of injury/occupational illness. For nuclear mishaps follow guidance in paragraph 1.4.

1.3.1. When determining the mishap severity classification for nuclear mishaps, be sure to reference the appropriate security classification guide and mark the report appropriately.

1.4. Flagwords. Flagwords are used to identify nuclear accidents (BROKEN ARROW), incidents (BENT SPEAR), and deficiencies (DULL SWORD). Flagword definitions may be subjective and it is up to the investigator to determine the best flagword to describe the mishap. If the event status changes after submitting an original report, submit another report using the new flagword. Upgrade the flagword only when time-critical responses are required. Do NOT downgrade the flagword of nuclear mishap reports without the concurrence of AFSC/SEW. Additional Flagwords are contained in AFI 10-206, *Operational Reporting*, cross-reference with this guidance to ensure you are reporting the correct Flagword.

1.4.1. NUCFLASH: Includes accidental, unauthorized, or unexplained events that could create the risk of war, meeting any of the following criteria:

1.4.1.1. Accidental, unauthorized, or unexplained actual or possible nuclear detonation by US forces or US-supported allied forces.

1.4.1.2. Accidental or unauthorized launch of a nuclear-armed or nuclear-capable missile by US forces or US-supported allied forces.

1.4.1.3. 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.

1.4.2. **BROKEN ARROW:** Accidental, unauthorized, or unexplained events that could not create the risk of war and the following:

1.4.2.1. Accidental or unauthorized launching, firing, or use by U.S. forces or U.S. supported allied forces of a nuclear capable weapons system.

1.4.2.2. An accidental, unauthorized, or unexplained nuclear detonation.

1.4.2.3. Non-nuclear detonation (no nuclear yield) or burning of a nuclear weapon or nuclear component.

1.4.2.4. Radioactive contamination (except as noted in paragraph 1.4.4.1).

1.4.2.5. Public hazard, actual or perceived.

1.4.2.6. Jettisoning of a nuclear weapon or nuclear component.

1.4.3. **EMPTY QUIVER:** Nuclear weapon is lost, stolen, seized, or destroyed. Loss includes, but is not limited to, intentional nuclear weapon jettisoning according to approved Air Force procedures, or inadvertent release of a nuclear component.

1.4.4. **BENT SPEAR:** Includes mishaps not in the accident category but meeting any of the following criteria:

1.4.4.1. Radioactive contamination from burning, theft, seizure, inadvertent release of content, or destruction of a radioactive limited-life component (Neutron Generator (NG), Gas Reservoir(s), etc) or Radioisotope Thermal Generators (RTG).

1.4.4.2. Inadvertent initiation of a limited-life component (except parachutes) or evident damage to a nuclear weapon or nuclear component that requires major rework, replacement, or examination or re-certification by the DOE.

1.4.4.3. Events requiring immediate action in the interest of nuclear surety (such as render safety procedures or failed positive measures) or which could result in adverse national or international public reaction or premature release of information (such as attempted theft or seizure of a nuclear weapon). **NOTE:** Includes damage to a nuclear weapon carrier that could lead to loss of, or damage to, nuclear components.

1.4.4.4. An event indicating a nuclear weapon or nuclear warhead has been armed without proper authorization.

1.4.4.5. Abnormal readings encountered during Non-Nuclear Verification procedures of Joint Test Assemblies.

1.4.4.6. Events which could lead to a nuclear weapon system accident and thus warrant the informational interest of, or action by, any of the following agencies:

1.4.4.6.1. Appropriate Military Service.

1.4.4.6.2. Office of the Assistant to the Secretary of Defense (Nuclear and Chemical and Biological Defense Programs).

1.4.4.6.3. Office of the Assistant Secretary of Defense (Strategy and Threat Reduction).

1.4.4.6.4. Office of the Assistant Secretary of Defense (Public Affairs).

1.4.4.6.5. Federal Emergency Management Agency (within the CONUS).

1.4.5. DULL SWORD: Used to identify deficiencies through crosstell communication and/or trend analysis to enhance nuclear surety by identifying the potential for a nuclear mishap. A Dull Sword report may be associated with any class mishap. AFSEC/SEW will provide semiannual informational summary of deficiencies & any trends identified to Project Officers Group (POG). Surety deficiencies not included in the accident or incident categories, but meeting any of the criteria listed below shall be reported by all Air Force organizations owning/using nuclear certified equipment through the Air Force Safety Automated System (AFSAS) website located at <https://afsas.kirtland.af.mil> or through classified route in accordance with Table 6.2. Recognizable failure modes where specific diagnostic and corrective actions are outlined in current technical data need not be reported as a DULL SWORD unless deemed necessary by the Weapons Safety Manager (WSM). Reports will be closed by originator.

1.4.5.1. General Identification Criteria:

1.4.5.1.1. EXTERNAL

1.4.5.1.1.1. Damage from electrical or electromagnetic energy (e.g., lightning, over voltage and power fluctuations). This includes malfunction, failure or any anomaly that directly results in damage or has the potential to damage the nuclear weapon system or component. Report actual or suspected exposure of a nuclear weapon or component to sources of electrical or electromagnetic energy.

1.4.5.1.1.2. Exposure of a nuclear weapon, nuclear component, or nuclear weapon system to an abnormal environment (e.g., flood, earthquake, etc.) whereby there is a possibility of damage to the nuclear weapon. Report the incident if there is any doubt as to the condition or serviceability of the nuclear weapon, component, or system.

1.4.5.1.2. OPERATIONAL

1.4.5.1.2.1. Malfunction, failure, or anomaly involving the command and control system which results in indications (suspected, false, or actual) of critical function (release, launch, or arming) activation.

1.4.5.1.2.2. Malfunction, failure, or anomaly during operations or testing, potentially resulting in a safety or coded device to arm or be left in an unsafe condition (e.g., Safety Control Switch, Safe and Arm devices).

1.4.5.1.2.3. Malfunction, failure, or anomaly that results in suspected or unconfirmed tritium release.

1.4.5.1.2.4. Minor damage to a nuclear weapon or nuclear component resulting from errors committed during the assembly, testing, loading, or transporting of the nuclear weapon while in Air Force custody (includes electrical components, mechanically activated components, explosives, or radioactive materials).

NOTE: Materiel deficiencies/failures (e.g., dents, scratches, scuffs, chips, rips, tears, cuts, splits, etc.) which are not safety related will be reported as applicable with T.O.s 00-35D-54, USAF Materiel Deficiency Reporting and Investigating System, 36-1-42, Technical Manual – Policies Governing Warranty Procedures for Air Force Vehicles, or 11N-5-1, Unsatisfactory Reports.

1.4.5.1.2.5. Use of uncertified equipment/hardware or software on a nuclear weapon or weapon system that requires nuclear certification.

1.4.5.1.3. WEAPON SYSTEM SAFETY RULES

1.4.5.1.3.1. Violations involving nuclear weapon system safety rules (published in AFI 91-100 series).

1.4.5.1.4. PERSONNEL

1.4.5.1.4.1. Nuclear surety violations, where there is the opportunity to tamper with or damage the nuclear weapon, component or system.

1.4.5.1.4.2. Nuclear weapon system technical order procedure inadequacies that the unit perceives could lead to a violation of nuclear weapon system safety rules.

NOTE: In addition, report procedural deficiencies according to T.O. 00-5-1, Air Force Technical Order System, using AFTO Form 22 and/or 11N-5-1, Unsatisfactory Reports.

1.4.5.1.5. SECURITY

1.4.5.1.5.1. Malfunctions or failures (catastrophic) to an intrusion detection system monitoring equipment, software and/or any malfunctions or failure trends of the intrusion detection system occurring at a nuclear weapon operational, maintenance, or storage facility. **NOTE:** This does not include false or nuisance alarms.

1.4.5.1.6. SINGLE MANAGER

1.4.5.1.6.1. The single manager will report an event or trend with an item that could have an adverse effect on nuclear surety or certification of nuclear weapon systems. This applies to items listed in the following:

1.4.5.1.6.1.1. Master Nuclear Certification List (MNCL) located on the AFNWC website at <https://wwwmil.nwc.kirtland.af.mil>.

1.4.5.1.6.1.2. T.O. 21M-LGM30F-12-1, Minuteman Nuclear Surety Procedures.

1.4.5.1.6.1.3. Known damage, malfunction, failure, or anomaly to items listed in the MNCL or T. O. 21M-LGM30F-12-1, Minuteman Nuclear Surety Procedures, that could have an adverse effect on nuclear surety of a nuclear weapon system.

1.4.5.1.7. OTHER

1.4.5.1.7.1. Abnormal or unknown status of any nuclear weapon according to applicable technical publication guidance.

1.4.5.1.7.2. Loss, theft, seizure, or destruction of a training weapon.

1.4.5.1.7.3. When directed by MAJCOM or AFSC, and any problem or situation, in the commander's judgment, that affects nuclear safety.

1.4.5.2. Specific Criteria:

1.4.5.2.1. Ground-Launched Missile Systems:

1.4.5.2.1.1. Loss or compromise (actual or suspected) of certified critical components listed in T.O. 21M-LGM30F-12-1, Minuteman Nuclear Surety Procedures. The DULL SWORD should indicate whether loss or compromise has occurred and follow-on actions required to recertify compromised critical components or to conduct a code change for a compromised code. **NOTES:** (1) Does not include momentary loss of Two-Person Concept control, if the duration does not permit tampering with a certified critical component or removal of codes without detection. (2) AFSC/SEW makes the final determination, if appropriate action was taken, therefore if recertification procedures are not provided in appropriate technical orders, or doubt exists regarding what action to take, request guidance from AFSC/SEW before submitting a DULL SWORD report.

1.4.5.2.2. Aircraft and Air-Launched Missile Systems:

1.4.5.2.2.1. Inadvertent release, launch, or jettison of a training weapon or non-nuclear store from any nuclear-capable station of a nuclear certified aircraft.

1.4.5.2.2.2. Damage, malfunction, failure, or anomaly involving the cargo restraint system, winching system, or procedures that affects the positioning or securing of cargo on non-combat delivery vehicles (C-17 cargo aircraft).

1.4.5.2.2.3. Damage, malfunction, failure, or anomaly involving the missile's arming and control or propulsion system when mated with a nuclear warhead.

1.4.5.2.2.4. Damage, malfunction, failure, or anomaly involving a nuclear combat delivery vehicle's Aircraft Monitor and Control (AMAC), or equipment installed in aircraft to permit nuclear weapon monitoring and control of the following critical functions: (1) safing, (2) pre-arming, (3) arming, and (4) fuzing functions of nuclear weapons or nuclear weapon systems that could have an adverse affect to the nuclear certification of the aircraft.

1.4.5.2.3. Nuclear Certified Support Equipment. Specific areas of concern include:

1.4.5.2.3.1. Stability, steering or brake system problems that affect the safe steering, stopping, towing, or holding in park of a tow or transport vehicle (cargo, loading, or lifting). **NOTE:** Does not include minor problems such as dents, flat tires, corrosion, or electrical accessory malfunctions.

1.4.5.2.3.2. Defects or failures in vehicle structural members (including the pintle hooks and mounting structure, fifth wheels) that support the load or transmit the towing or braking force.

1.4.5.2.3.3. Inadequate restraint of loads attributed to trailer tiedown points or tiedown patterns.

1.4.5.2.3.4. Unsafe condition or improper operation of the hydraulic, mechanical, and structural components of lift vehicles (e.g., forklifts and K-loaders) resulting

in unresponsive operation, uncontrolled raising or lowering, or improper cargo restraint.

1.4.5.2.3.5. Unsafe condition or improper operation of installed equipment lifting devices (e.g., overhead hoists, cranes, monorail hoist systems, and storage vaults) resulting in situations such as limit switch failure, over-speed operation, or uncontrolled raising or lowering operations.

1.4.5.2.3.6. Exceeding the rated load-capacity of any nuclear certified equipment/vehicle listed in the MNCL.

1.4.5.2.4. Nuclear Certified Test Equipment:

1.4.5.2.4.1. Damage, malfunction, failure, or anomaly involving test equipment listed in the MNCL.

1.4.5.2.4.2. All damage, malfunction, failure, or anomaly involving test equipment discovered when verifying proper operation of critical function circuits or when directly interfaced with nuclear or operationally certified critical components.

1.4.6. PINNACLE FADED GIANT. A nuclear reactor system or radiological accident, as defined by the following criteria: (The Flagword PINNACLE may be added at any level of command to expedite forwarding of this message to the NMCC).

1.4.6.1. Nuclear criticality or event resulting in significant damage to the reactor core, or a significant release of fission products from the reactor core.

1.4.6.2. Release of radioactive material such that, had an individual been present for 24 hours, the individual could have received an intake of 25 roentgen equivalent man (rems) (five times the federal annual occupational limit of 5 rems).

1.4.6.3. Exposure of an individual's whole body to 25 rems or more of radiation, exposure of the eye to 75 rems or more of radiation; or exposure of any extremity to 250 rems or more of radiation.

1.4.6.4. Immediate public hazard or widespread coverage in news media.

1.4.7. BEELINE FADED GIANT: A nuclear reactor system or radiological incident, as defined by the following criteria: (Used to report any event or incident that requires Air Force-level interest, but not requiring OPREP-3 PINNACLE reports).

1.4.7.1. Events or acts caused by humans or nature (e.g., fire, explosion, projectile impact, sabotage, earthquake, flood, tornado, hurricane, or riot), damaging a nuclear reactor system.

1.4.7.2. Exposure of an individual's whole body to 5 rems or more of radiation, exposure of the eye to 15 rems or more of radiation; or exposure of any extremity to 50 rems or more of radiation.

1.4.7.3. Release of radioactive material so that, had an individual been present for 24 hours, the individual could have received an intake in excess of 5 rems.

1.4.7.4. Possible public hazard, actual or perceived, or coverage in news media.

1.4.8. MISSING PENNY: A deviation from prescribed safety and security standards for a nuclear reactor system or radiological activity (i.e., a nuclear reactor system or radiological safety deficiency), as defined by the following criteria:

1.4.8.1. Release of radioactive material posing a threat to life, health, or property.

1.4.8.2. Uncontrolled release of radioactivity to radiologically unrestricted areas above the allowable limits specified in AFI 40-201, *Managing Radioactive Materials in the Air Force*.

1.4.8.3. Exposure of any individual exceeding one occupational dose limit.

1.4.8.4. Violation of nuclear reactor safety limits (as identified in technical specifications) not resulting in an accident or incident.

1.4.8.5. Abnormal degradation in reactor fuel, fuel cladding, coolant boundary, or containment boundary resulting in a measurable release of radioactive material.

1.4.8.6. Operation of nuclear reactor with any safety system setting less conservative than specified in the technical specifications. This includes the limiting safety system settings (LSSS) and the reactor protective system (RPS) settings.

1.4.8.7. Automatic or manual scram as a result of exceeding the LSSS or RPS settings, or the actuation of an engineered safety feature relating to the safety of the public, operating personnel, or facility.

1.4.8.8. Nuclear reactor operation in violation of any limiting condition for operation (as specified in the technical specifications).

1.4.8.9. Malfunction of a reactor, experiment, or experimental facility safety system component that could or does render a required safety system (as identified in the technical specifications) incapable of performing its intended safety function. Do not report a malfunction discovered during normal surveillance tests or checks.

1.4.8.10. Unanticipated or uncontrolled change in reactivity greater than \$1.00 (one dollar).

1.4.8.11. Condition which could or did result in operating the reactor or maintaining the decommissioned or entombed reactor in a manner less safe than conditions analyzed in the facility safety analysis report or other guidelines and restrictions.

1.4.8.12. Inadequate implementation of administrative or procedural controls which could create a credible possibility of an unsafe condition with regard to reactor operations or maintaining the integrity of the decommissioned or entombed reactor facility.

1.4.8.13. Event or condition (internal or external) posing a threat to the safety of the nuclear reactor (operational or decommissioned), or significantly hampering the ability of facility personnel to perform duties required for the safe operation of the reactor.

1.5. Mishap Costs. Use the guidance in AFI 91-204 with the following additions to determine mishap costs for mishap classification.

1.5.1. Dropped Weapons. For weapons or their components dropped a distance that exceeds the drop criteria in the specific item technical order, estimate the mishap cost at 15 percent of the item replacement cost in the current stock catalog for initial mishap class determination.

Upgrade or downgrade the mishap class, and report all changes when actual cost is determined. Upgrade or downgrade after completion of final evaluation.

1.5.2. Prelaunch Damage. Compute all ground-launch weapon prelaunch damage occurring without the weapon being launched, to include transportation and storage cost.

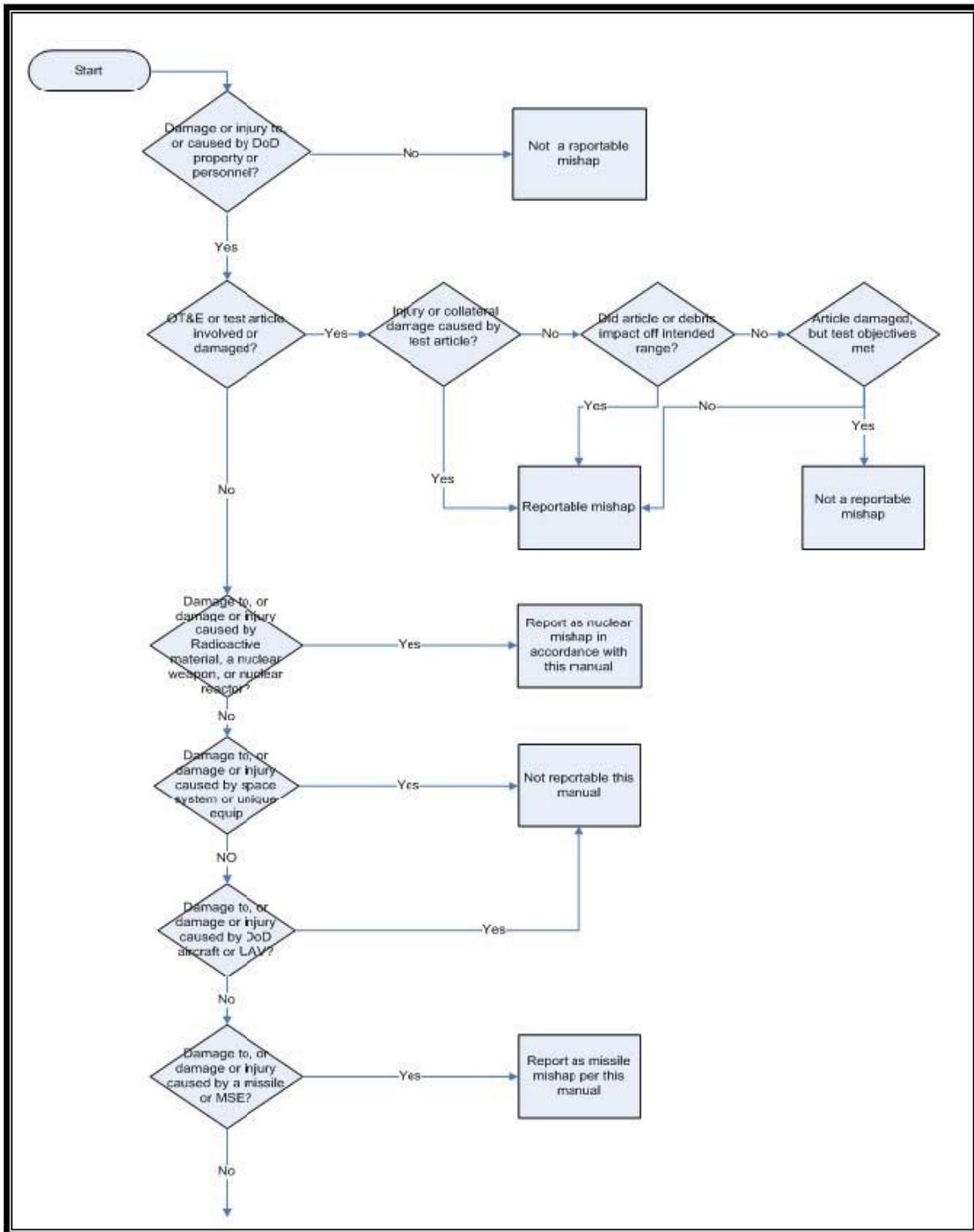
1.5.3. Unintentional Functioning. If the weapon or explosives functioned unintentionally (e.g., a bomb exploded), include the cost of the item (not including intentionally jettisoned items).

1.5.4. Intentional Functioning. If a weapon or explosive was intentionally functioned, do not include the cost of the item.

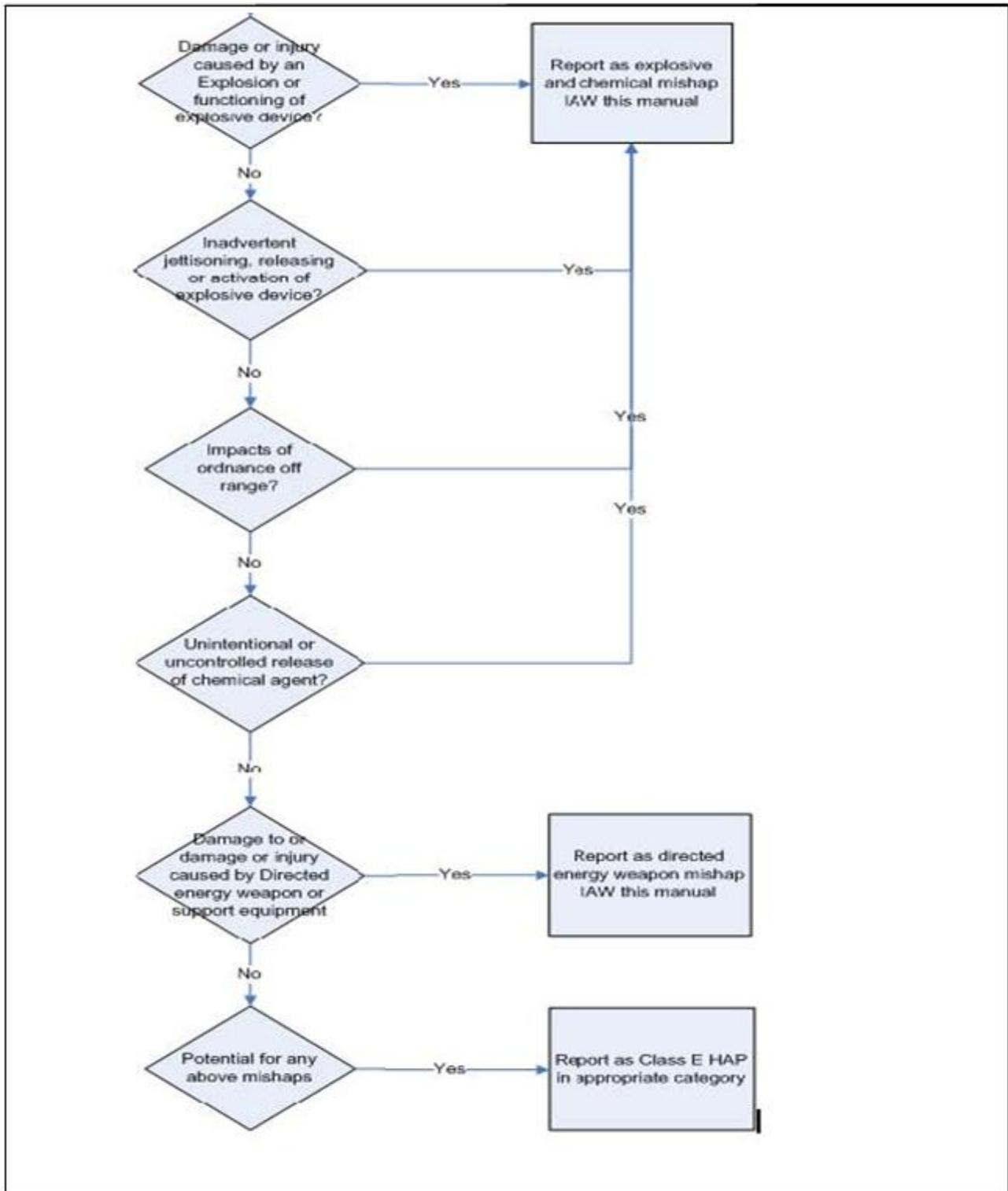
1.5.4.1. For test missions where recovery was expected, but not accomplished, include the cost of these items to determine classification, unless test objectives were met.

1.5.5. Parachute-recovered Weapons. Include the repair/replacement costs of all components where recovery was expected, but not accomplished, related to abnormal events or clearly excessive damage. Abnormal events include torn parachutes, late recovery initiation, failure of a parachute to blossom or release, high winds, etc. Excessive damage includes buckling of the main fuselage, fire at impact, destruction of the payload section, etc. The cost of expected damage to parachute-recovered weapons resulting solely from surface impact during an otherwise normal recovery sequence is an operational expense and not reportable. Do not include cost of recovery since recovery is normally a mission objective for recoverable weapons.

Figure 1.1. Reportable Mishap Flow Chart.



Reportable Mishap Flow Chart. (continued)



Chapter 2

INVESTIGATION AND REPORTING RESPONSIBILITIES

2.1. General Information. Follow guidance listed in AFI 91-204. There is no additional guidance specific to this Manual.

Chapter 3

PRIVILEGED SAFETY INFORMATION

3.1. General Information. Follow guidance listed in AFI 91-204. There is no additional guidance specific to this Manual.

Chapter 4

DETERMINING INVESTIGATIVE RESPONSIBILITY

4.1. General Information. Follow guidance listed in AFI 91-204. There is no additional guidance specific to this Manual.

Chapter 5

SAFETY INVESTIGATIONS

5.1. General Information. Conduct the safety investigation using a Safety Investigation Board (SIB) or a Single Investigation Officer (SIO). Follow guidance listed in AFI 91-204, with the following additions.

5.2. Safety Investigation Requirements.

5.2.1. Class A. Class A mishaps may be investigated by Safety Investigation Board (SIB) or Single Investigating Officer (SIO). SIB members will be selected from outside the mishap wing whenever possible.

5.2.1.1. Recorder - Officer or NCO familiar with office administrative procedures (required for Class A mishap investigations).

5.2.1.2. Required primary members:

5.2.1.2.1. SIB President or SIO Qualifications - Colonel (O-6) or above, and graduate of AFSC Board President Course.

5.2.1.2.2. AFSC Representative.

5.2.1.2.3. Investigating Officer with experience in weapon system and formally trained in mishap investigation techniques.

5.2.1.2.4. Technical expert on item involved.

5.2.1.2.5. Medical Officer – When investigation is of a fatality, otherwise optional as provided in paragraph 5.1.2.3.

5.2.1.3. Non-Required SIB Members (primary or non-primary) as determined by the convening authority:

5.2.1.3.1. Weapon Operations Officer qualified in the operational use of the weapon.

5.2.1.3.2. Weapon Materiel Officer - A qualified maintenance officer with munitions experience, EOD officer or NCO, or nuclear safety officer.

5.2.1.3.3. Weapons Safety Manager.

5.2.1.3.4. AFOTEC Representative.

5.2.1.3.5. Department of Energy (DOE) representative, if DOE-DoD agreements apply for the system involved.

5.2.1.3.6. Health physicist when radiation exposure is involved.

5.2.1.3.7. Bioenvironmental Engineer.

5.2.1.3.8. Munitions/Explosives Representative.

5.2.1.3.9. Security Forces Law Enforcement Officer/NCO.

5.2.1.3.10. Fire protection specialists (at least E-7 or GS-9).

5.2.1.3.11. Vehicle Maintenance Officer.

5.2.1.3.12. Representatives of the weapon system manager, test organizations, or program office representative, if these organizations decide to participate.

5.2.1.3.13. Weather Officer.

5.2.1.3.14. Human Factors Member. If the SIB suspects significant, complex human factors issues were present in the mishap, a human factors member should be assigned to the SIB as a primary member. Human Factors Members include, but are not limited to, aerospace physiologists, aviation psychologists, pilot physicians, human factors engineers or aerospace medicine specialists, flight surgeon, aerospace physiologists, aviation psychologists, pilot physicians or human factor engineers.

5.2.1.3.15. Cyberspace member, if there is a possibility that Cyberspace systems were involved in the mishap.

5.2.1.3.16. Representatives from other federal agencies, as advisors or consultants, if appropriate.

5.2.2. Class B. Class B mishaps may be investigated by SIO or SIB.

5.2.2.1. SIO Qualifications – Major (0-4), GS-12, or above (GS-11 for ARC); graduate of a AFSC safety investigation course; and not from same squadron/organization having the mishap.

5.2.2.2. SIB President Qualifications – Major (0-4), GS-12, or above (GS-11 for ARC), and not from same squadron/organization having the mishap.

5.2.2.3. Investigating Officer (IO) - Experience in weapon system and formally trained in mishap investigation techniques.

5.2.3. Other Classes. Class C, D, and E - Single IO Qualifications:

5.2.3.1. Safety NCOs/civilians/officers.

5.2.3.2. Not from the same squadron.

5.2.3.3. Experience in weapon system or formally trained in mishap investigation techniques is preferred.

5.3. Operational Test and Evaluation (OT&E) Mishaps. Mishaps involving weapon test articles undergoing Operational Test and Evaluation (OT&E) will be reported per this Manual. If test objectives were met, a mishap report is NOT required. Test mishaps may be investigated using a Safety Investigation Board (SIB), a Launch Analysis Group (LAG) or an Air-Launched Missile Analysis Group (ALMAG). ALMAG investigations will be handled IAW AFI 99-151, *Air-Launched Munitions Analysis Group*. However, the report class will be determined IAW AFI 91-204 classification guidance for the direct cost of the loss incurred.

5.3.1. The convening authority will determine if Operational Test and Evaluation mishaps may be reported via LAG or ALMAG based upon the following:

5.3.1.1. The weapon, reflected energy, or its debris does not impact outside the predicted impact limit parameters.

5.3.1.2. The mishap does not result in collateral (secondary and unintended) damage or injury.

5.3.1.3. The responsible agency fully investigates the mishap to determine causes and recommended corrective actions.

5.3.1.4. The convening authority does not have a reason to believe that there is a conflict of interest with the ALMAG or LAG conducting the investigation.

5.3.2. The ALMAG/LAG report may replace the formal safety investigation report; however, all safety message reporting (per **Table 6.1**) is required. Classify mishaps per AFI 91-204.

5.3.3. The ALMAG/LAG investigators may not offer promises of confidentiality. If confidentiality is required to determine the cause(s) of a mishap, a safety investigation board must be convened under AFI 91-204 and a safety investigation report issued.

5.4. Obtaining and Using Technical Assistance. If technical assistance is required to conduct the safety investigation, follow these procedures:

5.4.1. The SIB should request technical assistance through the convening authority. The convening authority then contacts AFSC/SEW who will answer directly to the SIB.

Chapter 6

REPORTS AND BRIEFINGS

6.1. General. In addition to the requirements of this chapter, nuclear accidents, incidents, and deficiencies will require the submission of a nuclear flagword report. Follow guidance listed in AFI 91-204, with the following additions.

6.1.1. Report submission schedule. Use **Table 6.1**

6.1.2. Addressing Safety Reports. Use **Table 6.2** and **Table 6.3**

6.1.3. When weapons are common to other services such as in **Table 6.5**, include other service safety agencies.

6.1.4. Route formal safety reports according to **Table 6.6**

6.1.4.1. Use AF Form 711A USAF Safety Report Checklist and Index located at the AFSC Website under pubs/forms (http://afsafety.af.mil/forms_pubs.shtml).

6.1.5. Use the proper security markings prescribed by AFI 31-401, *Information Security Program Management*, for classified messages.

6.1.6. Use the following examples for writing subject line of weapons reports, or if AFSAS cannot be accessed:

6.1.6.1. Deleted

6.1.6.2. CLASS B, GUIDED MISSILE, 19980307ZQKL003B

6.1.6.3. CLASS C, EXPLOSIVES AND CHEMICAL AGENTS, EXPLOSIVE, 19991225ZQKL123C.

6.1.6.4. CLASS D, EXPLOSIVES AND CHEMICAL AGENTS, EXPLOSIVE, 19981122ZQKL005D.

6.1.6.5. CLASS E, NUCLEAR, NUCLEAR WEAPON, 19990927FTFA005E.

6.1.7. Determining Mishap Event Number (MEN). 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. Assign local reporting number, and the following space specific guidance.

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

6.1.7.2. Installation Code [four digits].

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

6.1.7.3. Unit Control Number [four digits](Optional). 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.

6.2. Multiple Categories. When reporting multiple categories, refer to appropriate manuals that implement AFI 91-204 to provide all required information, and include necessary addressees in the reports.

6.2.1. The objectives for reporting nuclear, guided missile, explosives and chemical agents, and directed energy safety deficiencies are to prevent accidents and incidents, minimize their effects if they should occur, and reduce the occurrence of safety deficiencies. The requirement for reporting nuclear weapon system safety deficiencies supports the objectives of AFI 91-101, *Air Force Nuclear Weapons Surety Program*. The requirements for reporting nuclear reactor system and radiological safety deficiencies support the objectives of AFI 40-201, *Managing Radioactive Materials in the Air Force*.

6.2.2. While the results of safety investigations play a direct role in the mishap prevention process, the indiscriminate use of statistical comparisons between units can jeopardize accurate reporting and are inappropriate due to the rare nature of mishaps. Do NOT make statistical comparisons of different commands or units using mishap reports as a source.

6.2.3. Because the criteria for the submission of safety deficiency reports are so broad, comparing nuclear safety statistics between commands and operating units may NOT provide accurate trend information for managerial analysis. Use safety deficiency reports only to identify potential problems and corrective measures. Do NOT publish statistical comparisons of different commands or units using safety deficiency reports as a source.

6.3. Preparing reports for weapons mishaps.

6.3.1. Class A and B mishaps require both message/AFSAS and formal reports. Report other class mishaps by message/AFSAS.

6.3.2. MAJCOMs may supplement their addressees to include, any internal organizations with a need-to-know. They may use AIGs (Addressee Indicator Group) to add addressees, within the command, as recipients of selected safety reports. Do not include addressees outside of MAJCOM AIG listings.

6.3.2.1. Do not use an AL for reports that contain little or no information of worldwide mishap prevention potential. Use routine handling procedures for AL addressees.

6.3.3. Send reports conveying significant safety information peculiar to the nuclear weapon system to other Air Force MAJCOMs possessing like systems.

6.3.4. Whenever possible, mishap reports will be created using the Air Force Safety Automated System (AFSAS).

6.3.5. Consider human factors from both individual human performance, supervisory, and organizational influences.

6.4. Preliminary Message.

6.4.1. Only the first electronically transmitted safety message advising of a mishap is titled Preliminary Report. (**NOTE: OPREP-3 Reports do not satisfy this requirement.**) For Class A and B on-duty mishaps, send a fully releasable preliminary report within 8 hours (**Table 6.1**).

6.4.2. Include purely factual information only. Ensure no privileged safety information is included (nothing based on witness testimony, board analysis, etc.).

6.4.3. Send through AFSAS. When AFSAS is not available, use commercial facilities to send basic mishap data and follow up with a copy by first class mail.

6.4.4. Include a narrative description of what happened (but not why), stating the best and most complete information available in simple and direct terms. Do not delay the report for lack of information. If complete data is not available, provide it in a status report.

6.5. Status Message:

6.5.1. Follow guidance in AFI 91-204. Additionally, an initial status message *must* be sent within 10 days for Class A and B on-duty mishaps (**Table 6.1**). The purpose is to relay new information discovered since the preliminary message and to identify the investigating officer (by name, grade, organization, and position).

6.5.2. Status messages may be sent at any time to update information prior to final reports when awaiting results from deficiency reports, analyses, TOX tests, etc. The purpose is to relay the status of the mishap investigation and any new information discovered since the initial status report. Findings, causes, and recommendations may be made in a status report, if a delay is anticipated in receiving results, but the investigator believes that enough information is available to reach a conclusion. In this case, issue a status report no later than 30 days after the mishap with as much information as is known. Publish a final report when the results are known and revise the status report's findings, causes, and recommendations, if required.

6.5.3. If new information is found and the information makes significant changes to the final message, send a message updating findings, causes, or recommendations.

6.6. Final Message. Follow guidance in AFI 91-204. Additionally:

6.6.1. Use the message format, except as noted.

6.6.2. Complete the investigation and prepare the final message within the specified time limits. The convening authority will release the final message, unless this responsibility is delegated to the SIB or single investigator.

6.6.3. The principles for writing the narrative portion of the final report are the same as for the formal report below.

6.7. High Accident Potential (HAP) Reports.

6.7.1. HAP reports provide information on events and trends that did not cause damage, injury, or death, but have the potential to do so. HAP reports are Class E events that do not have a dollar cost.

6.7.2. If a HAP event involves materiel failure, malfunction, or design deficiency, the single manager forwards corrective action taken or contemplated to AFSC/SEW, AFMC/SE, and the investigating MAJCOM by message within 60 days following the date of the associated deficiency report or combined mishap deficiency report. Replies to deficiency reports by the agency with engineering responsibility suffice for the ALC action message if the HAP's mishap event number is included.

6.8. Formal Reports.

6.8.1. All privileged safety formal reports have two parts: Part 1, Factual Information & Releasable Exhibits, and Part 2, Board Conclusions & Protected Exhibits. Follow-up actions will be placed in supplemental Status Messages as required by para 6.5.2.

6.8.2. Authenticating Formal Reports. Type each primary SIB member's name, grade, and position on the last page of the tab containing board analysis and conclusions. 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. If the formal SIB report needs to be changed after it is completed and signed by the board, all primary members of the SIB shall be physically reconvened.

6.8.3. Controlling the Formal Report. Once the SIB completes the investigation and finalizes the hard copy report, the SIB will send all copies of the formal report to the convening authority. The convening authority safety office will control all hard copies of the report until the convening authority is briefed on the results of the investigation. Upon approval for release, the MAJCOM safety office will control the distribution of the report. MAJCOMs may set up different procedures to speed up the distribution process. Publish these procedures in the MAJCOM Supplement.

6.8.4. Forwarding Formal Reports.

6.8.4.1. The memorandum of transmittal (Figure A1.1) will list all addressees receiving copies of (or extracts from or attachments to) the report. Number and account for all copies of privileged reports by listing each addressee, including office symbol and copy number, in the "Distribution List" attachment to the memorandum of transmittal (for example, ACC/SE, Harbor Center, 2 Eaton Street, Suite 402, Hampton VA 23669, copy 4 of 20). The memorandum of transmittal goes before all Tabs in Part 1 of the report. Include a statement signed by the SIB president, certifying the number of copies of the report listed are the only copies of the SIB report produced.

6.8.4.2. Distribution of privileged reports is restricted to those with a need to know in the Air Force or Unified Commands. Do not provide copies or extracts to agencies outside the Air Force. If an agency outside the Air Force needs a copy of the formal report for corrective actions or has statutory jurisdiction, request authorization from AFSC/JA by message or memorandum before sending copies to these organizations.

6.8.4.3. AFSC or MAJCOMs may require additional copies to be sent to their headquarters to aid in staffing the report. After completing the command endorsement, MAJCOMs must destroy all but the file copy.

6.8.4.4. Send copies of the formal report to all Air Force agencies or organizations tasked in the recommendations. If investigators conclude action needs to be taken by an agency outside the convening authority's command, but cannot specifically identify where it must be accomplished, the convening authority's safety office will:

6.8.4.4.1. Locate the responsible agency and provide the investigating officer with a point of contact, or

6.8.4.4.2. Accept initial responsibility for the action by being tasked as OPR in the formal report. In this case, the convening authority's safety office should ensure an

extra copy of the formal report is prepared and available for forwarding when the appropriate action agency and point of contact are determined.

6.8.4.5. If a Secretariat level or Air Staff office is the action agency for a validated recommendation, the MAJCOM safety office will forward a copy of the report that agency and in informational copy to AF/SEI. MAJCOM safety offices will also forward reports directly to Forward Operating Units (FOAs) or Direct Reporting Units (DRUs).

6.8.4.6. AFSC may request extra copies of reports for distribution to other agencies. Send these copies to AFSC/JA, who will provide them to the proper agency.

6.8.4.7. Do not produce “information only” copies of formal reports.

6.8.4.8. The SIB president may keep a complete copy of the formal report (for briefing purposes) for 60 days. List this copy on the memorandum of transmittal and return it to the MAJCOM safety office for disposition.

6.8.4.9. Wing-level units or below destroy formal reports upon receipt of the Memorandum of Final Evaluation (MOFE) or Letter of Administrative Closure (LOAC). Numbered Air Forces and above destroy formal reports upon final close-out of recommendations and when no longer needed for mishap prevention purposes. The convening authority may retain reports according to AFI 33-364. AFSC/JA must approve retention of these reports for other than the convening authority.

6.9. Contents of the Narrative. See AFI 91-204 for information on documenting the investigation.

6.10. Preparing Formal Mishap Reports:

6.10.1. Prepare formal reports according to this instruction and AFI 91-204, use continuation pages, if needed.

6.10.2. Prepare the report using the title “(TYPE) Accident/Incident Report.” Paper copies will be placed in 3-ring binder on plain, 8.5 by 11 inch white paper, printed on both sides. Provide an adequate level of detail by including or condensing all information provided in message. Where appropriate, include the photographs referenced in message. Refer to **Table 6.3** for addressees for non-nuclear events. For nuclear events, use **Table 6.4**

6.10.3. Air Force mishap messages are subject to limited distribution. Moreover, safety reports that include confidential witness statements, findings, conclusions, causes, recommendations, analysis or the deliberations of the SIB or single investigating officer are privileged. Ensure reports are marked with appropriate warnings in accordance with AFI 91-204.

6.10.4. EXCEPTION: Preliminary mishap messages (“8-hour” reports) are factual only, not privileged, and fully releasable, unless controlled for other reasons, such as information security.

6.10.4.1. For classified messages, add the proper security classification marking from AFI 31-401, and omit the notation “FOR OFFICIAL USE ONLY.”

6.10.4.2. Special Markings. Do not stamp unclassified pages in Part 1 that have no privileged information with markings indicating special handling requirements or

identifying them as “FOR OFFICIAL USE ONLY.” Ensure all documents are marked in accordance with AFI 91-204.

6.11. PART 1—FACTUAL INFORMATION & RELEASABLE MATERIAL:

6.11.1. TAB A: Distribution Letter and Safety Investigator Information. Include one copy of the orders appointing the SIB (or investigating officer). The orders must contain the full name, rank/ grade, SSAN, organization, and complete official mailing address for each appointed person.

6.11.2. TAB B: USAF Mishap Report (AF Form 711-series)

6.11.2.1. Submit AF Form 711D, *Nuclear Mishap/Incident Report*, included in AFI 91-204, with formal nuclear mishap reports involving nuclear weapon reportable mishaps, if nuclear material is involved. Submit with nuclear reactor system or radiological safety reports involving nuclear reactor system or radiological accidents, incidents, and mishaps if nuclear power systems, radioactive material, or radioactive sources are involved. See AFI 91-204 for completing AF Form 711D.

6.11.2.2. Submit AF Form 711B, *USAF Mishap Report*, on each guided missile, explosive and chemical agent, and directed energy mishap requiring a formal report. Place the form in Part 1 of the report.

6.11.3. TAB C: Preliminary Message Report. Place the fully releasable preliminary report in Tab C.

6.11.4. TAB D: Maintenance Reports, Records, and Data. Place any maintenance data pertaining to the weapon, explosive, or radiological material involved.

6.11.5. TAB E: Not used.

6.11.6. TAB F: Weather and Environmental Records and Data. Use, if contributed to mishap.

6.11.7. TAB G: Personnel Records. Use for maintenance personnel and training records, QA reports, and evaluations.

6.11.8. TAB H: Egress, Impact, and Crashworthiness Analysis. N/A.

6.11.9. TAB I: Deficiency Reports. Include all Product Quality Deficiency Reports (PQDR) submitted in conjunction with the mishap investigation. 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.

6.11.10. TAB J: Releasable Technical Reports and Engineering Evaluations. If DoD personnel provided written reports, include them here. Do not provide a promise of confidentiality to DoD personnel. Include on-scene evaluations submitted by DoD personnel in this tab. Factual reports or information provided by a contractor, which the contractor’s representative has determined does not require the promise of confidentiality, are placed in Tab R, followed by a memorandum of acknowledgment. Joint ALC and contractor factual reports should also be placed in Tab R. Any analysis referring to privileged information (e.g., witness testimony, board conclusions, etc.) should be included in an addendum and placed in Tab T.

6.11.11. TAB K: Mission Records and Data. Forms and work orders associated with mishap item.

6.11.11.1. If private property is damaged, the Investigating Officer will draft a statement indicating the type of property damage involved (e.g., 20' x 30' x 15' deep crater in NW corner of property, 5 acres of grasslands destroyed, etc.) The statement will not contain damage cost estimates, but only describe the damage incurred. Additionally, do not state the cause of the property damage (e.g., 5 acres of grassland destroyed by post impact fire). Statement should be no more than a brief description of the type and extent of damage to civilian personnel and property.

6.11.12. TAB L: Data from On-Board Recorders. N/A.

6.11.13. TAB M: Data from Ground Radar and Other Sources. N/A.

6.11.14. TAB N: Transcripts of Voice Communications. These are written transcripts of recorded voice communications, e.g., emergency response, 911 calls, etc. Because these transcripts are factual data, they often provide a basis for information in the factual summary of circumstances.

6.11.15. TAB O: Any Additional Substantiating Data and Reports. This is supporting data not otherwise defined. It includes local operating instructions (OI), directives, non-privileged witness statements and other forms. 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 T.) For lengthy documents, it is sufficient to show a listing of documents or records reviewed by the SIB and their effective dates. Films or videotapes depicting the actual mishap sequence or mishap scene, but not containing any privileged safety material that are part of the formal report, should be located within this Tab. List the tape or film on the index page and give the original to the AFI 51-503, Aerospace Accident Investigations (AAIB), or AFI 51-507 Ground Accident Investigations Board (GAIB). 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 W, as required. Regardless, the publication may be released to the AIB or GAIB, if any.

6.11.16. TAB P: Damage & Injury Summaries. This lists the total damage to all government property, materiel, and equipment. Provide a detailed statement that includes acquisition, replacement or repair costs (as applicable) for all property, material or equipment damaged. Include nomenclature and national stock number (NSN), if available. Noting the exact cost of nuclear equipment or devices may classify the report.

6.11.17. TAB Q: AIB or AFI 51-507, Ground Accident Investigation Board, if any, Transfer Documents.

6.11.18. TAB R: Releasable Witness Testimony.

6.11.18.1. Memorandum for Non-Privileged Written Witness Statements: Refer to Figure 6.7.

6.11.18.2. Transcripts of complete interviews must contain this advisory. In cases where witness testimony is summarized by the interviewer, it must be clear that the witness was advised of and understood this advisory. Where a promise of confidentiality has been extended, AFI 91-204 provides a sample witness statement format for use with witness statements.

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

6.11.18.4. Guided missile, directed energy weapon, and nuclear weapon investigations are authorized to offer promises of confidentiality to witnesses. A "Promise of Confidentiality" is *not* authorized for testimony made during explosives or weapons mishaps. Explosive or weapons mishap investigations other than nuclear weapon, guided missile, or directed energy must ask AF/SE for permission before making a promise of confidentiality. If a witness or involved contractor will not provide a statement without a promise of confidentiality, contact AFSC/SE for special approval to grant confidentiality to witnesses. See AFI 91-204 for further discussion on confidentiality and privileged witness statements.

6.11.19. TAB S: Releasable Photographs, Videos and Diagrams. Ensure diagrams are self-explanatory. Include only those diagrams that add to the report such as wreckage patterns or impact areas. Indicate direction with a northward pointing arrow on each diagram. If practical, indicate scale. Ensure the diagrams do not depict the location of human remains. Such diagrams should be placed in Part 2, Tab U, to protect the privacy interests of the decedent's family.

6.12. PART 2—CONCLUSIONS AND NON-RELEASABLE MATERIAL:

6.12.1. TAB T: Investigation Analysis & Conclusions. This is the most important part of the report. It draws on all portions of the report to provide a complete picture of what happened. It is a thorough analysis of all evidence and the findings, causes, and recommendations. This section records the opinions of the SIB, and it either accepts or rejects all scenarios or theories in the report. Only in the case of a minority report are there differing findings, causes, or recommendations. Life sciences "human factors" recommendations related to causal findings will be included with the other SIB recommendations. Place all privileged status messages and the final CMR in this Tab. The layout should be as follows:

6.12.1.1. Executive Summary - Provide a condensed version of the mishap report that encapsulates the mishap sequence, analysis, and board's primary findings, causes and recommendations. (This should be two or three pages in length.)

6.12.1.2. Mishap Sequence.

6.12.1.3. Investigation and Analysis.

6.12.1.4. Report Authentication & Minority Reports. Type each primary SIB member's name, grade, and position on the last page of the tab containing board analysis and conclusions. 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. If the formal SIB report needs to be changed after it is completed and signed by the board, all primary members of the SIB shall be physically reconvened.

6.12.2. TAB U: Witness Testimony Provided Under a Promise of Confidentiality. Investigators take statements from all individuals involved in the mishap or who were eyewitnesses to it. A promise of confidentiality may be given to any witness whom the SIB determines should be extended such a promise for mishaps involving nuclear or directed energy weapons. A promise of confidentiality shall not be given on a blanket basis to every potential witness. The promise of confidentiality must be clearly understood by those witnesses extended the promise, and they must be given the opportunity to waive any confidentiality. Non-privileged statements will be placed in Tab O. Investigators must read the following Promise of Confidentiality advisory (Contained in AFI 91-204) to each witness, and must read it onto all tape recordings of interviews.

6.12.3. TAB V: Other Supporting Privileged Products.

6.12.4. TAB W: Technical Reports and Engineering Evaluations Provided Under a Promise of Confidentiality. 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. If possible, include a factual summary in Tab R. Also include memorandums of acknowledgment on protection of privileged safety data signed by these contractors when their evaluations are included in privileged formal reports.

6.12.5. TAB X: Privileged Photographs, Videos and Diagrams. Well-defined photos help in mishap analysis. Use them to show damage, impact areas, metal fractures, flight path, vehicle travel, etc. Only include photographs aiding in understanding the mishap, and reference them in the analysis at Tab W. Use of scanned or color copies for reproduction in the formal report is preferred over pasting of actual photographs. Do not include photographs of deceased personnel in the safety report. Place an index of photographs at Tab X to aid reviewers. Do not refer to privileged safety information on the page captions or in comments on the index. Staged photographs are placed at Tab T near the related narrative. For example, include pictures of models showing flight paths in a midair collision at Tab T. Pointing with a finger or other device at a portion of wreckage does not make the photograph staged. Assembling or reconstructing damaged parts or aligning parts to show fire patterns or impact marks are examples of staged photographs. Depictions of cockpit indications for a given set of assumptions made by the SIB or described in witness testimony are staged photographs. When investigators include privileged safety information on a transparent overlay, place the photograph with the overlay in Tab T and the photograph without the overlay in Tab S. Hold all photographs and videotapes taken by the SIB, except those staged for analysis, for use by the AIB or GAIB. Place films or videotapes depicting the actual mishap sequence and containing privileged safety material that are part of the formal report with this tab. List the mishap tape or film on the index page. Video or computer animations or reenactments of a mishap prepared for or by the SIB are part of the SIB's analysis of the mishap. Reference these video simulations or reenactments on the Tab W index page and include the video simulation with the copy of the report sent to AFSC/CC. All other copies of the video simulation should be destroyed when no longer needed by the SIB for analysis or briefing. AF/SE may authorize use of these SIB video simulations for mishap prevention purposes.

6.12.5.1. Whenever findings or recommendations involve deficiencies in, or changes to, technical orders, flight manuals, checklists, or directives, include applicable portions of the original publications in this tab. The SIB's conclusion that a particular paragraph of a document was or was not a mishap factor is privileged. Place highlighted pages or publication extracts revealing the deliberative process of the board in Tab T. Include copies of submitted AFTO Form 22, *Technical Manual (TM) Change Recommendation and Reply*, or AF Form 847, *Recommendation for Change of Publication*, as attachments to Tab T.

6.12.6. TAB Y: Life Sciences and Medical Reports. Narrative descriptions of human factors and portions of the Life Sciences and Medical Reports are in Tab T. However, a more detailed narrative using extensive medical terminology appears in Tab Y. The medical officer is responsible for the completion of this Tab. Tab Y is organized in three sections. Section One is the bulk of the SIB's analyses. As such, it is privileged information. It is releasable to all those authorized a copy of the report. Section Two contains 72-hour and 14-day histories. Section Three contains protected medical information that is not necessarily privileged. It is releasable to the AIB and is included only in the copy of the report that goes to the AFSC. The following topics should be discussed.

6.12.6.1. Section One, Privileged Information

6.12.6.1.1. Life Science Narrative. This narrative provides context for the life sciences factors and non-factors discussed later in the report. It will differ from the narrative in Tab T in detail only. Operational details are included to the extent necessary to describe life sciences variables. Extensive detail (including medical and human factors terminology) is included on medical issues, human performance, personal protective equipment, and procedures. As with the narrative in Tab T, begin the narrative as early in the mishap sequence as is relevant and stop the narrative when all injury and damage is described.

6.12.6.1.2. Investigation and Analysis of Life Science Factors. Include a discussion of "Organizational Influences, Supervision, Preconditions and Acts of Individuals" from the latest version of DoD HFACS (Human Factors Analysis and Classification System) (reference AFI 91-204, Attachment 5). Also include Rescue variables that contributed to the mishap outcome.

6.12.6.1.3. Analysis of Non-factors Worthy of Discussion. Use this section to discuss those things discovered in the course of the investigation which had no effect on the current mishap, but have a potential to contribute to a mishap in the future. "Typically, do not write a Non Factor Worthy of Discussion for any issue for which the SIB will not have an Other Finding of Significance and an Other Recommendation of Significance in Tab T".

6.12.6.1.4. Discussion of Non-factors. Use this section to discuss those things extensively investigated, but which the SIB has determined did not contribute to the mishap. Such a detailed discussion of a non-factor is usually done when one expects questions about a variable you ruled out as important.

6.12.6.1.5. Life Science Member/Consultant Reports. When available, place all human factors, aerospace physiology, aviation psychology, life support equipment,

and other consultant reports here. Remember, unlike the bulk of the Tab Y, the consultant report only speaks for the consultants' point of view. If a consultant was assigned to the board, the consultant must submit a written report, and the report must be included in Tab Y, even if the consultant report does not agree with the SIB findings. If the board chooses to discount or disagree with a significant portion of a consultant report this fact may be annotated in the appropriate "Investigation and Analysis" section.

6.12.6.2. Section Two, 72-hour and 14-day Histories. 72-hour and 14-day histories may be either privileged or non-privileged. Ensure to obtain, and include either the privileged or non-privileged witness statements.

6.12.6.3. Section Three, Non-privileged Protected Medical Information. This section is non-privileged information and is given to the AIB. It is included only in Copy 1, which is sent to the AFSC. Simply delete Section Three from all other copies of the final report. For the Toxicology reports and medical forms, simply scan and paste in the required documentation.

6.12.6.3.1. Toxicology Reports. Scan and paste in the reports from relevant toxicology tests.

6.12.6.3.2. Physical Examinations And Medical Condition. Include scanned copies of the DD Form 2808, *Report of Medical Examination*; DD Form 2807-1, *Report of Medical History*; the most recent Physical Health Assessment, the SF 2766; any active waivers; and the person's current profile.

6.12.6.3.3. Post Mishap Physical Or Autopsy Report. The factual post-mishap physicals should be documented on DD Form 2808 or SF 506 and included here. Include a summary of injuries (but do not include a detailed discussion of the sources/mechanisms of injury – that should appear in the narrative in Section One). Also include factual radiology reports and statements of prognosis and prescribed medications.

6.12.7. TAB Z: Investigation Final Products

6.13. Supplement. Follow-up Actions. This part is applicable for only the Convening Authority's copy and the AFSC copy one of the formal report.

6.13.1. Tab 1. Statements of Persons Cited in Findings. Place the original and endorsed notification memorandums and any statements provided by persons found causal in a privileged safety investigation at this tab.

6.13.2. Tab 2. Comments to Final Message/Formal Report. Insert copies of required comments.

6.13.3. Tab 3. Memorandum of Final Evaluation (MOFE).

6.13.4. Tab 4. Investigation Reports from Other Organizations (NTSB, National Transportation Safety Board), Law Enforcement, Foreign or other military services). Place applicable copies of any available reports that may assist personnel reviewing this mishap at a later date.

6.13.5. Tab 5. Significant Additional Information Received After MOFE. On rare occasions, new information is uncovered after the MOFE is complete.

Table 6.1. Report Submission Schedule for Weapons, Explosives and Radiological Class A, B, C, D, and E Events.

Reports required by this table are in addition to OPREP-3 reports required by AFMAN 10-206.				
	If the mishap is a	then submit	not later than	By
1	Class A or B mishaps	Preliminary message report (see note 1)	within 8 hours.	Priority message (see note 2)
2		Status report (Figure A3.1.)	within 10 days and as required afterward	AFSAS/Message format (see notes 3, 4)
3		Final report (Figure A3.2)	within 30 calendar days or 3 workdays following Formal Report	AFSAS/Message format
4		Formal report (see notes 5, 6)	within 30 calendar days	AF Form 711-series
5		Convening Authority briefing (if required)	15 days after completing investigation	Convening Authority direction
6	Class C mishaps	Preliminary message report (see note 1)	72 hours	AFSAS/Message format
7		Status report (see note 3)	as required	
8		Final report (see notes 5, 6)	within 30 calendar days	
9		Formal report (when directed by MAJCOM or AF/SE)	within 30 calendar days	AF Form 711-series
10	Class D mishaps and Class E events	Final report (see notes 5, 6)	within 30 calendar days	AFSAS/Message format
11	OT&E	Preliminary message report	within 24 hours	AFSAS/Message format
12		Status report	every 30 days	
13		Final report (see notes 5, 6)	Within 75 days	
14		Formal report (when directed by MAJCOM or AF/SE)	within 75 calendar days	AF Form 711-series

NOTES:

1. Use non-privileged, unclassified format for preliminary report (**Figure A3.1.**).

2. Overseas commands use IMMEDIATE precedence.
3. Use **Figure A3.1.** format for initial status report. 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. Include the “For Official Use Only” statement unless classified—then, use classification markings.
4. For subsequent reports, include information not previously reported in the initial status or preliminary report. It is not necessary to use the entire **Figure A3.1.** format for subsequent status reports. Only add information not previously reported. Use the **Figure A3.1.** format when modifying a previously transmitted message or final report.
5. If the investigation will not be complete within the time frame, transmit a 30-day status message on day 30 and every 30 days until the investigation is complete. Include estimated date of investigation completion. For extension of due date, send request to the investigating MAJCOM/DRU/FOA with information copy to AFSC/SEW.
6. Do not delay final reports awaiting testing results. If the results from testing significantly change the outcome of final report, reconvene the SIB (if necessary) and send a status report describing the changes. For extension of due date, send request to the investigating MAJCOM/DRU/FOA with information copy to AFSC/SEW.

Table 6.2. Report Submission Schedule for Flagwords.

Reports required by this table are in addition to OPREP-3 reports required by AFMAN 10-206.				
	If the Flagword is a	then submit	not later than	By
1	NUCFLASH, BROKEN ARROW, and EMPTY QUIVER	Preliminary message report (see note 1)	within 8 hours.	SIPR (see note 3)
2		Status Report (Figure A3.1)	Within 10 days and as required afterward	SIPR (see note 3)
3		Final report (Figure A3.2)	within 30 calendar days or 3 workdays following Formal Report	SIPR (see note 3)
4		Formal report (see notes 5, 6)	within 30 calendar days	As directed by Convening Authority
5		Convening Authority briefing (if required)	15 days after completing investigation	Convening Authority direction

6	BENT SPEAR	Preliminary message report (see note 1)	within 8 hours.	SIPR (see note 3)
7		Status Report (Figure A3.1)	Within 10 days and as required afterward	SIPR (see note 3)
8		Final report (see notes 5, 6)	within 30 calendar days	SIPR (see note 3)
9		Formal report	within 30 calendar days	As directed by Convening Authority
10	DULL SWORD	Status (note 4) or one-time DULL SWORD	within 15 calendar days	AFSAS report (see notes 1 & 2) Include 'Status' (note 4) or 'One-Time' in subject line
11		Follow-up report	within 30 calendar days	AFSAS report (see note 1) Include 'Follow-up' in subject line
12		Final report	within 90 days if not submitted as a one-time report	AFSAS report (see notes 1 & 2). Include 'Final' in subject line. Send requests for due date extensions to using MAJCOM and info AFSC/SEW
13	Classified DULL SWORD	Status (notes 4 & 7), one-time, follow-up, or final	Same as Unclassified Nuclear Deficiency Reporting	SIPR (see note 3 and note 7)

NOTES:

1. Use non-privileged, unclassified format for preliminary report
2. Reports shall include any additional report (e.g., DR, UR, AFTO 22, etc.) reference number, if applicable
3. AFSEC/SEW SIPRNet workflow address: AFSC.SEW@afmc.af.smil.mil
4. Status reports can be either an initial or preliminary report.
5. If the investigation will not be complete within the time frame, transmit a 30-day status message on day 30 and every 30 days until the investigation is complete. Include estimated date of investigation completion. For extension of due date, send request to the investigating MAJCOM/DRU/FOA with information copy to AFSEC/SEW.
6. Do not delay final reports awaiting testing results. If the results from testing significantly change the outcome of final report, reconvene the SIB (if necessary) and send a status report describing the changes. For extension of due date, send request to the investigating MAJCOM/DRU/FOA with information copy to AFSEC/SEW.
7. Classified Dull Swords will be sent to AFSC/SEW AFSC.SEW@afmc.af.smil.mil, Joint Staff J39STODDepforNucWeapons@js.smil.mil and MAJCOM on their respective SIPR.

Table 6.3. Addressees for Guided Missile, Explosives and Chemical Agents, and Directed Energy Mishap Message (see note 6).

	A	B	C
	Organization (see note 1)	Office Symbol	For
1	AFSC KIRTLAND AFB NM	CC/SEW	All mishaps (see note 2)
2	AF WASHINGTON DC	SEI/IL	
3	AFSOC HURLBURT FLD FL	SE	
4	AETC RANDOLPH AFB TX	SE	
5	AMC SCOTT AFB IL	SE	
6	PACAF HICKAM AFB HI	SE	
7	AFMC WRIGHT-PATTERSON AFB OH	SE	
8	ACC LANGLEY AFB VA	SE	
9	AFSPC PETERSON AFB CO	SE	
10	USAFA USAF ACADEMY CO	SE	
11	USAFE RAMSTEIN AB GE	SE	
12	AFGSC BARKSDALE AFB LA	SE	
13	ANG, ANDREWS AFB MD	SE	
14	AFRC ROBINS AFB GA	SE	
15	MAJCOM concerned (gaining MAJCOM for ANG/AFRC) (see note 3)	as required	
16	Intermediate commands		
17	Home base of operator (if other than the organization submitting the report)		
18	Military base of departure		
19	344 TRS LACKLAND AFB TX	TTEB	
20	AAC (ARSW) EGLIN AFB FL	CL/DV	
21	AFOTEC KIRTLAND AFB NM	SE	
22	USSTRATCOM COMMAND CENTER OFFUTT AFB NE	CL/OP/CL124/OP11	
23	ANG, ANDREWS AFB MD	SE	ANG mishaps
24	AFRC ROBINS AFB GA	SE	AFRC mishaps

25	AFMC WRIGHT-PATTERSON AFB OH	A2/5/A4M	All mishaps involving material deficiencies, Tech Order changes, or AF Policy changes
26	AWS NORMAN OK	SE	Mishaps involving weather events or services
27	88 ABW WRIGHT-PATTERSON AFB OH	SEF	Mishaps involving non-ballistic weapons support systems; ballistic weapon systems and/or components
28	75 ABW HILL AFB UT	SEW	
29	526 ICBMSG HILL AFB UT	EN/ENV	
30	AFSPC PETERSON AFB CO	SE	
31	ALC Safety Offices: 72 ABW TINKER AB OK, 75 ABW HILL AFB UT, and 78 ABW ROBBINS AFB GA	SE	Weapon mishaps involving TO, materiel, vehicle, or equipment deficiency; and other mishaps involving deficiencies in these areas (see note 5)
	A	B	C
	Organization (see note 1)	Office Symbol	For
32	COMNAVSAFECEN NORFOLK NAS VA		Mishaps involving US Navy personnel or facilities and mishaps involving weapons common to USAF and USN (Table 6.5. and notes 1 and 3)
33	COMNAVAIRSYSCOM PATUXENT RIVER MD		Mishaps involving weapons common to USAF and USN (Table 6.5. and notes 1 and 3)

34	CDRUSASC FT RUCKER AL	CSSC-SE	Mishaps involving US Army personnel or facilities and mishaps involving weapons common to USAF and USA (Table 6.5.)
35	SECDEF WASHINGTON DC	USD (AT&L) (I&E)	Preliminary report for mishaps involving fatality, in-patient hospitalization of three or more persons, or property damage of \$1,000,000 or more
36	ASAF WASHINGTON DC	IE	Preliminary and final report for Class A and B mishaps
37	AFMSA/SG3P WASHINGTON DC	OAFM	Preliminary and final report for Class A and B mishaps involving injury or death.
38	AFCESA TYNDALL AFB FL	CEXF	Preliminary and final report for mishaps involving fire suppression or crash and rescue operations
39	DET 63 ASC INDIAN HEAD MD	CC	Mishaps involving EOD operations or activities
40	DEPT OF DEFENSE EXPLOSIVES SAFETY BOARD ALEXANDRIA VA	DDESB	Class A, B and C mishaps involving munitions, missiles, and explosives.
	A	B	C
	Organization (see note 1)	Office Symbol	For
41	75 ABW HILL AFB UT	SE	
42	78 ABW ROBINS AFB GA	SE	
43	AAC EGLIN AFB FL	SE	

44	308 ARSW TYNDALL AFB FL	SE	All Class A and B aircraft factors mishaps (whether or not materiel were involved) and all other classes that identify material deficiencies or recommend TO or AF acquisition or logistics policy changes.
45	53 WG EGLIN AFB FL	SE	
46	AAC EGLIN AFB FL	YOT	
47	AFMC WRIGHT PATTERSON AFB OH	SEG	All mishaps involving AFMC managed systems, vehicles, and equipment
48	377ABW KIRTLAND AFB NM	SE	All DULL SWORD reports
49	784CBSG HILL AFB UT	GACP	All missile mishaps

NOTES:

1. Reference <http://safetycenter.navy.mil/> for mishap reporting. When reporting information to other agencies refer to the GAL.
2. Include the aircraft system program director (SPD) or equivalent as an addressee when explosives or weapon mishaps involve aircraft armament systems.
3. Include MAJCOM/DRU/FOAs that are common users of the mishap weapon materiel as message addressees when exchange of information would enhance mishap prevention efforts. Also use the Address List (AL) for the weapon system if one exists. MAJCOM/DRU/FOAs may also add AIGs specific to their command. **NOTE:** If mishap base is not listed on the AL, investigating MAJCOM/DRU/FOA will retransmit message under appropriate AL(s).
4. ANG units will send copy of all messages to appropriate ANG State Headquarters and the Adjutant General (TAG).
5. Include the appropriate SPD and single manager as addressees when mishaps involve Air Force materiel deficiencies.
6. Use the Address List (AL) Table 6.7. for the weapons system if one exists. MAJCOM/DRU/FOAs may add AIGs specific to their command.

Table 6.4. Addressees for Nuclear Safety Reports.

	A	B	C
	Organization	Office Symbol	For
1	AFSC KIRTLAND AFB	CC/SEW	All Flagwords

	NM		
2	MAJCOM or command concerned	As required	
3	NAF or intermediate command		
4	USSTRATCOM COMMAND CENTER OFFUTT AFB NE	CL/OP/CL 124/ OP11	
5	USAF WASHINGTON DC	SEI/IL/A3 N	All Nuclear Flagwords
6	AFMC WRIGHT- PATTERSON AFB OH	SE/A2/5/A 4M	
7	498 NSW KIRTLAND AFB NM	NWW/NW S/ NWE	
8	AFSFC LACKLAND AFB TX	SFO	Security related reports
9	AFMSA/SG3P 110 Luke Avenue, Suite 220 BOLLING AFB DC 20032-7050	SGO	NUCFLASH, BROKEN ARROW, FADED GIANT, MISSING PENNY
10	USAF School of Aerospace Medicine BROOKS CITY-Base -TX	OEHH	FADED GIANT, MISSING PENNY
11	CNO WASHINGTON DC 2000 Navy Pentagon Washington, DC 20350- 2000	CC	BENT SPEAR and DULL SWORD for security, command and control related reports involving E- 6B aircraft configured to perform the ALCS mission
12	CINCPACFLT PEARL HARBOR HI 250 Makalapa Dr Pearl Harbor HI 96890-7000	CC	

13	COMNAVAIRPAC SAN DIEGO CA NAS North Island P.O. Box 357051 San Diego, CA 92135-7051	CC	
14	COMPATWINGSPAC BARBERS POINT HI Naval Air Station Barbers Point, HI 96862-4415	CC	
15	COMSTRATCOMMWIN G ONE TINKER AFB OK 7641 Mercury Rd Tinker AFB OK 73145-8701	CC	
16	COMNAVSAFECEN NORFOLK VA Naval Safety Center 375 A St Norfolk VA 23511-4399	CC	
17	NAVAIRWARCENACDIV PATUXENT RIVER MD Naval Air Warfare Center Aircraft Division MS 2/516 (3d Floor) Patuxent River MD 20670-5304	I27102	BENT SPEAR and DULL SWORD for security, command and control related reports involving E-6B aircraft configured to perform the ALCS mission
18	75 ABW HILL AFB UT	SEW	All ballistic missile component, system reentry systems, reentry vehicles or booster related reports
19	526 ICBMSG HILL AFB UT	EN/ENV	
20	AFIC LACKLAND AFB TX	SE/MMIV C	BENT SPEAR, DULL SWORD COMSEC or crypto equipment related reports
21	510ICBMSS	GFLC	DULL SWORD for ballistic missile related reports involving guidance systems, computer faults, or

			chromate leaks.
22	377 ABW KIRTLAND AFB NM	CC/SE	DULL SWORD for nuclear weapons or associated DOE test and handling equipment.
23	898 MUNS KIRTLAND AFB NM	CC	
24	DTRA KIRTLAND AFB NM	NSO	
25	498 NSW KIRTLAND AFB NM	CC	
26	AMC SCOTT AFB IL	DOA	All reports involving air logistical movements
27	USAF WASHINGTON DC	A3	All security reports involving air logistical movements
28	MAJCOM owning		
29	MAJCOM of host base		
30	AMC SCOTT AFB IL	SE/A7S/A3 / TACC/DOO	
31	WR-ALC ROBINS AFB GA	LESVA	ALL DULL SWORDS
32			All Flagwords

Table 6.5. Weapons Common to Other Services.

	A	B	C
	MISSILES	ALC	COMMON TO
1	AIM-7 (Sparrow)	WR-ALC	USN
2	AIM-9 (Sidewinder)	WR-ALC	USN
3	AIM-120 (AMRAAM)	WR-ALC	USN
4	AGM-88 (HARM)	WR-ALC	USN

Table 6.6. Routing of Nuclear, Guided Missile, Explosives and Chemical Agents, and Directed Energy Formal Safety Reports (see note 1).

	A	B	C
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	Forward	To (see note 1)	For
1	Two copies of formal report by priority mail	AFSC/SEW	Review, appropriate corrective action, and file.
2	One copy of formal report by priority mail	AF/SEI	Review appropriate action.
3	One copy of formal report	Organization to which person who had mishap is assigned (see note 2)	Review, appropriate corrective action, and return to MAJCOM safety office or convening authority for disposition within 90 days of mishap. MAJCOMs specify endorsement requirements and their suspense dates. They may grant extensions when warranted.
4		Organization that possessed weapon if different from organization in line 2	
5		Intermediate commands of units specified in lines 2 and 3	
6		MAJCOM concerned	
7		ANG/SE or AFRC/SE if ANG or AFRC asset involved	
8		Gaining MAJCOM if ANG or AFRC asset involved	
9	Appropriate State Headquarters and the Adjutant General (TAG) if ANG aircraft involved		
10		ASC/ENS Wright-Patterson AFB OH 45433 if AGM-69, AGM-86, AGM-129, PQM-102, or QF-106 involved.	Review, appropriate corrective action, and file. Forward proposed and completed actions to AFSC/SEW within 90 days of mishap. Provide copies of endorsement to each formal report addressee and AFMC/SE.
11		507 CBSS/GBLA HILL AFB UT 84056	
12		AAC/SES Eglin AFB FL 32542-6838 MAIL TO aac.ses@eglin.af.mil	
13		Air Logistics or Product Center system program director as specified in TO 00-25-115 for aircraft, weapons and explosives involved (notes 1, 3, and 4 apply)	Review and take appropriate corrective action. Forward action memorandum or Endorsement with a copy of TDR, photos, test results, and when established, MIP interim or closing action to AFSC/SEW and a copy to AFMC/SE within 90 days of the mishap. See note 3.

14		Each agency or organization tasked in the primary recommendations (see note 4)	Review, appropriate corrective action, and file.
15		AFMC/SE 4375 Chidlaw Rd Rm S154 Wright-Patterson AFB OH 45433	Review and take appropriate action. Endorsement concurrence will be in AFSAS. If AFMC disagrees with ALC or non-concurs, Endorsement will be provided to each formal report addressee and AFSC/SEW.
16		AFWA/SE/XOO Scott AFB IL 62225 if deficiencies in weather services involved	Review, appropriate corrective action, and file. Endorse transmittal correspondence to AFSC/SEW within 90 days of mishap,
17		AFOTEC/SE Kirtland AFB NM 87117	and provide copies of endorsement to each formal report addressee.
18		784 CGSG/GACP Hill AFB UT 84056 if non-nuclear ammunition are involved	
19		SMC/AXZ 160 Skynet St, Ste 2315 Los Angeles AFB CA 90245-4683 if system or component of space system or space launch vehicle involved or if lift system or component of ballistic weapon system or ballistic weapon booster involved	
20		AFSPC/SE Peterson AFB CO 80914 if system or component of space system or space launch vehicle involved or if lift system or component of ballistic weapon system or ballistic weapon booster involved.	Review, appropriate corrective action, and file.
21		66 ABW/SE Hanscom AFB MA 01731 if ground electronics subsystem involved	
22		AAC/SE 1001 N. 2 nd St., Ste 366 Eglin AFB, FL 32542-6838	
23		AFMSA/SG3P 110 Luke Avenue, Suite 220 Bolling AFB DC 20032-7050 (See note 5)	
24		AF/IL 1030 Air Force Pentagon Washington DC 20330-5006 All weapon mishaps	

25		WR-ALC/SE 245 Cochran Street, Ste C9 Robins AFB, GA 31098- 1623 All tactical weapon mishaps	
26		Deleted	

NOTES:

1. Reference: <http://www.nctc.navy.mil/dpvs/dpvs.html/dpvs.html> for current message addresses. See AFMAN 33-326 for mail addresses.
2. Do not send a report to an agency outside the USAF. Prepare those copies of the report and send them to AFSC/JA for forwarding.
3. 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.
4. For all mishaps requiring an action by an AFMC organization, send one copy to AFMC/ SE, as well as the tasked agency.
5. In mishaps with significant medical contribution or resulting in a medical condition or physical injury, send a copy of the formal report.

Figure 6.1. Memorandum for Non-Privileged Written Witness Statements.

(Date)

1. I, (Name of Witness), (Grade), (Organization), have been advised by (Name of Investigator), a safety investigator of the mishap that occurred on (Date of Mishap) involving an (aircraft/space vehicle/missile type) of the following:
 - a. This investigation is being conducted under the provisions of AFI 91-204 solely for the purpose of mishap prevention within the United States Air Force and to determine all factors relating to the mishap in order to prevent recurrence. I understand I am being interviewed as a witness in a safety investigation, and I acknowledge a promise of confidentiality has not been extended to me.
 - b. This witness statement can be released to any subsequent investigation of the mishap and may be released to the public pursuant to a Freedom of Information Act request.

Witness Signature Block

Table 6.7. Addressee List.

AL 9380	A-10
AL 9381	C-17
AL 9383	C-5
AL 9385	Ground Safety
AL 9386	Helicopters
AL 9387	C-130
AL 9388	C-12
AL 9390	B-52/B-2
AL 9391	All flight mishap messages (Preliminary, status, and final)
AL 9392	Air Refueling
AL 9392	KC-135/KC- 10
AL 9393	F-22
AL 9394	T-1
AL 9395	T-38/F-5
AL 9397	T-37
AL 9399	F-16
AL 9401	T-39/C-21
AL 9404	Worldwide SE/SEW
AL 9405	Aero Clubs
AL 9406	B-1
AL 9407	F-15

Chapter 7

FOLLOW-UP ACTIONS

7.1. General Information. Follow guidance listed in AFI 91-204, with the following additions.

7.1.1. Managing Preventive Action for Mishaps w/o Formal Reports. Class C, D, mishaps, and Class E events without a formal report do not go through the MOFE process. MAJCOMs must establish an internal program to effectively track and manage recommendations resulting from these mishaps.

7.1.2. Operational Test and Evaluation (OT&E) Mishaps. For Class A and B OT&E mishaps, a Letter of Administrative Closure (LOAC) will be accomplished to document AF/SE coordination on report's recommendations.

GREGORY A. FEEST
Major General, USAF
Chief of Safety

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFI 31-401, *Information Security Program Management*, 1 Nov 2005

AFI 33-364, *Records Disposition--Procedures and Responsibilities*, 22 Dec 2006

AFI 33-364, *Records Disposition--Procedures and Responsibilities*, 22 Dec 2006

AFI 40-201, *Managing Radioactive Materials in the Air Force*, 13 Apr 2007

AFI 91-101, *Air Force Nuclear Weapons Surety Program*, 19 Dec 2005

AFI 91-204, *Safety Investigation and Reports*, 24 Sep 2008

AFI 91-401, *Directed Energy Weapons Safety*, 29 Sep 2008

AFI 99-151, *Air-Launched Missile Analysis Group*, 10 Aug 2005

AFMAN 33-363, *Management of Records*, 1 Mar 2008

AFRIMS AF Records Disposition Schedule,
<https://www.my.af.mil/afrims/afrims/afrims/rims.cfm>

AFPD 13-5, *Nuclear Enterprise*, 6 July 2011

AFPD 91-2, *Safety Programs*, 28 Sep 1993

T.O. 00-5-1, *Air Force Technical Order System*, 15 Aug 2009

T.O. 00-35D-54, *USAF Deficiency Reporting, Investigation, and Resolution*, 1 Oct 2009

T.O. 11N-5-1, *Unsatisfactory Reports*, 27 Feb 2009

T.O. 21M-LGM30F-12-1, *Minuteman Nuclear Surety Procedures*

Adopted Forms.

AF Form 847, *Recommendation for Change of Publication*

DD Form 1351-2, *Travel Voucher or Sub-voucher*

DD Form 1610, *Request and Authorization for TDY Travel of DoD Personnel.*

Abbreviations and Acronyms

AF—Air Force

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
AFLOA—Air Force Legal Operations Agency
AFMAN—Air Force Manual
AFMC—Air Force Materiel Command
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 Specialty Code
AFSC/JA—Assistant for Legal Matters
AFSC/SEW—Weapons Safety Division
AFSEC—Air Force Safety Center
AFSPC—Air Force Space Command
AIB—Accident Investigation Board
AIG—Addressee Indicator Group
AL—Address List
ALMAG—Air-Launched Munition Analysis Group
ANG—Air National Guard
AOR—Area of Responsibility
APU—Auxiliary Power Unit
ARC—Air Reserve Component
BP—Board President
CA—Convening Authority
CC—Commander
CD—R—Compact Disk-Recordable
CDI—Commander Directed Investigation
CFR—Code of Federal Regulations
CONUS—Continental United States
COS—Chief of Safety
CPO—Civilian Personnel Office

CSAF—Chief of Staff, United States Air Force
DAF—Department of the Air Force
DB—Data Base
DCMA—Defense Contract Management Agency
DD FORM—Department of Defense Form
DED—Directed Energy Device
DEW—Directed Energy Weapon
DMS—Defense Message System
DOD—Department of Defense
DR—Deficiency Report
DRU—Direct Reporting Unit
DSN—Defense Switched Network
DTRA—Defense Threat Reduction Agency
ECM—Electronic Countermeasures
EPU—Emergency Power Unit
FA—First Aid
FAX—Facsimile Machine
FFRDC—Federally Funded Research & Development Centers
FOA—Field Operating Agency
FOIA—Freedom of Information Act
FOUO—For Official Use Only
FY—Fiscal Year
GAO—General Accounting Office
GMV—Government Motor Vehicle
GS—General Schedule
GSA—General Services Administration
GVO—Government Vehicle Other
HAP—High Accident Potential
HE—High Explosive
HQ—Headquarters
IAW—In Accordance With
ICAO—International Civil Aviation Organization

ID—Identification
IG—Inspector General
IO—Investigating Officer
ISB—Interim Safety Board
JA—Judge Advocate
LAG—Launch Analysis Group
LOAC—Letter of Administrative Closure
LSSS—Limiting Safety System Settings
MAJCOM—Major Command
MC—Mission Capability
MCNL—Master Nuclear Certification List
MDS—Mission Design Series
MEN—Mishap Event Number
MOA—Memorandum of Agreement
MOFE—Memorandum of Final Evaluation
MOU—Memorandum of Understanding
MSE—Missile Support Equipment
NAF—Numbered Air Force
NGB—National Guard Bureau
NGB/CF—Director, Air National Guard
NRO—National Reconnaissance Office
NTSB—National Transportation Safety Board
NW—Nuclear Weapons Directorate
NWCA—Nuclear Weapons and Counter Proliferation Agency
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

OT&E—Operational Test and Evaluation
OWCP—Office of Workers' Compensation Program
PA—Public Affairs
PDO—Publishing Distribution Office
POG—Project Officers Group
PQDR—Product Quality Deficiency Reports
QA—Quality Assurance
RCN—Remote Control Number
RCS—Report Control Symbol
RDS—Records Disposition Schedule
RPS—Reactor Protective System
RTG—Radioisotope Thermal Generator
SAF—Secretary of the Air Force
SE—Chief of Safety
SECAF—Secretary of the Air Force
SIB—Safety Investigation Board
SIO—Single Investigation Officer
SM—Single Manager
SORTS—Status of Resources and Training System
SPO—System Program Office
SSN—Social Security Number
TCTO—Time Compliance Technical Order
TO—Technical Order
UR—Unsatisfactory Report
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

WSM—Weapons Safety Manager

Terms

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.

BEELINE FADED GIANT—A nuclear reactor system or radiological incident as defined by the criteria in paragraph [1.4.7](#)

BENT SPEAR—A reporting flagword identifying a nuclear weapon system incident. This includes mishaps not in the accident category but meeting any of the criteria in paragraph [1.4.4](#)

BROKEN ARROW—A reporting flagword that identifies a nuclear weapon accident that could NOT create the risk of war, but meets the following criteria: nuclear detonation of a nuclear weapon; nonnuclear detonation (no nuclear yield) or burning of a nuclear weapon, nuclear warhead, or nuclear component; radioactive contamination from a nuclear weapon or nuclear component; jettison of a nuclear weapon or nuclear component; public hazard (actual or perceived) from a nuclear weapon, nuclear warhead, or nuclear component.

CATASTROPHIC—Occurs when the entire system or a major portion of it is inoperative. For example failure of the annunciation and display subsystem.

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.

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.

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.

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.

DULL SWORD—A reporting flagword identifying a nuclear weapon safety deficiency. This includes mishaps not falling into the accident or incident categories, but meeting any of the criteria in paragraph [1.4.5](#)

EMPTY QUIVER—The loss, theft, seizure, or destruction of a nuclear weapon or component. Loss includes, but is not limited to, intentional weapon jettisoning according to approved Air Force procedures or inadvertent release of a nuclear component.

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.

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.

FIRST AID CASE—For military members, any initial one-time treatment and any follow-up visit
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.

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.

HUMAN FACTORS—“Human factors A body of scientific facts about human characteristics. The term covers all biomedical and psychosocial considerations; it includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluation.”

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 materiel used by the employee during the course of his or her work.”

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.

LIMITED-LIFE COMPONENT—A weapon component that deteriorates in some respect over time, and must be replaced periodically during weapon stockpile life: principle classes of limited-life components are reservoirs, neutron generators, and parachutes.

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 AFI 91-204. 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—Systems that are propelled through the air that are unmanned, guided by internal or external systems, self-propelled, and designed to deliver ordnance to a target or act as a target. This definition includes training missiles.

MISSILE MISHAP—Unplanned damage to or functioning of a missile; or damage, illness, or injury caused by a missile; or when the missile fails to complete its intended mission.

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).

MISSING PENNY—A deviation from prescribed safety and security standards for a nuclear reactor system or radiological activity as defined by the criteria in paragraph [1.4.8](#)

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.

NUCFLASH—Includes accidental, unauthorized, or unexplained occurrences that could create the risk of war 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.

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 COMPONENTS—Major subassembly of a nuclear explosive that contains SNM in quantities sufficient to fuel a nuclear explosion (e.g. pit or canned subassembly). Note that subassemblies containing tritium are not nuclear components.

NUCLEAR MISHAP—An Air Force mishap involving radioactive material.

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

NUCLEAR REACTOR SYSTEM ACCIDENT—An uncontrolled reactor criticality resulting in damage to the reactor core or significant release of fission products from the reactor core.

NUCLEAR REACTOR SYSTEM AND RADIOLOGICAL MISHAPS—Nuclear accidents, incidents, and deficiencies involving terrestrial nuclear reactor systems, nuclear power systems, and radioactive materials and sources.

NUCLEAR REACTOR SYSTEM INCIDENT—A nuclear reactor system mishap not meeting the criteria for an accident.

NUCLEAR REACTOR SYSTEM MISHAP—A generic term used to denote a nuclear reactor system accident or incident.

NUCLEAR REACTOR SYSTEM SAFETY DEFICIENCY—A situation, event, or condition involving a deviation from prescribed safety and security standards for a nuclear reactor system not meeting the criteria for an accident or incident.

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.

NUCLEAR WEAPON SYSTEM ACCIDENT—A serious nuclear weapon system mishap involving a nuclear weapon.

NUCLEAR WEAPON SYSTEM INCIDENT—A significant or unexpected event involving nuclear weapons, nuclear warheads, or nuclear components not meeting the criteria for an accident.

NUCLEAR WEAPON SYSTEM MISHAP—Nuclear accident, incident, and safety deficiency involving nuclear weapons, nuclear weapon systems, and associated equipment and procedures.

NUCLEAR WEAPON SYSTEM SAFETY DEFICIENCY—A situation, event, or condition which could (or did) degrade nuclear surety but did not meet the criteria for an accident or incident.

PINNACLE FADED GIANT—A nuclear reactor system or radiological accident involving nuclear criticality or event resulting in significant damage to the reactor core or a significant release of fission products from the reactor core. Also includes the release of radioactive material such that, had an individual been present for 24 hours, the individual could have received an intake five times the federal annual occupational limit. Also includes the exposure of an individual's whole body to 25 roentgen equivalent man (rem) or more of radiation; exposure of the eye to 75 rems or more of radiation; or exposure of the skin, feet, ankles, hands or forearms to 250 rems or more of radiation.

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 material 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.

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.

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 material used in a self-supporting chain reaction to produce heat for practical application).

Attachment 2

SAMPLE SAFETY MEMORANDUM

Figure A2.1. Sample Memorandum of Transmittal.

(Date)

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 and AFMAN 91-221.
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 or AFI 51-507 Ground Accident Investigation Board President, if any.
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

AFSC/SE 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

Attachment 3

MESSAGE LOOK-UP

Table A3.1. Message Values Common to All Mishap Categories.

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

PHASE OF OPERATIONS			
Aircraft Maintenance		Missile Maintenance (LF)	
AUR Container (Weapon Removal/Placement)		Weapons Maintenance (WSA)	
Aircraft Weapons Loading		Weapons Maintenance (LF)	
Back Shop Maintenance		Operational Use/Alert	
EOD Operations		OT&E Flight Test	
End-of-Runway Operations		Other	
Flight Line Delivery/Return		Re-Warehousing	
ICT Weapons Loading		Storage	
Inspection/Receiving		Weapons Load Training	
Transport/Handling (intrabase)		Transport (Air)	
Facility Maintenance (Including LF)		Transport (Ground)	
Missile Maintenance (WSA)		UXO (Unexploded Ordnance Handling)	
		Weapons Build-Up	
NUCLEAR			
CROSS CATEGORY		SUBCATEGORY	
Flight	Ground	Weapon	Reactor and Radiological
GUIDED MISSILE			
CROSS CATEGORY		SUBCATEGORY	
Flight	Ground	None	
EXPLOSIVES AND CHEMICAL AGENTS			
CROSS CATEGORY		SUBCATEGORY	
Flight	Ground	Explosives	Chemical Agents
DIRECTED ENERGY			
CROSS CATEGORY		SUBCATEGORY	
Flight	Ground	Weapons	Devices
COMPONENT			
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	
FMIL (foreign military assigned to Air Force		assistance program employees)	

OBJECT					
PROPERTY COMPONENT		PROPERTY DESCRIPTION	OBJECT ACTIVITY AT TIME OF MISHAP	MAJOR SYSTEM THAT FAILED/WAS DAMAGED	
Aircraft	Gun ICBM	Use property description nomenclature from Air Force publications when appropriate	Disposal Handling Maintenance Operational Other Transport Storage	Airframe	Other
Ammunition	Supp Eq MHE			Battery/Pwr	Parachute
Bomb	Missile Other			Canopy	Propulsion
CADD/PADD	Pyrotechnics			Dome	RV Payload
Chaff/Flare	Suspension Eq			Ejection	Telemetry
Demolition	Rocket Vehicle			Seat Flight	Unintended
Exp Egress	Real Estate			Control	Initiation
Item Gen				Surfaces	
Support Eq				Guidance	
Grenade/Mine				Hoist	
GBS					

PERSONNEL				
PERSONNEL IDENTIFICATION	PERSONNEL ACTIVITY AT TIME OF MISHAP		FUNCTIONAL AREA	SAFETY EQUIPMENT
Aircrew Member	Bystander Disposing Handling Inspecting Maintenance	Monitor/Observer Operating Other Training Transporting	Contractor CE	Ear protection
Bystander			EOD Field Maint	Eye/face
Commander Driver			Inspection/QA	protect Foot
EOD Escort			Loading Missile	protect Full
Operator Other			Maint Ops Org	body Gloves
Passenger Range			Maint Other	Harness
Officer Safety Rep			Depot Maint	Helmet/hardhat
Spectator Spotter			Safety Security	None Other
Supervisor Team			Storage/Handling	Respirator
Chief Team Member			Support/Supply	Restraint dev
Worker			Transportation	Safety belt
			Weapons Maint	Seatbelt

GRADE		
NOTE: This is not a true look-up table but a guide to the type of grade structures used.		
AFFN – FN1 (wage grade equivalent) FN2 (administrative) FN3 (management) AS1-AS19 (administrative service) CDT (academy cadet) E1-E9 (enlisted) GM13-GM15 (general manager) GS1-GS15 (general schedule) NA1-NA15 (trades and crafts) NL1-NL15 (trades and crafts work leader) NS1-NS15 (trades and crafts supervisor) O1-O10 (officer) NSPS (Y-Series)	CC1-CC5 (trades and crafts child development) OSI (OSI agent) PS1-PS19 (patron service) ROTC (ROTC cadet) SES1-SES6 (senior executive) UA1-UA9 (universal/annual) UNK (unknown) W1-W4 (warrant officer) WB1-WB19 (wage board) WG1-WG19 (wage grade) WL1-WL19 (wage leader) WS1-WS19 (wage supervisor)	
INJURY CLASS		
FT (Fatal) LT (Lost Time) LW (Lost Workday(s)) NL (No Lost Time) NO (None)	OT (Other) PP (Perm partial) PT (Perm total) TR (Treated and Released)	
BODY PARTS INJURED		
Abdomen Ankle Chest Eye Body, all Arm, Elbow lower Arm, Finger upper Back	Foot Head Face Leg, lower Hip Leg, upper Hand Knee	Mouth/Teeth Shoulder Neck Other Thumb Toe Ribs Wrist
TYPE INJURY		
Abrasion Amputation Bruise Burn Collapsed Lung Concussion Contusion Crush	Dislocation Drown/Suffocate Electric Shock Electrocution Fracture Gunshot Internal Injury	Laceration Other Puncture Rupture Sprain Strain Unknown
SUBSTANCE TYPE		
Alcohol Drugs, OTC (over-the-counter) Drugs, Other Drugs, RX (prescription)	None Other Unknown	

Attachment 4**REPORT FORMATS**

A4.1. Use this format for preliminary reports required by **Table 6.1**. This format can be used for status reports. Preliminary (8-hour) report must not contain privileged information. If this format is used for an initial status report, include the Privileged markings.

Figure A4.1. Format for Preliminary Reports.

From: Message originator.

To: List addressees from **Table 6.3.** or **Table 6.4.**

Classification: Use the proper security markings prescribed by AFI 31-401 for classified messages.

Subject: REPORT TYPE, CLASS, CATEGORY, FLAGWORD (if applicable), SUBCATEGORY, and MISHAP EVENT NUMBER. Example: PRELIMINARY, CLASS D, NUCLEAR, NUCLEAR WEAPON, 20000313AWUB001D (Preliminary Class D for AGM-86).

Special Markings (if applicable).

FOR OFFICIAL USE ONLY.

THIS REPORT 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, VOLUME 1 FOR RESTRICTIONS.

NOTE: For classified messages, “FOR OFFICIAL USE ONLY” does not apply. Omit the quotation “FOR OFFICIAL USE ONLY.”

- 1.** DD MMM YYYY/HHMM/weather conditions (if pertinent to mishap). Indicate when the mishap occurred or when it was discovered. Give the date, local time (24-hour clock), and weather conditions (if applicable). (e.g., 03 Mar 2001/1900/foggy, night).
- 2.** Clear text name of base submitting report.
- 3.** Location where the mishap was discovered. If on a military installation, give the name of the installation, specific location on base, and general function of the location or facility. If the event occurred off base, use street and highway references as well as the distance and compass direction from the nearest US military installation. GPS coordinates (ddd-mm.mm) may be used in place of street and highway references for remote locations.
- 4.** Object Information.
 - 4.1.** Nomenclature and name, weapon carrier MDS, serial number, building number and purpose, national stock number, part number, manufacturer’s name, mishap individual duty position, as applicable. *NOTE:* Consult classification guide for nuclear messages.

5. Owning MAJCOM/DRU/FOA

6. NAF

7. Center/Wing (Wing-equivalent Groups)

8. Squadron

9. Unit

10. Base Code

11. Nature of mishap (damage, injury, death, violation). For radiological, describe type and extent of any contamination, measured intensities, rate of decay, or any other data helpful.

12. Personnel Information. Include known information about personnel fatalities and injuries. Do not include names due to next of kin notification considerations. Do not include SSNs on preliminary messages. Include information on crewmembers and bystanders.

12.1. Grade: Age: (N/A for Preliminary Report) AFSC:

12.2. Injury Class and Type:

12.3 For crewmembers include qualifications.

13. Narrative of circumstances. Give brief description of mishap. Provide strictly abbreviated, factual information. Do not include information implying cause or containing material gained through testimony from crewmembers or other witnesses. Describe extent of damage, e.g., "Building destroyed by fire or explosion," "Missile destroyed," etc. Include mission information.

14. Initial estimates of collateral damage and injury costs. Give estimates of damage to non-Air Force property and non-Air Force injury costs if applicable. Include status of on-going rescue and recovery operations, hazard containment, and security. Provide information on the level of media interest. Exact cost of nuclear equipment or devices may classify the report.

15. Interim Safety Board President and cognizant official and telephone number (DSN and commercial) and e-mail address.

Figure A4.2. Format for Safety Reports.

FROM: (ORIGINATOR)

TO: (See **Table 6.3.** or **Table 6.4.**)

CLASSIFICATION:

SUBJECT: REPORT TYPE, CLASS, CATEGORY, FLAGWORD (if applicable), SUBCATEGORY, and MISHAP EVENT NUMBER. Example: FINAL, CLASS D, NUCLEAR, NUCLEAR WEAPON, 20000313AWUB001E (Final, Class D for AGM-86).

NOTE: For classified reports, see AFI 31-401.

NOTE: Include Privacy Act Statement if Social Security Numbers are included in the message.

//////////

**PRIVACY ACT WARNING
THIS MESSAGE CONTAINS INFORMATION PROTECTED FROM RELEASE BY
FEDERAL STATUTE**

//////////

FOR OFFICIAL USE ONLY.

**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, VOLUME 1 FOR RESTRICTIONS.
DESTROY IN ACCORDANCE WITH AFMAN 37-139 WHEN NO LONGER NEEDED
FOR MISHAP PREVENTION PURPOSES.**

//////////

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

NOTE: For "*" entries, see **Attachment 2**.

1. Location of mishap:

1.1. Name of base or military property (such as Utah Test and Training Range) on which mishap occurred. If mishap occurred off base, state "off military property." Courtesy reporting should be accomplished by the nearest Air Force installation.

1.2. Duty Status: on duty or off duty.

1.3. State and country of mishap.

1.4. Latitude and longitude (degrees and minutes to two decimal places), for remote locations.

1.5. Date of the mishap.

1.6. Local Time.

1.7 Phase of Operations. *

2. Ownership:

2.1. MAJCOM/DRU/FOA.*

2.2. NAF.

2.3. Center/Wing (Wing-equivalent Group).

2.4. Group.

2.5. Squadron.

2.6. Unit.

2.7 Base Code. (Use the four-letter location code from SORTS)

3. Environmental factors:

3.1. Weather was a factor (Y or N).

3.2. Day or night.

3.3 Mishap did involve fire or explosion (Y or N).

4. Damage and injury cost estimates:

4.1. Mishap cost NONAF: Estimate of damage to non-Air Force property, including other DoD and non-DoD property.

4.2. AF cost damage: Cost of damage to Air Force property, including labor and material.

4.3. Cost total injury: Cost of injuries to Air Force personnel, including military and civilian.

4.4 Total mishap cost (sum of costs in items 4.1. through 4.3.).

5. 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 5.X.1 through 5.X.12 for each person involved in the mishap. Number as 5.X.1 through 5.X.12.

5.X.1. SSN. **Mandatory** for military and DoD civilians involved.

5.X.1.1. Gender.

5.X.1.2. Age.

5.X.1.3. Grade*.

5.X.1.4. Duty AFSC or job series.

5.X.2. Time on duty prior to mishap. Give time to nearest 10th hour from the time the individual reported to work until he or she was involved in the mishap.

5.X.3. Activity at time of mishap.*

5.X.4. Personnel Identification.*

5.X.5. Functional area.*

5.X.6. Organization assigned.

5.X.7. MAJCOM/DRU/FOA*.

5.X.7.1. NAF.

5.X.7.2. Center/Wing (Wing-equivalent Group).

5.X.7.3. Group.

5.X.7.4. Squadron.

5.X.7.5. Unit.

5.X.7.6. Base.

5.X.8. Component.*

5.X.9. TOX testing (positive, negative, pending, not suspected or not accomplished). If positive or not accomplished, explain in narrative. TOX test information must be identified in all mishaps.

5.X.9.1. Substance type.*

5.X.9.2. Substance level.

5.X.10. Injury class.*

5.X.10.1. Part of body injured.*

5.X.10.2. Type injury.*

5.X.11. 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:

5.X.11.1. Was individual trained and, if required, certified to perform task (Y or N)?

5.X.11.2. Was training program, as designed, adequate to perform task (Y or N)?

5.X.11.3. Did training, as administered, comply with established training program (Y or N)?

5.X.11.4. Were written instructions available (checklist, TO, etc.) (Y or N)?

5.X.11.5. Were written instructions used (Y or N)?

5.X.11.6. Were written instructions satisfactory (Y or N)?

5.X.12. Safety equipment. Select available safety equipment (maximum of three) from **Attachment 2**, and state if it was used (Y or N) and if it worked (Y or N). Use following format: seat belts/yes/no; parachute/yes/no/; helmet/yes/no.*

6. Property data. Give following data on each piece of property involved. If more than one piece of property is involved, provide information in subparagraphs entitled "Object 1," "Object 2," etc.

6.X.1. Property Component.* Repeat all of entry 6.1 for each item if more than one item or property type is involved. Number as 6.X.1 through 6.X.8.

6.X.1.1. *Organization assigned. If the organization is same as paragraph **2**, state "same as paragraph **2**."

6.X.1.1.1 MAJCOM/DRU/FOA*.

6.X.1.1.2 NAF.

6.X.1.1.3 Center/Wing (Wing-equivalent Group).

6.X.1.1.4 Group.

6.X.1.1.5 Squadron.

6.X.1.1.6 Unit.

6.X.1.1.7 Base.

6.X.1.2. Vehicle or equipment serial number.

6.X.1.3. Object or vehicle activity at time of mishap.*

6.X.1.4. Was object destroyed (Y or N)?

6.X.1.5. Cost to repair or replace.

6.X.1.6. Mission-design-series (MDS).

6.X.1.7. Mishap within 10 miles of base (Y or N)?

6.X.1.8. Major system failing.*

6.X.1.9. Parts information. Repeat entries 6.1.9.1 through 6.1.10 as required for all failed parts. Number as:

6.X.1.9.X through 6.X.1.10.X.

6.X.1.9.1. Failed part:

6.X.1.9.1.1. Failed part description.

6.X.1.9.1.2. Failed part number.

6.X.1.9.1.3. Failed part manufacturer.

6.X.1.9.1.4. Mishap event number from DR report.

6.X.1.10. Lot number (if applicable)

7. Narrative. Give a concise, chronological description of the facts and circumstances leading to the mishap. 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) for all damage and injury or until the event ends. For technical assistance on this item, contact AFSC/SEW, DSN 246-6059, commercial (505) 846-6059. Specify in the narrative if an accident investigation was/was not convened and is being conducted.

8. Findings and causes. Repeat entries 8.1 through 8.X for the required number of findings and causes. Findings must not address new information that was not been previously discussed in the narrative. Identify and document hazards that played a role in the mishap sequence. Hazards are defined as “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.” Determine whether individuals or management addressed these hazards during preparation and

execution of the mishap sequence. Assess the risk based upon the tables of probability and severity from AFI 91-204.

9. Preventive action recommended or taken. Repeat entries 9.1 through 9.X as necessary.

10. Cognizant official, unit, office symbol, telephone number (DSN and commercial) and e-mail address.

Figure A4.3. Format for Nuclear Weapon System Safety Deficiency Reports (Dull Swords).

From: (originator)

To: (See Table 6.4.)

Classification: Use the proper security markings prescribed by AFI 31-401 for classified messages.

Subject: REPORT TYPE, REPORTING UNIT DESIGNATION, FLAGWORD, TWO-DIGIT CALENDAR YEAR OF OCCURRENCE, AND REPORTING UNIT'S SEQUENCE NUMBER.

NOTE: The reporting unit assigns sequence numbers consecutively from 1 October to 30 September of each year for each flagword category. If the deficiency occurs on 30 September and the report is prepared in October of the following year, number it according to the year of occurrence. Report all voided and unused DULL SWORD numbers to AFSC/SEW as soon as possible.

Examples:

PRELIMINARY 509 BW DULL SWORD 96-001

SUPPLEMENTAL REPORT NO. 1, 5 BW DULL SWORD 96-008

FINAL 5 BW DULL SWORD 96-008

ONE-TIME 509 BW DULL SWORD 96-010

Special Markings. Insert the following statement:

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FOR OFFICIAL USE ONLY.

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 FOR RESTRICTIONS.

