

**BY ORDER OF THE COMMANDER  
53RD WING**

**53rd WING INSTRUCTION 99-104**



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***Test and Evaluation***

***COMPLEX TEST MISSION  
PREPARATION AND CONTROL***

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This instruction implements some aspects of 53d Wing Instruction (53 WGI) 99-101, *53WG Capabilities-Based Test and Evaluation*. This instruction addresses the preparation for and the control of complex flight and ground tests for which the 53d Wing, United States Air Force Warfare Center, Air Combat Command, is responsible. It specifies applicability, policy guidelines, qualification and training requirements, test card development and review procedures, control room responsibilities, and ground-to-air standard communications terminology. See **attachment 1** for a complete glossary of references and supporting information. Refer recommended changes and questions about this publication to the office of primary responsibility, 53 WG/TD, 203 West D Avenue, Suite 600, Eglin AFB Florida, 32542-6867. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with AFMAN 33-363, *Management of Records*, and disposed of in accordance Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS).

***SUMMARY OF CHANGES***

This interim change revises 53WGI99-104 by (1) removing references to 53<sup>rd</sup> Test Management Group in **paragraph 1.2.3**; (2) clarifies relationship with all 53WG units working with AFOTEC in **paragraph 1.2.6**; (3) changing Department of Defense to Department of War; (4) replacing the DOD acronym to DOW in **attachment 1**; (5) changing Office of the Secretary of Defense to Office of the Secretary of War; and (6) replacing the OSD acronym to OSW in **paragraph 2.4.2** and in **attachment 1**.

## Chapter 1

### INTRODUCTION

**1.1. General.** Test organizations in the 53rd Wing (53 WG) shall conduct complex flight and ground tests within approved test plans and safety plans in accordance with (IAW) 53 WGI 99-101, 53 WG Test and Evaluation, and this publication. Unit commanders and project managers (PM) are responsible for implementing the provisions of this instruction for the test projects they plan and execute.

**1.2. Applicability.** This instruction only governs the preparation for and control of 53 WG complex flight or ground test missions.

1.2.1. For the purposes of this operating instruction, complex test missions are defined as those missions that require the real-time off-board (ground, airborne) or on-board (own-ship) monitoring of test aircraft, sensor, or weapons performance data and/or safety of flight/flight termination systems via telemetry or a resident network.

1.2.2. Complex test missions do not normally include missions whose primary purpose is one of tactics development. They also do not normally involve facilities whose “control” capability only provides for simple monitoring/controlling of the “fight” geographical location of participating aircraft and/or providing shot assessment for kill removal (i.e., air combat maneuvering instrumentation [ACMI], Nellis Air Combat Training System [NACTS], etc).

1.2.3. Although not released from meeting the intent of this instruction, 53d Weapons Evaluation Group (53 WEG) units responsible for executing the Weapons System Evaluation Program (WSEP) or the Nuclear Weapons System Evaluation Program (NucWSEP) dual-capable aircraft (DCA) missions are authorized to use locally-developed control room training courseware to fulfill 53 WG mission control room training (MCRT) requirements.

1.2.4. This publication does not apply to Air Force Materiel Command (AFMC) units affiliated with the 53 WG as the developmental test part of integrated testing unless directly supporting 53 WG-conducted operational testing.

1.2.5. This publication does not apply to Air Force Reserve Command (AFRC) units, Air National Guard (ANG) units, United States Space Force (USSF), or other service components, unless directly supporting 53 WG-conducted operational testing. This publication does apply to individual members of AFRC or ANG who are functionally (test) matrixed to a 53 WG test unit/team.

1.2.6. This publication does not apply to 53WG units in direct support of Air Force Operational Test and Evaluation Center (AFOTEC), Kirtland AFB, New Mexico, operational testing.

1.2.7. This instruction does not apply to tests where 53 WG members participate in a supporting role, including those of AFMC and AFOTEC.

1.2.8. This applicability paragraph should not be construed as precluding test project managers and/or test unit commanders, at their discretion, from applying the procedures of this wing instruction to tests not strictly meeting the criteria of complex test missions.

**1.3. Safety.** Complex test missions, as defined by this instruction, usually present special planning and execution challenges, particularly if these types of missions are not executed by the responsible unit on a frequent basis. Test personnel should recognize that no guidance on test preparation or control room operation can be sufficient enough that test execution becomes mechanical. Test card content and control room procedures should not be taken as direction or permission to do something unwise. Crew Resource Management (CRM) considerations dictate that any test aircrew member or control room participant should not hesitate to point out circumstances that will—in his/her judgment—put the aircraft or crew in an unplanned or hazardous situation. In short, each member of the test team must communicate, even beyond normal challenge and response levels, to resolve unforeseen situations that may occur.

**1.4. Security.** Test team personnel must follow good security practices to protect sensitive and/or classified telemetry information. Classified data will be properly marked, handled, and shared with appropriately cleared individuals on a “need to know” basis. Mission control room access will only be granted to individuals with the appropriate security credentials.

## Chapter 2

### POLICIES

#### 2.1. Qualifications and Training.

2.1.1. Test units will ensure that personnel are current and qualified in the duties they are required to perform in support of complex test operations.

2.1.2. Test units accomplishing complex test operations will document aircrew training, qualifications, and currency to perform specialized flight test events. Test units accomplishing complex test operations will ensure that aircrew members operating on-board data acquisition and telemetry systems receive training in the proper operation of these systems. Test units accomplishing complex test operations will ensure that maintainers and instrumentation technicians are qualified to perform their required duties through appropriate training prior to working on test articles and conducting ground or logistics tests.

2.1.3. Test units will establish a training and checkout program for mission control room test directors and test conductors. Unit commanders will approve qualifications and authorize test directors/test conductors to perform their duties. Unit commanders will designate instructor test directors to conduct and document initial checkout of new test directors and test conductors. As a minimum, upgrading test directors/conductors will attend 53 WG Test Team Training (computer based training), Test Control and Conduct Training (web based academics), and participate in at least two supervised control room test missions as an upgrade test director/test conductor, prior to assuming duties as an unsupervised test director/conductor. In situations where multiple units (e.g., test management and test execution) reside at the same geographical location, it is highly encouraged these units establish a common test director/test conductor checkout program, using a common pool of approved instructor test directors.

2.1.4. Project managers will verify that test directors and test conductors assigned to their projects have received appropriate academics and on-the-job training prior to performing mission control room duties in these roles.

2.1.5. Test directors will ensure that all other essential mission control room participants have received familiarization training appropriate to their assigned mission control room responsibilities. Essential mission control room participants are defined as those designated subject matter experts whose active participation in the control room are essential to safety of flight and/or mission execution and data collection success.

2.1.6. Depending on the complexity of the test mission, test directors should conduct a “dress rehearsal” with all test mission participants in the actual control room to be utilized, prior to executing the test mission. A dress rehearsal should include an appropriate subset of communications, instrumentation, and control room display checks; as well as a review of communications flow, aircraft flow, and mission flow.

## 2.2. Test Results.

2.2.1. Preparation for and execution of complex test missions are often costly and time consuming. Therefore, in adhering to all the “operationally representative” test mandates provided by Public Law and Department of War (DOW)/Air Force Instruction (AFI) guidance, 53 WG complex test missions will not be executed with a known test item deficiency that could jeopardize successful test mission accomplishment. However, if the deficiency is locally correctable prior to test (improper configuration, revised mission planning load, modified technical order procedures, etc.), the correction may be made and the mission accomplished, but the original discrepancy should be documented and assessed in the final report as to its impact on overall operational effectiveness and/or suitability. This paragraph does not apply to any testing whose purpose is to uncover or characterize suspected deficiencies (captive carries, investigative firings, etc.).

2.2.2. All complex test missions will be sufficiently debriefed to ensure test results are properly documented. To the maximum extent possible, all essential mission personnel, to include the test aircrew, the test director, test conductor, control room engineering representatives, cognizant contractor representatives, and chase/support aircrew, should attend the debriefing. Significant deficiencies discovered and confirmed during testing will be documented, as a minimum, IAW Technical Order (TO) 00-35D-54, *USAF Deficiency Reporting and Investigating System*.

2.2.3. Project Managers are responsible for ensuring that lessons learned from the test are captured and incorporated into the test plan, test report, and/or follow-on mission test cards, as applicable.

2.2.4. Any safety-related events (to include any software/integration anomalies preventing a planned munition’s release) must be reported to local base and 53 WG safety offices and investigated IAW local, Major Command (MAJCOM), and Air Force guidance, as appropriate. Further testing will not be accomplished until the incident is sufficiently investigated and a future occurrence is adequately mitigated.

## 2.3. Mission Control Room Access.

2.3.1. The test director is responsible for reconciling 53 WG mission control room operations procedures – including control room access policy – with local range control room guidance.

2.3.2. The only personnel normally admitted into a 53 WG test mission control room are those test team members who are both active participants in the test mission and who have attended the test mission mass pre-flight briefing. The test director is the final authority on test team access to the control room for all 53 WG missions, to include the following:

2.3.2.1. Participants unable to attend the pre-mission briefing and whose presence would not have been constructive.

2.3.2.2. Select observers where a range mission control facility does not have an adequate VIP/observer location to view the mission, to include O-6s or above and contractor/civilian equivalents and test execution/test management unit commanders.

#### **2.4. Office of the Secretary of War (OSW) Oversight Test Programs.**

2.4.1. Title 10 US Code, Section 139, specifies that any observers designated by Director, Operational Test and Evaluation (DOT&E) must be allowed to attend the conduct of an operational test.

2.4.2. Any DOT&E representative attending a 53 WG test of a system that is on the OSW Oversight List should be considered a “designee” of DOT&E for observing the test. It is the responsibility of the project manager to know if his/her project is on the OSW Oversight List and to convey that information to the test director.

2.4.3. Although mission control room facility VIP/Observer areas should provide adequate viewing for DOT&E representatives; the test director, at his/her discretion, is encouraged to grant DOT&E individuals access to the main mission control room if it will not compromise successful mission accomplishment.

## Chapter 3

### PROCEDURES AND PERSONNEL

#### 3.1. Test Preparation.

3.1.1. For complex test missions, a final test card review will be held by the unit project officer (UPO) and the test director/conductor, preferably 48 hours prior to test mission execution, but no later than 24 hours prior. Test card runs will be briefed in the planned testing sequence, to include a review of all flight test maneuvers and procedures. Major changes (adding new profiles, adding additional test aircraft, changing ordnance, etc.) to the card deck are not allowed at the final run card review. If major changes are required, the cards must be re-approved via the initial execution unit test card approval process. The test director is the final authority for what constitutes a major test card change.

3.1.2. The preferred process for this final test card review is for the test director to brief the test cards directly to all test team members, en masse. Special planning considerations must be taken into account when test team members are geographically separated, or when they need to travel to an off-site range prior to test execution. Teleconferencing capabilities may be used to simultaneously brief as many of the test team members as possible; but in all situations, it is incumbent upon the UPO or the test director to ensure that all test team members are made aware of all run card changes in sufficient time for their review and comment.

3.1.3. “Redline” changes may be made at the final test card review, without undergoing a formal coordination and re-approval process. Redlines are appropriate when correcting administrative errors that were not caught during the review cycle and making clarifications. Correction of errors is a primary reason for the card review and it is the last chance to ensure flight conditions, limits, procedures, etc., are all as desired to meet test objectives. Clarifications include such topics as the specifics of executing a particular test procedure and changing aircraft configurations between test points. The test director is the final authority for granting “redline” test card changes.

3.1.4. Mission support changes include such things as radio frequencies, aircraft tail numbers, aircrew members, support aircraft call signs, takeoff times, etc. These changes may be made without formal coordination and approval any time prior to and during the test mission, as appropriate.

3.1.5. New test runs cannot be added at the final test card review without repeating the entire test card review and approval process, but runs may be deleted, specified runs may be repeated, or the run card order may be changed. It is imperative, when deleting test runs or changing the run card order, to consider any potential impacts to chronologically connected or otherwise related test points. The test director has final approval authority on deleting test runs or changing run card order.

**3.2. Mission Control Rooms.** A mission control room is defined as any facility, ground or airborne, that provides two-way communication with the aircrew and real-time telemetry capability to monitor safety of flight and/or test data. The following procedures apply to all ground mission control room operations and to most situations where the test director/conductor and other key personnel are airborne in a test or a test support aircraft.

3.2.1. Every individual in the control room must be trained in his or her responsibilities and should be familiar with the responsibilities of all others in the control room.

3.2.2. There is always a single, highly experienced individual designated as the test director, who acts as supervisor of the mission control room test team and has emergency direct communication with the mission test aircrew.

3.2.3. There may be a single, experienced individual designated as the test conductor who is the primary communicator with the test aircrew. The test conductor will clear the test pilot to proceed from one test point to the next. The test conductor may be the test director for less complex test missions.

3.2.4. All essential control room personnel will be in direct communication with each other and with the test director/conductor. All essential control room personnel will monitor aircrew-to-control room communications. In-flight video of the aircraft and/or its released munition may be required to enhance the situational awareness of control room personnel. Teamwork is paramount. **Note: Any member of the aircrew or control room team may recommend termination of a test point to the test conductor. In cases where safety of flight is a concern, any member of the aircrew or control room team may abort the test activity. See [paragraph 4.2](#) for additional details about control room communication of information.**

3.2.5. Unambiguous radio communications with the test aircrew must be used (see [chapter 4](#)).

3.2.6. All safety or mission critical steps (e.g., weapons switch positions) in complex test missions must be “challenge and response” (i.e., the test director/conductor challenges and the test aircrew responds), and written/highlighted on the test cards/test procedures sheet that the aircrew uses to execute the mission. The test director/conductor must be familiar with mission specific aircrew workload, so challenge and response items will not interfere with critical cockpit activities.

3.2.7. All telemetered safety-of-flight and mission critical test data will be continuously monitored, and a procedure shall be in place to immediately notify the test aircrew if safety limits are approached, or if critical data reception malfunctions for any reason.

3.2.8. Test run and/or mission termination criteria will be covered in the mission pre-briefing. Test run and/or mission termination decisions will be made by the test director/conductor, as briefed, in coordination with range safety. For remotely operated air vehicles (ROAV) testing, including remotely piloted aircraft (RPA), the chase aircrew or ROAV operator may take control of the vehicle, as applicable, for safety reasons, without concurrence from the control room.

3.2.9. All test directors and test conductors, as well as any essential control room participants directly responsible for monitoring safety-of-flight related information, will observe a 10-hour

rest period prior to reporting for duty and participating in a test mission. This rest period requirement may be waived by the test unit's group commander or above. In addition, the duty day for all control room personnel will not exceed 12 hours, from the time the individual reports for duty until active mission control room monitoring is no longer required. For long duration test missions, test organizations should consider rotating control room personnel. The test unit commander may extend the control room crew duty day up to 18 hours. Any 53 WG test team member performing a role in a mission control room will not drink alcoholic beverages within a 12-hour period prior to entering the control room for a test mission.

**3.3. Mission Duties.** The following paragraphs discuss the roles of personnel who are typically control room participants in a large test requiring use of a ground mission control room. Depending on the complexity of the test mission, certain positions may not be required and/or individuals may fulfill more than one key mission duty (e.g., PM, UPO, rated project officer [RPO], or test engineer [TE] may also act as the test director or test conductor). In tests where a multi-person aircraft is the mission control room, modifications to these key personnel duties may be required. Contractual requirements or test activities involving multiple government agencies may also necessitate some modification of the responsibilities listed. Test teams may modify the key duties below, as necessary, but should ensure that all essential control room responsibilities are assigned to specific individuals. Depending on the nature and complexity of the test, the list of mission control room personnel referred to in this instruction may not be all-inclusive, and should not be perceived as excluding additional control room participants.

**3.3.1. Test Director.** Responsible for the technical quality, security, safety, and support aspects of the mission as identified in the test plan. The test director also performs the following:

3.3.1.1. Verifies that the test cards and/or procedures have been properly reviewed and approved.

3.3.1.2. Ensures key personnel attend both pre- and post-test briefings. The test director will ensure that test cards and safety packages are fully briefed and will ensure that test results are properly documented. Briefs any applicable mission risk management (RM) mitigations required by the test plan.

3.3.1.3. Emphasizes applicable CRM guidance to the entire test team.

3.3.1.4. Supervises the mission control room and verifies qualifications of all test personnel in the control room.

3.3.1.5. Possesses the authority to terminate the test point or mission if the technical validity of the test is in question or if safety is jeopardized.

3.3.1.6. Makes the final decision on the real-time selection of test run options during the test mission.

3.3.1.7. Has emergency direct communication with test mission aircrew.

**3.3.2. Test Aircrew.** Responsible for the safe operation of the test aircraft and successful completion of the test mission. The pilot-in-command will be the final authority on aircraft safety. On multi-crew aircraft, a designated aircrew individual will be responsible for the execution of the test points. The pilot-in-command and/or his designated rated aircrew representative also performs the following:

3.3.2.1. Assists the PM, UPO, operations analyst (OA)/operational suitability analyst (OSA), and TEs in preparation and review of the test plan.

3.3.2.2. Prepares or assists the PM and/or UPO in the preparation of ORM and safety reviews.

3.3.2.3. Assists the UPO, OA/OSA, and TE in the preparation of test cards and reviews test points and test mission profile for safety and execution practicality.

3.3.2.4. Reviews test cards for compliance with range safety review package.

3.3.2.5. Will be provided written information and be briefed on the entire horizontal and vertical flight profile of any free-flight weapon the mission aircraft is expected to release.

3.3.2.6. Possesses the authority to terminate the test point or mission for any safety of flight reason.

3.3.2.7. Performs test maneuvers as briefed, or in the case of multi-crew aircraft, oversees test maneuvers, as appropriate.

3.3.2.8. Leads the mission execution portion of the briefing and debriefing.

3.3.2.9. Ensures test aircraft crewmembers understand their duties for the mission and reviews aircrew duties in the event of an emergency in the test, chase or other support aircraft.

3.3.2.10. Completes post-mission questionnaires and/or reports, as required.

3.3.2.11. Assists OA and TE in analyzing test data by filling out post-mission questionnaires and providing assessments as to test system effectiveness and mission suitability.

3.3.3. **Chase Aircrew.** Responsible for clearing airspace, being in position to take photographs (as applicable), checking over the test aircraft between test points, and assisting the test aircraft in an emergency. The chase pilot-in-command also performs the following:

3.3.3.1. Attends mission briefings.

3.3.3.2. Reviews all mission maneuvers with test aircrew and ensures the test team is briefed on the following items: chase position, expected test results, photography requirements, minimum anticipated altitudes and terrain clearance, aircraft limits for both test and chase aircraft, fuel management plan, altitude deconfliction and plan for lost sight, and rendezvous/rejoin plan.

3.3.3.3. Will be provided written information and briefed on the entire horizontal and vertical flight profile of any free-flight weapon that the chase pilot is expected to observe. Briefing will include minimum altitudes below which the weapon will not be followed.

3.3.3.4. Ensures chase aircraft crewmembers (to include photographers) understand their duties for the mission and reviews aircrew duties in the event of an emergency in the test, chase, or other support aircraft.

3.3.3.5. Completes post-mission questionnaires and/or reports, as required.

**3.3.4. Test Conductor.** Responsible for real-time coordination of ground activities with the aircrew, paces progression through the test cards as agreed to in the mission pre-briefing, defers to the test director for decisions, as appropriate, and is the primary communicator with the test aircraft. The test conductor may be airborne in a test or test support aircraft. In less complicated tests, the test conductor may also be the test director. The test conductor also performs the following:

3.3.4.1. Works with the OA/OSA and UPO to provide approved test cards to the PM, test execution unit approval chain-of-command, test aircrew, test engineers, and others as applicable, prior to test pre-mission briefing.

3.3.4.2. Coordinates control room setup, as required.

3.3.4.3. Briefs the test team of technical requirements of the test cards during mission briefing.

3.3.4.4. Briefs the test team of applicable test risk mitigation procedures, to include specific ORM requirements, during mission briefing.

3.3.4.5. Makes test-point terminate and go or no-go calls based on real-time analyses of control room data. Terminates test points if the technical validity of the test is in question or safety is jeopardized.

**3.3.5. Test Engineer.** Responsible for the technical adequacy of the test. The TE also performs the following:

3.3.5.1. Assists the PM, UPO, test aircrew, and OA/OSA in preparing the test plan.

3.3.5.2. Assists the PM and UPO in the preparation of any required safety or risk assessment review packages.

3.3.5.3. Works with the UPO and OA/OSA to prepare test procedures or test cards.

3.3.5.4. Determines what control room data are required. Participates in control room configuration determination.

3.3.5.5. Ensures each test item is correctly configured and operationally representative.

3.3.5.6. Monitors critical data from safety and technical standpoints.

3.3.5.7. Determines if executed test point was technically adequate and gives test conductor recommendation to repeat point or proceed.

3.3.5.8. Informs test director/test conductor if telemetry data is unusable or when termination criteria is being approached.

3.3.5.9. Assists OA/OSA and test aircrew in analyzing test data and provides assessments as to test system effectiveness and mission suitability.

3.3.5.10. Works with the PM and OA/OSA to ensure test item deficiencies are catalogued in a watch item (WIT) list or the Joint Deficiency Reporting System (JDRS), as appropriate.

**3.3.6. Operations Analyst/Operational Suitability Analyst.** Responsible for test preparation, post-flight analysis, and post-test data reporting. The OA/OSA: also performs the following:

3.3.6.1. Works with the PM, UPO, TE, and test aircrew to prepare and review the test plan.

3.3.6.2. Constructs test cards and/or test procedures in coordination with the UPO, TE, and test aircrew. Works with the test conductor and UPO to provide approved test cards to the PM, test execution unit approval chain-of-command, test aircrew, test engineers, and others as applicable, prior to test mission pre-briefing.

3.3.6.3. Works with the PM and UPO to provide coordination between operations, engineering, and maintenance to schedule the test articles, support aircraft, and test ranges. The OA/OSA works with the TE and instrumentation engineer to ensure proper test article configuration and data acquisition system configuration.

3.3.6.4. Gathers post-mission reports, video tapes, and instrumentation information, as applicable, and accomplishes the appropriate data analysis and reporting activities.

3.3.6.5. Assists test aircrew and TE in analyzing test data; provides assessments as to test system effectiveness and mission suitability.

3.3.6.6. Works with the PM and TE to ensure test item deficiencies are catalogued in a WIT list or an approved Air Force Deficiency Reporting System, as appropriate.

**3.3.7. Instrumentation Engineer.** Responsible for the pre-flight, post-flight, and real-time operation of the data acquisition system.

**3.3.8. Data Production Analyst (DPA).** Responsible for development of real-time and post-flight data products, pre-mission preparation of mission control rooms and computer systems, operation of the mission control rooms, and associated data processing systems during test mission support (real-time and post-flight). The DPA is the liaison between users of the data support systems, instrumentation engineer, and the data processing staff. The DPA has overall responsibility for ensuring compatibility between the airborne instrumentation and ground data processing systems and interfaces.

**3.3.9. Range Control Officer (RCO).** Responsible to the test director for the mission profile – the real-time placement of the test and test support aircraft. The RCO coordinates all range support, both inter- and intra-range. The RCO prepares and coordinates documentation and procedures with range users and other support ranges, where necessary, to satisfy test mission requirements. The RCO is normally provided by the host range and is not formally part of the test director's mission test team.

**3.3.10. Range Safety Officer (RSO).** Responsible for protection of the general public. During real-time operations, the RSO provides an independent safety assessment for the flights of unmanned vehicles and weapons. The RSO may cancel or terminate test missions that violate range safety criteria or pose a potential threat to personnel, facilities, or property. In the event of imminent danger or errant flight of these systems, the RSO may directly invoke recovery or destruct actions on these vehicles using the ranges flight termination systems or by direction to project personnel. The RSO is normally provided by the host range and is not formally part of the test director's mission test team.

## Chapter 4

### COMMUNICATIONS

**4.1. General.** The test conductor will provide appropriate communications between the mission control room and the aircrew for conduct of the test. The following terms will apply when standard communications are in effect (paragraphs **4.2.1-4.2.13.**). The test team will be briefed on non-standard terminology. See 53d Weapons Evaluation Group Operating Instruction (WEGOI) 11-250 for additional, specialized terminology used in air-to-air WSEP missions.

#### **4.2. Terminology.**

4.2.1. **“Abort, Abort, Abort.”** This is an urgent call made when time is critical conveying the information. It usually occurs in safety-of-flight situations or as a result of a late malfunction on a weapons delivery run. This call is normally made in an attempt to preclude an unsafe situation from developing further or to prevent an ineffective weapons release. Upon hearing the call, the test pilot will cease maneuvering, as appropriate, and immediately safe all weapons switches. This is a priority call that may be made by the mission control room, the test aircraft, or the chase aircraft. This call may or may not end the mission, but as a minimum, it will necessitate resetting the entire test run. If the weapon has already been released, if possible, aircrew will guide weapon to predetermined abort point. Crews will brief a predetermined abort point.

4.2.2. **“Knock-it-off.”** Normally an AIRCREW ONLY term to cease maneuvering for safety of flight reasons in accordance with applicable Air Force published training rules. This call will necessitate resetting the entire test run. Control room personnel should use the abort or terminate calls in lieu of the knock-it-off call unless knock-it-off is specifically warranted by a safety-of-flight concern.

4.2.3. **“Terminate.”** Cease executing the planned maneuver. Actions may include unloading to 1g and decreasing airspeed. A reason usually follows the terminate call; however, the terminate call is not as urgent as an abort or a knock-it-off call and may not require resetting the entire test run. Examples include telemetry (TM) dropout, weather, off planned test parameters, inaccurate switch settings, etc.

4.2.4. **“Arm Hot”** (drone operations only). Directive for individual shooters to arm their weapons systems.

4.2.5. **“Cease Fire”** (drone operations only). If a cease fire is issued, shooters lose any previous clearance to fire. If shooters were armed hot, they may remain so. They may continue to intercept/maneuver against the drone. Shooters will immediately acknowledge the cease-fire call or a knock-it-off will be issued.

4.2.6. **“Arm Safe ”** (drone operations only). Shooters lose any previous clearance to fire and arm. Shooters will immediately safe their weapons systems and acknowledge the arm safe call. Failure to do so will result in a knock-it-off. Shooters may continue to intercept/maneuver against the drone. Arm safe will be called if any aircraft is positioned or will fly in front of an armed aircraft's 3/9 line within the missile footprint.

4.2.7. **“Stand-by.”** Hold the current conditions and do not execute additional steps in the test run. Used for data analysis or test set-up reconsideration, unless otherwise stated.

4.2.8. **“Continue.”** Confirms that previously issued directions are still in force. Often used when a “Stand By” (see [paragraph 4.2.6](#)) of extended duration is in effect.

4.2.9. **“Point Complete.”** Current test point complete. Stand-by for clearance to proceed to the next test point, air refuel, return to base (RTB), etc.

4.2.10. **“Cleared to [the next test condition].”** Cleared to the specified test point or maneuver.

4.2.11. **“On Conditions.”** Stabilized on the test point. Used for good data collection.

4.2.12. **“Skip It.”** Do not release on this pass; go through dry and safe the system. Skip it applies to testing where stores are released from the test aircraft. It is often used when the test aircraft has not achieved the proper weapons delivery parameters, where a chase aircraft is out of position for the release, or where the proper data will not be captured (to include required chase photos). Skip it is not used in any situation where safety is a concern or where time is critical in conveying a directive.

4.2.13. **“Loiter.”** Slow to maximum endurance and wait for further instructions. Frequently used prior to entering a range, when range safety, or the mission control room is not ready to proceed with the test.

R. RYAN MESSER, Col, USAF  
Commander, 53d Wing

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

AFPD 99-1, *Test and Evaluation Process*, 19 Jun 2018

AFI 99-103, *Capabilities-Based Test and Evaluation*, 18 Nov 2019

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***Abbreviations and Acronyms***

**ACMI**—Air Combat Maneuvering Instrumentation

**AFI**—Air Force Instruction

**CRM**—Crew Resource Management

**DPA**—Data Processing Analyst

**DOT&E**—Director, Operational Test and Evaluation

**DOW**—Department of War

**IAW**—In Accordance With

**MAJCOM**—Major Command

**MRM**—Mission Risk Management

**NACTS**—Nellis Air Combat Training System

**NUCWSEP**—Nuclear Weapons System Evaluation Program

**OI**—Operating Instruction

**OA**—Operations Analyst

**OSA**—Operational Suitability Analyst

**OSW**—Office of the Secretary of War

**PM**—Project Manager

**RCO**—Range Control Officer

**RSO**—Range Safety Officer

**ROAV**—Remotely Operated Air Vehicle

**RPA**—Remotely Piloted Aircraft

**RPO**—Rated Project Officer

**RTB**—Return to Base

**TO**—Technical Order

**TE**—Test Engineer

**UPO**—Unit Project Officer

**USAFWC**—United States Air Force Warfare Center

**VIP**—Very Important Person

**WIT**—Watch Item

**WEG**—Weapons Evaluation Group

**WEGOI**—Weapons Evaluation Group Operating Instruction

**WSEP**—Weapons System Evaluation Program

**WG**—Wing

**WGI**—Wing Instruction