

**BY ORDER OF THE COMMANDER  
AIR FORCE TEST CENTER**

**AIR FORCE TEST CENTER INSTRUCTION  
91-203**



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**Safety**

**AFTC TEST SAFETY REVIEW POLICY**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This publication implements Air Force Instruction (AFI) 91-202 Air Force Materiel Command (AFMC) Supplement. This publication provides further policy and guidance to Chapter 13. It directs the application of system safety principles to the planning and conduct of all Air Force Test Center (AFTC) and other designated AFMC test programs (reference paragraph 1.5) regardless of the agency conducting the tests. It also provides guidance for the application of system safety principles to AFTC training programs, logistics testing, and publications. Organizations within AFTC will supplement this instruction to provide a detailed local test safety review process. Draft supplements must be submitted to AFTC/SE for coordination and TW or Complex Commander for approval. Attachment 1 lists abbreviations and acronyms used in this instruction. 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 Forms 847 from the field through the appropriate functional chain of command. The authority to waive wing/unit level requirements in this publication is Tier 3. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to

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**(AEDC)** This publication represents Arnold Engineering Development Complex's (AEDC's) detailed local test safety review process, to supersede Safety, Health, & Environmental (SHE) Standard A4, to supplement Air Force Test Center Instruction (AFTCI) 91-203, and in turn implement Air Force Instruction (AFI) 91-202, Air Force Materiel Command (AFMC) Supplement (in particular Chapter 13). It applies to all AEDC personnel, including AEDC personnel operating at geographically separated units (GSUs), with the exception of any deviations as documented within attached appendices. This publication provides clarification to test safety review responsibilities and procedures for tests conducted at AEDC, which include return to service from major maintenance or repair and verification and validation (V&V) activities for new or modified configuration items. Refer recommended changes and questions about this publication to the OPR listed above using the AF Form 847, *Recommendation for Change of Publication*; route AF Forms 847 from the field through the appropriate chain of command. Requests for waivers must be submitted to the Office of Primary Responsibility (OPR) listed above for consideration and approval. 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*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

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## Chapter 1

### INTRODUCTION

**1.1. General.** The intent of this instruction is to establish a framework and basic requirements for AFTC test safety programs. This instruction further establishes basic vocabulary and definitions to be used universally throughout AFTC. Within the framework of this instruction, wings or their equivalent are expected to develop processes to fulfill the requirements of this instruction.

**1.2. Test Safety Review Process.** A Test Safety Review Process typically comprises the following functions or phases: Planning (Chapter 4), Review (Chapter 5), Coordination and Approval (Chapter 6), Execution (Chapter 7), Revisions (Chapter 8), Feedback, and Test Completion and Termination. This instruction provides overall policy and guidance for test safety activity to ensure standardization of AFTC organizations while adhering to Air Force Instructions and Air Force Material Command Supplements. Organizations within AFTC will supplement this instruction to provide further test safety process details that uniquely apply to their specific test safety requirements.

**1.3. Safety Review Process Goals.** The goal of any test safety review process is to prevent mishaps during test activities. This process should identify test hazards and establish both procedures and corrective actions to eliminate or control the hazards. The process will allow independent reviewers to evaluate test unique hazards identified by the test team, assess proposed mitigations and corrective actions, and affirm the test team's proposed overall risk level. Once the independent review board has agreed upon and proposed an overall risk level, the safety plan is reviewed and approved by leadership at a level appropriate for the assessed risk.

#### 1.4. Risk Management

1.4.1. Risk Management is the main tool used to prevent mishaps and is the essence of any test safety review process within AFTC. While each test may be unique, the test safety review process for each test will follow a predictable, consistent process. The policy outlined in this instruction and the processes defined in local supplements are tailored to manage risk unique to test activity.

1.4.2. At the discretion of subordinate units, the policy defined in this instruction and local supplement may be used to complete and approve a Risk Management review of non-test activities.

**1.5. Safety Mindset.** While test safety processes should be intentionally thorough, no process is perfect. Everyone involved in test must maintain a safety mindset. A safety mindset does not assume that a test is safe simply because the test has been reviewed and approved; rather, it is continually on the lookout for previously unrecognized hazards during test planning and execution. Once recognized, appropriate actions must be taken to prevent those hazards from becoming mishaps.

**1.6. Scope.** This instruction applies to:

1.6.1. Any ground or flight test activity utilizing AFTC assets. AFTC assets include:

1.6.1.1. Resources owned or possessed by AFTC (personnel, aircraft, equipment, facilities, etc.).

1.6.1.2. Ranges or airspace owned or restricted for use by AFTC units.

1.6.2. Any activity where the AFTC/CC or subordinate commander has responsibility for the safety of the general public as the Major Range and Test Facility Base Commander IAW DoD 3200.11.

1.6.3. Any activity utilizing AFTC assets that presents unique hazards not covered by published procedures or management directives.

1.6.4. AFMC assets when AFTC units are assigned as Lead Developmental Test Organization (LDTO).

1.6.5. Any AFTC unit assigned or acting in the capacity of an LDTO that is responsible for the safe conduct of test, even when AFTC assets are not at risk.

1.6.6. Any activities specified by the subordinate unit Test Safety Office.

**1.7. Waivers.** The AFTC Commander is the waiver authority for this instruction. Guidance in AFI 91-202, AFMC Sup Chapter 13 would still apply unless waived separately. The AFTC Chief of Safety (AFTC/SE) may approve minor variations from this instruction provided that the intent of the test safety process and this instruction are adequately met. Any variations or waivers approved by AFTC will be documented in an MFR and included in the Safety Annex to the Test Plan.

**1.8. Authority.** Compliance with AFTC Test Safety Review Policy does not provide authority to violate Air Force, AFMC, or AFTC instructions or directives.

1.8.1. When a test activity must deviate from an AFI or other command directive, units will comply with the applicable waivers/deviations process outlined in the applicable document. A copy of the waiver will be filed in the Safety Annex. If the waiver authority is within the local Wing or Complex chain of command, the waiver may be obtained during the approval cycle and documented as a coordination comment within the Safety Annex.

1.8.2. When a test activity must deviate from a technical order or flight manual, units will follow current command guidance. If a waiver is required, a copy of the approved waiver will be filed in the Safety Annex. Test teams will note the deviation in the test plan and incorporate safety planning as required.

## Chapter 2

### SAFETY RESPONSIBILITIES

#### 2.1. Test Approval and Coordination Responsibilities

2.1.1. Responsibilities of personnel/organizations involved in the test safety approval and coordination phase are as follows:

2.1.2. The AFTC/CC will:

2.1.2.1. Be the approval authority for this instruction.

2.1.2.2. Be the waiver authority for this instruction.

2.1.3. AFTC/SE will:

2.1.3.1. Establish test safety review policy for all AFTC organizations.

2.1.3.2. Review local supplements to this instruction.

2.1.3.3. Approve minor variations from this instruction that meet the intent of the test safety process and this instruction.

2.1.4. AFTC Test Safety Office will:

2.1.4.1. Organize an annual test safety process meeting with all AFTC organizations to review local test safety process best practices.

2.1.4.2. Assess compliance of AFTC organizations with this instruction when conducting inspections in accordance with AFI 91-202.

2.1.4.3. Approve locally developed Test/System Safety training courses.

2.1.5. Wing or Complex Commander will: Approve local supplements to this instruction.

2.1.6. Wing or Complex Test Safety Office (or SE delegate if none exists) will:

2.1.6.1. Develop a local test safety review process as a supplement to this instruction.

2.1.6.1.1. **(Added-AEDC)** The AEDC Chief of Safety (AEDC/SE) delegate is the OPR for this supplement and the implementation of the AFTC Test Safety Review Policy for all AEDC test operations.

2.1.6.2. Maintain the integrity of locally developed test safety review process to ensure independent government review of safety planning documentation is being accomplished for leadership approval decisions.

2.1.6.3. Provide initial and annually recurring test safety review process training for Wing/Complex/Unit personnel (including contractor personnel as appropriate) who are involved in test safety planning.

2.1.6.3.1. **(Added-AEDC)** The contractor responsible for test safety execution shall provide annually recurring training to AEDC Department of Defense (DoD) and contractor personnel involved in the test safety review process via an electronically tracked newsletter. This training shall be submitted to the AEDC/SE delegate for acceptance.

2.1.6.3.2. **(Added-AEDC)** The contractor responsible for test safety execution shall be responsible for conducting initial training for contractors involved with the test safety review process. Initial training shall be tailored to the specific roles involved in the test safety review process to include initial training for reviewers and initial training for authors. Contractor training shall be submitted to the AEDC/SE delegate for acceptance.

2.1.6.3.3. **(Added-AEDC)** The AEDC/SE delegate shall conduct initial training for AEDC DoD personnel involved with the test safety review process.

2.1.6.4. Incorporate lessons learned and best practices into appropriate training programs and provide for discussion during AFTC's annual test safety process meeting.

2.1.6.5. Provide guidance and assistance to test unit personnel on test safety planning.

2.1.6.5.1. **(Added-AEDC)** The contractor responsible for test safety execution shall provide guidance and assistance to contractor personnel involved in the test safety review process.

2.1.6.6. Designate or act as the Safety Review Board (SRB) chairperson (if required).

2.1.6.6.1. **(Added-AEDC)** The respective GSU Directors have been designated as the Safety Review Board (SRB) chairpersons for tests and operations conducted at AEDC Moffett Field and AEDC White Oak with anticipated risk levels of low and medium, as noted in attachments 2 and 3. This responsibility may not be further delegated.

2.1.6.6.2. **(Added-AEDC)** The AEDC Test Operations Division (AEDC/TST) Technical Director has been designated as the SRB chairperson for all low and medium risk sensitive programs conducted at AEDC. This responsibility may not be further delegated.

2.1.6.7. Approve independent safety reviewers chosen by test teams in accordance with **Section 2.3.**

2.1.6.8. Notify HQ AFMC/SE/A3 and asset owner of high risk tests, IAW AFI 91-202\_AFMCSUP.

2.1.6.9. Ensure an archive of approved test packages and associated documentation is maintained and available to test teams.

2.1.6.9.1. **(Added-AEDC)** Official AEDC test packages, to include the project safety plan and its components, are filed electronically according to the individual project number and accessible internally via the ENOVIA website located at <https://ebiz.arnold.af.mil/ematrix/common/emxNavigator.jsp>, except as noted in attachments 2 and 3.

2.1.6.9.2. **(Added-AEDC)** Safety plans and their components are created, reviewed, approved, and archived within the Safety link of ENOVIA located at [https://ebiz.arnold.af.mil/ematrix/common/emxNavigator.jsp?mode=Tree&MenuName=AEDC\\_Management\\_Links&CommandName=AEDC\\_SafetyHome\\_Link](https://ebiz.arnold.af.mil/ematrix/common/emxNavigator.jsp?mode=Tree&MenuName=AEDC_Management_Links&CommandName=AEDC_SafetyHome_Link). In the event of safety plans created via hardcopy, AFTC Form 5000, Test Hazard Analysis (THA), and AFTC Form 5001, Test Project Safety Review, shall be used.

2.1.6.10. (Added-AEDC) Conduct inspections and audits of contractor generated work to ensure compliance with this publication. A sample of systems, mitigations, and personnel shall be selected to determine compliance with this publication.

## 2.2. Test Unit Safety Planning Responsibilities

2.2.1. Responsibilities of personnel within a test unit during the test safety planning and review phase are as follows:

2.2.2. Squadron Commanders (Test Unit Commander, Director or equivalent) will:

2.2.2.1. Review and provide coordination for all test and safety plans within their organization.

2.2.2.2. Approve Low Risk test activities as delegated by Group CC (or equivalent).

2.2.2.3. Approve Negligible Risk test activities if applicable per local supplement to this instruction.

2.2.2.4. Ensure all unit personnel involved in safety planning or execution are familiar and comply with this instruction and local supplements and receive initial and annual test safety training.

2.2.2.5. Support the AFTC test safety process, which may include operations and/or technical personnel assigned to their test unit participating in independent review of other test programs or activities.

2.2.3. Safety plan authors will:

2.2.3.1. Complete a locally developed Test/System Safety training course offered by the Wing/Complex Test Safety Office and approved by AFTC/SET.

2.2.3.1. (AEDC) The contractor responsible for test safety execution shall conduct training for contractor personnel that author safety plans and its components (refer to Paragraph 2.1.6.3.2. Contractor training shall be submitted to the AEDC/SE delegate for acceptance.

2.2.3.2. Maintain currency by completing continuation training annually.

2.2.3.3. Develop safety plans in accordance with **Chapter 4** of this Instruction and local supplements.

2.2.3.4. Ensure drafted safety plans clearly and adequately provide enough information to support an approval decision.

2.2.3.5. Identify a proposed final project risk level to the independent reviewers.

2.2.4. Test Team will:

2.2.4.1. Determine if test methods, conditions, and resources in test methodology balance safety and data needs.

2.2.4.2. Ensure all appropriate test techniques were considered. Choose the lowest risk technique which efficiently meets test/data objectives.

2.2.4.3. Ensure appropriate test unique hazards related to test methods and system(s) operation are identified and sufficiently controlled (eliminated, mitigated, or residual risk determined to be acceptable).

2.2.4.4. Ensure tests are being conducted per published technical orders and Air Force Instruction guidance, or waivers are submitted/approved.

### **2.3. Independent Safety Reviewer Responsibilities**

2.3.1. Independent Safety Reviewers must be independent of the test program and should have appropriate qualifications; be senior in test experience or have formal Test Pilot School training; and have sufficient expertise in the test activity to be reviewed. To the maximum extent possible, independent safety reviewers should be the same individuals that served as independent reviewers for the technical review (if applicable). For an SRB, minimal membership includes Chief of Test Safety Office or designee as the SRB chairperson plus technical, operations, test facility and maintenance reviewers (as required). The SRB chairperson must be independent of the test program and a government employee. Senior leaders (Squadron Commander or above) satisfy this requirement. Independent reviewers will be approved by the Wing or Complex Test Safety Office in accordance with qualification guidelines set forth in local supplements to this instruction. Individual reviewer responsibilities are as follows:

2.3.2. SRB Chairperson will:

2.3.2.1. Ensure appropriate test unique hazards are identified and sufficiently controlled (eliminated, mitigated, or residual risk determined to be acceptable).

2.3.2.2. Ensure general and special mitigation procedures are clear and unambiguous.

2.3.2.3. Ensure the safety assessment is clearly and concisely articulated to approval authorities.

2.3.2.4. **(Added-AEDC)** Recommend to the Test Execution Authority (TEA) whether or not to execute a test based on SRB results and review of the safety plan per AFI 91-202\_AFMCSUP Paragraph 13.6.2.1.3.

2.3.3. Technical Reviewer will: Ensure technical safety hazards are identified and appropriately controlled (eliminated, mitigated, or residual risk determined to be acceptable).

2.3.4. Operations Reviewer will:

2.3.4.1. Ensure tests are executable, all test techniques were considered, and lowest risk technique which efficiently meets test/data objectives was selected.

2.3.4.2. Ensure hazards related to operating the system are identified and appropriately controlled (eliminated, mitigated, or residual risk determined to be acceptable).

2.3.5. Facility Reviewer (if required) will: Ensure hazards related to operating and maintaining facility-based test systems are identified and appropriately controlled.

2.3.5.1. **(Added-AEDC)** For tests conducted in AEDC test facilities, the Facility Reviewer is a mandatory requirement. The Facility Reviewer shall review the baseline safety reports (BSRs) and baseline hazard analyses (BHAs) applicable to the test and provide a summary to the other independent safety reviewers for the test. Applicable

BHAs that are overdue for revision or being revised shall be assessed for any additional risk imposed on the test and are not required to be approved prior to test safety plan approval or test execution unless they impose additional risk to the test above the existing baseline.

2.3.6. Maintenance Reviewer (if required) will: Ensure test conduct and execution does not deviate from test article maintenance procedures or technical manuals.

2.3.7. Optional Reviewers, as deemed necessary by the SRB chair, may include but are not limited to:

- 2.3.7.1. Range Safety/Range Operations Engineer
- 2.3.7.2. Flight Safety Representative
- 2.3.7.3. Test Engineer
- 2.3.7.4. System Safety Engineer
- 2.3.7.5. Ground Safety Representative
- 2.3.7.6. Weapons Safety Representative
- 2.3.7.7. EOD Representative
- 2.3.7.8. Test Requestor / Item Contractor
- 2.3.7.9. Airspace Representative
- 2.3.7.10. Logistics Representative
- 2.3.7.11. Munitions Representative
- 2.3.7.12. Fire Department Representative
- 2.3.7.13. Bioenvironmental Engineer
- 2.3.7.14. Medical Representative
- 2.3.7.15. Environmental Management Office Representative
- 2.3.7.16. Range O&M Representative
- 2.3.7.17. Laser or Directed Energy Safety Representative
- 2.3.7.18. Flight Termination System Analyst

**2.4. (Added-AEDC) Contractor responsible for test safety execution shall:**

- 2.4.1. (Added-AEDC) Conduct training as specified in 2.1.6.3.1., 2.1.6.3.2. , and 2.2.3.1.
- 2.4.2. (Added-AEDC) Maintain tracking log of annual training completion IAW 2.1.6.3.1.
- 2.4.3. (Added-AEDC) Generate, review, and maintain accurate BHAs for configuration items of responsibility, as required per AEDC-STD-CM-1, *Configuration Management*.
- 2.4.4. (Added-AEDC) Generate safety plans for tests as required.

### Chapter 3

#### RISK ASSESSMENT

**3.1. General.** Risk is defined as a combination of mishap severity and mishap probability. The overall risk level is the degree of risk assumed by leadership in allowing the proposed test to be accomplished in the manner described and under the conditions specified. Test teams will assess risk; independent reviewers will evaluate test unique hazards identified by the test team, assess proposed mitigations and corrective actions, and affirm the test team's proposed overall risk level. Once the independent review board has agreed upon a risk level, they will make a recommendation for a final risk level to the Test Execution Authority (TEA) as outlined in **Chapter 6**. Test teams use system safety techniques, prior experience, legacy system research, and overall engineering judgment to identify test hazards and assess risk by evaluating the credible outcome (mishap severity) of each hazard together with the associated probability of occurrence. The mishap severity and probability is then plotted on a Risk Assessment Matrix to determine the hazard's overall risk level. Although the goal is to minimize risk through good test and safety planning/review processes, the test may result in residual risk that must be directly accepted by the TEA in accordance with **Section 6.1**.

**3.2. Determine Mishap Severity.** The mishap severity category is a qualitative assessment of the most reasonable credible mishap consequence that could occur with all mitigation in place. For activities at AFTC organizations, the mishap severity categories are shown in **Table 3.1**. The assessment should incorporate engineering judgment and/or past experience with similar tests or systems with all minimizing procedures and corrective actions in place. Descriptive definitions should be used as the primary criteria for assessing mishap severity. However, quantitative values may be used for higher cost test articles. Quantitative values for mishap severity listed in **Table 3.1** may be adjusted to match current guidance specified in AFI91-204, *Safety Investigations and Reports*.

**Table 3.1. Mishap Severity Definitions**

MISHAP SEVERITY	Level	Descriptive	Quantitative <sup>1</sup>	Mishap Class
Catastrophic	1	Loss of life, aircraft, facility, or expensive and unique system	> \$2M	A
Critical	2	Severe injury, lengthy hospital stay, or permanent injury. Severe aircraft, equipment or property damage	\$500K - \$2M	B
Marginal	3	Minor injury, medical treatment requiring lost work days, but no permanent injury. Minor damage	\$50K - \$500K	C
Negligible	4	Superficial injury, little or no first aid required. Incidental, less than minor damage	< \$50K	D/E

**1 - Use values listed in table, or current AFI91-204 guidance, whichever is higher**

**3.3. Determine Mishap Probability.** The safety reviewers will subjectively assess the *mishap* probability with all mitigation in place. The mishap probability level should qualitatively and/or quantitatively measure the likelihood of the *mishap* occurring due to personnel error, environmental conditions, design inadequacies, procedural deficiencies, or system/subsystem component failure or malfunction. The assessment should incorporate engineering judgment and past experience with similar tests or systems with all minimizing procedures and corrective actions in place. If available, the test team and safety reviewers should consider the system safety analysis results from the contractor or system program office in order to understand areas of known concern. For operations where there is a well-developed database or sophisticated modeling/simulation, probabilities may be expressed quantitatively as  $1 \times 10^{-4}$ ,  $3.8 \times 10^{-6}$ , etc. However, for developmental testing, the ability to compute numeric failure probability values with confidence is difficult because these activities involve new, complex, and often unproven systems. Therefore, **Table 3.2** also contains descriptive probability definitions (along with some example descriptive statements) that should be used as a standard to consistently assess mishap probability for all AFTC test activities.

**3.3. (AEDC)When available:** The use of appropriate and representative quantitative data that defines frequency or rate of occurrence for the hazard is generally preferable to qualitative analysis, per guidance found in MIL-STD-882, *Department of Defense Standard Practice: System Safety*. When a quantitative assessment is used, an event is generally defined by the exposure duration. A THA typically uses the duration of a test event or test program, whereas a BHA typically uses the lifespan of a system.

**Table 3.2. Mishap Probability Definitions**

Probability	Level	Descriptive	Quantitative (Probability of occurrence per event <sup>1</sup> )
<b>Frequent</b>	<b>A</b>	<b>Very likely to occur</b> <sup>2</sup>	$> 10^{-1}$
<b>Probable</b>	<b>B</b>	<b>Likely to occur</b> <sup>3</sup>	$< 10^{-1}$ but $> 10^{-2}$
<b>Occasional</b>	<b>C</b>	<b>Some likelihood to occur, but not expected</b> <sup>4</sup>	$< 10^{-2}$ but $> 10^{-3}$
<b>Remote</b>	<b>D</b>	<b>Unlikely to occur</b> <sup>5</sup>	$< 10^{-3}$ but $> 10^{-6}$
<b>Improbable</b>	<b>E</b>	<b>Highly unlikely to occur</b>	$< 10^{-6}$

1 - Event may be defined in local supplements to this instruction.

2 - Test activity (or something similar) done before and a mishap occurred or very nearly did. The test exceeds the design limits. There are multiple test-unique single points of failure possible.

3 - Test activity (or something similar) done before and came close to a mishap. The test is at the design limit. There is at least one test-unique single point of failure possible.

4 - All available analysis has been conducted and no information suggests the chance of mishap occurrence is Frequent or Probable. Test activity may never have been done before but areas of concern have been identified. The test is nearing the design limit.

5 - Test activity (or something similar) done before with no problems encountered. Well within the design limits. No test-unique single points of failure.

**3.4. Risk Assessment Matrix.** The risk assessment matrix, shown in **Figure 3.1**, is a tool for assessing mishap risk of test hazards as documented in safety planning documents. The risk categories are discretely divided into four shaded regions to distinguish between NEGLIGIBLE (hashed), LOW (white), MEDIUM (grey), and HIGH (diagonal pattern) risk levels. The correlation of approval authorities with the assigned overall risk level is discussed in **Chapter 4**. Despite the discrete distinction between each risk level, safety reviewers are reminded of the subjective nature of their assessment. This subjectivity is illustrated within the Risk Matrix

using two curved subjectivity lines. The region between the subjectivity lines denotes a subjective MEDIUM risk level. Any block bisected by a subjectivity line becomes a “block of subjectivity”. A subjective assessment differing from the discrete risk level blocks is addressed further in Paragraph 3.6.1. The use of the matrix defined in Figure 3.1 and locally developed Test Safety Review Processes defined in supplements to this instruction are in accordance with AFI 91-202, *The US Air Force Mishap Prevention Program*, AFMC Sup, Chapter 13.

**Figure 3.1. Risk Assessment Matrix**

		Mishap Severity Category			
		<b>Catastrophic – I</b> Death, System/Facility Loss (e.g. Class A Mishap)	<b>Critical – II</b> Severe Injury, Major System/Facility Damage (e.g. Class B Mishap)	<b>Marginal – III</b> Minor Injury, Minor System/Facility Damage (e.g. Class C Mishap)	<b>Negligible – IV</b> Less than Minor Injury or System/Facility Loss (e.g. Class D/E Mishap)
Probability of Mishap Occurring During the Test	<b>Frequent (A)</b>				
	<b>Probable (B)</b>	<b>HIGH</b>			
	<b>Occasional (C)</b>		<b>MED</b>		
	<b>Remote (D)</b>			<b>LOW</b>	
	<b>Improbable (E)</b>				<b>NEGLIGIBLE</b>

**3.5. Negligible Risk.** The negligible overall risk category reflects a subset of “low” risk applicable to activities that are normal or routine operations. The Negligible Risk category is defined as hazards where the severity and probability assessments fall in the Negligible Severity column and Occasional, Remote, or Improbable Probability rows on the Risk Assessment Matrix. Due to the subjective nature of any risk assessment, an overall assessment greater than negligible for these blocks could still be appropriate.

3.5.1. For the severity category to be Negligible, the consequences of a mishap attributable to test activities must be less than minor injury or system damage. For personnel, the impact of the injury or illness equates to no work days lost. For equipment or facilities, less than minor damage equates to losses less than \$50,000 (or current Class D definition). Applicable mishap probabilities for NEGLIGIBLE risk are limited to “occasional, “remote”, or “improbable” levels. If the test team or reviewers identify test unique hazards that warrant a Test Hazard Analysis document, then an overall risk category of NEGLIGIBLE is not appropriate.

3.5.2. Examples include: ride-along data collection points, special instrumentation checkouts, form-fit-function checkouts of non-critical hardware/software, sensor or system

tests, or logistics testing activities that do not directly affect the airworthiness of an aircraft or performance of a test facility nor are they required for hazard avoidance.

3.5.3. **(Added-AEDC)** For all AEDC tests, the negligible risk category will remain within and be assessed as low risk.

**3.6. Determine Overall Risk Assessment.** An overall risk level assessment is accomplished after all hazards to the test have been identified and mitigations are clearly defined and documented in accordance with **Section 4.4**. Hazards that are unique to the test will be documented in the AFTC Form 5000, *Test Hazard Analysis (THA)*. Hazards associated with normal operation and maintenance may be documented in a locally produced Baseline Hazard Analysis (BHA) form. Plot the combination of mishap severity and probability on the Risk Assessment Matrix for each hazard. Once all the individual hazards are plotted, the test team will discuss the safety aspects of the plan and propose an overall project risk level. Project risk will be no lower than the lowest assessed risk from all the hazards. A detailed explanation of THAs and BHAs is discussed in **Section 4.4 Test Package Documentation**.

**3.6. (AEDC) In accordance with Paragraph 4 4.3:** Test safety components are accomplished electronically via ENOVIA as discussed in Paragraph 2.1.6.9.2. In the event a test hazard analysis (THA) or BHA is accomplished via hardcopy, the AFTC Form 5000 shall be used. When the AFTC Form 5000 is used for a BHA, specify that the analysis is a BHA under the “Comments” section of the form.

3.6.1. Subjective Assessments. As discussed in previous sections, both the THA and overall risk assessment can be highly subjective as each test team member and safety reviewer incorporates engineering judgment and/or past experience with similar tests or systems into their risk level assessment. Because of this subjectivity, a test team or safety reviewer may conclude that risk levels that fall within “blocks of subjectivity” may be higher or lower than depicted by the discreet risk level regions. For this reason, test teams and safety reviewers may utilize the subjectivity lines to fine tune their risk assessment if THA or overall risk assessment falls within a block bisected by a subjectivity line. The region between the subjectivity lines denotes a subjective MEDIUM risk level. Therefore, subjective risk assessments may only be adjusted one risk level higher or lower than the discrete risk assessment. The use of subjectivity lines is at the discretion of each Wing or Complex per supplements to this instruction.

3.6.1. **(AEDC)** The expectation for risk assessment is to use discrete risk level assessments for each identified hazard. The use of the subjectivity lines will be determined on a case-by-case basis at the discretion of the AEDC/SE delegate or the SRB chairperson.

3.6.2. THA Risk Assessment. The test team may assess the pre- and post-mitigation mishap severity category and probability level by plotting both on the Risk Assessment Matrix at **Figure 3.1**. This provides a comparison between initial and residual risk levels to evaluate the adequacy of safety measures and best available solution. Test teams and safety reviewers should note that although a minor improvement to the safety plan may not change the assessed “severity”, “probability”, or “risk”; it will still reduce the actual risk. The residual risk level determined by the test team for each THA acts as a proposal for the independent safety reviewers to affirm or adjust as necessary.

3.6.3. Overall Risk Assessment. The test team will propose an overall risk level for the test plan as determined by procedures discussed in this section. During the safety review phase (outlined in **Chapter 5**), the independent safety reviewers will have a general discussion of the test, identified hazards, and associated mitigation to generate opinions on the residual risk. The discussions should be candid and result in a general agreement by the board, although disagreements may occur. Safety reviewers will weigh the control measures in place, their experience with the types of tests, and the system under test (SUT) to assess the overall risk. The cumulative risk may (and frequently does) exceed the assessed risks for all THAs individually. However, the overall risk cannot be lower than the risk associated with any individual THA. The safety reviewers must also consider the complexity of the test, the potential for safety-related “unknown unknowns”, and their own experience with similar test activities. By using the Risk Assessment Matrix (**Figure 3.1**) and referencing the overall risk level descriptions, shown in **Table 3.3**, each safety reviewer should assess overall risk and provide justification for their assessment. This justification is especially important if subjective assessments are incorporated as outlined in **Paragraph 3.6.1**

3.6.3. (AEDC) The descriptions in Table 3.3 primarily apply to flight testing and do not provide an adequate description of the risk levels based on normal operations for ground testing at AEDC. The risk level for a hazard shall be defined using the risk assessment matrix shown in Figure 3.1. The overall risk level for the test shall be, at a minimum, the highest risk level of the THA(s).

**Table 3.3. Overall Risk Level Assessment**

Assessment	Description and Implication
HIGH RISK	Tests or activities that present a significant risk to personnel, equipment, and/or property even after all precautionary measures have been taken.
MEDIUM RISK	Tests or activities that present a greater risk to personnel, equipment, and/or property than normal operations even after all precautionary measures have been taken.
LOW RISK	Test or activities that present no greater risk than normal operations. Routine supervision is appropriate
NEGLIGIBLE RISK	Activities that are normal, routine, and operationally representative

3.6.3.1. In some situations, sufficient information may not be available to complete a risk assessment. The Test Safety Office of each AFTC organization will determine a course of action to develop resolution and may reconvene the safety reviewers to perform the assessment at a later date.

3.6.3.2. If appropriate, the risk may be assessed separately for AFTC and non-AFTC assets, for different phases of the test programs, or for individual test events.

**3.7. Elevated Risk Activities.** Certain tests conducted at AFTC organizations have demonstrated a higher than normal risk due to the inherent hazards involved. However, if the analysis of test activities clearly indicates that the predicted performance (flying qualities, pilot induced oscillation susceptibility, flutter margin, loads margin, etc.) is well within acceptable levels, the test point need not be considered elevated risk. This may be especially true if the analysis model has been validated through other simulation or test activity. In the absence of

quantitative probability data, however, use the following list of tests as a *guide* in identifying those tests which require close analysis to determine if an elevated risk level is warranted. The following list is not all inclusive, other similar activities may also be considered elevated risk:

- 3.7.1. Rocket motor test firing.
- 3.7.2. High Mach air load wind tunnel testing.
- 3.7.3. Radome vulnerability assessment testing.
- 3.7.4. Scaled model loads testing.
- 3.7.5. First flights of new/modified aircraft configurations (including new structures, changes to: flying qualities, performance, armament configurations, and major T-2 modifications).
- 3.7.6. New or modified aircraft life support systems.
- 3.7.7. Flight envelope expansion.
- 3.7.8. Flutter testing.
- 3.7.9. High speed testing of legacy aircraft up to envelope limits.
- 3.7.10. Rejected takeoffs, or performance landings at high sink rates, high crosswinds, or high brake energy levels.
- 3.7.11. Single-engine aircraft air start envelope determination.
- 3.7.12. High angle of attack, spin prevention and out of control tests.
- 3.7.13. Helicopter height-velocity envelope determination.
- 3.7.14. Ground and air minimum control speed determination.
- 3.7.15. Flight tests of development or prototype unmanned vehicles.
- 3.7.16. Tests involving high energy devices or hazardous materials.
- 3.7.17. Armament testing to include testing with live warheads.
- 3.7.18. Powered flight of developmental or prototype missiles.
- 3.7.19. Flight envelope clearance tests of new armament or release systems.
- 3.7.20. Photo/safety chase of any weapon during fly-out or termination.
- 3.7.21. Terrain avoidance and terrain following tests.
- 3.7.22. Initial man/equipment aerial deliveries.
- 3.7.23. Photo/safety chase of dynamic or low altitude maneuvering.

## Chapter 4

### TEST SAFETY PLANNING PHASE

**4.1. Test and Safety Planning.** Safety planning and test planning are integral and iterative processes, and as such, both should be interwoven to ensure the test methods incorporate safety controls where possible. Well planned tests that consider and incorporate risk control measures to eliminate or mitigate test hazards are inherently safer than test plans without this safety emphasis. This chapter covers considerations and guidance during the test safety planning and review phases.

#### **4.2. Safety Considerations During Test Planning.**

4.2.1. Test Approach or Build-up. During test plan development, the test team will carefully consider the test approach or build-up. The way the test approaches a hazardous or unknown condition must be clearly defined. If predictive analysis does not exist, or has questionable validity, the test methodology may require a more refined buildup approach to offset the risk. Criteria to continue, or more importantly when to stop, can provide good risk control by providing a clearly defined roadmap into the test team's decision making. This decision-making process is extremely important and should be documented.

4.2.2. Test Plan Size and Complexity. The test team must consider the size and complexity of the test plan and assess whether a review of a large, complex safety plan is more or less advantageous than several smaller reviews. If feasible, teams may conduct test safety planning for large, complex test plans in smaller, less complex safety plans matched to progressive phases of the test program.

4.2.3. Integration. If the planned testing utilizes more than one test plan, test information sheet (TIS), or procedure, it is incumbent upon the team to provide a clear test progression description. Without a clear path, the ability to identify hazards appropriately and develop a sensible risk assessment is difficult. The test team should be aware of this basic issue to avoid significant and unplanned schedule delays caused by action items or cancelled safety review boards.

#### **4.3. Safety Planning Objectives.**

4.3.1. Identify Test Unique Hazards. The team will identify unique hazards associated with each type of test or activity. In some cases test activities may elevate the risk associated with routine operational hazards, thus requiring additional safety planning. The following are some additional suggestions for identifying test unique hazards.

4.3.1.1. Refer to archived safety planning for consideration of similar tests.

4.3.1.2. Contact personnel or test teams with experience in similar test activities or testing.

4.3.1.3. Research technical aspects via technical libraries, internet, etc.

4.3.1.4. **(Added-AEDC)** Refer to lessons learned from similar tests, in accordance with AFI 91-202\_AFMCSUP Paragraph 13.5.2.6.

4.3.1.5. (**Added-AEDC**) Use contractor-supplied technical data and hazard analyses, if available, in accordance with AFI 91-202\_AFMCSUP Paragraph 13.5.2.8.

4.3.2. Eliminate or Control Hazards in the Following Order of Precedence.

4.3.2. (**AEDC**) In accordance with the philosophy of MIL-STD-882, the goal should always be to eliminate the hazard if possible. When a hazard cannot reasonably be eliminated, the associated risk should be reduced to the lowest acceptable level within the constraints of cost, schedule, and performance by applying elimination or mitigation approaches in the following order of precedence. The mitigations should be evaluated for effectiveness to apply the best “bang-for-the-buck” solutions, per AFI 91-202\_AFMCSUP Paragraph 13.6.3.2.

4.3.2.1. Design the test to eliminate the probability of the hazard occurring. This could include a decision to not perform the test if the risk is deemed to be unacceptably high. A redesign of the system to eliminate the hazard is another option.

4.3.2.2. Change the test methodology to reduce the probability, severity, or exposure to the hazard (building up to the test condition can be a strong control method).

4.3.2.2. (**AEDC**) Use modeling or simulation prior to or in lieu of hazardous test points, in accordance with AFI 91-202\_AFMCSUP Paragraph 13.5.3.3.

4.3.2.3. Incorporate safety devices (e.g. spin chute, or additional power sources).

4.3.2.3. (**AEDC**) Interlock devices are an example of incorporating engineering features or safety devices to reduce risk.

4.3.2.4. Provide caution and warning devices to detect an unsafe condition or trend.

4.3.2.5. Develop procedures and training when it is impractical to change the design or test methodology.

4.3.2.5. (**AEDC**) For hazards assigned a Catastrophic mishap severity category, the use of signage, procedures, training, and/or personal protective equipment (PPE) as the only risk reduction method shall be avoided.

#### 4.4. Test Package Documentation

4.4.1. The “test package” shall be an all-encompassing package of documents consisting of a test plan, safety plan, and any other appendices or documentation that support the test planning. The safety plan will be located in the “Safety Annex” to the test plan. Additional guidance on the test planning process and documentation can be found in local Wing or Complex test planning instructions.

4.4.1. (**AEDC**) If a test requires preplanned damage/destruction of test assets to obtain data, the test package shall contain documentation in accordance with AFI 91-202\_AFMCSUP Paragraph 13.13. Refer to AEDCI 99-100, *Test and Evaluation Project Management*, for more information on the AEDC test planning process.

4.4.2. The safety plan should follow documentation guidance from Chapter 13, paragraph 13.5.4, of AFI 91-202, *The US Air Force Mishap Prevention Program* as supplemented by AFMC. The safety plan shall also include documentation of General Minimizing Procedures (GMPs), THAs, BHAs, and a BSR (if applicable). THAs will be documented on an AFTC Form 5000, *Test Hazard Analysis*. BHAs will be documented in accordance with local

supplements. Format and structure of the safety plan may be further defined in local supplements to this instruction.

4.4.2. (AEDC) Other supporting documentation, as referenced in Paragraph 13.5.4.2.8. of AFI 91-202\_AFMCSUP, may include SRB presentations, stress analyses, graphical representation of the system or test article, safety data sheets (SDS), emails, explosive classifications, x-ray specifications, laser specifications, other methods of analysis, etc.

4.4.2.1. THAs are stand-alone documents that assess the risk associated with a single test unique hazard. A hazard is any condition that has the potential of causing a mishap. Confirm that the hazard is not a hazard associated with the basic operation of the aircraft, test article, vehicle, system under test, or facility. If the hazard is not unique to the series of tests, no THA is required. For example, midair collision with non-participating aircraft and bird strikes are not generally considered test unique hazards. However, should the very nature of the test increase the probability of these hazards above that of normal operations, they should be addressed as test unique hazards. The THA will include the following:

4.4.2.1. (AEDC) For tests involving test articles, THAs shall address unique hazards inherent to the article being tested and other customer-supplied equipment, as well as those hazards that the article or customer-supplied equipment may impose on personnel, facilities, and existing systems. For tests not involving test articles, THAs shall address the hazards associated with the initial testing of any new configuration item or return to service after major maintenance or repair. Any hazards completely assessed in a BHA do not require documentation in a THA. All test projects shall have a minimum of one THA, which is used to assess the overall risk of the project.

4.4.2.1.1. Mishap severity and probability of the Hazard as discussed in detail in [Chapter 3](#).

4.4.2.1.2. Causes are anything that could lead to the presence of the hazard. This is the cause of the hazard, not the mishap. There may be more than one cause.

4.4.2.1.3. Effect is the mishap that may happen if the hazard is not controlled. The mishap is what the THA is trying to prevent and is directly related to the mishap severity level.

4.4.2.1.4. Controls or Minimizing Procedures should be an action or procedure and tied to a specific cause, causes, or effect it is trying to control. These attempt to break the chain of events linking the causes to the hazard.

4.4.2.1.4. (AEDC) Controls or minimizing procedures fall under the general category of mitigation measures.

4.4.2.1.5. Corrective Actions or Emergency Procedures are the list of actions taken to prevent or mitigate a mishap (the effect) if the hazard occurs. Actions may be taken by the control room, ground personnel, flight crew, test facility operators, and anyone else participating in the test. Test unique and hazard specific emergency procedures would be listed here. If not test unique, corrective actions may state operation manual procedures will be followed. These attempt to break the chain of events linking the hazard to the mishap.

- 4.4.2.1.6. Comments are optional information that help support the THA risk analysis but are not directive in nature and do not contribute to breaking the mishap chain.
- 4.4.2.2. GMPs are stand-alone phrases/statements and used to address test article restrictions, test build-up, critical parameter monitoring, go-no-go criteria, weather or environmental criteria, and flight test chase requirements among other items of test safety concern. Some general minimizing procedures from THAs or BHAs may be repeated as a GMP if desired for emphasis.
- 4.4.2.2. **(AEDC)** AEDC does not use the term general minimizing procedures (GMP), but the minimizing procedures are captured in standards, policies, procedures, and work instructions for conducting the test.
- 4.4.2.3. Baseline Hazard Analysis (BHA) – An analysis used to document known hazards concerned with the normal day-to-day operation and maintenance of a system, subsystem or facility.
- 4.4.2.3.1. **(Added-AEDC)** BHAs shall exist for AEDC configuration items in compliance with the requirements of AEDC-STD-CM-1, appendices C and D.
- 4.4.2.3.2. **(Added-AEDC)** BHAs shall include supporting documentation in order to assist reviewers of the analysis (refer to 4.4.2 **(Added)**).
- 4.4.2.3.3. **(Added-AEDC)** BHAs shall be flagged as inactive for configuration items with sustainment statuses of mothballed or abandoned (as defined in AEDC-STD-CM-1).
- 4.4.2.4. Baseline Safety Report (BSR) – A compilation of the entire baseline hazard analysis for a test unit, plant operation, utility, etc. The BSR allows the individual hazard analyses that make up the baseline to be evaluated in a comprehensive package and thus shows the interaction of the systems and interfaces.
- 4.4.2.4.1. **(Added-AEDC)** The connected BHAs are related to the asset hierarchy structure of the systems and subsystems (refer to AEDC-STD-CM-1).
- 4.4.2.4.2. **(Added-AEDC)** Approved BSRs constitute the baseline safety plan for normal operations and maintenance activities of the test facility.
- 4.4.3. Safety plans may be prepared electronically or printed and arranged in hardcopy format. Electronic signatures may be used for coordination and approval of electronic packages.
- 4.4.3. **(AEDC)** The safety plan and its components shall be labelled in accordance with the *AEDC Information Dissemination Process Handbook*. Safety plan documentation shall not contain any privileged safety information as defined in AFI 91-204, *Safety Investigations and Reports*.
- 4.4.4. Statement of Capability (SOC). The following wording must be included in any SOC that is transmitted to a customer when the safety review process is required: “AFTC Safety Review: The proposed test/activity must be reviewed using the procedures contained in AFTCI 91-203, AFTC Test Safety Review Policy and any local supplements to this instruction. To support this review, safety planning must begin early in the program.”

4.4.5. Mishap Accountability. Detailed information on mishap accountability and investigating responsibility must be provided by the test team in the Safety Annex when deviating from AFI 91-204, or if non-Air Force assets are involved, to include pre-mishap planning. A memorandum of agreement is the preferred method when multiple agencies are involved.

4.4.5. (AEDC) Mishap accountability must be clearly established prior to test operations. The owning organization of the test facilities is considered to be AEDC; however, the owning organization of the test article and customer-supplied equipment may be less clear. The owning organization, including point of contact and phone number, of the test article shall be provided in the safety plan for all non-commercial tests.

## Chapter 5

### TEST SAFETY REVIEW PHASE

**5.1. Safety Review Preparation.** In preparation for an independent safety review, test teams should perform the following:

5.1.1. Determine the type of safety review (examples in [Paragraph 5.2.2](#)) and consult Wing/Complex Test Safety office for concurrence.

5.1.2. Evaluate the probability and severity category for each Test Hazard Analyses (THAs) or Baseline Hazard Analyses (BHAs) ([Chapter 3](#)). Provide to the safety reviewers the proposed overall risk level and any test points or test phases which may have a lower risk than the overall risk level (if they exist). Include the rationale for the varying risk levels. The proposed risk level(s) will be considered during the independent safety review.

5.1.3. Develop a list of safety reviewers following guidance in [Section 2.3](#)

**5.2. Safety Review.** The purpose of the Safety Review phase is to allow an independent team to formally review the test unit's safety planning to ensure that all test hazards have been identified and mitigated, and then assess the residual risk. The documentation from the Safety Review phase should reflect a suitable level of clarity and maturity for the Test Execution Authority to make an informed decision on whether to proceed with test execution. The Wing or Complex Test Safety office is the focal point for the Safety Review phase.

5.2.1. Objectives:

5.2.1.1. Ensure appropriate test hazards associated with the test activity are identified.

5.2.1.2. Ensure the proposed risk control measures sufficiently mitigate (minimize or eliminate) the hazards caused by the test/activity to an acceptable level.

5.2.1.3. Assess and recommend an appropriate residual risk level for the test/activity.

5.2.1.4. Ensure the safety annex clearly and adequately provides enough information to support an approval decision by senior leadership.

5.2.2. Types of Independent Safety Reviews. Below are four types of independent safety reviews that may be used to complete the safety review phase. The Wing or Complex Test Safety office may advocate additional types of reviews as defined in local supplements to this instruction. The test team will review relevant documentation and propose a review type to the Test Safety office, who will make the final determination. The four types of independent safety reviews are:

5.2.2.1. Safety Review Board (SRB).

5.2.2.2. Electronic Safety Review (ESR).

5.2.2.3. Combined Technical Review Board (TRB)/SRB.

5.2.2.4. Negligible Risk Review (NRR).

**5.3. Safety Review Board.** The SRB is a formal safety review meeting attended by independent safety reviewers and project personnel, and is chaired by a designated Wing or Complex Test Safety office representative. The decision to conduct an SRB is based primarily

on the test plan size, complexity, maturity of test item/methodology, and expected risk level. To the maximum extent possible, independent safety reviewers chosen for the SRB should be the same individuals that served as independent reviewers for the technical review. This is to ensure continuity of information regarding test methodology is preserved throughout the review and approval process and should result in a more insightful and thorough SRB.

5.3.1. **(Added-AEDC)** An SRB shall be held for tests with an anticipated medium or high risk level.

5.3.2. **(Added-AEDC)** A test SRB shall include:

5.3.2.1. **(Added-AEDC)** Attendee introduction (TEA, SRB chair and board members, project team, and other attendees)

5.3.2.2. **(Added-AEDC)** Agenda/outline

5.3.2.3. **(Added-AEDC)** Project overview (project number, name, description, sponsor/customers, program supported, facility, utility, test units/systems involved, responsibilities of AEDC, sponsor, customer.

5.3.2.4. **(Added-AEDC)** Test article/activity and system/facility information (name, description, layout, system maturity, normal operational and maintenance modes, objectives of activity/test, predicted/expected results of activity to include expected damage, scope, tests/methods, success/failure criteria, significant differences from previous tests/activities/articles, review of mishaps and lessons learned).

5.3.2.5. **(Added-AEDC)** Safety plan summary (mishap reporting and accountability, BSR summary, changes or exceptions to baseline due to test reconfiguration, facility hazards that can impact test or test article, critical hazards that can impact facility, major risks analyzed in the BHAs, critical effects and high level of protection mitigation measures, THA summary, critical effects, high level mitigation measures, test article restrictions, qualification and training, highest risk assessment, additional considerations).

5.3.2.6. **(Added-AEDC)** Action items from the Technical Review Board (TRB) and SRB.

5.3.2.7. **(Added-AEDC)** SRB voting results and recommendation for approval/disapproval. The board members vote and the SRB chairperson recommends approval or disapproval of the safety plan based on the results of the SRB, in accordance with AFI 91-202\_AFMCSUP Paragraph 13.6.2.1.3.

5.3.3. **(Added-AEDC)** A facility SRB shall be held for initial review (Rev 0) of all BSRs. An SRB for a BHA or BSR may also be held at the discretion of the AEDC/SE delegate or the approval authority.

**5.4. Combined TRB/SRB.** For those tests that are easily understood, less complex, or lower in risk, the test team may request a combined TRB/SRB in lieu of separate technical and safety reviews to minimize impact to resources and shorten the timeline. Teams should contact the Test Safety office for final determination on this course of action. Teams will ensure that the test plan is sufficiently mature for safety review prior to the combined TRB/SRB.

**5.5. Electronic Safety Review.** The Electronic Safety Review is a formal safety review of test packages by independent safety reviewers, to include the Test Safety office that occurs without a

meeting. The test package is typically distributed electronically and reviewed in parallel by the safety reviewers. An Electronic Safety Review is appropriate when test activities are readily understood by reviewers, tend to be less complex, and are lower in risk.

**5.5. (AEDC)An Electronic Safety Review (ESR):** Is not to be confused with the mandatory safety plan which is conducted electronically in ENOVIA. The ESR option simply means no formal meeting is held. For tests with an anticipated risk level of low, an SRB waiver request may be sent via email to the AEDC/SE delegate.

**5.6. NEGLIGIBLE Risk Review.** A Negligible Risk Review (NRR) is a streamlined technical and safety review process applicable to a subset of low risk tests. Resultant test hazards cannot have severities greater than “negligible” or probabilities greater than “Occasional” (See [Figure 3.1](#), Risk Assessment Matrix). Test activities that are normal, routine, and operationally representative are also candidates for an NRR process since the risk is effectively the same as the operational risk.

5.6.1. NRR Qualification. NRR qualification of a test program should be proposed by the test team to the Wing or Complex Test Safety office who will make the final determination based on the following criteria:

5.6.1.1. The risk level for the test activity must be assessed as negligible and fall within the hashed blocks in the Risk Assessment Matrix, (see [Figure 3.1](#)). Examples of these activities are listed in [Paragraph 3.5.2](#).

5.6.1.2. Testing will adhere to normal operating procedures and existing risk control measures as defined in the approved flight manual(s), technical orders, test facility procedures, and/or operational guidance/instructions (e.g. Air Force Instructions, Air Force Materiel Command Instructions, and Air Force Test Center Instructions).

5.6.1.3. GMPs are allowed only to the extent that they clarify or further restrict already existing guidance. If the test team or reviewers identify test unique hazards that warrant a Test Hazard Analysis document, then the NRR process is not appropriate.

5.6.1.4. Routine and existing aircrew/operator training, qualification, and proficiency are sufficient to perform the test activity, test or maneuver.

5.6.1.5. Test procedures do not involve the use of abnormal or emergency procedures, checklists or configurations.

5.6.1.6. For flight test, the SUT has no airworthiness impact, such that a failure or malfunction of the SUT would cause the use of abnormal or emergency procedures to safely recover the aircraft.

5.6.2. NRR documentation will be located in the Safety Annex to the Test Plan.

5.6.3. Each Wing/Complex may define a NEGLIGIBLE Risk Review and approval process in a local supplement to this instruction. If defined locally, the NRR process will comply with NRR qualification guidance in this Chapter and the approval coordination path defined in [Table 6.1](#).

## Chapter 6

### TEST SAFETY APPROVAL PHASE

**6.1. Approval Authorities and Notification Levels.** All activities conducted in accordance with paragraph 1.6 require approval before beginning execution. The approval phase provides appropriate leadership the opportunity to make an informed risk acceptance and test approval decision based on the safety review and risk assessment completed in the safety review phase. The Test Execution Authority (TEA) for these activities is based on the proposed risk level as outlined in **Table 6.1**. Approval is defined as permission to conduct or participate in the test program or activity granted by the appropriate TEA. The TEA may require a Test Approval Brief (TAB) to assist in making an informed decision. Signature of the TEA on AFTC Form 5001, *Test Project Safety Review*, constitutes acceptance of the risk and approval to begin activities under the conditions set forth in the test package. A signed safety package does not authorize deviation from Air Force, AFMC, or AFTC instructions or directives.

**Table 6.1. Approval Process Coordination Path**

Organization Level	NEGLIGIBLE Risk	LOW Risk	MEDIUM Risk	HIGH Risk
Safety Office	Coord	Coord	Coord	Coord
Squadron CC (or equivalent)	Approve	Coord	Coord	Coord
Group CC (or equivalent)	Info	Approve*	Approve	Coord
Wing/Complex CC	Not Required	Info	Info	Coord
AFTC SE	Not Required	Not Required	Not Required	Coord
AFTC CC	Not Required	Not Required	Not Required	Approve**
HQ AFMC/SE/A3	Not Required	Not Required	Not Required	Info

\* may be delegated in writing to Squadron CC (or equivalent)  
 \*\* may be delegated in writing to Wing or Complex Commanders

6.1.1. **(Added-AEDC)** Electronic review signatures will be documented in ENOVIA and will constitute acceptance of the risk and approval to begin activities, in accordance with Paragraph 4.4.3.

6.1.2. **(Added-AEDC)** The Execution Authority for a BHA is based on the proposed risk level as outlined in Table 6.1. Approval of a BHA is defined as permission to conduct normal operations and maintenance activities of the system as granted by the appropriate Execution Authority.

**6.2. Delegation.** When approval authority is delegated to a lower organization level, the approval coordination path in **Table 6.1** is still followed but with an info copy sent to the original approving authority. Signature delegation will be no lower than the applicable deputy/vice commander.

### 6.3. LOW Risk Activities.

6.3.1. The Group CC (or equivalent) is the TEA for approval to execute all low-risk test events. However, final approval to execute low risk test may be delegated in writing to the Squadron CC (or equivalent) in compliance with AFI 91-202 as supplemented by AFMC.

6.3.2. NEGLIGIBLE Risk activities, as defined in **Paragraph 3.5**, are a subset of LOW Risk and may be approved no lower than the Squadron CC (or equivalent). If the Squadron CC is unavailable for approval, NEGLIGIBLE Risk activities default to LOW Risk approval requirements.

**6.4. Elevated Risk Activities.** Elevated risk activities are those that result in a residual risk level of MEDIUM or HIGH. Example elevated risk activities are provided in **Section 3.7** but are not limited to activities on this list.

6.4.1. MEDIUM Risk Test Approval. The Group CC (or equivalent) is the TEA for approval to execute all MEDIUM risk test events.

6.4.2. HIGH Risk Test Approval.

6.4.2.1. The AFTC/CC is the TEA for all HIGH risk test events. Final approval to execute HIGH risk test may be delegated in writing to the Wing or Complex CC.

6.4.2.2. If non-AFTC assets/personnel are involved, the asset owner must be notified of the high residual risk prior to test execution. Notification method will be established in local supplements.

6.4.2.3. HQ AFMC/SE/A3 must be notified of high risk tests prior to execution in accordance with AFI 91-202 AFMC Sup para 13.3.4.6. AFTC/SE will send this notification in conjunction with HIGH risk safety plan approval. Wing/Complex Safety offices will inform AFTC/SE when HIGH risk packages have been approved if TEA has been delegated to Wing or Complex CC level.

**6.5. Test Approval Brief.** The TEA or any other Commander on the Approval Coordination Path may require a Test Approval Brief to assist in making an informed decision. A TAB should be an executive level meeting that provides a test program overview and highlights test unique hazards, mitigation procedures, discussion points during the independent review, and any contention or disagreement by the independent board and the test team. The TAB may be combined with an SRB if the TEA is in attendance.

### 6.6. Acceptance of Safety Planning across AFTC.

6.6.1. An AFTC test program which has been approved through an AFTC test wing/complex's technical and safety review processes may be executed by a different, supporting, AFTC test wing/complex.

6.6.2. The originating test wing will notify the supporting wing when the technical and safety review processes are complete and the test program is approved for execution. The originating test wing will provide the supporting wing with test and safety planning documentation required under the originating test wing processes. The supporting wing may accept this documentation as written, or may request additional safety or test review following their own wing supplement to this instruction. Differences will be resolved by equivalent TEAs from each wing. The supporting wing may then execute any assigned

portion of a test program which has been approved to execute under the originating test wing processes.

6.6.3. Test execution materials (e.g. test cards or mission decks) may be developed by either the originating or supporting test wing. The organization creating the mission materials will adhere to local guidance for formatting, content and approval. Mission materials will be approved by the executing organization in accordance with their local procedures.

## Chapter 7

### TEST EXECUTION PHASE

**7.1. General.** The procedures, restrictions, and mitigations documented in the Safety Plan must be observed while conducting the test in order to maintain the accepted level of risk. Safety Plan requirements take precedence over those specified in the test plan. The safety plan is a contract between the test team and senior leadership.

**7.2. Test Card/Test Period Directive Preparation and Approval.**

7.2.1. Test Cards/Test Period Directives/etc. are documents describing the test activity procedures in a step-by-step or checklist format. These documents are used by test teams to successfully complete test activities. They may be reused for multiple test programs but should not be overly general in documentation. Inherently, they should be a synopsis of operation, test and/or manufacturing technical data immediately available to reference for the test team in executing test activities effectively, efficiently and safely.

7.2.2. During test card or test period directive preparation, the test team will review applicable general minimizing procedures, test hazard analysis and Baseline Hazard Analysis to ensure the procedures comply with safety limits, procedural constraints or approved Test Plan requirements.

7.2.3. Test execution procedures, whether documented in test cards or another format, must be approved prior to use during testing. Test card approval levels will be documented in local Wing/Complex instructions.

**7.3. Test/Mission Execution Briefing.** During the test/mission execution brief, the test team will address the procedures and restrictions specified in the Safety Plan. As a minimum, all general minimizing procedures, test hazard analyses and baseline hazard analyses applicable to that particular test will be covered during the test briefing

**7.3. (AEDC)Due to the sheer volume of hazard analyses:** it is impractical for AEDC to cover all the hazards applicable to a particular test during that test's mission execution briefing. Thus, pre-test mission briefings will cover, as a minimum, all test-unique procedures, critical safety instrumentation/limits, and abort procedures referenced in the approved safety plan applicable for that particular test.

**7.4. Unusual Events.** An “unusual event” or “unexpected test result” is any occurrence that warrants a safety-related pause in the test program. If an unusual event occurs, the test team will consult with the Wing or Complex Test Safety Office representative and associated test points will be placed on hold. Once a recovery plan of action is determined, unusual events will normally be documented with a safety plan amendment. Testing of the suspended test points may be resumed upon approval of the appropriate change documentation, as described in [Chapter 8](#). Unusual events include, but are not limited to:

**7.4. (AEDC)See AEDCOI 21-2, *Hold and Impoundment*:** For guidance to initiate/release a hold or impoundment on an AEDC asset following an unplanned event.

7.4.1. Damage to the test article or support equipment.

7.4.2. Exceeding safety of test limits.

- 7.4.3. Unfavorable departure from predicted simulation/analysis.
- 7.4.4. Occurrence of a THA/BHA hazard requiring corrective action.
- 7.4.5. Occurrence of a hazard requiring corrective action not already mitigated by procedures defined in a THA/BHA form.
- 7.4.6. Any lesson learned that needs to immediately pass to the entire test team.

**7.5. (Added-AEDC) The test manager shall:** Notify the AEDC/SE delegate when the test is complete and communicate any safety lessons learned, effectiveness of hazard controls or minimizing procedures, unexpected hazards, value added from the safety review process, and suggestions for improving the safety review process, per AFI 91-202\_AFMCSUP Paragraph 13.10. Notification shall be performed by promoting the safety plan in ENOVIA to inactive status and utilizing the “Comments” text block. Other methods of notification may be used when the safety plan is not approved via ENOVIA. Safety lessons learned shall also be entered in the Lessons Learned database located at the ENOVIA homepage at <https://cs.eis.afmc.af.mil/sites/TeamAEDC/default.aspx>.

## Chapter 8

### CHANGES AND TIME LIMITS

**8.1. Changes.** It is not unusual for project changes to arise after receiving test approval. Unexpected results, overly restrictive controls, hazards not previously identified or adequately controlled, and changes in risk level all constitute reasonable grounds for changing safety planning. All project changes will re-accomplish the following test safety review process phases: safety planning, safety review, and approval. However, the scope of each phase may differ significantly from that of an original safety plan, depending on the changes and documentation method used.

**8.2. Major Changes.** Any potential change in risk level (higher or lower), major test plan change, changes to safety planning, and unusual events are considered major changes that affect test conduct or safety planning. Major changes require additional safety planning, independent safety review, and approval before continued testing with these changes incorporated.

8.2.1. Risk Level Change. During the course of testing, information may be obtained that potentially warrants a change in risk level. This could be an increase in the risk based on unexpected results or a decrease in risk level due to increased system maturity.

8.2.1.1. The approval authority for an increase in risk level will be based on the “new” risk level IAW **Chapter 6** (i.e. an upward change to HIGH risk requires AFTC/CC approval if not already delegated).

8.2.1.2. The approval authority for a decrease in risk level will be based on the “original” risk level IAW **Chapter 6** (i.e. a downward change from HIGH risk requires AFTC/CC approval if not already delegated).

8.2.2. Major Test Plan Change. The definition of major test plan change will be outlined in local supplements. Generally, substantive changes to test objectives, technical approach, or test procedures will also require an amendment to safety planning as defined in the Safety Annex. Individuals performing the final safety review should be the same as those from the original package, if available. For multi-discipline test plans, only the discipline(s) affected by the amendment need to be included for review along with an operations representative.

8.2.2. (AEDC) Changes are considered major if the change is outside/expands the scope of the statement of capability (SOC), if the assigned risk level has changed or is expected to change, if any step in an approved test-unique or baseline procedure/work instruction that is identified as a mitigation measure has changed or is expected to change, or if the change introduces any additional test-unique hazards not assessed during the test safety review or increases the probability or severity of any previously identified hazard.

8.2.3. Change to Safety Planning. Any change to content of the safety plan is considered a change to safety planning. The desired changes could be more restrictive or less restrictive than the approved safety planning.

8.2.4. Unusual Event. Safety plan documentation following an unusual event should describe the occurrence of the event, summarize the cause(s) as they are understood by either analysis or hypothesis, and identify the test team’s intended path for the resumption of testing.

**8.3. Minor and Administrative Changes.** Some changes to the approved test package may be classified as minor or administrative only and will be defined in local supplements. Minor test plan changes may include changing the flight conditions of test points, adding test points (provided the new conditions are within the approved envelope of test points), or deleting test points that are not a part of safety build-up. An administrative change to the test package clarifies information contained in the package and does not affect test conduct or safety planning. Locally approved procedures for documenting and approving minor or administrative changes may be defined in supplements to this instruction. The test unit commander (or equivalent) may be the approval authority for any changes not defined as Major Changes in **Section 7.2**.

**8.3. (AEDC) Changes are considered minor:** If the change does not affect the risk level of the test, does not alter any steps in an approved test-unique or baseline procedure/work instruction, does not introduce additional test-unique hazards, or does not increase the probability or severity of any previously identified hazard. Information pertaining to minor or administrative changes (i.e., new SDSs) shall be attached to the safety plan in ENOVIA. Generally, minor or administrative changes do not require re-approval of the safety plan.

**8.4. Time Limit.** Safety plans will be reviewed at least every three years. Baseline Safety Reports and USAF Test Pilot School standard curriculum event safety plans will be reviewed at least every four years. Teams will identify any new risks and mitigation plans; highlight key issues experienced since approval or the last review; and purge non-applicable guidance from the plan. Teams will document reviews on an AFTC Form 5001 in accordance with **Chapter 6**.

**8.4. (AEDC) BHAs:** Shall be reviewed and reapproved every two years for medium risk activities and every three years for low risk activities as a minimum. BSRs shall be reviewed and reapproved every three years. THAs used for series tests, repeated tests, or long-term tests shall be reviewed and reapproved every three years as a minimum. Electronic review signatures will be documented in ENOVIA and will constitute acceptance of the risk and approval to begin activities.

ARNOLD W. BUNCH, Maj Gen, USAF  
Commander

(AEDC)

RODNEY F. TODARO, Colonel, USAF  
Commander

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

**AFI 33-360**, *Publications and Forms Management*, 25 September 2013

AFI 91-202, *The US Air Force Mishap Prevention Program*, 5 August 2011

AFI91-204, *Safety Investigations and Reports*, 12 February 2014

**AFI 91-202\_AFMCSUP**, *The US Air Force Mishap Prevention Program*, 9 July 2013

**Prescribed Forms**

AFTC Form 5000 – Test Hazard Analysis

AFTC Form 5001 – Test Project Safety Review

***Abbreviations and Acronyms***

**BHA**—Baseline Hazard Analysis

**BSR**—Baseline Safety Report

**ESR**—Electronic Safety Review

**GMP**—General Minimizing Procedures

**LDTO**—Lead Developmental Test Organization

**NRR**—Negligible Risk Review

**RM**—Risk Management

**SE**—Safety Office

**SOC**—Statement of Capability

**SRB**—Safety Review Board

**SUT**—System Under Test

**TAB**—Test Approval Brief

**TEA**—Test Execution Authority

**THA**—Test Hazard Analysis

**TIS**—Test Information Sheet

**TRB**—Technical Review Board

***Terms***

**Acceptable Risk**— That part of identified risk which is allowed by the managing activity to persist without further engineering or management action.

**Baseline Hazard Analyses (BHA)**— An analysis used to document known hazards concerned with the normal day-to-day operation and maintenance of a test system, subsystem or ground test facility.

**Baseline Safety Report (BSR)**— A compilation of BHAs that constitute the hazards associated with the specific operation of a test system, subsystem or ground test facility and includes a BHA for all systems to be operated or maintained. The BSR allows the individual hazard analyses that make up the baseline to be evaluated in a comprehensive package and thus shows the interaction of the systems and interfaces.

**Control/Safety Measure**— An action taken to eliminate or reduce a potential test hazard to an acceptable risk level.

**Deviation**— The intent of the requirement is not met and a waiver must be approved through the appropriate authority.

**General Minimizing Procedure**— Statements that direct a specific action or procedure that mitigates general test execution risk; these generally include the words “will” or “shall”. GMPs are used to address test article restrictions, test build-up, critical parameter monitoring, go-no-go criteria, weather or environmental criteria, and flight test chase requirements among other items of test safety concern.

**Hazard**— Any real or potential condition that can cause injury, illness, or death to personnel; damage to or loss of a system, equipment or property; or damage to the environment. It is the threat of harm and is a precursor state to a mishap.

**Identified Risk**— That risk which has been determined through various analysis techniques.

**Independent Review**— A review by an individual or group that does not have a vested interest in the successful accomplishment of the test objectives and was not directly responsible for the development of the safety plan.

**Mishap**— An unplanned event or series of events resulting in death, injury, occupational illness, or damage to or loss of equipment or property, or damage to the environment.

**Residual Risk**— The remaining mishap risk that exists after all mitigation techniques have been implemented or exhausted, in accordance with the system safety design order of precedence.

**Risk Assessment Consensus**— Unanimous agreement by the safety reviewers on the overall risk assessment. Less than unanimous agreement must be documented in the Final Safety Review Memorandum.

**Risk Level**— An expression of the danger posed by a hazard in terms of the severity of outcome and the probability of occurrence. Risk = Severity x Probability. Risk levels are assigned to both a test event and the test as a whole.

**Risk Management (RM)**— The systematic process of identifying threats/hazards/problems, assessing risk, analyzing risk control options and measures, making control decisions, implementing control decisions, accepting residual risks, and supervising/reviewing the activity for effectiveness.

**Safety Annex**— The safety annex is part of the test plan where all safety planning documentation (i.e. the safety plan) is located.

**Safety Plan**— Safety documentation that details the specific safety criteria and parameters to allow safe conduct of a test. The safety plan can identify targets, munitions, aircraft, and other equipment to be used; defines danger areas; identifies the potential hazards associated with the test; and establishes the specific safety requirements necessary to conduct the test, such as special handling, flight termination systems, surveillance requirements, communication requirements, etc.

**Safety Review Board**— A formal safety review meeting chaired by Wing or Complex Chief of Test Safety or delegate and consisting of independent reviewers as voting members. The meeting is also supported by appropriate project personnel. The product of an SRB is an independently reviewed safety plan and proposed overall risk level of the test for consideration by the TEA.

**Safety Reviewers**— An independent panel of subject knowledgeable individuals that review the test and associated safety plan to ensure test hazards are identified; then eliminated, minimized or controlled to an acceptable level; and to establish the overall risk level. As a safety reviewer, the individual is acting on behalf of the AFTC senior leadership. As a minimum, the safety reviewer panel will be composed of a technical and operations representative who will review the test package. Technical representatives are chosen based on their experience and expertise in the engineering discipline(s) associated with the test activity to be reviewed. Operations representatives are chosen based on their test and operations experience in similar test activities.

**Senior Leadership**— Collective reference to the various Operations Group, Test Wing, Test Complex, and AFTC authorities who coordinate, approve, and review test packages.

**Test and Evaluation (T&E)**—The act of generating empirical data during the research, development or sustainment of systems, and the creation of information through analysis that is useful to technical personnel and decision makers for reducing design and acquisition risks. The process by which systems are measured against requirements and specifications, and the results analyzed so as to gauge progress and provide feedback.

**Test Execution Authority (TEA)**— Senior leader who approves the test package.

**Test Hazard Analysis (THA)**— A document that identifies test hazards, causes, and effects and establishes controls which are used to determine risk level. For AFTC test programs, test hazard analysis will be documented on an AFTC Form 5000.

**Test Organization/Unit**— The organization or unit providing the test facilities, equipment or personnel to conduct a test. The test article may or may not be a resource of the test organization/unit. Also known as the test executing organization (TEO).

**Test Organization/Unit Commander**— The highest ranking individual at the test organization or unit (commander or director). This individual has responsibility for the personnel, equipment and/or facilities for accomplishing the test, and is the individual responsible for reporting mishaps involving the test article or the facilities.

**Test Package**— As a minimum, the test package includes the test plan, safety plan, and any other appendices or documentation that support the test planning.

**Test Plan**— The test plan describes the system under test, defines the test objectives and outlines the test methodology in sufficient detail to demonstrate technical adequacy and execute a technically effective test program.

**Test Safety**— The application of engineering and management principles, criteria, and techniques to optimize all aspects of safety within the constraints of operational effectiveness, time and cost throughout the defined test cycle.

**Test Safety Office**— The division in the safety office that reports directly to the Chief of Safety and is responsible for the implementation and management of the locally developed test safety review process.

**Test Unique Hazards**— Hazards that are a result of the specific test being accomplished and not present in the normal operational hazards associated with the system or environment. These hazards include those inherent to the article being tested as well as those hazards associated with the initial testing of any new system.

**Unacceptable Risk**— That risk which cannot be tolerated by the managing activity. It is a subset of identified risk. Unacceptable risk is either eliminated or controlled.

**Variation**— The intent of the requirement is expected to be met.

**Waiver**— Approval from the appropriate authority to deviate from both the intent and the letter of the requirement.

## Attachment 1 (AEDC)

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

*References*

*AEDC Information Dissemination Process Handbook*, 1 April 2012  
 AEDCI 99-100, *Test and Evaluation Project Management*, 15 April 2015  
 AEDCOI 21-2 *Hold and Impoundment*, 6 July 2010  
 AEDC-STD-CM-1, *Configuration Management*, 24 September 2014  
 MIL-STD-882, *DOD Standard Practice for System Safety*, 11 May 2012

*Abbreviations and Acronyms*

**AEDC** —Arnold Engineering Development Complex  
**BHA** —Baseline Hazard Analysis  
**BSR** —Baseline Safety Report  
**DoD** —Department of Defense  
**ESR** —Electronic Safety Review  
**GMP** —General Minimizing Procedures  
**GSU** —Geographically Separated Unit  
**PPE** —Personal Protective Equipment  
**SAP** —Special Access Program  
**SDS** —Safety Data Sheet  
**SE** —Safety Office  
**SHE** —Safety, Health, & Environment  
**SOC** —Statement of Capability  
**SRB** —Safety Review Board  
**TEA** —Test Execution Authority  
**THA** —Test Hazard Analysis  
**TRB** —Technical Review Board  
**TST** —Test Operations Division  
**V&V** —Verification & Validation

*Terms*

**Administrative Change**—Change that does not affect the subject matter content, authority, purpose, application, and/or implementation of the publication (e.g., changing the point-of-contact (POC) name, office symbol(s), fixing misspellings, etc.)

**ENOVIA** -- A product lifecycle management tool that allows for effective work flow processing and communication through web-based solutions.

**Initial Risk** – The first assessment of potential risk of an identified hazard.

**Mishap Accountability** – The owning organization that pays for test-related repairs and replacements following an AEDC mishap. Generally, a mishap is recorded in the command that

has investigative responsibility for the mishap, per AFI 91-204. Mishap accounting in no way implies blame or mishap responsibility.

**Mission Phase** – A system configuration used to define the operational scope for a set of hazards.

**Mitigation measure** – Action taken to reduce risk by reducing the severity and/or probability of a hazard, cause, or effect (also referred to as a control/safety measure).

**Probability** – An expression of the likelihood of occurrence of a mishap.

**Probability interval** – A chosen length of time over which the hazards are estimated.

**Risk Assessment Matrix** – A tool that assigns risk level based on threshold values established for severity and probability.

**Safety Data Sheet (SDS)** – A fact sheet provided by the manufacturer or supplier of a hazardous material. The SDS describes a material's hazards in sufficient detail to develop proper storage, use, and handling procedures.

**Severity** – The magnitude of potential consequences of a mishap.

**System** – The organization of hardware, software, material, facilities, personnel, data, and services needed to perform a designated function within a stated environment with specified results.

**Attachment 2 (Added-AEDC)****AEDC MOFFETT FIELD SUPPLEMENT**

**A2.1. (AEDC) Review.** This supplement will be reviewed and updated using the same cycle as AEDC Supplement to AFTCI 91-203.

**A2.2. (AEDC) Scope.** This supplement identifies the site-specific actions needed to implement a test safety program at AEDC Moffett Field and which must be complied with by all new or revised hazard analyses. This supplement applies to all personnel conducting operations, maintenance, testing and support at AEDC Moffett Field.

**A2.3. (AEDC) Requirements/Responsibilities:**

**A2.3.1. (AEDC) AEDC Management shall:**

A2.3.1.1. (AEDC) Ensure compliance.

A2.3.1.2. (AEDC) Provide direction and conflict resolution in matters of system safety at AEDC Moffett Field.

**A2.3.2. (AEDC) AEDC Moffett Field Site Director shall:**

A2.3.2.1. (AEDC) Allocate and distribute resources to maintain compliance with this supplement.

A2.3.2.2. (AEDC) Identify, to AEDC management, any unresolved conflicts encountered concerning this supplement, AEDC Sup to AFTCI 91-203, and AEDC Moffett Field operations, maintenance, testing and support requirements.

A2.3.2.3. (AEDC) Serve as the AEDC/SE delegate's designated SRB chairperson for all low- or medium-risk test events to be conducted at AEDC Moffett Field. (This responsibility may not be further delegated.)

A2.3.2.4. (AEDC) Identify a primary POC for the test safety program at AEDC Moffett Field.

**A2.3.3. (AEDC) AEDC Moffett Field Site Supervisors shall:**

A2.3.3.1. (AEDC) Ensure proper operational support during the generation and maintenance of hazard analyses.

**A2.3.4. (AEDC) AEDC Moffett Field System Safety POC shall:**

A2.3.4.1. (AEDC) Develop and maintain a facility safety plan that lists and prioritizes which facilities/systems require hazard analyses. An applicable hazard analysis, or documentation accounting for the lack thereof, shall be properly vetted for each facility/system.

A2.3.4.2. (AEDC) Develop and maintain an AEDC Moffett Field hazard analysis supplement that includes risk identification, mitigation, and communication to decision authorities for primary and support systems. Risk shall be included and mitigation strategies identified for baseline and test-specific activities. Hazard analysis records and related documents will be maintained using local AEDC Moffett Field servers or databases (e.g., FileMaker).

**Attachment 3 (Added-AEDC)****AEDC WHITE OAK SUPPLEMENT**

**A3.1. (AEDC) Review.** This supplement will be reviewed and updated using the same cycle as AEDC Supplement to AFTCI 91-203.

**A3.2. (AEDC) Scope.** This supplement identifies the site-specific roles/responsibilities and actions needed to implement a test safety program at AEDC White Oak. This supplement applies to all personnel conducting operations, maintenance, testing and support at AEDC White Oak.

**A3.3. (AEDC) Requirements/Responsibilities:**

A3.3.1. (AEDC) AEDC Management shall:

A3.3.1.1. (AEDC) Ensure compliance.

A3.3.1.2. (AEDC) Provide direction and conflict resolution in matters of system safety at AEDC White Oak.

A3.3.2. (AEDC) AEDC White Oak Site Director shall:

A3.3.2.1. (AEDC) Allocate and distribute resources to maintain compliance with this supplement.

A3.3.2.2. (AEDC) Identify, to AEDC management, any unresolved conflicts encountered concerning this supplement, AEDC Sup to AFTCI 91-203, and AEDC White Oak operations, maintenance, testing and support requirements.

A3.3.2.3. (AEDC) Serve as the AEDC/SE delegate's designated SRB chairperson for all low- or medium-risk test events to be conducted at AEDC White Oak. (This responsibility may not be further delegated.)

A3.3.3. (AEDC) AEDC White Oak Chief Facility Engineer shall:

A3.3.3.1. (AEDC) Serve as the primary POC for the test safety program at AEDC White Oak.

A3.3.3.2. (AEDC) Develop and maintain a facility safety plan that lists and prioritizes which facilities/systems require hazard analyses. An applicable hazard analysis, or documentation accounting for the lack thereof, shall be properly vetted for each facility/system.

A3.3.3.3. (AEDC) Develop and maintain an AEDC White Oak hazard analysis supplement that includes risk identification, mitigation, and communication to decision authorities for primary and support systems. Risk shall be included and mitigation strategies identified for baseline and test specific activities. Hazard analysis records and related documents will be maintained using local AEDC White Oak servers or databases.

A3.3.3.4. (AEDC) Assign system safety responsibility for AEDC White Oak assets.

A3.3.4. (AEDC) AEDC White Oak Team Leaders shall:

A3.3.4.1. (AEDC) Ensure proper operational support during the generation and maintenance of hazard analyses.

A3.3.4.2. (AEDC) Assign hazard analysis responsibility for test programs to be conducted at AEDC White Oak.

**A3.3.5. (AEDC) AEDC White Oak System Engineers and Project Engineers shall:**

A3.3.5.1. (AEDC) Prepare facility safety plan products for AEDC White Oak assets and test programs in accordance with AEDC Sup to AFTCI 91-203.