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Test and Evaluation

**AIR-LAUNCHED MISSILE ANALYSIS GROUP
(ALMAG)**

COMPLIANCE WITH THIS PUBLICATION IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 99-1, *Test and Evaluation Policy*. Air Force Instruction (AFI) 91-204, *Safety Investigations and Reports*, authorizes use of this instruction. This AFI establishes policies, procedures, and responsibilities for using the Air-Launched Missile Analysis Group (ALMAG) to investigate air-launched missile mishaps occurring during force development evaluation (FDE). AFI 99-151, 1 April 1999, supersedes AFI 99-151, 1 May 1998. This AFI applies only to units, organizations, and members of the Combat Air Forces (CAF) who are involved in MAJCOM-conducted FDE of air-launched missiles. Send comments and suggested improvements to this publication on AF Form 847, **Recommendation for Change of Publication**, through channels, to HQ ACC/DRMT, 204 Dodd Blvd, Suite 226, Langley AFB VA 23665-2777.

SUMMARY OF REVISIONS

AFI 99-204 authorizes use of the ALMAG investigation procedures. The ALMAG will convene for incidents that occur within test range boundaries, no debris impacts outside of range boundaries, and does not involve collateral damage or personal injury. The Joint Air-to-Surface Stand-off Missile (JASSM) replaces the Air-to-Ground Missile (AGM-69A) on the list of systems requiring an ALMAG. The ALMAG Chairperson's duties have been expanded. The ALMAG procedures have been altered for convening and reporting of incidents.

Chapter 1

GENERAL POLICY AND PROCEDURES

1.1. General Policy. This AFI outlines Air Force policy on investigating specific types of air-launched missile anomalies and failures that occur during force development evaluation (FDE) activities conducted during the sustainment portion of the system life cycle. It outlines how the Air-Launched Missile Analysis Group (ALMAG) will conduct appropriate investigations to determine the cause(s) of failure. This AFI is allowed by AFI 91-204, *Safety Investigations and Reports*, Chapter 8.

1.2. Purpose of the Air-Launched Missile Analysis Group (ALMAG). The ALMAG is a mechanism for performing timely and thorough failure analysis and investigations when a formal safety investigation is not required. It is an ad hoc group convened at the direction of the appropriate test center commander or appropriate MAJCOM director (DO or DR). The ALMAG investigates specific types of missile in-flight failures or anomalies to determine missile mechanical or possible design deficiencies and report results.

1.3. Requirements for an ALMAG. The requirement for convening an ALMAG is dependent on the circumstances of each particular incident.

1.3.1. When to Convene an ALMAG. An ALMAG investigation will be convened when the following types of incidents and conditions are met:

1.3.1.1. The incident occurs within test range boundaries, no debris impacts outside of range boundaries, and it does not involve collateral damage or personal injury.

1.3.1.2. No aspect of the incident requires submittal of a High Accident Potential (HAP) Report.

1.3.2. Types of Systems Requiring an ALMAG. The following are examples of air-to-air and air-to-ground missile systems, being evaluated during FDE or tactics development and evaluation (TD&E), covered by this instruction:

1.3.2.1. AGM-65 Maverick.

1.3.2.2. Joint Air-to-Surface Standoff Missile (JASSM).

1.3.2.3. AGM-84 Harpoon.

1.3.2.4. AGM-86B Air-Launched Cruise Missile (ALCM).

1.3.2.5. AGM-86C Conventional Air-Launched Cruise Missile (CALCM).

1.3.2.6. AGM-88 High-Speed Anti-Radiation Missile (HARM).

1.3.2.7. AGM-129A Advance Cruise Missile (ACM).

1.3.2.8. AGM-130, AGM-142 HAVE NAP.

1.3.2.9. AIM-7 Sparrow, AIM-9 Sidewinder.

1.3.2.10. AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM).

NOTE: This instruction will also apply to new air-to-air and air-to-ground missiles entering the inventory.

Chapter 2

ALMAG MEMBERSHIP AND RESPONSIBILITIES

2.1. ALMAG Membership. Each ALMAG is composed of experts chosen by the ALMAG chairperson to conduct each specific investigation. Exact ALMAG membership will be determined on a case-by-case basis. ALMAG membership ends upon completion of each investigation.

2.2. ALMAG Convening Authority. The lead test center commander or higher MAJCOM authority will convene an ALMAG when required. The convening authority will appoint the ALMAG chairperson in writing. Initial ALMAG appointments must be made within 24 hours after the air-launched missile failure or anomaly is discovered or verified.

2.3. ALMAG Chairperson. The chairperson must be a major or above whose selection is based on experience, expertise, maturity, and impartiality. In certain cases, the chairperson may be chosen from an outside organization to ensure a more independent investigation is accomplished. The ALMAG chairperson will:

2.3.1. Nominate members from critical support agencies and functional areas to serve on the ALMAG.

2.3.2. Add technical experts and supplemental members to the ALMAG as required for the particular investigation.

2.3.3. Advise the convening authority of the final ALMAG membership, and provide an estimated time frame for completing the investigation.

2.3.4. Convene and chair the ALMAG.

2.3.5. Assume all responsibilities for successful conduct of the ALMAG.

2.3.6. Arrange for facilities, transportation, communications, equipment, and other support for the investigation.

2.3.7. Secure all test data and technical information for the investigation.

2.3.8. Coordinate through the FDE point of contact (POC) in obtaining any additional or outside technical expertise.

2.3.9. Submit reports and briefings as described in [chapter 3](#) of this AFI.

2.3.10. Submit an extension waiver request to the convening authority, and provide an information copy to the Air Force Safety Center (AFSC), if sufficient data is not available to allow for the investigation and report to be completed as required (i.e., within 75 days).

2.3.11. Disband the ALMAG after all analysis and recommendations for further investigations or fixes, if any, have been reported. Convening authority concurrence is required.

2.4. Primary ALMAG Members. The following specialists will normally be present on each ALMAG convened:

2.4.1. Operations, Analytical, Engineering, or Maintenance Specialists. The missile launch unit provides government representative(s) who are operations, analytical, engineering, and maintenance

expert(s) as required by the ALMAG chairperson. These personnel should be drawn from system program offices (SPO) and system item manager offices, test and evaluation organizations, analytical agencies, and operational organizations. Other fields or disciplines may be selected for the ALMAG as needed.

2.4.2. Safety Specialist. A qualified flight safety officer or weapons safety non-commissioned officer. The safety specialist will advise the ALMAG chairperson on safety issues and guidelines according to AFI 91-204 after the ALMAG is convened, and will advise the adjournment of the ALMAG if the incident falls under the purview of the 91-series safety instructions.

2.4.3. Appropriate Air Force Materiel Command (AFMC) Specialists. Government specialists from AFMC will be selected for the ALMAG as required. These specialists will:

2.4.3.1. Provide the ALMAG with technical and historical data about the system under investigation.

2.4.3.2. Arrange for or acquire technical data or laboratory analysis from the system contractor.

2.4.4. FDE Point of Contact (POC). The test center FDE POC responsible for the overall management of the specific weapon system evaluation will:

2.4.4.1. Coordinate the tasking of other USAF agencies, functional areas, military services, or contractors for technical support, as required, at the direction of the ALMAG chairperson.

2.4.4.2. Arrange funding for travel and lodging for those members not normally budgeted to support an ALMAG.

2.4.4.3. Ensure all relevant test and instrumentation data is made available to the ALMAG.

2.4.4.4. Advise the ALMAG about all FDE and test matters.

2.4.5. MAJCOM Program Manager (PM). The PM for the system under investigation is normally subordinate to the MAJCOM division chief and is a member of the ALMAG. The PM will provide any coordination required between the ALMAG and the MAJCOM headquarters.

2.5. Optional ALMAG Members. The following optional experts should be considered for ALMAG participation as required:

2.5.1. Operations expert(s).

2.5.2. Weapon or aircraft maintenance expert(s).

2.5.3. Weapons or aircraft safety expert(s).

2.5.4. Continental United States test range safety expert(s).

2.5.5. Non-CONUS test range representative(s).

2.5.6. Test instrumentation expert(s).

2.5.7. Recovery specialist(s).

2.5.8. Mission software expert(s).

2.5.9. Mission planning expert(s).

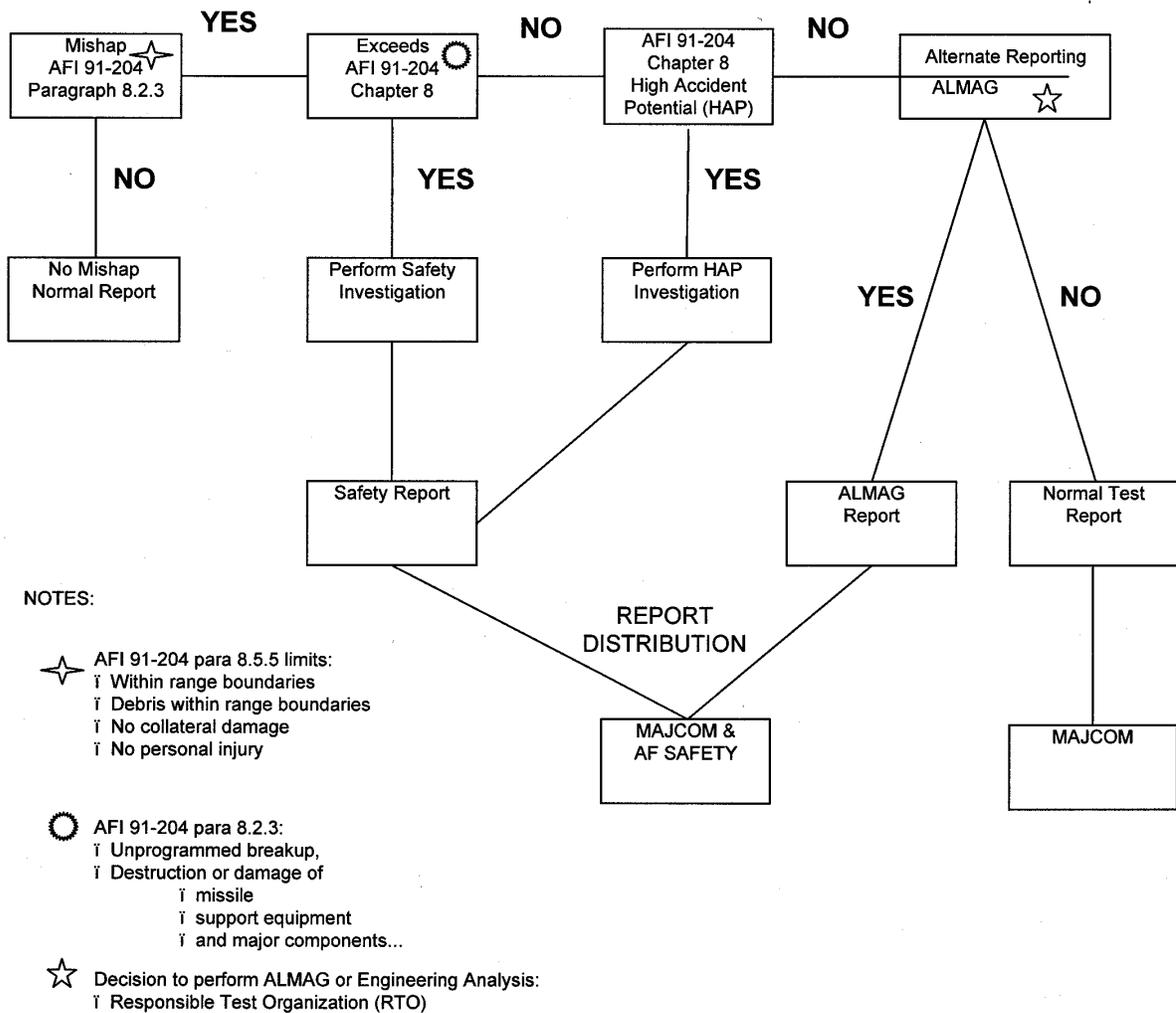
2.5.10. System contractor engineering specialist(s) for the weapon system being investigated.

Chapter 3

ALMAG PROCEDURES

3.1. Convening the ALMAG. The convening authority or higher official determines if an ALMAG is necessary based on the advice of the lead test center and this instruction. If an ALMAG is appropriate (see Figure 1, ALMAG Decision Tree), the convening authority appoints an ALMAG chairperson in writing. If the test center identifies any internal conflicts of interest, the convening authority may appoint an ALMAG chairperson from outside the test center.

Figure 3.1. ALMAG Decision Tree.



3.2. Reporting Requirements. All ALMAG members will participate in preparing required reports and messages to ensure clarity and technical accuracy. All reports are restricted to agencies on a "need to know" basis. The ALMAG chairperson will be the final approval authority for all reports and messages which will be submitted according to the following guidelines:

3.2.1. Message Reports. For standardization, see AFI 91-204, Consolidated Mishap Report (CMR) for recommended ALMAG message report format..

3.2.1.1. Preliminary Message. A preliminary message will be sent to the testing MAJCOM and HQ AFSC within 8 hours (when possible, but no later than 24 hours), and will provide the time of the occurrence and a brief narrative of the incident.

3.2.1.2. Progress Report Message. Provide periodic progress reports by message to the convening authority on the investigation's status as additional information becomes available or no later than 30 days following the incident. Provide information copies to the FDE POC, HQ AFMC/DO, and appropriate Air Force safety agencies.

3.2.1.3. Final Report Message. A final report message will be sent no later than 75 days after the convening of the ALMAG, unless an extension has been requested and approved.

3.2.2. Final Report Briefing. A final report briefing to the ALMAG convening authority will summarize the information in the written final report. The convening authority may waive the briefing when appropriate. The reporting requirements in this directive are exempt from licensing according to AFI 37-124, *The Information Collections and Reports Management Program: Controlling Internal, Public, and Interagency Air Force Information Collections*, paragraph 2.11.4.

3.2.3. Written Final Report. When the investigation is complete, the ALMAG chairperson will submit a written final report documenting all evidence, engineering analysis, and findings. For reference of a suitable report format, use AFI 91-204, CMR. As a minimum, the final report will cover findings, causes, a summary of the engineering analysis, and recommended corrective actions. If sufficient data is not available to complete the investigation and final report within 75 days, the ALMAG chairperson will request an extension from the convening authority.

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

AFI 91-204, *Safety Investigations and Reports*

AFPD 99-1, *Test and Evaluation Policy*

AFI 99-101, *Developmental Test and Evaluation*

AFI 99-102, *Operational Test and Evaluation*

AFI 37-124, *The Information Collections and Reports Management Program: Controlling Internal, Public, and Interagency Air Force Information Collections*

Abbreviations and Acronyms

ACC—Air Combat Command

ACCR—Air Combat Command Regulation

ACM—Advanced Cruise Missile

AFI—Air Force Instruction

AFSC—Air Force Safety Center

AFMC—Air Force Materiel Command

AFPD—Air Force Policy Directive

AFRC—Air Force Reserve Command

AGM—Air-to-Ground Missile

AIM—Air Intercept Missile

ALC—Air Logistics Center

ALCM—Air launched Cruise Missile

ALMAG—Air-Launched Missile Analysis Group

AMRAAM—Advanced Medium Range Air-to-Air Missile

ANG—Air National Guard

ASC—Aeronautical Systems Center

CAF—Combat Air Force

CALCM—Conventional Air Launched Cruise Missile

CMR—Consolidated Mishap Report

CONUS—Continental United States

DO—Director of Operations

DR—Director of Requirements
FDE—Force Development Evaluation
FOT&E—Follow-on Operational Test and Evaluation
HAP—High Accident Potential
HARM—High-speed Anti-Radiation Missile
HQ—Headquarters
MAJCOM—Major Command
PACAF—Pacific Air Force
PDO—Publishing Distribution Office
PM—Program Manager
POC—Point of Contact
SAF—Secretary of the Air Force
SPO—System Program Office
SRAM—Short Range Attack Missile
TD&E—Tactics Development and Evaluation
USAFE—United States Air Force Europe
WWW—World-Wide Web

Terms

Combat Air Forces (CAF)—For the purpose of this instruction, the CAF is ACC, ANG, AFRC, with USAFE and PACAF (via lead command responsibilities adjudicated to ACC by AF Policy Directive 10-9). This instruction is fundamentally applicable to the test and evaluation process for the CAF.

Force Development Evaluation (FDE)—The evaluation, demonstration, exercise, or analysis of fielded, operational systems during the sustainment portion of the system life cycle. FDE focuses on the operational employment and sustainment of fielded systems after the initial system acquisition process, I/QOT&E, and/or FOT&E are complete. See AFI 99-102.