NAVAIR INSTRUCTION 3960.4C

From: Commander, Naval Air Systems Command

Subj: PROJECT TEST PLAN POLICY FOR TESTING AIR VEHICLES, AIR VEHICLE WEAPONS, AND AIR VEHICLE INSTALLED SYSTEMS

Ref: (a) NAVAIRINST 3960.2C  
(b) ISEET Director’s Note 7  
(c) OPNAVINST 3432.1  
(d) NAVAIRINST 13034.1C  
(e) Range Commanders Council Document 323-99  
(f) OPNAVINST 5090.1C  
(g) NAVAIRINST 13030.1  
(h) SECNAVINST 5720.42F  
(i) SECNAVINST 5510.36A  
(j) DoD Directive 5230.24, Distribution Statements on Technical Documents of 18 Mar 87

Encl: (1) List of Local Instructions  
(2) Test Plan Review and Approval Process  
(3) Sample Test Plan Instruction Change Proposal Form

1. Purpose. To establish Naval Air Systems Command (NAVAIR) policies, processes, responsibilities, and requirements for preparation, review, and approval of flight, ground, and laboratory tests of air vehicles, air vehicle weapons, and air vehicle installed systems. This instruction provides test planning policy and guidance and is not intended to define or restrict the structure of program teams. Teaming arrangements are often dynamic and unique to specific programs. Guidance on their structure and the roles of test teams within that structure may be found in program operating guides or other governing documents.

2. Cancellation. This instruction supersedes NAVAIR Instruction 3960.4B. Since this is a major revision, changes are not indicated and the instruction should be reviewed in its entirety.

3. Scope. This instruction applies to the Naval Air Systems Command Headquarters (NAVAIRHQ), the Naval Air Warfare Center Weapons Division (NAVAIRWARCENWPNDIV), the Naval Air Warfare Center Aircraft Division (NAVAIRWARCENACDIV) and activities
supported by NAVAIRHQ: the Naval Aviation Program Executive Officer (PEO) for Air Anti-Submarine Warfare, Assault, and Special Mission Programs (PEO(A)); PEO for Unmanned Aviation and Strike Weapons (PEO(U & W)); PEO for Tactical Aircraft Programs (PEO(T)) and Program Management Group (AIR-1.0).

4. Background

a. The project test plan is a critical part of the test process which is an important component of the acquisition life cycle, reference (a). The project test plan provides a systematic approach to the advanced planning required for the effective, efficient, and safe conduct of a test program. Planning for tests conducted in support of research, development, acquisition, and in-service support of our products is a complex evolution. It involves recognition and mitigation of risk factors to ensure the efficient generation of required test data while safeguarding human life, preserving valuable air vehicle, air vehicle weapons, and air vehicle installed systems assets, and maintaining program schedules within cost constraints.

b. The Commanders of the Naval Test Wing Atlantic and Naval Test Wing Pacific and their subordinate squadron commanding officers (COs) are directly responsible for the safe and efficient operation of test aircraft in support of Integrated Program Teams (IPTs), External Directed Teams (EDTs) and Integrated Test Teams (ITTs). The Directors of the Range Department (AIR-5.2) and the Integrated Battlespace Simulation and Test (IBST) Department (AIR-5.4) are responsible for the safe and efficient operation of their laboratories, test facilities and ranges during the test execution. Likewise, the Director, Flight Test Engineering (AIR-5.1) is responsible for ensuring test teams are staffed with personnel qualified for developing plans to gather the required data safely and efficiently. These are serious responsibilities, and for this reason, the responsibility for test plan approval covered by this instruction rests with the Test Squadron COs, the Director, Flight Test Engineering and/or the Director, Range Department and/or Director, IBST Department. However, there is also a responsibility for them to assess the risk of each test program and to delegate approval authority for the test plan in question to the lowest practical level in their chain of command, commensurate with the risk involved. Delegation of authority does not connote delegation of responsibility. Therefore, the responsible senior individuals have an obligation to ensure their subordinates receive the training, experience, and leadership to successfully exercise their increased authority.

c. Project test plans are drafted and implemented by test teams. Requirements to establish a test team will generally flow
from an IPT or EDT leader. Test teams will usually be comprised of Test Engineering personnel and Test Squadron aircrew from AIR-5.1.X, personnel from AIR-5.2.X and AIR-5.4.X, as well as personnel from other AIR-4.0, AIR-5.0, and AIR-6.0 competencies, and other support personnel as necessary to effectively and safely translate engineering data requirements into test methodologies, procedures, and plans. Test teams may also be comprised of contractor engineering personnel, other government agencies and/or Fleet aircrew, as approved by the Test and Experimentation Coordination Team (TECT). The product of a test team is greatly dependent upon a sound interaction and relationship between the project officer, who brings the mission perspective of the system under test, and the project engineer, who brings the ability to apply engineering theory and practice to the flight test environment. This relationship is generally referred to as the project officer/project engineer team and they typically lead the test planning effort. Local (i.e., Patuxent River, Maryland, Point Mugu, California, China Lake, California) TECTs have been established by AIR-5.1, AIR-5.2, and AIR-5.4 to assist in managing the test planning process in conjunction with test team leadership. The local TECT consists of the Chief Test Engineer (CTE) from AIR-5.1G and the Chief Test Pilot (CTP) from AIR-5.1.X or AIR-5.2/5.4. For projects involving engineering personnel, aircrew and/or aircraft from more than one site/organization, the TECT will be comprised of CTEs and CTPs from all participating activities. The TECT is chartered to provide: (1) customer support; (2) a valuable linkage between test squadrons and engineering support resources; and (3) leadership and guidance to the test teams and IPTs. A tiered test plan review concept is used to ensure responsiveness to the customer; this provides a mechanism to ensure adequate test planning, preparation, and coordination have been accomplished. After approval, the test plan becomes a working tool and the governing document for the conduct of the test. Applicability of this instruction to unique and/or special cases as they arise will be determined by the TECT. Reference (b) provides specific procedures, guidance and examples to follow in the test planning process.

5. Policy

   a. An approved test plan is required when conducting:

      (1) Research, Development, Test and Evaluation (RDT&E) and experimentation efforts involving air vehicle ground and flight tests of which NAVAIR is responsible for the conduct and/or safety of the test or portions of the test. This includes testing systems and/or subsystems when installed, attached to, carried on, or integrated into an air vehicle, and all tests conducted in the AIR-5.4 IBST facilities (Shielded Hangar,
Anechoic Chambers, Hazards of Electromagnetic Radiation to Ordnance Pad, Naval Electromagnetic Radiation Facility, Electromagnetic Transient Facilities, and the Radar Reflectivity Lab), and other NAVAIR and non-NAVAIR laboratories/facilities, as required by the TECT. Tests of all other developmental surface/airborne systems involving control, sensor observation, or any other interaction with (modified/standard) air vehicles must have a test or support plan as determined by the TECT. The air vehicles covered by this instruction include manned aircraft, full-scale and sub-scale target aircraft, air and surface launched missiles and weapons, and unmanned air systems (UAS).

(2) All other RDT&E and experimentation test programs that involve air vehicles. This includes non-Navy and non-NAVAIR customers (e.g., National Aeronautics and Space Administration, Missile Defense Agency, U.S. Army, Naval Sea Systems Command, contractors) who use NAVAIR infrastructure or assets (including personnel) for ground, lab, or flight tests. All air vehicle related tests conducted outside of traditional acquisition programs (i.e. Joint Capability Technology Demonstrations, Science & Technology Initiatives, Independent Research and Development, Small Business Innovation Research, Demonstrations, Quick Looks - specific nomenclature is not relevant) will be considered RDT&E. This instruction applies to all test and experimentation involving air vehicles and systems that are not part of a dedicated Operational Test (OT) series; it does apply to Developmental Test scope that is being conducted in conjunction with Contractor Test or OT.

(3) Flight simulator evaluations. Defined as evaluations of simulations utilizing AIR-5.1 assets (including aircrew) or training systems where the data is to be used for acquisition decisions.

(4) The RDT&E air vehicle tests (as defined above) that involve Special Access Programs or that are conducted within Sensitive Compartmented Information channels or both. In this category, programs and test efforts supported by funding of all types and origins fall within the scope of this instruction. Compliance is required regardless of the identity or organizational affiliation of the headquarters sponsor(s), the NAVAIR team members, or the test participants.

b. In each case described in paragraph 5.a, TECT members shall determine applicability of this instruction to a specific test program.
c. The following is a list of areas for which this instruction does not apply. Although not specifically covered under this instruction, these types of events, when they occur on NAVAIR Ranges must be coordinated with appropriate Range personnel to determine the necessary planning and approval processes:

(1) air vehicle events exclusively using operational assets for training or for OT objectives (non-RDT&E tests);

(2) tests exclusively using surface assets with no air vehicle involvement; and

(3) some special category surface tests of air vehicles or their components that are not part of a flight test program. These include, but are not limited to, events such as full-aircraft fatigue tests, bomb detonations, insensitive munitions tests, ordnance environmental tests, static rocket motor tests, surface fired projectile tests, and nonflight weapon tests on rocket sleds. For all such surface tests not specifically mentioned here, the TECT shall determine the applicability of this instruction.

d. The NAVAIR test plan preparation and approval will be standardized. Non-NAVAIR test plans must contain the basic elements to meet the spirit and intent of this instruction, but may use other processes and/or formats for development and preparation. The following will apply to all test plans:

(1) test plans will receive thorough and timely review for content and risk management;

(2) planning will be tailored to address sponsor/customer peculiar requirements;

(3) lessons learned will be incorporated; and

(4) risk assessment and risk management will follow the procedures defined herein.

e. The TECT will oversee the test planning process.

f. Whenever a new weapon, weapon system, or aircraft system is developed for an aircraft, or when a current weapon, weapon system, or aircraft system is modified from the approved Fleet configuration, three specific processes must be completed prior to the start of developmental flight testing:

(1) modification approval by the appropriate authority;
(2) airworthiness approval obtained for the new configuration (for airworthiness of modifications to FAA-registered aircraft, see reference (b), section 15 for test plan acceptance criteria); and,

(3) test plan approval by the appropriate authority.

6. Responsibilities. The following actions are required by designated personnel with respect to the test planning process. Test team members shall be familiar with references (a) through (j) and applicable local instructions, enclosure (1), which address various aspects of the test planning process. Test team members shall also be knowledgeable about information contained in the appropriate Naval Air Training and Operating Procedures Standardization (NATOPS), Naval Aviation Technical Information Publication (NATIP), and Interim Flight Clearances (IFCs) including operating limitations, and the impact these limitations may have on the test under consideration.

a. Local Program Sponsor. This is normally the AIR-5.1.1 Assistant Program Manager Test & Evaluation (APMT&E). On programs without an APMT&E, the incumbent may be an IPT leader, an EDT leader, a Lead Test Engineer (LTE), an Assistant Program Manager for Systems Engineering (APMSE) or other designated individual. The person performing this role should be identified in the Test Project Introduction Document (TPID) as delineated in reference (b). The local program sponsor will:

(1) initiate TPID;

(2) ensure tasking that defines the requirements is provided in writing to the test team with all deliverables identified;

(3) ensure reporting requirements adequately reflect sponsors’ requirements;

(4) provide funding to support all resource requirements;

(5) define schedule requirements; and

(6) negotiate test team leadership with appropriate competency managers. The Team Assignment Agreements (TAA) will specify the level of responsibility, authority or empowerment.

b. LTE. Many large test teams have an AIR-5.1.1 LTE assigned to a project. On some teams, the LTE roles may be performed by the Platform Coordinator. On many smaller teams, the LTE roles are performed by the Project Officer/Project
Engineer. Who performs this role and lines of communications should be determined in the Test Team Formation Process and defined in the Concept of Operations or Project Planning Memorandum (PPM). The LTE will:

(1) coordinate with the local program sponsor and draft a PPM, reference (b), upon tasking from the sponsor/customer and submit the memorandum to the TECT;

(2) coordinate the Test Requirements Definition, Verification and Concurrency (TRDVC) Process with competency representatives;

(3) ensure correct AIR-5.1.X participation in the Engineering Data Requirements Agreement Plan (EDRAP) process as found in reference (d);

(4) ensure the project adheres to the appropriate security classification guidance and personnel have proper security clearances;

(5) review the Capabilities Development Document and Test and Evaluation Master Plan (TEMP), if applicable, to ensure that all test requirements necessary to support an acquisition milestone, decision meeting and/or preparation for Operational Test of Measures of Effectiveness, Measures of Suitability, Critical Technical Parameters and Key Performance Parameters are completely understood and accounted for in the test data requirements;

(6) coordinate with the team and appropriate competencies to ensure all resource requirements are identified;

(7) negotiate, as needed, team membership with appropriate competency managers. The TAA will specify the level of responsibility, authority, or empowerment; and

(8) coordinate day to day operations of the test team.

c. Project Officer/Project Engineer: The Project Officer/Project Engineer will:

(1) negotiate deliverables with the sponsor and appropriate competencies during development of tasking and document the plan via the Test Reports/Deliverables Plan (TRDP), reference (b). The TRDP is approved by the test team and sponsor/customer. An approved TRDP shall be submitted as an appendix to each project test plan unless specifically waived by the TECT;
(2) coordinate inputs from all test personnel, prepare a written test plan, and coordinate the review process for approval of the test plan, including the Technical Risk Assessment (TRA) and the submission of the project test plans to the Executive Review Board (ERB) per reference (b);

(3) contact the Operations Security (OPSEC) Officer or Coordinator early in the planning phase to assist in the development of an OPSEC annex as applicable following reference (c);

(4) coordinate with the Communication Security Material System Custodian early in the planning phase to ensure required hardware and keying materials are available for tests;

(5) brief all personnel assigned to the test team on requirements and goals;

(6) consult with technical area specialists to ensure a complete and balanced assessment of the technical approach and risk, and for lessons learned;

(7) perform appropriate level of Test Hazard Analysis (THA) and risk assessment. Following reference (b), section 5, determine risk category. Review test points to establish suitable build-up increments and determine if additional aircrew and/or engineer training must be accomplished. Interface with other engineering competencies as appropriate for identification and mitigation of any engineering hazards;

(8) where applicable, coordinate an instrumentation conference. Establish an instrumentation plan necessary to meet test data requirements and safety-of-flight requirements following local instructions listed in enclosure (1);

(9) translate engineering data requirements into test plans. Interface with other engineering competencies as appropriate to ensure all engineering data requirements are included;

(10) conduct or review appropriate analysis and simulation for tests involving flight regimes, configurations, or maneuvers not previously tested or demonstrated;

(11) ensure the flight clearance request(s) is drafted and submitted in a timely manner, in accordance with AIR-4.0P guidelines, to the Test Flight Clearance Officer (TFCO)/Local Flight Clearance Releasing Authority (FCRA). Ensure requested test envelope encompasses planned test points. Ensure proper flight clearance is obtained per reference (d) and reviewed prior
to the final test plan approval process unless otherwise coordinated with the TECT;

(12) initiate aircraft modification/configuration control forms when needed following local instructions listed in enclosure (1). Ensure air vehicle system configuration matches flight clearance and test plan;

(13) coordinate project related maintenance control issues and asset availability;

(14) coordinate with the applicable Ordnance Officer whenever weapons or stores are to be loaded or carried on aircraft;

(15) ensure a stores loading checklist is developed and approved in accordance with the test site’s local instructions (enclosure (1)) for any store which does not have an existing NAVAIR checklist;

(16) ensure unique support items are available (i.e., specific control tower support, special air field/runway requirements, special Real Time Telemetry Processing support requirements, etc.);

(17) coordinate the scheduling of facilities and laboratories;

(18) when required, ensure Range Safety/Explosive Safety personnel are involved in the early planning phase;

(19) when required, ensure Laser Safety Officer is involved in the early planning phase;

(20) ensure an environmental analysis has been performed in accordance with reference (b), section 4;

(21) ensure project team personnel have reviewed and signed the approved test plan;

(22) ensure the project test plan adequately reflects current knowledge of the threat weapon system, the mission under test, and the security requirements of the project;

(23) submit test plan amendments for any change in scope, method of test, and/or personnel (defined in paragraph 7.f(2)) beyond what has been approved;
(24) ensure an up-to-date test plan, amendments, and test plan related papers are maintained in the official test plan file;

(25) ensure adequate time and resources are available for data analysis between critical test phases;

(26) manage and conduct tests as appropriate;

(27) ensure strict adherence to the approved test plan;

(28) ensure flight data cards used for the tests follow the approved test plan;

(29) ensure testing is conducted in accordance with the test plan and applicable flight clearances (NATOPS, NATIP, and IFCs);

(30) ensure appropriate engineering analysis and evaluation of test data. Analysis and evaluation of test data is a team function performed by test team members from various Test & Evaluation and Engineering competencies;

(31) ensure the engineering veracity of the test data. Coordinate with other engineering competencies as appropriate;

(32) write reports and produce required test plan deliverables in accordance with the TRDP unless specifically waived by the TECT; and,

(33) ensure Range Safety Criteria for Unmanned Aerial Vehicles (UAVs) Rational and Methodology Supplement, reference (e), is used to minimize flight risk.

d. **Test Squadron Platform Coordinators.** The Squadron Platform Coordinator will:

(1) coordinate aircraft usage to meet varying customer requirements;

(2) provide long-term continuity with respect to platform configuration and flight clearance envelope;

(3) coordinate aircraft assets, platform/weapons systems configuration, and configuration changes to support tests;

(4) coordinate instrumentation installations and modifications; and,
(5) review test plans with respect to platform utilization, configuration, and safety.

   e. TFCO. Manages RDT&E flight clearance process. Provides the focal point for all test flight clearances. Assists the test team in interpreting all project flight clearance requirements. Empowered to release test flight clearances of an unlimited scope by direction of AIR-4.0P.

   f. FCRA. Manages Local Flight Clearances process. Provides the focal point for all local test flight clearances. Assists the test team in interpreting all project flight clearance requirements. Empowered to release test flight clearances of a limited scope by direction of AIR-4.0P. FCRAs typically reside within/near the test activity, but their authority is not limited to any one geographical location.

   g. Project Liaison Office (PLO). Provides liaison support and coordination between the test team, platform coordinators, the maintenance office, instrumentation personnel, and other supporting competencies. Coordinates details of project related maintenance, configuration control, and asset availability during the test planning process.

   h. Test Squadron Safety Officer. Ensures review of all test plans for ground and flight safety issues. Ensures key safety considerations are addressed in the overall test approach and operating procedures are in compliance with safety instructions and Standard Operating Procedures.

   i. Range Safety Officer. Ensures review of all test plans involving the release or significant potential for release of weapons, objects, or hazardous emissions to ensure hazards are identified and risk is minimized, and all Test Plans involving UAV/Drone operations.

   j. Laser Safety Officer. Reviews all tests involving the operation of new laser systems, or operations of previously approved laser systems that have been modified to change the laser’s operating modes, power output, beam characteristics, operating frequency or control interlocks.

   k. OPSEC Coordinator. When applicable, acts as a member of the team and assists in test plan preparation to ensure all OPSEC issues are addressed and applicable documentation is available and drafts the OPSEC annex to the test plan when tasked.

   l. Naval Test Wing Atlantic Ordnance Officer. Provides store/armament system support and review of test plans involving
the carriage or employment of air launched stores as outlined in the local instructions of enclosure (1).

m. Naval Test Wing Pacific (VX-30/VX-31) Ordnance Officers. Provides store/armament system support and review of test plans when requested by the TECT involving the carriage or employment of air launched stores.

n. NAVAIR National Range Sustainability Office. Project officer/project engineer will coordinate with the appropriate Range Sustainability Office (RSO) personnel during preparation of the test plan Environmental Analysis. The RSO personnel will provide assistance tailored to the specific needs of the squadron/range, obtaining timely and cost-effective environmental approval.

o. Test Squadron Operations Officer. The Test Squadron Operations Officer will:

(1) at the discretion of his/her Squadron CO, ensure reviews of test plans with respect to local air operations requirements, coordination, and support;

(2) ensure aircrew qualifications meet the requirements applicable for category of test; and,

(3) support the test team in coordinating aircraft assets and airspace.

p. Integrated Systems Evaluation, Experimentation and Test (ISEET) Test Engineering Division Heads/Branch Heads. The ISEET Test Engineering Division Head/Branch Head will:

(1) coordinate with the test team leadership to map skilled and knowledgeable people to test teams to successfully execute projects;

(2) coordinate with other AIR-4.0 Engineering Department’s Division/Branch Heads and appropriate team leadership regarding requirement for non-test and evaluation (T&E) engineering personnel on test teams. Ensure the roles and responsibilities of these personnel regarding test planning, conduct of tests and evaluation of test data are well defined and that test plans reflect these requirements;

(3) ensure applicable test technologies, test methodologies and procedures, processes and lessons learned are made available to and integrated across all ITTs, EDTs, and other test teams;
(4) establish agreements with teams on methods for maintaining knowledge of the test programs, for providing required oversight for test team members and for assessing team member performance, via TAAs;

(5) establish the level of empowerment for individual test team members via TAAs;

(6) provide direct consultation and expertise to test teams and sponsors;

(7) work with team leadership to develop test requirements in accordance with the TRVDC process;

(8) review test plans or provide an empowered employee to provide this review. Empowerment must be in writing either via memorandum or TAAs and a copy provided to the TECT. Develops and maintains criteria for empowerment; and,

(9) encourage senior/experienced engineers and officers to actively coach, mentor, and advise personnel assigned to ITTs, EDTs and other test teams.

q. TECT. The TECT will:

(1) ensure each test team is comprised of the appropriate competency representation by reviewing the TPID reference (b), section 2 and PPM reference (b), section 3, unless waived by the TECT, and providing feedback to the originators;

(2) ensure adequate safety, and airworthiness issues are addressed;

(3) ensure security classification guides and security test plans, if applicable, are in place. Addresses any security issues with test team;

(4) provide guidance for project test plan preparation;

(5) coordinate the executive review process and convene the test plan ERB where applicable;

(6) ensure the test team has reviewed all applicable requirements, including the TEMP;

(7) review test plans and provide final approval as delegated. Maintain a master file of approved flight test plans and amendments;
(8) monitor test projects to ensure adherence to the approved test plan; and,

(9) ensure the appropriate reporting is completed in accordance with the test plan.

r. **Test Squadron CO.** The Test Squadron CO will:

(1) provide aircraft and aircrew;

(2) ensure aircrew are qualified and trained to safely execute test data points;

(3) ensure overall flight test safety; and,

(4) provide approval authority for tests involving aircraft or resources under squadron purview. This authority may be delegated in writing to designated individuals.

s. **Director, Flight Test Engineering.** The Director, Flight Test Engineering will:

(1) provide trained test engineers;

(2) ensure test team is adequately staffed to safely and efficiently execute test data points;

(3) ensure overall flight test safety; and,

(4) provide approval authority for tests under the purview of this instruction. This authority may be delegated in writing to designated individuals.

t. **Director, Range Department and Director, IBST Department (AIR-5.2/5.4).** Provides approval authority for tests involving NAVAIR resources under the purview of the Range Department and IBST Department. This authority may be delegated in writing to designated individuals. Responsibilities include:

(1) execution of open air events on ranges and IBST facilities and assignment and operation of range and IBST resources;

(2) range and IBST safety analyses and approvals as required;

(3) ensuring environmental compliance or approval of test event with respect to range and ISBT facility operation;
(4) ensuring all radio frequency assignments are in place;

(5) ensuring all local site approvals regarding range and facility operations are in place;

(6) ensuring compliance with Information Assurance guidelines to use range and IBST facilities; and

(7) ensuring compliance with IBST and range safety policies.

u. TRA Decision Authority (DA). The TRA DA is a reviewer empowered by his Division Head, typically a Branch Head or Division Senior Test Engineer, designated by the TECT to perform the following:

(1) ensure test plan is complete and ready for TRA;

(2) coordinate and chair the TRA board; and

(3) ensure test plan is complete, technically accurate, and meets program objectives and is ready for executive review.

7. Test Planning Documentation. The project test plan forms the base for most project test planning documentation. All test plans shall be marked with the appropriate classification, typically, "FOR OFFICIAL USE ONLY". Several formats are available depending on the scope and purpose of the test. The format for a given project can be directed by the TECT, or can be chosen from the following general guidelines:

a. Project Test Plan. The guide in reference (b), section 4 shall be followed in test plan preparation for NAVAIR test efforts. The length and detailed content of a project test plan may be tailored based on the complexity, risk level, and scope of the project. Any non-standard formats for NAVAIR test plans can be negotiated with the applicable TECT.


(1) Approval of contractor/non-NAVAIR activity test plans is required whenever use of a NAVAIR T&E asset is involved. These test plans may completely fulfil the requirements of this instruction and reference (b), and may be approved "as is" by the appropriate test plan approval authority. Non-NAVAIR test plans are acceptable for programs where external teams are responsible for system design/development, test planning and execution, data
analysis and reporting and when the NAVAIR role is limited to support functions such as range, telemetry, chase and target support. If a non-NAVAIR customer is conducting tests using NAVAIR test aircraft or NAVAIR engineers for system design/development, test planning and execution and/or data analysis and reporting, the complete NAVAIR test plan review/approval process must be followed.

(2) For contractor/non-NAVAIR activity test plans which do not fully meet the requirements of this instruction, the test team can attach a short cover page to clarify, modify, or explain issues. Test teams can also include supporting documentation such as a safety checklist or a test hazard analysis, which may be missing from the original plan. Contractor/non-NAVAIR activity test plans shall follow the guidance in reference (b), section 14, for preparing a NAVAIR review and approval test plan cover sheet and other supportive documentation as applicable.

c. Aircraft Fit Check Test Plan. The guide for test plan preparation in reference (b), section 11 may be used for an aircraft Fit Check. The existing aircraft modification and documentation procedures shall be followed to conduct physical work on the aircraft once the test procedure has been approved using the Fit Check Test Plan form. A Fit Check is a limited scope project where hardware is physically mounted or installed in the aircraft to collect mechanical fit, clearance or range of motion data, and then removed. This does not apply to aircraft stores.

d. Support Plan. On occasion, non-developmental NAVAIR resources (e.g., aircraft, targets, ranges, facilities, equipment, and personnel) are required for support of RDT&E test programs. If the participation of these NAVAIR resources is not adequately documented in the associated RDT&E test plan, then a support plan may be appropriate. Support plans are normally restricted to Risk Category A (although supported tests may be higher risk) and may never be used as a replacement for a NAVAIR test plan. Additionally, support plans cannot be used for testing of aircraft or their installed systems, or for evaluation of any new capability, procedure, envelope expansion or for the sole means of generating programmatic decision data. If the activity covered by the support plan involves any unique hazards, then applicable THAs may be attached. Support plan examples include: check flights of existing instrumentation systems if not covered under a test plan, airborne range telemetry and optical support, and aircraft target or chase activities. The guide in reference (b), section 10 may be used for support plans. Consult a TECT member to determine support plan applicability.
e. Specialized Test Plan (STP). A tailored format for specialized recurring tests may be proposed to the TECT. The TECT will be responsible for review and approval of all STP formats and once approved they will be incorporated in reference (b), section 12. For project use, STP review and approval will be in accordance with paragraph 10.

f. Test Plan Changes. During execution of a test program, circumstances may dictate the need to make changes to approved test plans. These changes could be due to unexpected results, unexpected safety impacts, changes in program scope or specification requirements, or other causes. Once a test plan is approved it cannot be changed without the appropriate level of documentation and review as established by the TECT. Changes are categorized as “pen and ink” changes and amendments. Pen and ink changes are used to make minor corrections/changes which do not affect risk (i.e.; change in nomenclature, additional physical descriptions, etc.) and typically do not require further review beyond that of the TECT. Applicability of pen and ink changes must be coordinated with the TECT. Amendments are required for deviations in scope of tests; flight clearance changes (may or may not apply for software updates); modification of the test envelope; change in technical approach or test methodology; information changes which could invalidate the original THA; or other reasons at TECT discretion. Amendments should be short and concise but include sufficient detail for reviewers to understand what has changed from the original test plan and why the amendment is necessary. A new test plan may be required when significant changes are made to test objectives. The TECT shall be consulted to determine the appropriate method for making changes to approved test plans. When changes are required to approved test plans, the guidance set forth in reference (b), section 9 shall be followed. Review and approval of test plan amendments shall be the same as that of the original test plan unless otherwise agreed to with the TECT. In determining the need for a TRA or ERB, the TECT will consider the extent of the changes, results of testing to date, predicted results of proposed testing, and other pertinent details. It is recommended that the test team discuss details with the TECT since in most cases the review process can be tailored according to the scope of changes. The test plan review and approval process as related to amendments is discussed in 9(c).

1) Annual Updates. Annual updates, following the periodic review process discussed in paragraph 11, will be submitted via amendment to the approved test plan. Amendment details and format are included in reference (b), section 9.

2) Test Team Changes. Changes to any critical test personnel specifically delineated in the test plan shall be
approved by the appropriate test plan approval authority. Personnel involved in range and facility operations, including Range Test Conductor are not delineated in the test plan. Critical test personnel delineated in the test plan include (but are not limited to) lead engineers, project officers, test conductors, and engineers with primary responsibility for monitoring safety-of-flight or data-critical information during test operations. Test team changes will be approved via amendment in accordance with guidance of reference (b), section 9.

8. Test Plan Preparation. Test teams will follow the process depicted in enclosure (2) for the preparation of test plans unless otherwise negotiated with the TECT. It must be emphasized that the test team prepares the test plan and that proposed tests are traceable to program requirements. Test plan format is provided in reference (b), section 4.

a. For all test efforts it is vital that test teams collaborate early with relevant Branch Heads, Senior Test and Evaluation Engineers, and the TECT to determine the required engineering disciplines and test team personnel needed for successful test program execution. This communication is formally initiated by submission of a TPID and continues through development of the PPM. The TPID and PPM formats are described in reference (b), sections 2 and 3, respectively. The TPID is the instrument for initiating communication between the team and competency leadership. The PPM is the instrument for pre-planning the test effort including the review and approval process. Test Plan reviewers identified in the PPM should be included in all test team reviews to the maximum extent possible to avoid unnecessary rework during the review cycle.

b. Test teams are typically comprised of Test Engineering personnel/Test Squadron aircrew (AIR-5.1.X), personnel from AIR-5.2.X and AIR-5.4.X, personnel from other AIR-4.0, AIR-5.0, and AIR-6.0 competencies, and other support personnel as necessary to effectively and safely translate engineering data requirements into test methodologies, procedures, and plans. Test teams may also include contractor engineering personnel, other government agencies and fleet aircrew as approved by the TECT. The test team will seek guidance and input from safety departments, platform coordinators, facilities and asset coordinators, PLO, squadron maintenance representatives, SMEs, (SMEs, technologists from engineering competencies and other agencies) and the customer as necessary.

c. Test team reviews provide a forum for collaborative discussion of the test plan and will be held as necessary to develop a test plan which reflects an effective, efficient and
safe approach to the conduct of tests. It is essential that the test team open these reviews to those listed in paragraph 8.b as well as reviewers identified in the PPM to incorporate inputs early and minimize rework later in the review cycle. Prior to entering the review process discussed in paragraph 9, the test team must obtain concurrence from the TRA DA. The TRA DA, a reviewer identified in the PPM, typically a Branch Head, will use the TRA/ERB checklist reference (b), section 8 as a guide in determining the maturity and readiness of the test plan to proceed to the TRA.

d. The test team shall prepare a TRDP to satisfy each customer’s requirements and include a signed copy in the test plan. Effective reporting of technical information may encompass a spectrum of communication methods. A TRDP example is contained in reference (b), section 4.

e. Preparation Checklists, reference (b), section 8, are checklists that can be used when preparing for a TRA/ERB and items to consider prior to initial firings of guided munitions when conducting a Firing Readiness Review.

9. Test Plan Review. The review process shall be thorough and timely. In general there will be two levels of review: the TRA and Executive Review, depicted in enclosure (2). Review boards where all participants are present in order to completely focus on the test plan and provide responsive review shall be used to the maximum extent practicable as prescribed by the TECT. Non-NAVAIR test plans will follow a similar process as outlined below, recognizing the differences in organizations and processes while maintaining the spirit and intent of this instruction. The Test Plan must be provided to the members of each review board sufficiently in advance to accommodate a responsible review, taking into consideration complexity of the test plan. Test plan reviewers consist of authorized reviewers (those specifically identified in paragraph 6 with responsibility to review test plans for specific areas: ISEET Test Engineering Division Head, Platform Coordinator, Test Squadron Safety Officer, Range Safety Officer, Laser Safety Officer, appropriate Ordnance Officer and Squadron Operations Officer (at the CO’s discretion)) and empowered reviewers as delegated by authorized reviewers.

a. TRA. A TRA shall occur as part of the team review process. This process should be brought to focus in a team level "Review Board" wherein the project officer/project engineer and other team members jointly present their draft test plan to the review board. The review, chaired by the TRA DA, will involve, as appropriate: all reviewers identified in the PPM, test team leadership and team members as necessary to address technical questions, and additional SMEs at the request of the TRA DA.
Squadron Safety Officer review may be accomplished at any time prior to entering the serial review process or at the ERB; however if not accomplished prior to the TRA, it will be with TRA DA concurrence. At the conclusion of the TRA, reviewers will indicate their concurrence with the test plan by their initials or signature (include name/position/code) under the “Reviewed By” ledger on the Test Plan coversheet. At TRA DA discretion reviewers signatures may be obtained prior to the TRA if it is not considered critical to the discussion for the reviewer to be present. It should be noted that the reviewer representing a particular competency (typically the branch head) is the singular review required and no further review is required by the competency. The desire is to obtain all signatures, prior to, or at the TRA to expedite the review process. It is important to point out that there is no hierarchy in the review other than that of the TRA DA as the final decision authority.

b. Executive Review. Following a successful TRA, the test team will contact the TECT to coordinate the executive review phase. Any pending actions that may prevent approval of the test plan, such as release of the IFC, shall be identified by the test team. In general, the IFC is required to enter into executive review, however, under certain circumstances the TECT may choose to conduct the review and withhold approval pending receipt of the IFC. Executive review can be accomplished through serial review or by ERB. The review path is established by the TECT commensurate with test risk category, typically as follows: Serial Review for Category A test plans and all category of test plan amendments; and ERB for Category B, C and D test plans. Serial review for other than Category A test plans and ERB for Category A test plans and all categories of amendments may be prescribed at the discretion of the TECT. Further details are provided in following paragraphs.

(1) ERB. The ERB is comprised of all individuals required for test plan approval and others needed for specific input and concurrence such as the Safety Department from the appropriate squadron. The TECT may stipulate additional members as appropriate. Copies of the Test Plan must be provided to the members of the ERB sufficiently in advance to accommodate a responsible review. All test plans submitted for review must include a package containing TRA/test team review minutes, the PPM, and any supporting material deemed necessary by the test team or the TECT. The project engineer/project officer will coordinate test plan dissemination requirements with the TECT and will bring the original test plan, with reviewer’s signatures, to the ERB. During the ERB the project engineer/project officer will annotate the test plan with comments and changes as requested by the board. At conclusion of the ERB, changes may be accepted as “pen and ink” changes and the test plan approved, or
the test team may be required to incorporate changes electronically and/or provide additional information prior to approval. If the IFC was not available prior to the ERB, approval will be withheld pending receipt and review of the IFC.

(2) Serial Review. If a test plan is serially reviewed the original hardcopy of the test plan, with reviewer’s signatures, will be routed by the project engineer/project officer to the TECT or their officially designated representatives (identified in the PPM) allowing sufficient time to accommodate a responsible review. All test plans submitted for review must include a package containing TRA/test team review minutes, the PPM, and any supporting material deemed necessary by the test team or the TECT. During the review the approvers may annotate the test plan with comments and changes. At conclusion of the review, changes may be accepted as “pen and ink” changes and the test plan approved, or the test team may be required to incorporate changes electronically and/or provide additional information prior to approval. If the IFC was not available prior to review, approval will be withheld pending receipt and review of the IFC.

c. Test Plan Amendment Review. Test plan amendments will normally be routed, reviewed and approved in the same manner as the original project test plan unless otherwise directed by the TECT. It is highly recommended that test teams contact the TECT prior to submitting an amendment for review since in many cases a tailored approach is appropriate and will expedite the review and approval process. Amendments shall contain the information prescribed in paragraph 7.f.

10. Test Plan Approval. Test Plan approval is a critical part of NAVAIR’s overall risk management process in that it represents the Command’s formal acceptance of a test’s residual safety risk. The process of accepting this risk for the Command is deliberate and requires specific approval authority as described in the following paragraphs:

a. The NAVAIR test plan approval is required for air vehicle, weapon and installed system testing conducted within the scope of this instruction. The NAVAIR test plan approval includes both engineering and operational components. Approval authority for the engineering component is granted to the Director for Flight Test Engineering, and is usually delegated to senior ISETET Department T&E engineers designated as CTEs. Approval authority for the operational component is granted to the NAVAIR test squadron COs (AIR-5.1.X), and/or the Director of the Range Department (AIR-5.2), and/or the Director of IBST (AIR-5.4). AIR-5.1.X authority is often delegated to the respective test squadron CTPs for lower risk events, and AIR-5.2/5.4
authority is delegated to the range CTPs. AIR-5.1, AIR-5.1.X, AIR-5.2, and AIR-5.4 may also delegate a limited scope of their respective approval authority to other selected senior T&E personnel. For test plans involving civilian air vehicles, the test plan will be reviewed and signed by the owner/operator, or an empowered representative. For test plans involving fleet assets, the test plan will be reviewed and signed by the squadron CO or his designated representative prior to conduct of tests. For test plans developed by ITTs with contractor participation, the test plan may be reviewed and signed by a designated contractor representative at the request of the contractor.

b. The TECT shall maintain an up-to-date record of delegated test plan approval authority, and may assign test plan approval tasks to those individuals, commensurate with their delegated approval authority. Test plan approvers will be identified in the PPM. When requested by the TECT, those empowered to approve test plans must participate in TECT discussion/meetings, process improvement reviews, and continue training by the TECT in order to maintain a level of proficiency to approve test plans. The TECT will recommend revoking any delegated authority as warranted.

c. Typical test plans require both flight test engineering and operational approval (typically Test Wing). Events involving multiple NAVAIR squadrons and ranges must typically receive approval from each of the participating TECT members. Variations in this approval requirement may exist for some test plans, and the specifics will be tailored by the participating CTEs and CTPs/COs. Some typical examples include:

(1) Testing involving NAVAIR squadrons on NAVAIR ranges may substitute the squadron CTP approval for that of the range CTP.

(2) Non-RDT&E test support missions involving NAVAIR squadron aircraft may be approved solely by the respective squadron CO or CTP.

(3) Testing conducted in the Installed Systems Test Facility (Shielded Hangar, Anechoic Chambers, HERO Pad and ATEF) using NAVAIR aircraft requires the approval of AIR-5.4, AIR-5.1, and applicable Test Squadron Commanding Officer (AIR-5.1.X), or their official designees.

(4) Testing involving NAVAIR engineering personnel without any associated NAVAIR squadron/range involvement may be approved solely by a CTE.
d. For many contractor/non-NAVAIR activity test plans, NAVAIR's role is limited to functions such as range, telemetry, chase, and targets support (and may be outlined in a Commercial Service Agreement). In these cases, test plan approval indicates that the TECT has an understanding of the planned test activities and objectives to ensure: the test methodology and execution approach completely define the use of NAVAIR resources and support capabilities; there are no unresolved safety or OPSEC issues; and all other required discipline areas (i.e., range safety, explosive safety, airworthiness) have been addressed. The TECT may require additional technical discipline specific reviews or information, and may deny test plan approval if there is any doubt regarding its adequacy. The contractor/non-NAVAIR activity test team has responsibility for: test plan preparation; test team makeup/qualifications; test matrix/point efficacy and safety; test execution; and assessing aircraft maintenance and safety programs.

e. TECT will not deny test plan approval based on any aspect of a test program governed by another NAVAIR department’s process without consulting that department.

11. Periodic Test Plan Review. Test plans are valid for one year after approval unless otherwise negotiated with the TECT. The test team will review the test plan and submit an amendment in accordance with reference (b), section 9 in order to continue testing beyond the one year period. This “annual update” to the test plan will be subjected to a TRA and/or Executive Review at TECT discretion.

12. Security Classifications. Whenever possible, test plans should be written at the unclassified level. Classified information, when required, shall be contained in separate appendices.

13. Test Plan Distribution. Every test plan will include a distribution and releasability statement. A copy of the approved test plan will be given to the TECT.

14. Review. AIR-5.1 shall review this instruction annually and recommend changes as necessary. Any recommended instruction changes can be forwarded at any time to AIR-5.1E via a local TECT using the Change Proposal Form, enclosure (3).

D. ARCHITZEL
Electronic only, via NAVAIR Directives Web site: https://homepages.navair.navy.mil/directives/
List of Local Instructions

1. AIR-5.1 Memo 3960/510000V, ISEET Directors Note 1, Test Reporting.

2. NAVAIRWARCENACDIVINST 13050.3, Procedures for Planning and Coordination of Aircraft Modifications.

3. NAVAIRWARCENACDIVINST 13050.1C, Aircraft Modification Configuration Control Policy, Procedures, and Responsibilities.


6. NAVAIRINST 13050.6, Policy, Procedures and Responsibilities for Modification and Configuration Control of Air Vehicles, Air Vehicle Stores and Air Vehicle Installed systems for Research, Development, Test and Evaluation.

7. AIRTEVRONTHREEZEROINST 3710.7, Standard Operating Procedures (SOP).

8. NAWSPTMUGUINST 3750.2A, Aviation Safety Program.

9. AIRTEVRONTWOTHREEEINST 3710.12, SOP.

10. AIRTEVRONTWOONEINST 3710.15, SOP.

11. NAWCWPNINSINST 5100.2A, Sea Range Safety.

12. NAWCWPNINST 8010.1B, Ordnance Hazards Evaluation Board.


14. NAVAIRINST 5090.1A, Naval Air Systems Command Environmental Program.

15. NAVAIRWARCENACDIVINST 3432.1A, Operations Security.

Test Plan Review and Approval Process

Test Plan Preparation and Team Review Process

**Test Plan Preparation**

- Test Requirements Definition, Validation and Concurrence Process complete
- Flight Clearance Process initiated including EDRAP
- PPM approved with Test Team members, Reviewers and Approvers identified
  
  *Reference PPM in Test Plan*

**Test Plan Preparation**

PO/PE Draft Test Plan based on requirements and input from team members/reviewers identified in the PPM.

Note: Early participation of BH, PC and Sr. T&E Eng crucial to avoid rework and delays.

**Hold Test Team Reviews with team members/reviewer as necessary**

**PO/PE Discus TP Status with PC, LTE, BH, Sr. T&E Eng and TECT (as required)**

**Review Test Plan Handbook - TRA Checklist Criteria with TRA DA**

**PO/PE Schedule TRA**

**Mature Test Plan**

**Initiate rework**

**NO**

**Ready for TRA? TRA DA concurrence required**

**YES**

**Technical and Risk Assessment**

**Hold TRA Participants:**
- PO/PE
- Authorized Reviewers
- Empowered Reviewers
- Squadron Safety Officer (if available)
- SMEs at discretion of PO/PE or Empowered Reviewers/TRA DA

**Minor Changes or additional data required?**

**NO**

**TRA Complete? Decided by TRA DA**

**YES**

**NO**

**Reviewers Signatures collected at TRA to maximum extent possible. Minutes taken and attendance list collected.**

**Ready to submit Test Plan for Executive Review & Approval**

**PO/PE Draft Test Plan**

Based on requirements and input from team members/reviewers identified in the PPM. Note: Early participation of BH, PC and Sr. T&E Eng crucial to avoid rework and delays.

**PO/PE**

**Based on requirements and input from team members/reviewers identified in the PPM.**

**Note:** Early participation of BH, PC and Sr. T&E Eng crucial to avoid rework and delays.

**Initiate rework**

**NO**

**Hold Test Team Reviews with team members/reviewer as necessary**

**PO/PE Discus TP Status with PC, LTE, BH, Sr. T&E Eng and TECT (as required)**

**Review Test Plan Handbook - TRA Checklist Criteria with TRA DA**

**PO/PE Schedule TRA**

**Mature Test Plan**

**Initiate rework**

**NO**

**Ready for TRA? TRA DA concurrence required**

**YES**

**Technical and Risk Assessment**

**Hold TRA Participants:**
- PO/PE
- Authorized Reviewers
- Empowered Reviewers
- Squadron Safety Officer (if available)
- SMEs at discretion of PO/PE or Empowered Reviewers/TRA DA

**Minor Changes or additional data required?**

**NO**

**TRA Complete? Decided by TRA DA**

**YES**

**NO**

**Reviewers Signatures collected at TRA to maximum extent possible. Minutes taken and attendance list collected.**

**Ready to submit Test Plan for Executive Review & Approval**

**PO/PE Draft Test Plan**

Based on requirements and input from team members/reviewers identified in the PPM. Note: Early participation of BH, PC and Sr. T&E Eng crucial to avoid rework and delays.

**Legend:**
- PO – Project Officer
- PE – Project Engineer
- LTE – Lead Test Engineer
- BH – ISEET Branch Head
- PC – Platform Coordinator
- Sr. T&E Eng – Senior Test & Evaluation Engineer
- TRA DA – Technical & Risk Assessment Decision Authority

**Enclosure (2)**
Test Plan Executive Review and Approval Process

Serial Review
- Category A Test Plans, Category B Test Plans at TECT discretion
- Category A, B, C and D Amendments at TECT discretion

Interim Flight Clearance (IFC) in hand?

TECT or Delegated Reps?

TECT or Delegated Reps?

Obtain Squadron Safety Review if not obtained during TRA

Pen & Ink Changes or return to Test Team for Changes/additional info

Revert to Test Team for changes/additional info

IFC in hand?

Hold ERB

Minimum Participants:
- PO/PE
- Team members / SMEs as req’d
- Squadron Safety Officer
- CTE, CTP and CO (as red’d based on Category of Test)

Test Team brings Original Hardcopy Test Plan with reviewers Signatures

Hold ERB

Test Plan Approved?

YES

APPROVED TEST PLAN, Copy provided for TECT archives

Hold Test Plan for IFC

Test Team schedule ERB with TECT. Submit electronic or hard copy of Test Plan with TRA minutes to TECT & Squadron Safety

Test Plan Approved?

YES

Test Team schedule ERB with TECT. Submit electronic or hard copy of Test Plan with TRA minutes to TECT & Squadron Safety

Serial Review

Test Plan Approved?

NO

NO

TEST in hand?

NO

IFC in hand?

Delay review for IFC

Hold Test Plan for IFC

Pen & Ink Changes or return to Test Team for Changes/additional info

YES

YES

Test Team brings Original Hardcopy Test Plan with reviewers Signatures

Test Plan Approved?

NO

YES

If Delegated, notify TECT of approval

Pen & Ink Changes or return to Test Team for Changes/additional info

APPROVED TEST PLAN, Copy provided for TECT archives
SAMPLE
TEST PLAN INSTRUCTION
CHANGE PROPOSAL FORM
(SUBMIT SHEET TO A LOCAL TECT)

SUBMITTER’S NAME:   CODE:   PHONE:

Location of Change (specify exact location in instruction):

Proposed Change:

Explanation/Justification for Change:

From: AIR-5.1
To: Change Submitter (Name, Code)

Proposed Change Disposition: □ Accepted □ Accepted as Modified □ Rejected

Comments: