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NAVAL AIR SYSTEMS COMMAND
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IN REPLY REFER TO

NAVAIRINST 3960.4B
AIR-5.1
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NAVAIR INSTRUCTION 3960.4B

From: Commander, Naval Air Systems Command

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

Ref: (a) NAVAIRINST 3960.2C
(b) OPNAVINST 3432.1
(c) NAVAIRINST 13034.1C
(d) Range Commanders Council Document 323-99
(e) OPNAVINST 5090.1B CH-3
(f) NAVAIRINST 13030.2
(g) SECNAVINST 5720.42F CH-2
(h) SECNAVINST 5510.36
(i) DOD Directive 5230.2

Encl: (1) List of Local Instructions
(2) Project Planning Memorandum Guide
(3) Test Plan Writing Guide
(4) Test Team Review Board (TTRB)/Executive Review Board (ERB)/ Firing Readiness Review (FRR) Preparation Checklists
(5) Fit Check Test Plan Guide
(6) Support Plan Guide
(7) Test Plan Amendment Guide
(8) Guide for Addition of Flight Crew and/or Engineers
(9) Test Plan Instruction Change Proposal Form

1. Purpose. To establish Naval Air Systems Command (NAVAIR) policies, processes, responsibilities, and requirements for preparation, review, and execution of flight, ground, and laboratory tests of air vehicles, air vehicle weapons, and air vehicle installed systems. This instruction provides test planning 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. Guidance for NAVAIR involvement in the experimentation process is currently under development and will be published via separate correspondence.

2. Cancellation. This instruction supersedes NAVAIR Instruction 3960.4A of 8 Jun 99. Since this is a major revision, changes are not indicated.

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 Strike Weapons and Unmanned Aviation (PEO(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 procedure 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 safe generation of required test data while safeguarding human life, preserving valuable air vehicle assets, and maintaining program schedules within cost constraints.

b. The Commanders of the Naval Test Wings Atlantic and Pacific (Test Wings) and their subordinate squadron commanding officers 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 Integrated Systems Evaluation, Experimentation & Test Department. The Directors of the Range Department and the Integrated Battlespace Simulation & Test (IBST) Department are responsible for the safe and efficient operation of their laboratories, test facilities and ranges during the test execution. Likewise, the Lead Project Engineers, Project Officers and/or Test Team Leads are responsible for developing plans to gather the required data efficiently. These are serious responsibilities. For this reason, the responsibility for test plan approval covered by this instruction rests with senior members of the Integrated Systems Evaluation, Experimentation, and Test (ISEET) Department (AIR-5.1) and/or the Director, Range Department (AIR-5.2) and/or Director, IBST Department (AIR-5.4). However, there is also a responsibility for these senior members 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 increased 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 and AIR-5.0 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 constitute the leadership of the test team. Local (i.e., Patuxent River, MD, Point Mugu, CA, China Lake, CA) 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 the IPTs. 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 engineers, 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. Enclosures (1) through (9) provide 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) 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 Installed Systems Test Facility (Shielded Hangar, Anechoic Chambers, Hazards of Electromagnetic Radiation to Ordnance (HERO) Pad and Aircraft Test and Evaluation Facility (ATEF)) and other NAVAIR and non-NAVAIR laboratories/facilities, as required 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 vehicles (UAVs).

(2) All other RDT&E test programs that involve air vehicles. This includes non-Navy and non-NAVAIR customers (e.g., National Aeronautics and Space Administration, contractors, U.S. Army, Naval Sea Systems Command) who use NAVAIR infrastructure or assets for ground, lab, or flight tests. All air vehicle related Advanced Concept Technology Demonstrations and Advanced Technology Demonstrations will be considered RDT&E tests.

(3) Flight simulator evaluations. Defined as evaluations of simulations intended for use as part of the training system for aircrew. This includes, but is not limited to, flight fidelity evaluations of training systems in support of NAVAIR acquisition programs.

(4) 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 IPT members, or the test participants.

b. In all the above cases in paragraph 5a, 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 tests exclusively using operational assets for training or for Operational Test 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, aircraft survivability 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 will determine the applicability of this instruction.

d. NAVAIR test plan preparation and approval will be standardized. Non-NAVAIR test plans must contain the basic elements, as defined in this instruction, but may use other processes and/or formats for development and preparation:

(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 and define 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) flight clearance obtained for the new configuration; 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 (i) 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) and Tactical Manuals, including NATOPS operating limitations, and the impact these limitations may have on the test under consideration.

a. Local Program Sponsor. Designated by the program manager. Incumbent may be an IPT leader, a local project coordinator, an EDT leader, or other designated individual. The local program sponsor will:

(1) ensure tasking, provided in writing, defining the requirements is provided to the test team with all deliverables identified;

(2) ensure tasking and reporting requirements adequately reflect sponsors' requirements;

(3) provide funding to support all resource requirements;

(4) define schedule requirements;

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

(6) for cases where tasking has been received, but a test team is not yet established or the project officer/project engineer has not been identified, prepare a draft Project Planning Memorandum, enclosure (2), and submit it to the TECT.

b. Project Officer/Project Engineer. The project officer/project engineer will:

(1) coordinate with the local program sponsor and draft a Project Planning Memorandum (PPM), enclosure (2), upon tasking from the sponsor/customer and submit the memorandum to the TECT;

(2) negotiate deliverables with sponsor and appropriate competencies during development of tasking and document the plan via the Test Reports/Deliverables Plan (TRDP), enclosure (3) appendix G. 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;

(3) review the Operational Requirements 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 or Suitability, Critical Technical Parameters and Key Performance Parameters are completely understood and accounted for in the test data requirements;

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

(5) coordinate inputs from all test personnel, prepare a written test plan, and coordinate the review process for approval of the test plan, including the Test Team Review Board (TTRB) and the submission of the project test plans to the Executive Review Board (ERB) (enclosures (3) and (4));

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

(7) 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 (b);

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

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

(10) consult with technical area specialists to ensure a complete and balanced assessment of the technical approach and risk, and that lessons learned have been considered;

(11) perform appropriate level of Test Hazard Analysis and risk assessment. Following enclosure (3), appendix F, 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;

(12) 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);

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

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

(15) ensure the flight clearance request(s) is drafted and submitted in a timely manner, in accordance with AIR-4.0P guidelines, to the Flight Clearance Control Officer (FCCO). Ensure requested test envelope encompasses planned test points. Ensure proper flight clearance is obtained, per reference (c), prior to the final test plan approval process, unless otherwise coordinated with the TECT;

(16) 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;

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

(18) coordinate with the Ordnance Support Team whenever weapons or stores are to be loaded or carried on NAVAIRWARCENACDIV aircraft or any aircraft at Patuxent River, MD or when NAVAIRWARCENACDIV loading personnel are being used;

(19) 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;

(20) ensure unique support items are available (i.e., specific control tower support, special air field/runway requirements, special RTPS support requirements, etc.);

(21) coordinate the scheduling of facilities and laboratories;

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

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

(24) ensure an environmental analysis has been performed in accordance with enclosure (3), appendix I;

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

(26) 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;

(27) submit test plan amendments for any change in scope, method of test, and personnel beyond what has been approved;

(28) ensure an up-to-date test plan, amendments, and test plan related papers are maintained in the official test plan file;

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

(30) manage and conduct tests as appropriate;

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

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

(33) ensure testing is conducted in accordance with the test plan, issued flight clearances, and applicable NATOPS manual;

(34) 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 T&E and engineering competencies;

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

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

(37) ensure Range Safety Criteria for UAVs Rational and Methodology Supplement, reference (d), is used to minimize flight risk.

c. 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.

d. FCCO. Provides the focal point for all flight clearances. Assists the test team in interpreting all project flight clearance requirements.

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

f. 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.

g. 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, including UAV/Drone operations.

h. 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.

i. 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.

j. Ordnance Support Team Leader (NAVAIRWARCENACDIV). 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).

k. VX-30/VX-31 Ordnance Officer (NAVAIRWARCENWPNDIV). Provides store/armament system support and review of test plans when requested by the TECT involving the carriage or employment of air launched stores.

l. 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. RSO personnel will provide assistance tailored to the specific needs of the squadron/range, obtaining timely and cost-effective environmental approval. RSO personnel should be involved early in the RDT&E process for any testing being performed in the NAWCAD Atlantic Test Range or the NAWCWD Land or Sea Range.

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

(1) 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.

n. ISEET Test Engineering Division Heads/Branch Heads. The ISEET Test Engineering Division Head/Branch Head will:

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

(2) coordinate with other 4.0 Engineering Department's Division/Branch Heads and appropriate team leadership regarding

requirement for non-T&E engineering personnel on test team. 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 IPTs, 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) 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; and

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

o. TECT. The TECT will:

(1) ensure each test team is comprised of the appropriate competency representation by reviewing the PPM (enclosure (2)), unless waived by the TECT, and providing feedback to the originator of the PPM (either the local program sponsor or project officer/project engineer);

(2) ensure adequate security, safety, and flight clearance issues are addressed;

(3) provide guidance for project test plan preparation;

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

(5) ensure the test team has reviewed the applicable requirements of the TEMP, if applicable;

(6) review test plans and provide final approval as delegated. Maintain a master file of approved flight test plans and amendments;

(7) monitor test projects to ensure adherence to the approved test plan; and

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

p. Test Squadron Commanding Officer. Provides approval authority for tests involving aircraft or resources under squadron purview. This authority may be delegated in writing to designated individuals.

q. Director for Test and Experimentation Engineering (AIR-5.1). Provides approval authority for tests under the purview of this instruction. This authority may be delegated in writing to designated individuals.

r. AIR-5.2/5.4. Provides approval authority for tests involving NAVAIR resources under the purview of the Range Dept. and IBST Dept. This authority may be delegated in writing to designated individuals.

7. Test Planning Documentation. The project test plan forms the base for most project test planning documentation. All test plans should be marked "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 enclosure (3) shall be used in test plan preparation for NAVAIR developmental 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 nonstandard formats for NAVAIR developmental test plans can be negotiated with the applicable TECT.

b. Contractor Test Plans/Non-NAVAIR Test Plans

(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 fulfill the requirements of this instruction, and may be approved "as is" by the appropriate test plan approval authority.

(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.

c. Aircraft Modification Test. The guide for test plan preparation in enclosure (5) may be used as a Test Plan for an aircraft modification project (Fit Check) if the TECT determines that the project constitutes a test. 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 test is typically defined as limited scope project where hardware is physically mounted or installed in an aircraft to collect mechanical fit, clearance or range of motion data, and then removed. Other applications of this format are at the discretion of the TECT.

d. Support Plan. A support plan is used when NAVAIR assets (e.g., aircraft, targets, ranges, facilities, equipment, personnel) are used in support of a test project where utilization of these assets is not already covered under the approved NAVAIR test plan. This format is applicable for ground and flight events which are not tests of the support aircraft or installed systems, are short duration, are within aircraft NATOPS envelope, and are Risk Category A. Examples are instrumentation check flights, target support, demonstration flights, maintenance demonstrations when using approved maintenance procedures, or use of an aircraft as part of the test planning process when using approved maintenance procedures. The guide in enclosure (6) may be used for support plans. Consult a TECT member when it is unclear whether a support plan is appropriate.

e. Standardized Test Procedures (STP). If a test team proposes a standardized test process, an STP may be submitted in lieu of a NAVAIR test plan. The TECT will be responsible for review and approval of all STPs.

f. Test Plan Changes

(1) Amendments. The guide in enclosure (7) must be used for amendments to previously approved project test plans. A copy of the approved project test plan with prior amendments will be submitted, when requested by the TECT, for each test plan amendment. Amendments shall be sequentially numbered and will normally be routed, reviewed and approved in the same manner as the original project test plan unless otherwise agreed upon by the TECT.

(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. Critical test personnel include (but are not limited to) lead test engineers, project officers, flight test conductors, and engineers with primary responsibility for monitoring safety-of-flight or data-critical information during test operations. Enclosure (8) is provided as a guide for test team changes.

8. Test Plan Preparation. It must be emphasized that the test team prepares the test plan.

a. For all test efforts it is vital that test teams coordinate early with the TECT to determine the required engineering disciplines and test team personnel needed for successful test program completion. This communication can be accomplished through technical TECT/test team interaction or by preparation of a PPM as described in enclosure (2).

b. The test team shall prepare a TRDP to satisfy each customer's requirements. Effective reporting of technical information may encompass a spectrum of communication methods. A TRDP example is contained in enclosure (3), appendix G.

c. The test team must incorporate guidance and input from technical specialists, safety, test pilots, the customer, engineers from any other engineering competency as deemed necessary by the TECT, ISEET engineering divisions and test squadrons (AIR.5.1.X), the IPT/EDT leader, and AIR-5.2/5.4 personnel as appropriate.

d. Preparation Checklists, enclosure (4), are checklists that can be used when preparing for a TTRB/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: Test Team and Executive Review. 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. For test plans involving reviewers from multiple sites, Video Telecommunication Centers or conference calls should be used. Non-NAVAIR test plans are encouraged to follow a similar process as outlined below, recognizing the differences in organizations and processes. The Test Plan must be provided to the members of each review board sufficiently in advance to accommodate a responsible review (typically three working days).

a. A TTRB shall occur as part of the preparation 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 for review by others. The TTRB is the prime technical and risk assessment review. The review will involve, as appropriate: technical representatives from each necessary competency, level 3/4 competency managers, platform coordinators, facilities and asset coordinators, PLO and/or squadron maintenance representatives, and the local program sponsor. At the conclusion of the TTRB, competency managers and platform coordinators (at a minimum) 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 prior to submittal for executive review. For test plans involving civilian air vehicles, the test plan will be reviewed and signed by the holder of the Federal Aviation Administration airworthiness certificate, or an empowered representative, for the air vehicles involved in the test. The TTRB review shall:

(1) ensure proper processes have been followed for technical content, risk analysis, and safety;

(2) ensure proper coordination has been made for all assets and facilities;

(3) obtain concurrence from applicable competencies and sponsor representatives;

(4) ensure the testing is cost-effective and is planned to achieve the test objectives in a realistic time frame;

(5) ensure any potentially hazardous procedures or tactics are thoroughly analyzed to reduce risk;

(6) ensure the tests are planned within the authorized test envelope as defined by NATOPS or the flight clearance;

(7) ensure the availability of resources as specified in the test plan;

(8) ensure the qualifications and experience of assigned personnel are sufficient and personnel responsibilities during the test are delineated;

(9) 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;

(10) ensure the project test plan includes tests to collect data in order to address the applicable TEMP requirements in the report;

(11) ensure the environmental compliance requirements, if any, are identified and issues or mitigating procedures highlighted;

(12) ensure the project test plan meets the sponsor's tasking expectations and reflects the reporting requirements negotiated with the sponsor following the TRDP;

(13) ensure OPSEC issues have been addressed and appropriate documentation has been added to the project test plan;

(14) ensure data requirements, instrumentation requirements, data handling and data reduction processes are clearly defined;

(15) ensure that all support requirements and go/no-go criteria are clearly defined; and

(16) result in the preparation of a brief synopsis of the TTRB that shall include a list of attendees/technical areas represented, summary of problem areas, and resolutions. Problem areas, which have not been resolved, must be thoroughly explained. This synopsis will be included with the Test Plan when submitted for executive review.

b. The ERB is comprised of all individuals required for test plan approval and others needed for specific input and concurrence such as the AIR-5.1.X Operations and Safety Departments from the appropriate squadron. The TECT may stipulate additional members as appropriate. 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 contain a package with amendments, tasking, and applicable references. The project engineer/project officer will coordinate test plan dissemination requirements with the TECT. 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.

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. For the majority of testing conducted by NAVAIR, approval will be required from both the Director for Test and Experimentation Engineering (AIR-5.1) and Test Squadron Commanding Officer (AIR-5.1.X) and/or Director, Range Dept. (AIR-5.2), and/or Director, IBST (AIR-5.4) or their official designees. Variations in this approval requirement will exist for some test plans, including testing conducted on non-NAVAIR aircraft and testing conducted at sites other than where the test team is based. For example,

(1) Testing conducted within NAVAIR ranges or facilities using non-NAVAIR aircraft requires the approval of both AIR-5.1 and AIR-5.2 or AIR-5.4, or their official designees.

(2) 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.

(3) Testing involving multiple platforms will require the approval of AIR-5.1 and all applicable Test Squadron Commanding Officers (AIR-5.1.X), or their official designees.

(4) Testing involving engineers or aircrew from more than one site/organization, will require the approval of all applicable Test Squadron Commanding Officers (AIR-5.1.X) and AIR-5.1 or their official designees.

b. Test teams with unique or unusual circumstances or testing situations not covered in the examples above should coordinate in advance with their respective local TECT to determine the appropriate test plan approval authority.

c. Test Plan approval authority may be delegated in writing to lower levels and will be a function of the scope and complexity of the test program and the risk level of the tests. Delegation for their respective departments are nontransferable and may only be made by Director, Test and Experimentation Engineering (AIR-5.1), Test Squadron Commanding Officers (AIR-5.1.X), Director, Range Department (AIR-5.2), and Director, IBST Department (AIR-5.4).

d. The TECT shall maintain a record of up-to-date delegated signature authority for test plan approval.

e. When requested by the TECT, those empowered to approve test plans must participate in TECT discussion/meetings, process improvement reviews, and continue certification 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.

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

12. 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.

13. Periodic Test Plan Review. Test plans are valid for one year after approval unless otherwise negotiated with the TECT. At the discretion of the TECT, a test plan revision may be requested for those test plans with a significant number of substantial test plan amendments. This revision will be subjected to a TTRB and/or Executive Review.

14. Review. AIR-5.1 shall review this instruction annually and recommend changes as necessary. Any recommended instruction changes can be forwarded at anytime to AIR-5.1 via a local TECT using the Change Proposal Form, enclosure (9).

W. B. MASSENBURG

Distribution: Electronic only, via NAVAIR directives website: http://directives.navair.navy.mil/index.cfm or locally at https://directives.navair.navy.mil

LIST OF LOCAL INSTRUCTIONS

1. NAVAIRWARCENDIVINST 5100.5B, Systems Safety Engineering; Policy and Procedures.

2. NAVAIRWARCENDIVINST 5213.1, Developmental Test/Operational Test Transition Report.

3. NAVAIRWARCENDIVINST 5214.1A, Report Policy.

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

5. NAVAIRWARCENACDIVINST 13050.1B, Aircraft Modification/ Configuration Control Policy, Procedures, and Responsibilities.

6. NAVAIRWARCENACDIVINST 3700.2A, Range Safety Policy.

7. NAVAIRWARCENACDIVINST 3710.1, NAWCAD Range Safety Manual.

8. NASPAXRIVINST 5100.35A, Chapter 17 & 28, Occupational Safety and Health Manual.

9. TESTWINGLANTINST 8020.1C, Ordnance Systems Standard Operating Procedures (SOP).

10. 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.

11. NAWCWPNCENINST 5214.1C, Reports Management Program.

12. VX30INST3710.7E, Standard Operating Procedures.

13. NAWSPTMUGUINST 3750.2A, Aviation Safety Program.

14. VX31INST 3710.7D, Standard Operating Procedures.

15. NAWCWPNSINST 5100.2A, Sea Range Safety.

16. NAWCWPNINST 8010.1B, Ordnance Hazards Evaluation Board.

17. NASPAXINST 5090.3A CH-1, Environmental Review Process.

18. NAVTESTWINGPACINST 3500, Firebreaks -- Policy to Prevent Accidental Stores Release.

19. Test Article Preparation Standard Operating Procedure 13000, dated Feb 2, 2000.

20. NASPAXRIVINST 5090.1A, Environmental Quality Plan.

21. NAVTESTWINGLANTINST 3710.1B, NTWL General Flight and Operating Instructions.

22. AIRTEVRONTWOZEROINST 3710.7K, Standard Operating Procedures.

23. AIRTEVRONTWOTHREEINST 3710.12F, Standard Operating Procedures.

24. RWINST 3710.15F, Standard Operating Procedures.

PROJECT PLANNING MEMORANDUM GUIDE

Date (DD MMM YYYY)

PROJECT PLANNING MEMORANDUM

RISK CATEGORY __ (Anticipated)

From: Project Officer, Project Engineer or Project Test Team Leader
To: Test and Experimentation Coordination Team
Via: Platform Coordinator

Subj: PROJECT PLANNING MEMORANDUM FOR (INSERT PROJECT TITLE)

1. Purpose of Project: State the objectives of the proposed effort.

2. Summary Statement of Proposed Project: This short narrative should briefly discuss the background and proposed scope of test activity involvement. In addition, this section should identify whether the program is ACAT designated or not. Also, the status of an ORD and TEMP and any other documents related to test specification verification should be discussed.

3. Project Sponsor and Funding Source: Identify the sponsoring activity and funding source. Provide test budget if available.

4. Other Agency/Command Involvement: List all other activities, which will either participate or are dependent upon the completion of the proposed project testing. Identify if Operational Test is required. If so, is combined or independent OT planned? Will testing with non-NAVAIR assets be required?

5. Proposed Test Team Membership: List the proposed competency membership on the project. Specific names of individuals are not required.

6. Project Schedule. This section should include a notional test team schedule designed to accomplish the objectives of the proposed project.

7. Request TECT approval of project staffing plan.

_____
Project Officer, Project Engineer or
Project Test Team Leader

PROJECT PLANNING MEMORANDUM GUIDE (CONT'D)

From: Test and Experimentation Coordination Team, Appropriate Test Squadron Region

To: Project Officer, Project Engineer or Project Test Team Leader

Subj: PROJECT PLANNING MEMORANDUM FOR (INSERT PROJECT TITLE)

1. The Staffing Plan is acceptable / is acceptable as modified; proceed with test planning.

Comments:

_____
Chief Test Pilot

2. The Staffing Plan is acceptable / is acceptable as modified; proceed with test planning.

Comments:

_____
Chief Test Engineer

Enclosure (2)

SAMPLE

15 May 2002

PROJECT PLANNING MEMORANDUM

RISK CATEGORY: C

From: LT Project Officer, Ms Project Engineer
To: Test and Experimentation Coordination Team, VX-20 Region
Via: Mr. Platform Coordinator

Subj: PROJECT PLANNING MEMORANDUM FOR P-3C AGM-84H/K SLAM-ER MISSILE

1. Purpose of Project: The purpose of this project is safe separation, captive carriage, integration, and live fire evaluation of the AGM-84H/K SLAM-ER missile from the P-3C for the maritime patrol mission.

2. Summary Statement of Proposed Project: The Maritime Patrol Aircraft (MPA) P-3C aircraft underwent a major weapons capability improvement with the AN/AWG-32 (V) Maverick/ Missile Control System. This new strike capability has provided the platform with a close in weapons requirement (AN/AGM-65 Maverick) and a standoff capability through the AN/AGM-84E Stand Off Land Attack Missile or SLAM. It was noted during the Kosovo air campaign that the existing SLAM launch envelope was severely limiting the aircraft's strike capabilities. SLAM-ER should improve the P-3Cs SUW/strike capability. The AGM-84H/K SLAM-ER is an all-around improvement of the AGM-84E SLAM guided missile. Due to the new aerodynamics of this missile (most notably, a set of folding wings used to increase range), each platform that carried the SLAM now needs to be re-evaluated to determine the current fleet compatibility of the SLAM-ER. Recoverable Air Test Vehicles (RATVs) representative of the SLAM-ER aerodynamics and mass properties will be used for store separation testing. Dedicated captive carriage tests will be performed utilizing a Vibration Test Vehicle (VTV), to be accomplished under separate test plan. Either test may occur first. Integration and live fire of SLAM-ER will also be covered under separate test plans. This is an ACAT IV program and the TEMP is currently in draft form.

3. Project Sponsor and Funding Source: NAVAIR, PMA-290, CDR Class Desk, AIR-4.1. Approximately $800K is allocated for this project.

4. Other Agency/Command Involvement: Combined DT/OT testing is planned for all tests except live fire. An independent OT live fire test will occur following successful completion of combined DT/OT live fire testing. Tests will utilize a VX-20 airplane.

5. Proposed Test Team Membership: The test team will be composed of members from the following competencies:

AIR-5.1.6	Lead Project Engineer and Project Engineers
AIR-5.1.7	Project Officer and Aircrew, VX-23
AIR-5.1.6.3	Aeromechanics, Maritime Branch
AIR-5.1.2.1	Battle Space Systems Integration Branch
AIR- 5.4.X	Electromagnetic Capabilities/Electromagnetic Interface
AIR-4.3.2.5	Separation Analysis

6. Project Schedule. Modification of test aircraft is planned during Aug-Oct 2002. Test program will begin following modification and is estimated to take six months to complete.

7. Request TECT approval of project staffing plan.

_____
Project Officer, Project Engineer or
Project Test Team Leader

Enclosure (2)

SAMPLE
(CONT'D)

From: Test and Experimentation Coordination Team, VX-20 Region
To: LT Project Officer, Ms Project Engineer

Subj: PROJECT PLANNING MEMORANDUM FOR P-3C AGM-84H/K SLAM-ER MISSILE

1. The Staffing Plan is acceptable / is acceptable as modified; proceed with test planning.

Comments:

_____
Chief Test Pilot

2. The Staffing Plan is acceptable / is acceptable as modified; proceed with test planning.

Comments:

_____
Chief Test Engineer

TEST PLAN WRITING GUIDE

This enclosure outlines the format of a NAVAIR test plan. This test plan writing guide, including sample pages and templates, is available on disk from a Local TECT, or can be accessed online at http://tetoolkit.navair.navy.mil.

Although not all sections may be applicable to all tests, this enclosure should be followed as closely as possible to ensure comprehensive test planning documentation.

ORGANIZATION OF THE TEST PLAN

Any clear, easy to follow paragraph numbering system that positively identifies each paragraph is acceptable.

A clear analogy exists between test planning and the preparation required to write the final report. Test planning should always be accomplished with the latter in mind. In preparing a test plan:

a. analyze the objective(s) of the project;

b. determine which tests are required to meet those objectives;

c. organize the test events into primary, secondary, and subsequent categories;

d. write a report outline during the planning stage; and

e. prepare the test plan and ensure the data obtained in the test will allow thorough completion of the objectives and will provide the critical data for the report.

FRONT COVER

The cover of the test plan has standardized information. It will contain the title, the date, the name of the project officer/project engineer preparing the flight test plan, the security classification, the downgrading instructions (when applicable), and appropriate distribution statement. Guidance on selecting the appropriate distribution statement is contained in reference (i). The title should be the same as that contained in the Team Work Plan if it is descriptive of the test to be performed; otherwise, the test plan should be given a title which describes:

a. the nature of the project;

b. the equipment/weapon to be tested; and

c. significant limitation to the scope of the tests (for example, ground tests, fit checks, etc.).

If possible, the title should be unclassified. A sample test plan front cover page is provided in Figure 1.

Figure 1
Sample Test Plan Front Cover

NAVAIR

NAVAIR TEST PLAN

Test Plan Classification: **Test Plan Number:**
Project Classification:
Risk Category / Categories: **Test Plan Expiration Date:**

PROJECT TITLE:		
NAVAIR Work Plan:	**DATE:**	
Sponsoring Organization:	**Sponsor / Code / Telephone:**	
Team ID / Code:		
Project Engineer / Code / Telephone:	**Project Officer / Code / Telephone:**	
Funding Expiration:	**Chargeable Object:**	
Est. Date of 1st Grnd/Flt Event:	**Est. Date of Last Grnd/Flt Event:**	**Est. Date of Test Program Completion:**
Est. Ground Test Hrs:	**Est. Flight Test Hrs:**	**Est. Total Sorties Req'd:**

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(Name / Position / Code)
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(Name / Position / Code)
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(Name / Position / Code)
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(Name / Position / Code)

APPROVED: _____ _____
(T&E Engineering Representative) **DATE**

APPROVED: _____ _____
(Test Squadron Representative) **DATE**

APPROVED: _____ _____
(Additional Test Squadron or T&E Dept. (AIR-5.X) Representative) (If Applicable) **DATE**

FOR OFFICIAL USE ONLY

TEST TEAM SIGNATURE PAGE

The Test Team Signature Page will immediately follow the Front Cover. Test team members who have a role/responsibility in the execution of the test shall sign the Test Team Signature Page after the test plan has been approved and prior to their involvement. Test team members will read the test plan, understand the planned tests, and acknowledge their roles and responsibilities by signing the Test Team Signature Page. A sample Test Team Signature Page follows:

SAMPLE TEST TEAM SIGNATURE PAGE

The following individuals have read the test plan, understand the planned tests (including appropriate Standard Operating Procedures), and acknowledge their roles and responsibilities for this project.

(Signature)	(Date)	(Project Engineer)
(Signature)	(Date)	(Project Officer)
(Signature)	(Date)	(Function)
(Signature)	(Date)	(Function)
(Signature)	(Date)	(Function)
(Signature)	(Date)	(Function)

TEST PLAN TABLE OF CONTENTS

A Table of Contents is required if the number of pages in the body of the flight test plan is greater than 50, but may be used in shorter test plans. A sample Table of Contents follows:

SAMPLE TABLE OF CONTENTS

1.0 BACKGROUND

2.0 PURPOSE OF TEST

3.0 DESCRIPTION OF TEST AIRCRAFT OR EQUIPMENT
- 3.1 Basic Aircraft
- 3.2 Test Aircraft Modification
- 3.3 Test Item (Missile/Pod/Box/Software)
- 3.4 Test Item Modifications
- 3.5 Test Instrumentation

4.0 SCOPE OF TEST
- 4.1 Test Envelope
- 4.2 Flight Clearance
  - 4.2.1 Flight Restrictions
  - 4.2.2 Tailored Airworthiness
- 4.3 Tests and Test Conditions
- 4.4 Test Loadings
- 4.5 Test Configurations
- 4.6 Test Criteria
- 4.7 Limitations to Scope

5.0 METHOD OF TEST
- 5.1 Test Method and Procedures
  - 5.1.1 Flight Preparation and/or Ground Checks
  - 5.1.2 Operational Procedures
- 5.2 Support Requirements
- 5.3 Personnel Requirements

6.0 RISK MANAGEMENT
- 6.1 Safety Checklist
- 6.2 Test Hazard Analysis
- 6.3 Firebreaks
- 6.4 Hazard Pattern
- 6.5 Environmental Analysis
- 6.6 Risk Category
- 6.7 Real-Time Data Monitoring
- 6.8 Additional Special Precautions

7.0 PROJECT MANAGEMENT
- 7.1 Funding and Manpower Requirements
- 7.2 Schedule/Milestones
- 7.3 Test Plan Change Procedure
- 7.4 Reports
- 7.5 Project Security

REFERENCES

APPENDICES

A.....TEST PLAN MATRIX
B.....FLIGHT CLEARANCES
C.....OPERATIONAL COUNTDOWN
D.....INSTRUMENTATION REQUIREMENTS
E.....SAFETY CHECKLIST
F.....TEST HAZARD ANALYSIS
G.....TEST REPORTS/DELIVERABLES PLAN
H.....AIRCREW QUALIFICATIONS
I.....ENVIRONMENTAL ANALYSIS DOCUMENTATION

ACRONYMS AND ABBREVIATIONS LIST

For test plans with many acronyms and abbreviations, a list should be included. The acronyms and abbreviations should be in alphabetical order with their meanings. When an acronym or abbreviation is used in the test plan the first time, it must be in parentheses and be preceded by its meaning. If a compound term is used only once in the test plan, do not establish an acronym for that term.

SAMPLE
ACRONYMS AND ABBREVIATION

AIC	Aircraft Interoperability Center
ARDS	Advanced Range Data System
AWA	Atlantic Warning Area
CNI	Communication, Navigation, and Identification
CTP	Critical Technical Parameters
DAP	Data Analysis Plan
EA	Electronic Attack
EW	Electronic Warfare
HUD	Head Up Display
MUX	Multiplexer
RPS	Remote Power Supply
TM	Telemetry

TEST PLAN FORMAT

1.0 BACKGROUND

1.1 The background introduces the project. It should state how and why the project came into being. State pertinent information regarding the origin of the requirement for the test program and its relationship to the acquisition process. This information is generally in the "Background Information" paragraph of the assigned Team Work Plan/AIRTASK/Work Unit/Project Order and can be amplified as necessary. This section should be suitable for inclusion in the final report.

1.2 When applicable, a separate paragraph of this section shall include previous test results, failure summaries, technical literature, and relevant reports which support the test plan or highlight potential risks.

1.3 The applicable TEMP will be identified. If no TEMP exists, so state.

2.0 PURPOSE OF TEST

2.1 This section should include specific objectives or goals which deal with the purpose of the test program. In some cases, data determination and comparison may be the objective; i.e., determination of compliance with performance guarantees, specifications, and/or functional capabilities. In other cases, it may be necessary to refer to specific operational requirements or the intended mission of the platform or equipment. The purpose can generally be found in the Work Unit or Project Order.

2.2 Technical and operational characteristics to be demonstrated and/or certified before entering the next test and/or acquisition phase should be clearly identified.

3.0 DESCRIPTION OF TEST AIRCRAFT OR EQUIPMENT. Lengthy or detailed descriptions (more than two pages) should be included as appendices. Liberal use can be made of reference material in this section; however, the references must be accessible.

3.1 Basic Aircraft. Describe or reference the basic aircraft used in the test (if applicable). Description may be similar to that found in a NATOPS manual. If several variants of an aircraft type are acceptable for the test, so state.

3.2 Test Aircraft Modification. Discuss aircraft modifications incorporated to <u>support</u> the test. Do not discuss the actual test item or instrumentation here, as it will be described in the following paragraphs. Discuss instead added systems, which support your test, but are not under test (like engine monitors, spin chutes, flight test weapon controls, additional redundant systems, etc.). Describe the modification approval process if other than the NAVAIR process is used. List specific airplane Bureau Numbers (BUNOs) if only certain aircraft have the required test modifications. Discuss the impact to the test results because of these aircraft changes. Is the aircraft still "Fleet representative"?

3.3 Test Item (Missile/Pod/Box/Software). Describe the basic test item (the configuration one would expect to be released to the fleet). The description may be similar to that found in a NATOPS manual or a TACMAN. Identify test critical items (e.g. part number, serial number, or version ID as appropriate). For software tests discuss significant capability increases of the new software.

3.4 Test Item Modifications. Discuss any changes to the expected fleet configuration due to pre-production, test or instrumentation modifications. Discuss the impact to the test results because of these changes. For example, even though the test article has been modified, will the data gathered still be valid?

3.5 Test Instrumentation. All test instrumentation required during the test should be listed in this section to include type and recording methods. The listing should include external instrumentation requirements such as cameras, signal sources, radar and theodolite ranges, Real Time Telemetry Processing System, etc., as well as on-board requirements. The instrumentation list should be included as shown in appendix D. A detailed listing of parameters to be measured, the measurement characteristics, and the recording and final output devices would be helpful for final report preparation and may also be contained in an appendix.

4.0 SCOPE OF TEST. The scope of test section in the test plan is designed to capture items such as how high, how fast, how far, test loadings and test configurations the test aircraft is expected to fly, and/or when this test project is expected to be completed. The following subsections are designed to address these issues.

4.1 Test Envelope. State the envelope in which the team actually intends to conduct testing. Special note should be made of differences from approved limits defined in NATOPS, TACMAN, or Flight Clearances. It is important that the test envelope be clearly defined. The envelope may be presented in a tabular or graphical format.

4.2 Flight Clearance. Flight clearance policies, procedures, and responsibilities are contained in reference (c). In this section, describe the flight clearance requirements for the test project. Include the flight clearances as an appendix to the test plan. All flight clearances pertaining to the system under test must be included in the test plan prior to approval of the test plan. Flight clearances for instrumentation installed by Air Vehicle Modification Instrumentation (AVMI) are not required prior to test plan approval, unless the installation resulted in the generation of an AVMI Special Precaution Notification (SPN) form. SPN forms will be generated by AVMI and will be coordinated with a 4.0P representative. Test plans may be approved in stages or phases in order to account for incremental flight clearances. If the test plan approval by increments is required, it must be clearly stated if this authority is delegated, and to whom. The test plan must include a separate one-page appendix which provides the format for incremental test plan approval as clearance messages are received. Incremental clearances will be included in the flight clearance appendix of the test plan. After approval of the test plan if a flight clearance is changed/amended or a new flight clearance issued, the test team will submit a test plan amendment with the new or amended clearance as an enclosure, unless otherwise specified in this section. An example of a flight clearance is included in appendix B.

4.2.1 Flight Restrictions. List the additional flight restrictions officially placed on the project/aircraft (e.g. dry aircraft, center of gravity, angle of attack, airspeed, asymmetry) that are not already stated in the flight clearance, NATOPS, or approved operating limits. List those restrictions/special pilot procedures that have been/will be added to the aircraft information sheets which are maintained by Maintenance Control.

4.2.2 Tailored Airworthiness. Reference (f) provides policy and guidance which permits consideration, during the flight clearance process, for tailored application of airworthiness standards for flight test of special purpose configurations (limited operation in a T&E environment) of Navy aircraft and weapon systems. If NAVAIR's airworthiness standards have been tailored for a special purpose configuration, the extent to which the standards have been tailored will be discussed in the flight clearance section of the test plan. Additionally, the risks associated with the non-compliant design/hardware shall be clearly identified and discussed in the risk management section of the test plan.

4.3 Tests and Test Conditions. Give a brief summary of the test program, stating number of phases/sub-tasks, tests, flights, flight-hours, location, and general scheduling. This section is applicable to mission systems as well as airframe systems. Include mission scenario testing requirements where applicable. State which DT tests will be conducted to measure the potential for OT success. A matrix of tests and test conditions is frequently the best format for presentation. Use of an appendix may be applicable. The test matrix:

a. will include each specific test, including each required buildup test point/sortie to be conducted and should include as a minimum the task title, test objective, loading, configuration, test conditions, and the risk category of the test point/sortie;

b. should be detailed and explicit enough so as to leave no doubt as to the tests and test conditions planned and an indication of test methods to be employed;

c. should provide sufficient information to make up flight data cards;

d. should contain sufficient detail to avoid confusion and answer potential questions prior to the ERB;

e. may include a column tracing test points to requirements (e.g. buildup, certification data, specification compliance, Operational Requirements Document (ORD), TEMP, Functional Requirements Document (FRD), etc.);

f. may be in a form suitable for specific types of tests such as the examples shown in appendix A.

This section of the test plan may be used to specify criteria used by the test team to repeat or delete test points or sorties, or to add intermediate buildup in the test matrix. The matrix for an extensive project may be of such length that separate test plans for phases/sub-tasks of the total program may be beneficial. Test plans for programs that are being conducted in support of TEMP technical evaluation programs will include a matrix in the Scope of Tests section, or in an appendix if the matrix is longer than one page, that specifies which tests or test phases correlate

with which thresholds of the Critical Technical Parameters section of the TEMP (sections I.D. and I.E.) and the requirements of the DT and Evaluation and OT and Evaluation Outlines (TEMP sections III and IV).

4.4 Test Loadings. The various loadings to be tested should be presented. Variables which may have a significant effect on the tests being conducted should be included (gross weight, Center of Gravity (CG) position, drag index, stability index, asymmetry, moments of inertia, etc.). If the test loadings are not representative of the mission requirements, so state and explain the impact on the tests and the test results. A typical table of test loadings is presented in Tables 4-1 and 4-2. If non-NATOPS or TACMAN stores are used, an approved loading checklist shall be utilized per local instructions (enclosure (1)) and may be included as an appendix.

Table 4-1
STORE/STATION ALLOCATION

LOAD	STA 1	STA 2	STA 3	STA 4	STA 5	STA 6	STA 7	STA 8	STA 9
A	AIM-9M	Clean	Empty Pylon	TFLIR	FUEL TANK	AIM-7	Empty Pylon	Clean	AIM-9L
B	Empty Launcher	AIM-120	Clean	AIM-7	FUEL TANK	NAV FLIR	Clean	AIM-120	Empty Launcher
C	AIM-9M	Clean	FUEL TANK	Clean	Clean	Clean	FUEL TANK	Clean	EATS POD

Table 4-2
TEST LOADINGS

LOADING	DESCRIPTION	TOTAL TAKEOFF GROSS WEIGHT LBS	TAKEOFF CG % MAC
A	NO EXTERNAL STORES	65,000	11.0
B	PYLONS STATIONS 1 & 8	65,400	11.1
C	4 SPARROW MISSILES ON STATIONS 3,4,5 & 6	66,200	11.5

4.5 Test Configurations. List and describe the configurations of the aircraft (gear, flaps, speedbrake, thrust, etc.) and items to be tested when they are germane to the test results. A tabular form such as Tables 4-3, 4-4, and 4-5 may be used to describe aircraft or missile configurations.

Table 4-3
AIM-54C LIVE MISSILE CONFIGURATIONS

MISSILE SERIAL NUMBER	MISSILE DASH NO. (ACT FREQ)	ARMAMENT SECTION	PROPULSION SECTION	CONTROL SECTION	TELEMETRY DATA
85136	1	84042 (INERT)	85013 (FSU-10)	85129	DKT-64 TM-6 TS2 TM KIT 017 2272.5 MHZ
85116	1	83065 (INERT)	86183 (FSU-10)	85120	DKT-64 TM-6 TS86 TM KIT 035 2272.5 MHZ

Table 4-4
TEST CONFIGURATIONS

PRI	TEST NAME	CABIN DOOR	FORM LIGHTS	SEARCH LIGHTS	NVD
1	IGE/OGE HOVER	OPEN	ON	I/R	NO
2	IGE PEDAL TURN	OPEN	ON	I/R	NO
3	IGE/OGE HOVER	OPEN	ON	I/R	NO
4	IGE PEDAL TURN	OPEN	ON	I/R	NO
5	APPR/RECOVERY	OPEN	ON	I/R	NO
6	APPR/RECOVERY	OPEN	ON	I/R	NO
7	LATERAL TRANS	OPEN	ON	I/R	NO
8	LATERAL TRANS	OPEN	ON	I/R	NO
9	LATERAL TRANS	OPEN	OFF	BLUE	YES
10	LATERAL TRANS	OPEN	OFF	BLUE	YES

Table 4-5
TEST CONFIGURATIONS

Config-uration	Wing Sweep (deg)	Ldg Gear	Flaps/ Slats	Speed Brake	Direct Lift Control	Approach Power Compen-sator	Thrust
Catapult Take Off (CTO)	20	Down	Down	In	Stowed	Off	Intermediate, Zone 1 of Zone 5 afterburner.
Power Approach (PA)	20	Down	Down	Out	Deployed	On and Off	Thrust for Level Flight (TLF) or to maintain Thrust Glideslope (TGS).
PA_1	20	Down	Down	Out	Stowed	On and Off	TLF or TGS.
PA Simulated Single Engine (SSE)	20	Down	Down	In and Out	Stowed and Deployed	Off	TLF or TGS, retarded engine will be at idle.
Wave Off (WO)	20	Down	Down	In	Stowed	Off	Intermediate or afterburner as required.

4.6 Test Criteria. The criteria used for determining the overall success or failure of the item under test will be described in sufficient detail and clarity and will comply with the following requirements:

a. All criteria should be derived from authoritative documents such as the ORD, TEMP, specifications, contracts, or approved official document. If authoritative references are not available, so state, and provide the rationale why such a criterion is selected.

b. All criteria should be specific and measurable, either quantitatively or qualitatively, by the procedures and methodology detailed in the test plan.

c. The criteria stated should be the minimum required to exit the test program. If they are not the minimum required, explain the reason for their inclusion.

d. When tests involve math models or simulation of threats or other stimuli, cite if/how validation was done.

4.7 Limitations to Scope. Discuss significant envelope or operating modes that will not be investigated due to limitations imposed on testing and indicate the reasons for the limited scope (examples are unavailability of equipment, unacceptable costs, schedule constraints, lack of test resources, etc.). State how the test envelope is different from the anticipated mission envelope;

describe how these limitations may affect the test results. Also discuss limitations and the effects on the test results of test assets or support assets which are not representative of fielded equipment (examples are modified test assets, non-threat representative targets or offensive threat systems, etc.).

5.0 METHOD OF TEST

5.1 Test Method and Procedures. This section describes how the test will be conducted and should include the flight profiles, environment, test techniques, test procedures or maneuvers required for the test. The method of test section should not reiterate the test and test conditions described in section 4.3. Reference to the test matrix is appropriate to link the methods to the test points. If the methods and procedures to be used are described in accepted texts or manuals, these may be referenced along with a general description; however, non-standard tests should be described in detail. Lengthy (more than one page) descriptions should be included as a Detailed Method of Test (DMOT) appendix.

5.1.1 Flight Preparation and/or Ground Checks. In this section describe any unique training requirements for support personnel, flight test engineers and/or aircrew as they pertain to specific flights and/or events. Describe non-standard ground or pre-flight checks. Describe any specific actions required prior to flight (i.e. aircraft weight and balance, measurement of store mass properties, etc.)

5.1.2 Operational Procedures. This section will discuss the following, as applicable for the specific test program (this is a suggested list and may not be all-inclusive).

a. Operational Countdown. This is a step-by-step timeline of key events for conducting an operation such as a missile shot. An operational countdown is highly recommended for complex tests where timing is critical to achieve test objectives. An example is given in appendix C.

b. Switchology. Describe necessary switchology to accomplish the test, if different from normal operational procedures outlined in NATOPS or TACMANs. Detailed switchology may be included as an appendix or provided via flight cards for large scale system integration testing (e.g. AV-8B OFP Validation testing).

c. Aircraft maneuvers. Amplify the flight test matrix if sufficient detail is not included there. Describe in detail the specific maneuvers to be performed during the test. List the build-up approach to any hazardous test points including test points which approach NATOPS limits.

d. Test specific range safety/clearance requirements and procedures.

e. Changes to NATOPS/Aircraft Operating Guide operating and/or emergency procedures. Describe any override of safety interlocks or safety devices.

f. Aircraft/Test Item discrepancy review procedures to be followed prior to all Mission/Pre-Test Briefings designed to ensure all "Up".

g. Mission Brief / Pre-Test Briefs. Describe what guide(s) will be used to conduct the mission or pre-test brief. Describe who is required to be present at the brief. Briefing guides should ensure that the following minimum test specific items are addressed:

(1) Overall Test/Mission Objectives
(2) Points/Maneuvers/Tolerances Required
(3) Aircraft Limitations/Restrictions
(4) High Risk/High Workload Data Point Techniques
(5) Possible Project Related Emergency Procedures
(6) Any Options or Deviations from Test Cards
(7) Authorized Alternate Missions, Backup Test Points
(8) Special Precautions
(9) Support Personnel Requirements
(10) Review of Applicable Test Hazards and Risk Mitigation Procedures from the THA.
(11) Review of go/no-go criteria
(12) Test item configuration

h. Test specific pre-flight/post-flight procedures for aircraft, instrumentation or test equipment.

i. Test specific Go/No-Go Criteria. (An example of a Go/No-Go can be seen in Figure 5-1.)

(1) Weather Requirements:
(a) Terminal
(b) Area

(2) Chase Requirements. Define purpose (e.g., Area Safety Chase, Store Sep Validation, Weapon Tracking, or Photo Support), Chase Pilot responsibility, Positioning, Communications (e.g, Hot Mic to Chase) and Emergency Procedures Involvement. Should be included as a separate appendix or as part of the DMOT for complex requirements.

(3) Instrumentation Requirements. Include a separate table listing all parameters determined to be Safety of Flight (SOF), Safety of Test (SOT) or Analysis Critical (AC). The following specific guidelines are provided to define SOF/SOT/AC items:

(a) SOF Measurands. A SOF measurand is required to alert the aircrew of impending unsafe conditions regardless of the testing being conducted. (Telemetry or aircrew monitor of cockpit warning indications will be required during all flight operations.) SOF measurands are generally only defined for the initial operation of a new platform or major changes to flight critical systems. Any defined safety of flight measurand for a given airplane would apply to all test plans flying on that airplane, and should be placarded as such in the Aircraft's Discrepancy Book (ADB) or equivalent logbook.

(b) SOT Measurands. A SOT measurand is required to alert the aircrew of impending unsafe conditions. (Telemetry or aircrew monitor of cockpit indications (e.g.. Normal Acceleration (Nz)) will be required for the specific test only.) Failure of the measurand and

required backup will require a Return to Base (RTB) or proceeding with alternate, pre-briefed tests not requiring the failed measurands.

(c) AC Measurands. An AC measurand is required for either real-time or post-flight analysis essential to continue execution of the test program. Telemetry will be as required. Failure of an AC measurand or any sufficient backup will require either RTB, or proceed to prebriefed alternate testing not requiring the failed measurand.

(4) Aircraft System Requirements. Define specific system(s) essential to complete the test, e.g., A/A radar fully functional. Describe SOF or SOT systems essential for safe mission execution, e.g., Requirement to monitor via real-time Telemetry (TM) the Environmental Control System (ECS) Bleed Air Temp during the initial functional checkflight following ECS critical component redesign would be considered SOF; monitoring radar coolant temperature during initial integration testing of an advanced radar with the radar power on would be considered SOT.

(5) Additional Go/No-Go Criteria.

Table 5-1
WEAPON FIRING GO/NO-GO CRITERIA

Item	Requirement	Action
1. Weather	a. A/C Launch – Basic VFR b. Weapon Release – Less than 1,000 ft Vertical and 2,000 ft Horizontal cloud separation, and/or less than 5 statute mi visibility. c. Weapon Flight Path – Less than +/- 2,000 ft Vertical cloud separation, and/or less than 3 statute mi visibility. d. Target Area – Less than 1,000 ft Ceiling and 3 statute mi visibility	a. **GO** b. **HOLD** for Wx c. **Skip** Wpn Chase d. **HOLD** for Wx
2. Launch A/C	a. No downing discrepancies b. SMS status GO or OP GO c. A/G Radar Modes not fully functional	a. **GO** b. **GO** c. **HOLD** for repair
3. Chase A/C	a. No A/C to act as Safe Separation observer b. No downing discrepancies	a. **NO-GO** b. **GO**
4. Range Clearance A/C	a. Operational P-3 or C-130	a. **GO**
5. Range Tracking	a. Less than 2 tracking sources (Radar and/or TM) b. Radar Track Data Lost c. Lack of Pre-launch Beacon Track from the Weapon	a. **NO-GO** b. **NO-GO** c. **HOLD** for Good Track
6. Flight Termination System	a. Less than 2 Ground Station FTS transmitters operational b. Weapon FTS fails prior to A/C launch c. FTS tone checks fail prior A/C Launch d FTS fails prior to Weapon Launch	a. **HOLD** till 2 Operational b. **NO-GO** c. **NO-GO** d. **HOLD** till re-established
7. Telemetry	a. Loss of Real-Time TM displays b Loss of Missile TM data at PM Lab site c P-3 TM RERAD not functioning	a. **HOLD** till re-established b. **HOLD** till re-established c. **NO-GO**
8. Communication	a NTC voice link unavailable prior to Takeoff b. NTC voice link lost airborne	a. **NO-GO** b. **HOLD** till re-established
9. Weapon	a. Missile BIT status GO b. Missile power anomalies observed prior to launch	a. **GO** b. **NO-GO**
10 Weapon Flight Path	a. Launch area clear of air and surface contacts b. Weapon flight path clear of air and surface contacts inside +/- 10 nm of intended flight path c. Target Area clear of air and surface contacts	a. **GO** b. **GO** c. **GO**

5.2 Support Requirements. Describe other test equipment required for the test, such as special mission aircraft, specific fire control radar, Electronic Warfare (EW) equipment, specialized targets, unique pods or canisters, unique software loads, etc. List the timeframe in which the resources/assistance will be required. If the equipment is not fully representative of production/fleet equipment, the differences and their expected impacts to the test results should be discussed. Support requirements and how they are to be obtained should be listed with specific details to cover the following:

a. Support Aircraft. Describe any required support aircraft other than actual test aircraft. This should include target aircraft, photo chase, communications relay, range clearance, jammer/sensor aircraft, etc.

b. Targets. If new target configurations are required, explain how those configurations will be approved and tested.

c. Weapons, stores and expendables. Include specific weapon instrumentation/TM configurations required for the test.

d. Unique ground support equipment.

e. Laboratory.

f. Test ranges and range resources, to include instrumentation support such as cameras, signal sources, radar tracking, Time Space Position Information (TSPI) sources, real-time telemetry processing, and theodolite ranges. Identify any requirements for Range Safety or Explosive Safety reviews and approvals, as required by the applicable local instructions listed in enclosure (1) or the local TECT.

g. When remote/off-site support facilities are used, cite Memorandum of Agreement (MOA), Host Tenant Agreements, etc. which address facilities/support. Address funding of facility support and points of contact at each facility.

h. Data services and photo support.

i. Expendables as required.

j. Government organizations (outside of NAVAIR). Identify key notification personnel associated with their pre-mishap plan.

k. Contractor support. Identify all functional and support responsibilities. Identify key notification personnel associated with contractor furnished equipment (CFE) employed in the test.

l. Shops (metal, machine, airborne instrumentation, photo lab, etc.).

m. Electronic countermeasures.

n. Facilities which require special scheduling (NAVAIR Ranges, Air Combat Environment Test and Evaluation Facility, Anechoic Chamber, Real-Time Telemetry Processing System, targets, Eglin Air Force Base, Naval Weapons Evaluation Facility, submarine or surface ship services, etc.).

5.3 PERSONNEL REQUIREMENTS. List those personnel, military, civilian and contractors, who are assigned to the test program giving project function, organization codes, and telephone numbers. If particular personnel are required for certain tests or test phases, so state. State who will be the flight test conductor. For large programs, the list may be so extensive as to require that it be an appendix. See appendix H for list of aircrew qualifications. Describe the requirements associated with changes to personnel including aircrew and flight test engineers. If an amendment is required it will be submitted in accordance with enclosure (8).

6.0 RISK MANAGEMENT. Throughout the test plan, reference will be made to terms like safety, systems safety, hazards, risk, and risk management. The following provides definitions and clarification of these terms:

a. Safety is the practice of risk management and the avoidance of hazards, in accomplishing a task, in order to avoid injury, damage, or loss of resources or system availability.

b. Systems safety is the effort to make events as safe as practical by systematically using engineering and management tools to identify, analyze, and control hazards.

c. Hazards are conditions that are a prerequisite to a mishap.

d. Risk is an expression of possible loss in terms of hazard severity and hazard probability.

e. Risk management is the application of numerical ratings or value judgement to the weighing of risks against the controls necessary to minimize these risks.

f. Environmental analysis is the documentation process required to ensure the environment is considered in the planning process and life cycle of a program or project. Such analysis includes disclosure of potential environmental consequences of a proposed test project, evaluation of alternatives, and disclosure of practices implemented to offset any potential impacts.

g. The Range Safety Criteria for UAVs Rational and Methodology Supplement, reference (d), will be utilized to minimize risk for all R&D UAV flights. The appendix (B) of reference (d) provides "Range Safety Review questions for UAV projects" which must be answered to minimize risk and will help develop a level of confidence in order to grant authorization to fly the vehicle on a NAVAIR range.

6.1 Safety Checklist. The safety checklist presented in appendix E will be included in all test plans. The checklist is designed to stimulate the thinking process of all test team members so that the risks associated with all types of test operations can be materially reduced. Additional questions should be added to this checklist to cover items that are not properly covered by the

required questions. All questions on the safety checklist may be modified to accommodate unique ground testing requirements. The safety checklist presented in appendix E is not applicable for simulator evaluations.

6.2 Test Hazard Analysis (THA). Systems safety concepts and tools should be used to provide the systematic engineering and analysis necessary to identify, analyze, and control hazards. Preliminary hazard analysis, fault trees, and failure modes and effects analysis should be used where applicable. The THA, included as an appendix, shall be prepared for any test which has equipment or procedures not detailed in the aircraft's current NATOPS or TACMAN. The THA shall address those hazards which are directly associated with the testing. "Generic" hazards associated with normal operation of the aircraft or test equipment should not be included. The THA process (guidance and formats) is included in appendix F.

6.3 Firebreaks. Frequently, testing involves the actuation of weapons release controls either in a simulated launch condition or during actual releases. Firebreaks instruction (NAVAIRWARCENWPNDIV) or local ordnance instructions (NAVAIRWARCENACDIV), enclosure (1), were developed to ensure an inadvertent release of the store under test or other loaded stores do not occur. These instructions are very specific about which weapons release actuations are allowed under which conditions. For all tests involving the actuation of weapons release controls, either during a simulated or actual release, a statement regarding adherence to the local Firebreaks instruction shall be made. Tests which do not adhere to Firebreaks requirements shall be specifically addressed with risk mitigation measures discussed.

6.4 Hazard Pattern. Describe the weapon footprint/hazard pattern, if applicable. Detailed hazard patterns may be included in an appendix. List individuals/agencies that provided the analysis. Hazard patterns may be omitted from a test plan if planned to be formally reviewed as part of a firing readiness review established by the test plan.

6.5 Environmental Analysis. The potential for environmental impact associated with test projects shall be considered during the early phase of test plan development. An environmental analysis shall be performed, in accordance with enclosure (3), appendix (I), for every test project. The local NAVAIR National Range Sustainability Office (RSO) will perform the environmental analysis based on specifics of the test project provided by the test team. At the completion of the analysis, local RSO personnel will prepare the necessary environmental documentation and will provide the test team with the environmental analysis paragraph to be included in this section of the test plan. The paragraph will include specific actions required during testing to mitigate potential environmental impacts (if any). If changes to the planned test project occur after the environmental analysis is performed, the test team will contact the appropriate RSO personnel to determine if a test plan amendment is required to update the environmental analysis section.

6.6 Risk Category. State all risk categories, as determined by the Test Hazard Analysis, to be encountered during testing and address how they are identified within the test plan. For example:

"This test plan includes Cat A/B/C testing. Cat C testing will only be performed during the store separation work conducted with initial Mk 102 releases. Cat B testing will be conducted during live warhead weapon delivery accuracy testing, with all remaining tests to be Cat A. The test matrix identifies the associated risk category for each test event."

6.7 Real-Time Data Monitoring. Real-time data monitoring is a valuable tool that can improve flight test safety and efficiency, especially when proper coordination between the aircrew and personnel in the ground station has been accomplished. For all SOF and SOT parameters identify Who (by Name or Function) is assigned to monitor What (may be identified on the table of SOT/SOF/AC parameters). Describe data management techniques to detect adverse trends in these parameters. Describe what action will be taken, when and by whom, in order to stop adverse trends. Examples include:

"A cross plot of damping ratio versus airspeed will be utilized to detect an adverse trend in airplane response to control inputs during flutter tests. The result from each test point will be plotted to determine if the subsequent test point will follow predicted trends and remain within acceptable damping limits."

"Maneuvers will be terminated in the event of any Flight Control System (FCS) caution, loss of telemetry data or SOF parameter, loss of radio communications, or by the decision of the engineers at the ground station or pilot. If telemetry or radio communications cannot be reestablished, the test will be aborted and the airplane will Return To Base (RTB) as soon as practical. Maneuver termination will be briefed."

"For any non-emergency termination of maneuvers, engineers at Real Time Processing System (RTPS) will call "KNOCK IT OFF." This usually applies to loss of Telemetry (TM) or approaching test limits (Angle of Attack(AOA), Angle of Side Slip (AOSS), etc.). If emergency termination of the maneuver is required or if the airplane appears to be out of control, engineers at RTPS will call, "ABORT, ABORT, ABORT," and give altitude calls in 5,000 ft increments until 10,000 ft Mean Sea Level (MSL) and in 1,000 ft increments below 10,000 ft MSL."

6.8 Additional Special Precautions. List any additional special precautions or risk management requirements of the test team or test equipment.

7.0 PROJECT MANAGEMENT

7.1 Funding And Manpower Requirements (if required). Give the funds allotted, their source, and expiration date. State the overall manpower and cost estimate and comment as to the adequacy of funds provided. A detailed cost estimate showing labor (civilian and military), material, contract, travel, and flight-hour costs required to complete the project may be used.

7.2 Schedule/Milestones. An abbreviated schedule/milestone chart showing major project milestones should be presented. For large programs, a detailed test schedule may be included as an appendix showing milestones, contract deadlines, reporting dates, project completion, etc. It is noted that the charts may be used as progress charts by plotting actual progress and achieved milestones.

7.3 Test Plan Amendment Procedure. If a test plan needs to be changed after it has been approved, use the test plan amendment guide in enclosure (7) or the test team change guide in enclosure (8). Some test projects may require flexibility in the test plan amendment process to better meet the test objectives. If so, test teams will discuss the proposed amendment process

with a local TECT to determine if the tailored process will be acceptable. This section will state the test plan amendment process if other than that required in enclosures (7) or (8). The following provides additional guidance regarding when this section would be applicable:

(a) If the test plan has multiple risk categories assigned, describe how amendments to the test plan will be reviewed and approved. For example, if a test plan has been assigned risk categories A/B, the amendment reviews and approvals may be different for category A test events than those required for the category B test events.

(b) Some test projects have known requirements for test plan changes that will occur during the execution of the test plan. For example: incremental envelope flight clearances or multiple software revisions. If known test plan changes will occur during the test execution, describe how these changes will be incorporated into the test plan including required reviews and approvals.

7.4 Reports. The project is not complete until required reports are published. Reporting will be done responsively in such a manner as to ensure customer satisfaction. Reporting will be tailored to meet individual sponsor requirements and the responsibility to fully document test results. An approved TRDP, appendix G, shall be submitted as an appendix to each project test plan, unless waived by the TECT.

a. State the type, frequency, and distribution of reports that are expected to be published.

b. Describe the type, frequency, and content of progress reports that will be provided to the squadron, competency managers, sponsors, and designated representatives.

7.5 Project Security. State the overall security classification of the project as well as the data or test results. The cover page classification statement should reflect the classification of the test plan and the project as determined by the applicable security classification guide(s) (e.g., OPNAVINST 5513 series). For instance, the project data or test equipment may be classified, but the actual test plan could be unclassified. All classified test plans will be marked, handled, stored, disseminated, and ultimately destroyed following reference (h) requirements. All unclassified test plans will be marked "FOR OFFICIAL USE ONLY" following the applicable local instruction and reference (g). In addition, all unclassified test plans will be handled, stored, disseminated, and ultimately destroyed following reference (g) requirements.

7.5.1 Specify which security classification guide(s) for the subject aircraft, weapon systems, and equipment has/have been reviewed. If any systems, subsystems and/or components are classified, define the specific procedures established and implemented for storage and handling. If the data is classified, state how it will be protected (e.g., encrypted telemetry, secure voice, etc.). If classified equipment and/or ordnance is to be delivered to or shipped from the test site, define the arrangements and procedures to be followed.

7.5.2 Some of the more recently developed aircraft and weapon system programs have, in addition to the applicable security classification guide, a Plan for the Protection of Weapon System Test and Performance Data (PPWSTPD)or a Program Protection Plan (PPP). The PPWSTPD identifies all "sensitive" elements of the applicable program regardless of their classification level. The PPP defines Critical Program Information (CPI), threats to that CPI, and

policy and guidance for protection of the CPI. The PPWSTPD and/or PPP, if it exists, is to be used in the development of the test plan and in the conduct of associated testing. Specify which PPWSTPD and/or PPP for the subject aircraft, weapon systems, and equipment has/have been reviewed.

7.5.3 All classified tests require the application and use of an OPSEC annex following local instruction requirements. Specific OPSEC countermeasures, as determined by the applicable security classification guide(s), PPWSTPD(s), and/or higher authority, will be developed by the OPSEC Coordinator in conjunction with the project officer/engineer. The only exception to this requirement is if cognizant higher authority has developed a unique OPSEC annex due to programmatic issues (e.g., Special Access Program, limited distribution, etc.).

7.5.4 Classified portions of test plans should be part of separate appendices if at all practicable.

REFERENCES. References may be identified in the text of the test plan; however, if references are numerous (10 or more), they should be cited in the text and completely identified in an appendix. List all references in the order they occur in the test plan.

APPENDICES. Appendices should be used to reduce the amount of material in the main body of the test plan. *Examples of material that may be presented in an appendix are:*

a. Safety Checklist
b. Test Hazard Analysis (THA)
c. Flight Clearances
d. Test Plan Matrix
e. Instrumentation Requirements
f. Operational Countdown
g. Detailed Description of Test Aircraft/System
h. Weight and Balance
i. Flight Clearance Basis
j. Test Standards/Evaluation Criteria
k. Pre-flight Inspection and Cockpit Switchology
l. Detailed Method of Test
m. Test Data Requirements
n. Electronic Warfare Support Requirements
o. Loading and Checkout Procedures
p. Documentation Checklist
q. Minimum Equipment List
r. Emergency Procedures
s. Predicted Weapons Footprints/Hazard Patterns
t. Detailed Cost Estimate
u. Detailed Schedule/Milestone Chart
v. Equipment Drawings and Illustrations
w. OPSEC Plan
x. Flight Data Cards

ROTARY WING AIR VEHICLE TEST PLAN MATRIX
Tests and Test Conditions

Tests	Loading	Airspeed (KIAS)	Altitude (ft Hp)	Other	Category	Remarks
Engine Assessment:	1, 2, 3, 4, 5	0 - Vne	0 - 10,000		B	Concurrent with all tests. Installed Power Available, Specific Fuel Consumption.
Airspeed & Altimeter Calibration *Level Flight*	1	40 - Vh @ 10 kt Increments	3000		B	Trailing Bomb Method. Trimmed flight (Ball Centered).
Climbs and Descents		40 - 100 @ 10 kt Increments	1500 - 3500	500 & 1000 ft/min ROC & ROD	B	
Hover Performance *Tethered Hover Method*	1, 3, 5	0 (ambient winds less than 5 kt)	0 & 3800	Skid heights of 15 and 75 ft AGL. Nr 97 & 100 %.	B	3800 ft, is Ingalls Field, Hot Springs, VA.
Free Hover			0 & 3800	Skid heights of 5, 15, 75 ft AGL. Nr 97 & 100 %.	B	Skid heights of 15 & 75 ft used to augment tethered hover data with zero tension
IGE/OGE Transition Height			0	Skid heights of 2, 5, 15, 25, 50, 75 & 100 ft AGL.	B	.
Vertical Climb Performance: *Partial Power Method*	1, 3, 5	0 (ambient winds less than 5 kt)	0 - 2000		B	From Out of Ground Effect (OGE) hover, incremental power settings to maximum power (minimum of 5).
Level Flight Performance: *W/σ Technique*	1, 2, 3, 4, 5	40, 45, 50, 55, 60, 65 ,70, 75, 80, 85, 90, 100, 110, & Vh or Vne	1000 - 10,000, and 15,000	Target W/σ of 9,000, 11,000 and 13,000 lb	B	Altitudes determined by test day conditions. W/σ=15,000 lb in loading three only
Forward Flight Climb and Descent Performance *Partial Power Method*	1, 2, 3, 4, 5	45 - 85 @ 10 kt Increments	1000 - 10,000	W/σ values of 9,000, 11,000 and 13,000 lb, ± 1500 ft	B	Incremental power settings around power for level flight from minimum to maximum power. Altitudes to be determined by test day conditions.

FLYING QUALITIES AND STRUCTURES TEST PLAN MATRIX
Tests and Test Conditions

Maneuver	Configu-ration	Loading	Pressure Altitude (ft MSL)	Airspeed/ Mach (KCAS)	Target Load Factor (g)	Category	Remarks
Wings level sideslip	CR	2	5,000	0.8	-	B	Half & full rudder pedal, left & right.
Rolling Pullout	CR	2	30,000	0.9, 0.8	4.0	B	Maximum bank angle change limited to 180 deg
			10,000	0.6	4 0		
				0.8	5 0 (buildup) 5.86	C	
			5,000	0.8	5.0	B	Maximum entry dive angle = 35 deg Initiate recovery at 4,000', Altitude loss = 2500'
			2,000	0.8	4 0, 5.0	B	Maximum entry dive angle = 15 deg Initiate recovery at 2,000', Altitude loss = 500'
Sym Pullup	CR	2	10,000	0.8	6 0 (buildup) 7.33	C	Maximum allowable GW = 13,232 lb for 7.33g (fuel weight = 2,140 lb)
Abrupt Pullup	CR	2	10,000	0.8	5 5 (buildup) 6 5 (buildup) 7.33	C	Maximum allowable GW = 13,232 lb for 7.33g (fuel weight = 2,140 lb)
Windup Turns	CR	2	15,000	0.5	2.9	B	Windup turns to be performed to the left and right. Target load factor values represent predicted Nz otherwise max/Maximum AOA at the given flight condition unless noted.
				0 6	3.8		
				0 7	4 0, 4.9		
				0.75	5.5		
				0.8	5 0, 5 7		
				0 85	5.7		
				0.9	6.0 (buildup) 7 33	C	Max allowable GW = 13,232 lb for 7 33 g (fuel weight = 2140 lb)

MISSIONS SYSTEMS TEST PLAN MATRIX

Event	Test Objective (See Note 1)	Method/ Maneuver Description	Pass/Fail Criteria	Initial Conditions: Config-uration	Load-ing	Altitude Ft AGL	Air-speed KCAS	Nz G	Dive Angle ±2 deg	Target Air-speed ±5% KCAS	Warning Altitude Ft AGL	Monitored Terminate Run Altitude 35000 lb Ft AGL	Terminate Run Bottom Out Altitude 35000 lb Ft AGL	Remarks
A1	Verify buffer altitude entry	Set buffer at altitudes starting at 3500 ft and descend through	Warning at Ft 3590 ± 100	CR	FE CL	3800	300	1	NA	300	3590	3000	2900	
A2		floor	3090±80			3300				±15	3090	2500	2400	
A3		altitude at	2590±65			2800					2590	2000	1900	
A4		300 fpm	2090±55			2300					2090	1800	1700	
A5		to trigger	1590±40			1800					1590	1400	1300	
A6		warning.	1090±30			1300					1090	900	800	
A7	Trigger a warning in each state, within each boundary of each state, and check clearing of warning Each test point will be included in post flight Sim evaluation for comparison. Below 200 KCAS	From 1250 ft increase sink rate to >300 fpm remain < 400 fpm. Note warning and transition to Climb to cancel Set take-off state with take-off, touch and go or wave-off (>1000 fpm Climb)	Warning at -300 fpm	TO	FE CL	1300	180	1	0	180 ±9	<1150 >1000	1050	1000	
A8		Repeat Event A7 with landing gear up	Warning at -300 fpm	CR		1300	180			180 ±9	<1150 >1000	1050	1000	1/2 flaps at pilot's discretion
A9	200-250 KCAS	Repeat EVT A8	Warning at -300 fpm	CR		1300	220			220 ±11	<1150 >1000	1050	1000	

Sample Weapon System Validation Test Matrix

Flight Test Matrix

Flight Responsible Engineer	Test Objectives (Requirements Source)	Notes	Description of Maneuvers Airspace / Range Reqt's	# of Test A/C A/C Type Test Category	# of Support A/C A/C Type Test Category	Ordnance/Stores (Flight Clearance Reqt's)	Specific Hazards Requiring Review & Mitigation [THA Item #'s]
AGFF-1/2 C. Meadows	Scored SQT Visual Dive Deliveries from Med Altitude, Med Dive Angle. (Regression Verification)	#1	Visual Dive Releases not to exceed 40 deg dive. Min TCF = 3,500 ft AGL Baker Range w/ RCC Real-time Monitoring Required (R-2505)	1 F/A-18 C/D **Cat A**	N/A	• Any NATOPS approved INERT Free Fall Ordnance ▪ Authorized. ▪ TFLIR / ATFLIR. ▪ ARDS Pods. ▪ Desired Load: 8 Inert CBU-100 w/ FMU-140 Fuzing. (C/D TACMAN Load)	▪ A/G CFIT [1] ▪ Hung Stores [2] ▪ TFOA [3] ▪ G-LOC [4] ▪ A/C Overstress [5]
A/A-7 C. Martin	Verify Weapon System Effectiveness during short-range aerial combat. (Regression Verification)	#2	BFM using ACM Starts identified in the Detailed Method of Test Min Altitude = 5,000 ft AGL Requires Exclusive Use Airspace (R-2505 / R-2524)	1 Any F/A-18 **Cat B**	1 Any Ftr **Cat B**	▪ CATM-9M ▪ AIM-9X PRM or EDM CTU ▪ CATM-7F (3) Wafer ▪ Centerline EFT (C/D TACMAN Load or E/F SLIM Load, and Aim-9X Interim Clnc)	▪ Midair, ACM and JHMCS (if employed) [6] ▪ G-LOC [4] ▪ A/C Overstress [5] ▪ Depart/OOCF [8] ▪ A/A CFIT [1]
AGSM-3, HARM PNU-1 R. Obenza	Verification of HARM Blk VI navigation modes, including: Data Download, weapon inventory, missile symbology changes, and updated missile modes. (17C FRD Items 16.1, .2, .3, .4 & .7)	--	▪ Admin Turns at Medium and High Altitudes to establish weapon to target geometry. ▪ Straight & Level High Altitude SIM Launch, NTE 40K ft MSL. ▪ Medium Altitude Dives during weapon SIM Flight NTE 45 deg Dive with recovery complete NLT 3K ft MSL. (R-2508 and R-2524)	1 F/A-18 C/D **Cat B**	N/A	▪ HARM Blk 3B/6 on Stations 2,3,7 or 8 ▪ HARM Blk 3A/5 on Stations 2,3,7 or 8 ▪ ARDS Pods ▪ Approved TACMAN Stores (Interim Clnc for HARM Blk 3B and 6, C/D TACMAN Loads Approved for HARM Blk 3A and 5)	▪ TFOA [3] ▪ A/G CFIT [1]

Notes: 1. SQT Definitions: Low Alt < 5K ft AGL, Med = 5-15 K ft MSL, High > 15K ft AGL at Release;
Shallow Dive < 20 deg FPA, Med = 21 – 39 deg FPA, Steep > 40 deg and < 60 deg FPA at Release.
2. VX-31 Air-to-Air Training Rules Apply and Shall Be Part of Mission Brief

FLYING QUALITIES AND STRUCTURES TEST PLAN MATRIX
Tests and Test Conditions

Maneuver	Configu-ration	Loading	Pressure Altitude (ft MSL)	Airspeed/ Mach (KCAS)	Target Load Factor (g)	Category	Remarks
Wings level sideslip	CR	2	5,000	0.8	-	B	Half & full rudder pedal, left & right.
Rolling Pullout	CR	2	30,000	0.9, 0.8	4.0	B	Maximum bank angle change limited to 180 deg
			10,000	0.6	4 0		
				0.8	5 0 (buildup) 5.86	C	
			5,000	0.8	5.0	B	Maximum entry dive angle = 35 deg Initiate recovery at 4,000', Altitude loss = 2500'
			2,000	0.8	4 0, 5.0	B	Maximum entry dive angle = 15 deg Initiate recovery at 2,000', Altitude loss = 500'
Sym Pullup	CR	2	10,000	0.8	6 0 (buildup) 7.33	C	Maximum allowable GW = 13,232 lb for 7.33g (fuel weight = 2,140 lb)
Abrupt Pullup	CR	2	10,000	0.8	5 5 (buildup) 6 5 (buildup) 7.33	C	Maximum allowable GW = 13,232 lb for 7.33g (fuel weight = 2,140 lb)
Windup Turns	CR	2	15,000	0.5	2.9	B	Windup turns to be performed to the left and right. Target load factor values represent predicted Nz otherwise max/Maximum AOA at the given flight condition unless noted.
				0 6	3.8		
				0 7	4 0, 4.9		
				0.75	5.5		
				0.8	5 0, 5 7		
				0 85	5.7		
				0.9	6.0 (buildup) 7 33	C	Max allowable GW = 13,232 lb for 7 33 g (fuel weight = 2140 lb)

DATA PROCESSOR (TDP).

3. LIMITS: IAW NATOPS, TACMAN AND APPLICABLE NAVAIR FLIGHT CLEARANCES.

4. SPECIAL NOTES, CAUTIONS AND WARNINGS:
A. ----------NOTE----------
ICE 4.0 WILL BE PROVIDED TO LOCAL TACTICAL SUPPORT CENTER (TSC) ON A CD ROM. ICE 4.0 WILL BE RELEASED TO THE P-3C AIP FLEET UNDER OASIS 1.1 AND IS PLANNED TO BE PACKAGED WITH WINDOWS NT OPERATING SYSTEM, AN UPDATED IMAGE SPOOLER AND ANOTHER LICENSED COTS PRODUCT, FRONTIER SUPER NFS. THE ICE 4.0 SOFTWARE SHALL BE LOADED ONTO THE 4.3 GIGABYTE IP REMOVABLE HARD DRIVE OF THE OASIS TDP BY TACTICAL SUPPORT CENTER (TSC) PERSONNEL USING A NAWCAD PROVIDED CD-ROM OF AN UPGRADED IP HARD DRIVE IMAGE.
B. ----------NOTE----------
NECESSARY PERSONNEL SHALL BE PROPERLY TRAINED IN THE USE AND OPERATION OF THE ICE 4.0 SOFTWARE.

5. TIME PERIOD: THIS CLEARANCE EXPIRES ON 01 JUN 2003 OR WHEN RELEASE OF ICE 4.0 AS INDICATED BY THE PUBLISHED AVIONICS SOFTWARE CHANGE TECHNICAL DIRECTIVE, WHICH EVER OCCURS FIRST.

6. POINTS OF CONTACT:
A. CLASS DESK: CDR DAN CRAIN, AIR-4.1.1.3, COMM 301-342-1093, E-MAIL CRAINPD@NAVAIR.NAVY.MIL. MACK MUTCHLER, AIR-4.1.1.3, COM 301-757-5649, E-MAIL MUTCHLERMS@NAVAIR.NAVY.MIL
B. ASPO: DOUG BELLIS, AIR-4.5.1.2, COMM 301-757-5651, E-MAIL BELLISDC@NAVAIR.NAVY.MIL.
C. FLIGHT CLEARANCE: HARRY NIESTRATH (RBC), COMM 301-342-8410, E-MAIL NIESTRATHHE@NAVAIR.NAVY.MIL

7. OTHER REMARKS/COMMENTS:
A. THIS CLEARANCE HAS TYCOM CONCURRENCE VIA REF A.
B. REQUEST TYCOMS READDRESS FLT CLNC TO SUBORDINATE COMMANDS.
C. PER REFERENCE B, THIS FLIGHT CLEARANCE PROVIDES NAVAIR AIRWORTHINESS CERTIFICATION SUBSEQUENT TO A DESIGN ENGINEERING REVIEW. IT DOES NOT AUTHORIZE AIRCRAFT/SYSTEM MODIFICATION, NOR DOES IT SATISFY NAVAIR REQUIREMENTS FOR CONFIGURATION MANAGEMENT. REFER TO OPNAVINST 4790.2H FOR POLICY GUIDANCE ON CONFIGURATION MANAGEMENT AND MOD AUTHORITY.//

BT
#8248
NNNN

SAMPLE
OPERATIONAL COUNTDOWN
XYZ LAUNCH MISSION

TIME	LOCATION	RESPONSIBILITY	OPERATION
T-30 Days	To Be Determined (TBD)	Test Team	Review operational requirements
T-21 Days	TBD	Test Team	Program final test approval
T-14 Days	Naval Air Warfare Center Weapons Division (NAVAIRWARCENWPNDIV)	Navy Test Conductor (NTC)/ Operations Test Conductor (OTC) NTC FTE/NTC	Determine/schedule target requirements Prepare scenario/ hazard patterns Review/approve flight profiles
T-12 Days	NAVAIRWARCENWPNDIV	FTE	Distribute final mission firing plan
T-10 Days	Fleet Operations	OTC	Release LOI
T-8 Days	NAVAIRWARCENWPNDIV	NTC	Submit schedule requests to range
T-7 Days	NAVAIRWARCENWPNDIV	NWTS	Confirm tasking/ asset availability
T-5 Days	NAVAIRWARCENWPNDIV	Test Team NTC	Test objectives/ assets final review Release MOI
T-1 Day	NAVAIRWARCENWPNDIV NAVAIRWARCENWPNDIV NAVAIRWARCENWPNDIV	NTC NTC Targets	Pre-Operations Briefings Submit final aircraft configurations and instrumentation requirements Target hulks underway or in configuration
T-8 Hours	NAVAIRWARCEN WPNDIV	NTC	Hazard patterns to range control
T-4 Hours	NAVAIRWARCEN WPNDIV	NTC	Technical flight briefings

SAMPLE OPERATIONAL COUNTDOWN
XYZ LAUNCH MISSION
(CONT)

TIME	LOCATION	RESPONSIBILITY	OPERATION
T-3 Hours	NAVAIRWARCENWPNDIV	NTC	NTC assume mission control of all participating units conduct communications and time checks
	NAVAIRWARCENWPNDIV	NTC	Range clearance A/C airborne
	NAVAIRWARCENWPNDIV	NTC	TM relay A/C airborne
T-2.5 Hrs	NAVAIRWARCENWPNDIV	NTC	Weather recce A/C airborne
	NAVAIRWARCENWPNDIV	NTC	Target in place tugs clearing area
T-2 Hours	NAVAIRWARCENWPNDIV	NTC	Verify telemetry
T-75 Min	NAVAIRWARCENWPNDIV	NTC	Tanker on station
T-60 Min	NAVAIRWARCENWPNDIV	NTC	Chase A/C airborne
	NAVAIRWARCENWPNDIV	NTC	Process data pass
T-30 Min	NAVAIRWARCENWPNDIV	NTC	Conduct captive carry flights as required
T-20 Min	NAVAIRWARCENWPNDIV	NTC	Issue launch clearance**
T-10 Min	NAVAIRWARCENWPNDIV	NTC	Chase A/C Range Safety Carrier (RSC) verified ON
	NAVAIRWARCENWPNDIV	NTC	Telemetry/FTS/target systems/recorders/ software bit/fuzes checked satisfactory
T-5 Min	NAVAIRWARCENWPNDIV	NTC	Chase aircraft in position
	NAVAIRWARCENWPNDIV	NTC	Aircraft arm/fire clearance
-- T-4 Min to T-1 Min events will vary according to project and type weapon, and to aid launch unit with on board launch procedure continuity.			
T-10 Sec	A/C LAUNCH	PILOT/NTC	Begin launch countdown
T-Zero	AIRCRAFT	PILOT	Launch missile
T+1 Min	AIRCRAFT	PILOT	Record wind data
T+2 Hours	NAWCWPNS	TEST TEAM	Operation de-brief
** Launch clearances may be given at various times after the 20 min time depending on particular operation and weapon.			

SAMPLE

INSTRUMENTATION REQUIREMENTS

Program _____

Vehicle _____

Date _____

COLLECTION METHOD

V - Visual Instruments
A - Airborne Recorder
SINGLE SOURCE
XDUCER - Transducer
AS - Avionics Signal
TV - Video
MLD - Meteorological

OUTPUT DESIRED

SC - Strip Chart (Raw Data)
SA - Special Analysis
T - Telemetered
PH - Photography
RA - Radar
RTR - Real-Time Range Data
CP - Computer Printout
RTPS - Real-Time Telemetry Processing System

Test No.	Parameter	Parameter Range	Frequency Response	Required Accuracy	Signal Source	Collection Method	Output Desired	Remarks (SOF, SOT, AC)

Page ___ of ___

SAMPLE

INSTRUMENTATION PARAMETERS

PROGRAM: NSH-60B CONTINGENCY FLIR PROGRAM
VEHICLE: SH-60B BUNO 162337
DATE: 22 March 1994
ENGINEER: I. M. Famous x1994

V-Cockpit visual gage
T-Telemetered parameter.
A-Aircraft onboard tape recorded parameter

ITEM NO	MEASUREMENT	MEASUREMENT RANGE	FREQUENCY RESPONSE	STRUCTURAL / VIBRATION DNE	DATA COLLECTION			GO-NO-GO PARAMETERS
PCM								
1	Run Counter	0 to 200 cts	10 Hz		V	T	A	
2	Event Marker	Marker	10 Hz			T	A	
3	No 1 Engine Ng	0 to 120%	10 Hz			T	A	
4	No 2 Engine Ng	0 to 120%	10 Hz			T	A	
5	No 1 Engine Np	0 to 125%	10 Hz			T	A	
6	No 2 Engine Np	0 to 125%	10 Hz			T	A	
7	No 1 Engine Torque	0 to 150%	10 Hz			T	A	
8	No 2 Engine Torque	0 to 150%	10 Hz			T	A	
9	No 1 Engine Power Lever Angle	0 to 100% (Sweep)	10 Hz			T	A	
10	No 2 Engine Power Lever Angle	0 to 100% (Sweep)	10 Hz			T	A	
11	No 1 Engine Fuel Flow	50 to 1,000 pph	10 Hz			T	A	
12	No 2 Engine Fuel Flow	50 to 1,000 pph	10 Hz			T	A	
13	No 1 Engine T4 5	0 to 1,000^0 C	10 Hz			T	A	
14	No 2 Engine T4.5	0 to 1,000^0 C	10 Hz			T	A	
15	No 1 Engine PS3	0 to 250 psig	10 Hz			T	A	
16	No 2 Engine PS3	0 to 250 psig	10 Hz			T	A	
17	Engine Total Fuel	0 to 4,000 lbs	10 Hz			T	A	
18	Spare					T	A	

SAFETY CHECKLIST

1. A Safety Checklist is required for all test plans. The purpose of this checklist is to stimulate thought in the area of safety. Most of these questions have been written from lessons learned from past mishaps in the RDT&E community.

2. The Safety Checklist is NOT intended to be the location where these questions are answered. This should be done in the appropriate locations in the Test Plan, and merely referenced in this checklist.

3. The first 24 questions address common concerns for all test plans. The remaining questions are targeted toward specific test phases or types of test, but shall be reviewed for applicability to this test. For each question, the possible responses are:

a. Paragraph number(s). A pointer to the location in the test plan where the question has been answered.
b. Check the N/A if not applicable. If the rationale is not obvious, consider adding explanatory comments.
c. Reference to another document or to an addendum. The question's appropriate response needs to be addressed in a written document. This is primarily intended for non-NAVAIR test plans (e.g. contractor test plans).

4. Any changes to the Test Plan require a review of the Safety Checklist.

GENERAL				
No.	**Question**	**Location**	**N/A**	**Comments**
1	Does this test have a high degree of residual risk which should be called to management attention through special notification (such as a special briefing or submission of a Commander's Package)?			
2	Has an offsite briefing/Letter of Instruction (LOI) for flight operations away from home base been generated?			
3	If any items under test are contractor furnished equipment (CFE), has a pre-mishap plan been identified for these items?			
4	If a unique pre-mishap plan is required for non-NAVAIR agencies, who is responsible for executing it?			
5	Will any test maneuvers or test procedures require a waiver to NATOPS, FAA Regulations, local aircraft Standard Operating Procedures or maintenance procedures and have waivers been requested/approved?			
6	Have any external notification requirements, such as Notice to Airmen/Mariners, FAA, FCC coordination, etc. been identified and completed?			
7	Are there any hazards to ground personnel (e.g. Hazard of Electromagnetic Radiation to Personnel/Ordnance (HERP/HERO)) or possible damage to equipment that require changes or special precautions to normal maintenance and/or ground handling procedures?			
8	If operating away from home base does your test or test article require any special notification or briefings of the host facility support? (e.g. unique crash and rescue procedures)			

GENERAL				
No.	Question	Location	N/A	Comments
9	What background material was reviewed? (e.g. contractor reports, previous T&E reports, or other agencies published reports on similar aircraft or equipment, discussion with contractor pilots, Naval Safety Center Data)			
10	What other agencies were contacted that have conducted similar tests, both military and civilian, so that benefit can be realized from consideration of their standard procedures and lessons learned?			
11	Are any additions to existing NATOPS emergency procedures required as a result of test modifications and/or possible malfunctions of test equipment and have they been identified?			
12	Were any TAP special instrumentation or precaution notifications generated?			
13	What aircraft discrepancy review procedures have been established to avoid potential adverse impact on the evaluation?			
14	Does removal/installation of project equipment constitute Functional Check Flight (FCF)/Safety of Flight Test (SOFT) criteria?			
15	Have your Mission brief or Pretest briefing requirements been identified?			
16	Are any safety devices or interlocks bypassed or overridden during tests, and if so, what additional hazards are involved and what steps will be taken to reduce the risks?			
17	What ground checks are required to assess proper operation of project equipment and emergency equipment unique to the test aircraft?			
18	Do test instrumentation systems under any conditions prevent the normal operation of the aircraft systems (including UAV command uplink, downlink, autopilot or other critical systems)? Are instrumentation controls easily identified and conveniently placed?			
19	What simulation tests or Built-In-Tests are required to assess proper operation of project equipment unique to the test aircraft?			
20	What special additional aircrew, engineer, or test team training is required and how will that training be achieved?			
21	Will any test maneuvers/test points require changes or adjustments to standard crew coordination, communication duties? Has training been conducted to address these changes?			

GENERAL

No.	Question	Location	N/A	Comments
22	Under what circumstances will normal or emergency control transfers be required during test flights? Have test-specific control transfer criteria and any communication, switchology, operator actions which differ from standard procedures been outlined.			
23	What logical buildup is planned for high risk/pilot workload data points?			
24	Should project flight crewmembers and/or test team preview high risk/workload data points and compound emergency procedures in a flight simulator, laboratory environment or surrogate aircraft? (e.g. surrogate UAV or spin training aircraft)			

Ground and/or Anechoic Chamber Tests

No.	Question	Location	N/A	Comments
25	Will any peculiar support equipment or utilities be required (e.g., special cooling adapters, coolant oil, radar deflectors, power to pods, TTU-205, etc.) on the ground or inside the chamber?			
26	Will electrical aircraft systems be operated or energized during ground or chamber testing?			
27	Will hydraulic aircraft systems be operated or energized during ground or chamber testing?			
28	Will pneumatic aircraft systems be operated or energized during ground or chamber testing?			
29	Will any stress panels have to be removed during the time in the chamber?			
30	Has a detailed stress analysis been completed if any stress panels are opened or removed while the aircraft is suspended?			
31	Will the transmitted power output exceed a power density of 0.75 watts per square inch at any surface while in the chamber?			
32	Will the chamber test require simulated closed-loop and/or radiated test signals?			
33	Will a ground or anechoic chamber test involve the activation of any laser equipment?			
34	Will any test equipment be positioned inside the chamber and/or instrumentation pit?			
35	Will the test require personnel to be positioned inside the anechoic chamber and/or instrumentation pit?			

Tests Involving Ordnance or External Stores

No.	Question	Location	N/A	Comments
36	Will any external stores be required during ground, flight or anechoic chamber testing?			
37	Have range safety and explosive safety approvals, if required, been received?			
38	Do NAVAIR approved loading checklists exist for each store type? For non-NATOPS loads, have stores loading checklists been developed by the project and approved by the appropriate authority?			
39	If stores are to be carried, will CADS be installed? What procedures have been implemented to ensure the desired CAD configuration is loaded?			
40	Are any special procedures required (other than normal loading or release checklist adherence) to guard against in-flight loss of ordnance or aircraft equipment? In the event of an inadvertent loss of the test equipment or item, are any special procedures or contingency plans required to safeguard personnel or property?			
41	If non-NATOPS/TACMAN stores loadings are to be carried, has an AIR-4.0P approved flight clearance been approved for those stores? Have the Aircraft Discrepancy Books (ADB) in Maintenance Control been placarded accordingly?			
42	Are special hung/unexpended ordnance procedures required?			

Airborne Tests

No.	Question	Location	N/A	Comments
43	What airworthiness certification process was used?			
44	For local operations using non-resident aircrew, will a course rules briefing be conducted?			
45	In the case of air vehicle RF loss-of-link, what are the procedures to regain the link?			
46	In the case of air vehicle RF loss-of-link, what is the air vehicle likely to do during the loss-of-link period? (e.g. if the air vehicle has a pre-programmed or "return home" function, what program/waypoints/holding point will be programmed?)			
47	Does internal/external instrumentation change the aircraft operating envelope?			

Airborne Tests

No.	Question	Location	N/A	Comments
48	Has a pre-maneuver checklist been generated for high angle of attack tests, blade stall tests, or flight within critical areas of the height-velocity diagram?			
49	If control of the vehicle is lost during the course of the test, what precautions have been taken to ensure that the vehicle does not cause injury to personnel or damage to property on the ground?			
50	If the air vehicle is equipped with a safety/recovery parachute or flight termination system, have control methods and criteria for actuation been completely described.			
51	For chase aircraft, have chase procedures/responsibilities been defined? Have chase danger/no fly areas been identified?			
52	Have specific weather minimums, that are consistent with test objectives, been established for both the terminal area and the operational area?			
53	Are weather guidelines referenced in specific flight test SOP? If so, provide a test plan paragraph where a brief description can be found.			
54	If a safety or photo chase is involved, have launch and chase weather criteria and/or minimums been established?			

TEST HAZARD ANALYSIS PROCESS

1. The THA is an essential part of the overall risk management process to identify and mitigate hazards unique to the planned test. Risk may be defined as "an expression of possible loss in terms of mishap severity and mishap probability." It is useful to expand somewhat on this definition of risk. Loss is measured in lives, dollars, equipment, and mission capability. Risk assessment, therefore, involves determining the hazard involved, predicting resulting frequency of occurrence, assessing severity or consequences, determining exposure, and identifying action to avoid or minimize the risk. The THA is required to discuss potentially hazardous conditions created by testing the item in question. When defining potential hazards, consideration should be given to the specific test item, the test maneuvers and flight conditions planned, and the environment in which the test will be conducted. Ensure that workload during critical flight maneuvers is taken into consideration when determining risk category. The following outline provides the desired information, which should be incorporated in the THA. Different formats are acceptable, but all of the below elements must be included. Test teams will use the THA as a risk management tool during the conduct of the test, to include reviewing the THA during pre-test briefings. Sample THA formats are provided on the following pages.

Step 1:
Identify the hazards associated with the test. Some methods to identify potential hazards include test team discussions, conducting fault tree analysis, reviewing historical data, and reviewing hazard analysis and flight test lessons learned databases maintained by U.S. Navy, U.S. Air Force, and Society of Experimental Test Pilots.

Step 2:
Identify the cause(s) and their associated effect(s). The cause is anything that could lead to the presence of the hazard identified in step 1. What is the cause of the hazard? What is the effect of the hazard being uncontrolled? What aircraft system and subsystem failure modes can be identified?

Step 3:
Identify precautionary measures available/required to eliminate or control the identified hazards. The precautionary measures attempt to break the chain of events linking the causes to the hazard. The precautionary measure should reference the specific cause being controlled. If the precautionary measure cannot be tied to a specific cause, it is possible that another cause needs to be identified. If the failure mode cannot be eliminated, what special precautions, emergencies and emergency procedures are anticipated?

Step 4:
Identify corrective action. The corrective action attempts to break the chain of events linking the hazard to the mishap. This step is the list of actions to take to prevent a mishap if the hazard occurs. The list should cover the control room, ground personnel, flight crew and anyone else the situation calls for. What agencies/personnel are available to assist in hazard control and mitigation both pre-flight and during the flight to minimize the impact of the hazard once encountered? Have assignments been made to ensure everyone understands their role during the test once a hazardous situation develops?

Step 5:
Classify residual hazard severity and probability. Considering the application of precautionary measures and assuming corrective action identified was appropriately applied during the test event, classify the residual hazard severity and probability following the Hazard Level Guide presented in Figure 1.

Figure 1
Hazard Level Guide

Hazard Severity:

I **Catastrophic**:
May cause death or aircraft loss.

II **Critical**:
May cause severe injury or major aircraft damage.

III **Marginal**:
May cause injury or minor aircraft damage.

IV **Negligible**:
Will not result in injury or aircraft damage.

Hazard Probability:

A **Frequent**:
Likely to occur immediately, or during an individual test event.

B **Probable**:
Probably will occur during this evaluation.

C **Occasional**:
May occur during this evaluation.

D **Remote**:
Unlikely to occur during this evaluation.

Step 6:
Determine risk category. After defining the hazard level, determine the risk category of the test event/flight profile following the classification in the Risk Category Matrix in table 1.

Table 1
RISK CATEGORY MATRIX

Hazard Probability	**Hazard Severity**			
	I Catastrophic	**II** Critical	**III** Marginal	**IV** Negligible
A - Frequent	UA[3]	UA[3]	Category C[4]	Category B[5]
B - Probable	UA[3]	Category C[4]	Category C[4]	Category A[6]
C - Occasional	Note 1	Category C[4]	Category B[5]	Category A[6]

D - Remote	Note 2	Note 2	Category A[6]	Category A[6]

Notes:

(1) For test results with a residual risk assessment of I/C, up front discussions with the TECT will be required prior to proceeding with the test program under development.

(2) For assessments that result in I/D or II/D, coordination with the TECT (prior to an ERB) will determine assignment of Category A, B, or C testing classification.

(3) Unacceptable Risk (UA), means that the project is considered too high risk to proceed with testing.

(4) Test Category C: Test or activities which present a significant risk to personnel, equipment, or property even after all precautionary measures and corrective actions would be taken.

(5) Test Category B: Test or activities which present a greater risk to personnel, equipment, or property than normal operations.

(6) Test Category A: Test or activities which present no greater risk than normal operations.

Step 7:
Assign the test plan risk category(s). A description of risk categories, examples of possible test risk categories, and sample THAs are presented on the following pages.

DESCRIPTION OF RISK CATEGORIES

1. PROJECT RISK CATEGORIES. The THA is the primary tool for determining the risk associated with the conduct of a project. The test hazards included in the THA are only those hazards that are specifically introduced by the nature of the testing. When a hazard is discussed, there is an associated severity and probability that defines the risk of a defined hazard. After precautionary measures and corrective actions are defined, there should be a level or risk that is less than the original risk. The risk which remains after all precautionary measures and corrective actions have been implemented is termed residual risk. Summarization of residual risk will be used to determine the category of the test plan (i.e., Category A - Low, Category B - Med, Category C - High). Category D will encompass all ground and flight tests of prototype/pre-production aircraft. The Risk Category Matrix shall be used to make the final assessment of the appropriate project risk category. Empowerment for test plan approval includes the responsibility for determining project category.

2. AIRCREW QUALIFICATION. Due to the hazards involved with certain project flights and the increased level of aircrew experience required to safely conduct certain flight tests project, flights have been divided into categories. Aircrew minimum qualification and currency required for each category are defined in wing and squadron SOPs. TECT shall ensure, with the assistance of the squadron's operations officer, that the minimum aircrew qualifications specified are met for the type category of test to be conducted.

3. Examples of project risk categories that have been historically assigned:

CATEGORY A. Ground tests or project flights not involving potential or known hazardous operations. This includes flights within the NATOPS flight envelope not involving testing of critical safety of flight components. Examples include:

- Antenna patterns (specific category can be A/C dependent).
- Ordnance lot testing.
- Cruise performance tests.
- Pace flight at altitude with non-critical avionics.
- Generally most ground and laboratory tests.
- Sensor evaluation (not including night vision devices).
- Inert Missile Functional Carriage Tests.
- Government Lot Acceptance Tests (GLAT).

CATEGORY B. Ground tests or project flights involving potentially hazardous operations. Examples include:

- Automatic Carrier Landing Systems - Shipboard.
- Engine Stall Susceptibility.
- Helicopter Mine Countermeasures Towing.
- Stores Separation of non-standard or modified stores.
- External Lift.
- Airstart Envelope Definition - Multi-engine.
- SONAR Dipping.
- Accelerated Service Testing.
- Engine Component Improvement.
- Engine-Out Testing: One engine on three- or four-engine aircraft.
- Catapult and Arresting Gear Certification.

- Mission software not yet flown that could affect flight related displays, navigation/bombing accuracy.
- Tower fly-by tests.
- Air Combat Maneuvering (ACM).
- Night Bombing Test.
- Captive carry of live stores.
- Engine performance.
- Countermeasures towing of untested stores.
- Accelerated Service Testing.
- Decoy Flare Lot Acceptance flight tests.
- Initial Instrument Meteorological Conditions (IMC).
- Safety of Flight (SOF) software checks.
- Lab tests that intentionally induce faults on power lines.

CATEGORY C. Ground test or project flights involving known hazardous operations. Examples include:

- Flutter Testing.
- First flight of new/modified aircraft configuration.
- Aborted takeoffs.
- Ground and air minimum control speed determination.
- Spins.
- High Angle-of-Attack Evaluations.
- Airstart Envelope Definition - Single Engine.
- Minimum Endspeed Catapult Shots.
- Carrier Suitability Structural Testing.
- Helicopter/Ship Dynamic Interface Testing.
- Envelope Expansion
- Full Autorotations.
- Flight Control Software.
- Stores separation for envelope definition or expansion.
- Hazardous stores jettison tests.
- Missile gas ingestion engine tests.

CATEGORY D. Ground tests on, or all flights in, prototype aircraft including all pre-production aircraft and any other aircraft whose unique configuration or value warrants CATEGORY D designation by the Director for Test and Experimentation Engineering (AIR-5.1) and Test Wing Commanders (AIR-5.1).

SAMPLE

TEST HAZARD ANALYSIS (THA)

General

The purpose of this THA is to evaluate the test related hazards associated with conducting the T-45A F405-RR-401 Engine Surge Mitigation Test. The THA has been limited to hazards specifically pertaining to this evaluation. Hazards such as those encountered during normal flight operations have not been assessed unless specific test maneuvers or conditions increase the probability of those hazards occurring (i.e., bird strike, ground impact, midair collision, aircraft systems failures, aircraft emergencies, etc.).

Specific

Three test specific hazards have been identified in this analysis as summarized in Table 1 below. Detailed analysis of each of these hazards is presented in the following pages.

Table 1
Test Hazards

Hazard	Residual Risk Category
Engine Damage During Surge	C (II/C)
Departure from Controlled Flight	A (I/D)
HYD 1 Overtemperature	B (III/C)

Conclusion

Based on this THA, a Category C risk assessment has been assigned to this flight test program.

Hazard/Risk: ENGINE DAMAGE DURING SURGE

Causal Factor: Locked engine surge, engine overtemperature

Resulting Effect: Degraded engine performance, potential engine out situation

Minimizing Procedure:

1. For intentional engine surge test points, the pilot will retard the throttle to IDLE immediately upon reaching the target AOA or as soon as the engine surges.

2. Engine parameters (including Exhaust Gas Temperature (EGT) and compressor discharge pressure) will be monitored real time by engineers at RTPS for the installed engine performance ground test and for all flights with either the instrumented baseline or modified engine installed. As soon as a locked surge is detected, the test conductor will call for engine shutdown.

3. Conservative buildup in AOA has been incorporated into the test matrix to minimize overshoot of the AOA necessary to surge the engine. Less AOA overshoot (i.e., less time with high levels of engine inlet distortion) decreases the likelihood that the engine will lock surge.

4. Pilots have practiced the intentional engine surge and airstart test points and Simulated Flame Outs (SFOs) in the simulator.

5. Each pilot will conduct a dedicated SFO flight prior to participation in surge and airstart tests and at the beginning of each test period for which engine surges and airstarts are planned, the pilot will perform an SFO from high key.

6. The pilot will keep the field within 90 degrees of the aircraft nose and maintain position within gliding distance of the field for all surge boundary tests.

7. A gaseous oxygen system is installed on a pallet in the rear cockpit to supply the pilot with oxygen at all times.

8. A crosswind limit of 15 knots will be observed for all surge and airstart tests.

9. All surge boundary test flights will be chased.

10. Engine airstart capability will be verified and Ground Turbine Starter (GTS) and Ram Air Turbine (RAT) systems will be functionally verified in-flight prior to planned engine surge tests. Igniter operation will be audibly verified, the battery voltage will be checked, and the RAT will be deployed on the ground prior to flights where intentional engine surges and airstarts are planned.

11. Following three consecutive windmill engine airstarts, with subsequent failed GTS start attempts, the GTS will be started within the GTS start envelope as a health check of the GTS system following the NAVAIR flight clearance.

ENGINE DAMAGE DURING SURGE (Continued)

12. The modified NATOPS procedures for engine surge, shutdown, and airstart are detailed below and will be used during testing. These procedures will be covered at the pre-flight briefing.

Corrective Action:

1. Immediate airstarts may be attempted anywhere in the envelope, windmill airstarts may be attempted below 25,000 ft MSL with at least 13 percent RPM, and GTS assisted airstarts may be attempted below 15,000 ft.

2. Following NAVAIR flight clearance and NATOPS procedures as modified below. Deviations from standard NATOPS procedures are in *italic* print.

1. Throttle - IDLE (altitude permitting)
2. Controls - NEUTRALIZE
3. EGT/RPM - MONITOR

If EGT remains above 450 degrees C for more than 6 seconds-

4. Throttle - OFF (do not pull emergency oxygen actuator)
5. *Turn towards airfield.*
6. *Ensure High Angle of Attack (HAOA) bleed valve closed (cockpit switch).*
7. Execute Immediate Airstart Procedures
   Simultaneously perform steps a and b -
   a. GTS start button - PRESS AND HOLD
   b. Throttle - IDLE (monitor EGT/RPM)

If EGT and RPM indications normal -

8. *If no engine temperature exceedances, proceed with testing, otherwise RTB.*

If engine fails to light within 30 seconds after moving the throttle to idle or hot start:

1. Throttle - OFF (allow 30 seconds to drain if practical)
2. *Establish maximum range glide (195 Knots Calibrated Air Speed (KCAS)) towards high key*
3. Reattempt airstart

If airstart attempts are unsuccessful by high key, then proceed with flameout approach:

1. *Throttle - OFF*
2. *Non-essential electrical equipment - OFF*
3. *HYD 2 pressure - MONITOR*
4. *ANTI-SKID switch - CHECK OFF*
5. *Flaps - EMERGENCY EXTENSION WHEN APPROPRIATE*
6. *Landing gear - EMERGENCY EXTENSION WHEN APPROPRIATE*
7. *Field arrestment if available*

ENGINE DAMAGE DURING SURGE (Continued)

Hazard Severity: II

Mishap Probability: C

Residual Risk Category: C

Hazard/Risk: DEPARTURE FROM CONTROLLED FLIGHT

Causal Factor: Insufficient control power to effect recovery

Resulting Effect: Loss of aircraft/aircrew

Minimizing Procedure:

1. Sustained maneuvering will not be conducted at high AOA.

2. Aircraft maneuvering will be terminated when excessive wing rock or wing drop occurs.

3. Aircrew will brief Out of Controlled Flight (OCF) procedures during pre-flight briefs for flight where abrupt pulls and other maneuvering are planned.

4. Aircrews have practiced the surge test points in the T-45A simulator.

Corrective Action:

1. Following NATOPS.

Hazard Severity: I

Mishap Probability: D

Residual Risk Category: A

Hazard/Risk: HYD 1 OVERTEMPERATURE

Causal Factor: Use of emergency flaps during SFOs

Resulting Effect: Increased HYD 1 system temperatures, damage to HYD 1 seals causing HYD 1 leak

Minimizing Procedure:

1. Emergency flaps will be not be selected until short final and will be deselected on the runway or following low approach during SFO approaches.

2. Emergency flaps will not be selected for more than 30 seconds consecutively, following appendix B.

3. Project engineers at RTPS will monitor the emergency flap extension time.

Corrective Action:

1. Follow NATOPS Procedures.

Hazard Severity: III

Mishap Probability: C

Residual Risk Category: B

TEST HAZARD ANALYSIS FOR H-60 T700 ENGINE IMPROVEMENT PROGRAM

HAZARD	CAUSE	EFFECT	PRECAUTIONARY MEASURE	CORRECTIVE ACTION	RESIDUAL HAZARD LEVEL/RISK CATEGORY
GENERAL					
Cabin electrical fire.	Short in instrumentation installation	Possible damage/injury to aircraft/crew.	Installation will be required to pass NRWATS pink sheet inspections. System will be ground tested prior to flight All tests will be flown day/VMC. Engineers/pilots will brief instrumentation electrical fire procedures prior to flight	Secure electrical power to instrumentation, fight fire, and land as soon as possible	II/D (Note 2) CAT A
Instrumentation EMC (source).	Electromagnetic signals from instrumentation	Errant signals to AFCS, cockpit display, and/or possibly engine DECU. Test mission abort	Instrumentation will undergo EMC Soft prior to first flight. Instrumentation will be ground tested prior to flight.	Secure electrical power to instrumentation package.	IV/D CAT A
Instrumentation EMC (victim)	Electromagnetic signals to instrumentation	Errant signals to instrumentation. Test mission abort	Instrumentation and aircraft will undergo EMC Soft prior to first flight. Instrumentation will be ground tested prior to flight	Secure electrical power to instrumentation package	IV/D CAT A
AUTO-IGNITION/Ng-Dot TESTING					
Engine being tested exceeds T4.5 limitations	Engine acceleration due to rapid PCL movement from 100% Np to the fly detent results in engine T4.5 exceeding NATOPS limitations (there is no temperature limiting with engine in lockout)	Engine overtemp may result in damage to engine requiring removal/replacement of engine Test mission abort	PCL advance rate buildup and realtime verification of peak T4.5 prior to next data point Buildup will be terminated if a T4.5 limit condition is reached.	Monitor T4.5 during relight, retard PCL if T4.5 approaches NATOPS limitation.	II/C CAT C
Hot/hung start during auto-ignition	Ng (engine core speed) too low (approx 60%) when auto-ignition occurs, insufficient airflow to sustain combustion, resulting in hot/hung start.	Engine hot/hung start, pilot shuts down engine, resulting in single engine configuration	Never approached limit during VH-60N Auto-Ignition Program or H-60 T700 Lockout Controllability Tests Buildup will be terminated if a T4 5 limit condition is reached.	Monitor T4 5 during relight, retard PCL if T4.5 approaches NATOPS limitation	IV/C CAT A

TEST HAZARD ANALYSIS FOR H-60 T700 ENGINE IMPROVEMENT PROGRAM

HAZARD	CAUSE	EFFECT	PRECAUTIONARY MEASURE	CORRECTIVE ACTION	RESIDUAL HAZARD LEVEL/RISK CATEGORY
Inadvertent engine shutdown while attempting to reset lockout	Pilot at engine controls inadvertently moves the PCL past the IDLE detent to OFF position resulting in engine shutdown.	Engine shuts down, resulting in single engine configuration Pilot required to manually restart engine	The engine PCL's have throttle stops installed to prevent the PCL's from being retarded past the IDLE detent Each throttle stop must manually be unlatched to retard the PCL's past the IDLE detent Procedures for identifying and relighting the shutdown engine were formulated and practiced in both the SH-60F and SH-60B flight simulators for the H-60 T700 Lockout Controllability Tests.	Execute single engine relight procedures	IV/D CAT A
Non-test engine Np follows test engine Np	Above 100% Np, governor is in low-gain, torque is attempting to match the engine in lockout. Drag from sprague clutch could aggravate this hazard	Possible dual engine overspeed/flameout/ relight	Highest Np observed during VH-60N -401 Auto-Ignition Program and H-60 T700 Lockout Controllability Tests was 112% APU will be ON. Practice autorotations will be conducted prior to inflight testing	If non-test engine passes 115%, Nr/Np will be checked with PCL of test engine by retarding towards IDLE, and data point will be terminated.	IV/D CAT A

Hazard levels were rated for severity and mishap probability/risk as follows:

Hazard:
- I Catastrophic, may cause death or aircraft loss.
- II Critical, may cause severe injury or major aircraft damage.
- III Marginal, may cause minor injury or minor aircraft damage.
- IV Negligible, will not result in injury or aircraft damage

Mishap Probability
- A Likely to occur immediately or with in short period of time.
- B Probably will occur within the span of this evaluation.
- C May occur within the span of this evaluation.
- D Unlikely to occur

EXAMPLE

TEST REPORTS/DELIVERABLES PLAN (TRDP)

Test Program/Project:	
Applicable Requirements Document, TEMP, AIRTASK/Work Unit, etc.:	
Test Plan Number	
Sponsor/Customer Team Representative (Name, Code, Telephone):	
Test Team Representative (Name, Code, Telephone):	

TAILORED REQUIREMENTS LIST:
(All reports will be in compliance with the applicable report writing guidance or as required by the TECT.)

DELIVERABLE	ESTIMATED PROJECT COMPLETION DATE	DELIVERABLE TIMING	REMARKS*

*As an example, include who will release the report and to whom it will be sent.

DATE APPROVED:_____

FOR TEST TEAM:_____

FOR SPONSOR/CUSTOMER TEAM:_____

EXAMPLE

Test Aircrew Qualifications

1. If specific test aircrew qualifications are required due to project complexity or training requirements, provide their names and rational.

2. List all test aircrew requested to fly in this project. Aircrew is defined as pilots, Naval Flight Officers, aircrewmen, engineers, and photographers that are participating in and required for this test. A Flight Information Scheduling and Tracking (FIST) report is a suitable alternative.

Aircrew qualifications are as of _____.

Test Aircrew	Total Flight Hours	Total Flight Hours in Type	Category Qualified	Remarks

3. Additions to this list after test plan approval will require a test plan amendment (enclosure 8) listing the qualifications for each added personnel.

ENVIRONMENTAL ANALYSIS AND DOCUMENTATION PROCESS

1. The first step in the environmental analysis is to complete an environmental planning checklist and submit it to the local Range Sustainability Office (RSO) personnel. They will review the proposed checklist and determine the level of documentation required for the test project. Information on how to obtain the environmental planning checklist for NAWCAD Patuxent River, NAWCWD China Lake, and NAWCWD Point Mugu is provided below.

a. NAWCAD PATUXENT RIVER. An automated checklist for environmental planning can be obtained at https://icbm.navair.navy.mil/oep/checklist/index.htm. The checklist contains a series of questions about the proposed test project. Once completed, a project planning summary is generated and electronically submitted to the Operational Environmental Planning (OEP) Team (the local RSO personnel). The program determines if any environmental issues have been identified. If none, the environmental analysis (paragraph 6.5) will be automatically generated and electronically transmitted to the project team for inclusion in the test plan. If environmental issues are identified, the proposed project is analyzed by the OEP team for potential impacts. At the completion of analysis, the environmental analysis paragraph will be electronically issued to the project team. All environmental analysis documentation issued by the OEP team must be maintained in test team project files. The OEP team can be contacted at:

Office: OEP Team, NAVAIR National Range Sustainability Office
Location: Building 505 at NAS Patuxent River
Phone: 301-342-6284
Email: PaxOEPHelpDesk@navair.navy.mil

b. NAWCWD. Contact the appropriate NAVAIR National RSO personnel to discuss the proposed test project:

(1) NAWCWD Sea Range Environmental Coordinator
Code 529600E
Building 53C
NAWCWD, Point Mugu, CA
(805) 989-0647

(2) NAWCWD Land Range Environmental Coordinator:
Code 529700D
NAWCWD, China Lake, CA
(760) 939-9159

(3) NAWCWD Environmental Coordinator:
Code 8G0000D
Building 982
NAWS, China Lake, CA
(760) 939-3238

Test Team Review Board (TTRB)/Executive Review Board (ERB)/ Firing Readiness Review (FRR) Preparation Checklists

____ Essential test plan reviews completed, recommendations reviewed and incorporated.

____ Status of Required Test Plan Signatures.

____ Status of all required MOD installations and approval, and accompanied documentation / references. (Must be completed prior to commencing flight test)

____ Status of initial Flight Clearances, both H/W and S/W. (Generally must be complete prior to final approval of the Test Plan)

____ A/C and/or Store configured appropriately in accordance with MOD and Flight Clearance.

____ Test Envelope Clearly Defined.

____ Test Envelope within the Flight Clearance Envelope and allows completion of all test points.

____ Procedural requirements understood by the Test Team in the event of a Flight Clearance Exceedence (e.g., Excessive Sink Rate during FCLP event resulting in potential Landing Gear overload).

____ Ensure funding is allocated and released.

____ Ensure S/W meets established Release for Flight (RFF) or Safety of Flight (SOF) criteria with documented results/signoffs complete to start testing.

____ Software confidence metrics established and agreed upon. (SAR/PR categorization, and disposition plan).

____ Lead Project Engineer, Project Officer and Program Sponsor are in agreement that the system meets all Entry Criteria to enter the Upcoming Test Phase.

____ Exit / Success Criteria for the Upcoming Test Phase clearly understood.

____ Test Buildup requirements clearly identified in the Matrix and/or DMOT.

____ Safety Checklist Review Completed.

____ Test Hazard Analysis Completed as a Test Team.

____ Verification that all Proposed Risk Mitigation Steps identified in the THA are available/ attainable during applicable test events.

____ Test Plan References are Accurate and Current.

____ Firing Readiness Review Requirements established, and Coordination Responsibility assigned to a Test Team Member.

____ Range Requirements established and Long Lead Items on track to support

____ Data Collection, Reduction and Evaluation Requirements Established.

____ Real-time and Post-flight data monitor plan established, with a keen understanding of SOF, SOT and/or analysis critical parameters and who is Responsible to Monitor.

____ Thresholds clearly defined for Warning and Abort/KIO calls based upon Real-time Monitoring Parameters, along with the Team's understanding of Why the Thresholds were set, what to do if they are exceeded, and why safe operations could be compromised if thresholds are exceeded.

____ Completed Lessons Learned Review of Similar/Past Test Programs.

____ Ensure proposed testing conducted in accordance with all applicable SOPs or Waivers in hand.

____ VTC/Teleconference arranged for multi-sited Teams, including key Government and Industry Engineers, Aircrew and Unique/Critical Support Personnel.

Guidelines for Conducting
Firing Readiness Reviews (FRR)

Reasons for Conducting an FRR:

- Initial firing of a Guided Weapon with the Guidance System Active.
- Initial firing following significant changes in a weapon's guidance and control (G&C) logic, or G&C hardware.
- Initial weapon firing following significant changes to an aircraft's armament computer H/W or S/W.

Recommended Participants:
- Test Team Lead Engineer and Project Officer
- Test Team Members
  (Including Contractor Personnel on an ITT)
- Range Test Conductor
- Flight Test Conductor
- Range Safety Office
- Essential A/C and/or Range Support Personnel
  (e.g., Target Operators, FTS Operator, Squadron Ordnance, Station EOD, or Range Camera/Tracking System Operators)
- Chief Engineer from the IPT, or CTE for a small team
- Senior Pilot from the IPT
- Squadron or Range CTP

Agenda:

Introduce all personnel present. Recommend limit attendance to those essential to mission accomplishment.

____ Review Specific Firing Objectives:
- Launch Platform
- Weapon

____ Confirm both Aircraft and Weapon properly configured, and that aircrew can easily identify the proper configuration.

____ Confirm all flight clearances, H/W and S/W for both aircraft and weapon, are in hand and support the intended shot envelope.

____ Review maturity of both the Aircraft and Weapon configuration for the shot, specifically:

- Identify when and why significant design changes were made that are related to safe operation (e.g., SMS updated to –003 configuration due to faulty MRI commands, or tail fin redesigned due to recurring root assembly cracks).
- Summary of Lab/Ground/Flight Test time and results associated with major configuration changes of both the aircraft and weapon critical components.

- Review all outstanding Priority I, I*, and I** deficiencies, and all Open or Deferred Priority A, B, and C SARs/PRs/STRs that impact or potentially impact successful weapon employment.

____ Review mission planning, and ensure all memory loader devices have been properly prepared and uniquely identified for mission data transfer to the aircraft/weapon.

____ Review the results of all mission rehearsals to date.

____ Determine if additional mission rehearsals are required prior to the live fire.

____ Review the operational timeline of events leading up to, through, and past weapon release.

____ Review GO/NO-GO Criteria. The following sample table is provided for consideration:

Item	Required	Desired
Launch A/C	- Operable A/A Radar - SMS GO or OP GO - POS/AINS w/ 2 digit HERR/VERR - Operable A/A TACAN	- FMC Aircraft
Launch A/C Instrumentation	- 1 Operable VTR - Operable MARS - Operable VTX - Valid Time Synch - Operable A/C TM	- 3 Operable VTRs
Weapon	- Successful Store and Station IBIT - Weapon RDY Status at Launch - Operable FTS	N/A
TSPI	- 2 A/C Sources - 2 Weapon Sources	- 4 A/C Sources - 4 Weapon Sources
A/C Tracking Systems	- 1 Operable	- 3 Operable
Flight Termination System (FTS)	- 1 Operable transmitter - 1 Operable backup transmitter	N/A
Target Impact Cameras (KTMs)	- 3 Operable	- 6 Operable
Tanker	N/A	On Station
Safety Chase for Store Separation	- 1 F/A-18 with Safety Chase Pilot - Operable A/A Radar - Operable A/A TACAN	- 1 F/A-18 D or F with Photographer
Weather	Wpn at Launch: >5 mi Vis, 2K' Vert Sep from Clouds below and 1K' Vert Sep from Clouds above Wpn Chase: >10 mi Vis, +/- 4K' Vert Sep from Clouds Target Area: >10 mi Vis, >5K' Ceiling	Clear of Clouds, Unrestricted Vis

- Scenario Specifics:

____ Roles and Responsibilities of:
- Shooter(s)
- Chase
- Photographer(s)
- Observer Aircraft
- Support / Tanker Aircraft
- Support Personnel

____ Review Aircraft to Aircraft Positioning, before and after weapon release. Review aircraft positioning relative to:
- Released Store(s)
- Critical Ground Targets / Tracking Sites
- Airborne or Ground Based Hazards
- Mandatory Avoidance Areas (e.g., Marine Sanctuary or Manned Sites)

____ Chase KIO Criteria if weapon functions improperly

____ Roles and Responsibilities of:
- Flight Test Conductor
- Range Test Conductor
- Flight Test Engineer(s)
- Control Room Personnel
- System Engineer(s)
- Sub-System Engineer(s)

____ Hold/Skip-It/KIO/ABORT Plans and Concerns

____ Comm Plan and Expected Calls/Terminology between:
- Range Control Center (RCC)
- Test Conductors
- Aircrew

____ Mission Specific COMSEC and Information Protection Requirements

____ Expected Weapon Flight Path
- Weapon Kinematic Hazard Pattern
- Weapon Destruct or Termination Plan
- Resultant in-flight Hazard Pattern following Weapon Destruction or Impact as related to Launch, Chase, Support Aircraft or Ground Personnel

____ Hang Fire or Misfire Procedures:
- All Load/EOD Crews Properly Trained
- Control Room Responsibilities
- Aircrew Procedures/Switchology Validated
- Hang Fire Rehearsal Requirements/Plan

____ Minimum Fuel/KIO Requirement
- Calculate MIN Fuel for each A/C Airborne (Consider fuel required to commence final shot run, shoot, weapon Hang, orbit at prescribed altitude and duration, and successfully completed a Hung Ordnance Approach to Landing)
- Comply with all SOP Requirements

____ Review Specific Test Hazard Analysis findings associated with the Weapon Live Fire

____ Review Post Mission Requirements:

- Debrief Time/Location / Personnel
- Report Generation/Review/Release Plan
- Ordnance Firing/Expenditure Report Requirements
- COMSEC Disposition Reports for Weapon TM Encryption Systems

____ Determine if any actions remain, if so document specifics and closure plan

____ Complete "Around-the-Room" Check for either No-Vote or Thumbs Up.

FRR Action Items

Action Item	Assigned To	Completion Verified By	Completed On

Approval Signatures to Proceed:

_____ _____
Lead Test Pilot for Platform/IPT Date

_____ _____
Chief Engineer for Platform / IPT Date

_____ _____
Chief Test Pilot Each Participating Test Squadron Date

GUIDELINES FOR TAILORED PROJECT TEST PLAN FOR HARDWARE FIT CHECK OF AIR VEHICLES AND INSTALLED SYSTEMS

1. Background. Paragraph 7a of this instruction specifies that "The length and detailed content of a project test plan may be tailored according to the scope and risk level of the project." The guidelines presented here provide an acceptable option for test plans for ground fit check testing of components, and the format presented in appendix A of this enclosure may be used in lieu of the format presented in enclosure (3) at the test team discretion. Any external store fit checks will continue to use TESTWINGLANTINST 8020.1B. Measurements made using mock-ups or shapes created from frangible material such as cardboard, Styrofoam, and/or clay that do not break the integrity of the hydraulic, fuel, or electrical systems are considered measuring devices and not test hardware. Measurements made using these or standard measuring devices (rulers, calipers, etc.) may not constitute a fit check and may not require a test plan.

2. Project Planning Memo. Since fit check evaluations are usually a preliminary step to a future project, a project planning memorandum should be generated for the overall project. However, due to the limited test scope, a stand-alone project planning memorandum is not required for a fit check test that falls within the guidance of this enclosure.

3. Fit Check Test Scope. A Fit Check Test is described as a test whereby test hardware is physically mounted or installed in the aircraft to collect fit or clearance data. It does not apply to test instrumentation system hardware. This enclosure offers guidelines for test plan format and may be used for ground fit check evaluations under the following test conditions:

a. Ground event only

b. Test assesses fit only and does not verify correct operation or function of test equipment

c. THA process results in Category A risk assessment

d. Test hardware is removed at test completion

4. Environmental Impact Statement (EIS). All test plans require that an environmental impact analysis be performed in accordance with enclosure (3), appendix I.

5. Reports. Although a formal report format may not be necessary, the data should be documented and verified with the same scrutiny as any test before dissemination. If the data will be forwarded to the sponsor informally, that together with any conclusions will be presented to the branch head and platform coordinator prior to release. Informal report types may include e-mail, phone or face-to-face brief, or electronic dissemination. Message reports or other formal reports will follow the standard review.

6. Review/Approval. The fit check test team may be led by either a project engineer/technician or project officer; both are not required. The TTRB requirement for Fit Check Tests may be met through individual meetings between the project leader and PLO, Platform Coordinator, and

other required support/team personnel where test method and safety procedures are discussed. The Project Liaison Office and Safety must review fit check test plans. Approval will be delegated per paragraph 10 of this instruction. For non-Test Wing Atlantic or Test Wing Pacific test aircraft, this form may be used at the discretion of the test team and aircraft custodian, and approval will reside with 4.11 and the custodian.

7. Format. The fit check test plan format is presented in appendix A of this enclosure. Use guidance provided in enclosure (3) of this instruction, except as provided below. Additionally explanations for some blocks are provided below.

a. Aircraft T/M/S. Specify aircraft type, model, series, e.g. KC-130J.

b. Aircraft BuNo block: Enter test aircraft BuNo. More than one aircraft may be specified.

c. Type of Report: Some typical examples of informal reports include e-mail, face-to-face brief, and PowerPoint presentation.

d. Consumables Required. If consumables are required, they should be coordinated with PLO/maintenance prior to testing. Specify parts under the Method of Test section.

e. FCF Required. If an FCF is required as a direct result of the fit check test, check Yes.

f. Aircraft Spotting. Specify test location (hangar, ATEF, ramp, etc.). Details regarding any special considerations for the location of the test should be presented in the Method of Test. Any locations outside the hangar, ramp, or ATEF will require an environmental paragraph to be generated and attached.

g. Background: Include short summary of events precipitating the need for the fit check. Include concise description of test hardware.

h. Purpose: Specify the purpose of the test in one or two sentences.

i. Method of Test: Discuss any specific configurations/loadings desired or required for the test aircraft. Specify test set up and procedures (refer to maintenance manuals, instructions, SOP, or other publications whenever possible) and fit check data collection techniques.

j. Support Requirements: Specify support required to complete the test and who will provide the support (include name(s) if known).

k. Risk Management. Provide answers to the questions and any special precautions. Although the Safety Checklist and Test Hazard Analysis (THA) is not specifically required for a fit check test, the process of determining possible risks and their mitigation is still required. A THA should be performed and if no unique hazards are identified, the THA matrix need not be submitted as an enclosure. The test lead shall consider potential safety hazards to personnel and potential damage to equipment, facilities, and aircraft and then subsequently determine appropriate precautions, mitigating procedures, and corrective action. Any remaining hazards

that are not covered by standard maintenance procedures, applicable SOP, or NATOPS, shall be noted in a THA appended to the test plan and in accordance with enclosure (3), appendix F.

l. Environmental Analysis: If the environmental impact analysis determines that the activity falls within the scope of the Final EIS for the location of the test and no further action is required, then check Standard. If any action is required to address the environmental impact, then check Non-Standard and attach a hardcopy of the paragraph.

m. Reviewed by: PLO and any other appropriate reviewers should initial.

n. Security. Include information as described in enclosure (3), paragraph 7.5 if project or test is classified.

NAVAIR

FIT CHECK TEST PLAN

Test Plan Classification: Unclassified
Project Classification: Unclassified

Test Plan No:
Test Plan Expiration Date:

Project Title:			Aircraft T/M/S:
Project Lead/Competency/Phone:			Signature:
Estimated Start Date:	Time Required:		Aircraft BuNo:
Type of Report:	Consumables Required: ☐Yes ☐ No		FCF Required: ☐ Yes ☐ No
Deliverable Timing/Remarks:	Aircraft Spotting:		
No. of Aircraft Gnd Hrs:	Total Cost Estimate:	Network Activity:	Funding Expiration:

Background:

Purpose:

Method Of Test:

Support Required (use enter to space down)	Support Provider (use enter to space down)

Risk Management

To ensure no undue hazard to ground personnel or possible damage to equipment exists, what changes or **special precautions** to normal aircraft maintenance and/or ground handling procedures are required?

Do data collection systems or methods prevent the normal operation of any aircraft systems to be operated during the fit check? ☐ No ☐ Yes, explain:

Will the test hardware be left unattended by the project team at any time while installed in the aircraft?
☐ No ☐ Yes, describe procedures to ensure no inappropriate action will be taken which could damage the aircraft or hurt personnel:

Specify who will attend the pre-test brief:

Environmental Analysis: ☐ Standard, no further action ☐ Non-Standard, attach paragraph

SECURITY ☐ Unclassified ☐ Classified, describe procedures:

Reviewed by: _____ PLO _____ Safety _____ PC _____ _____	Approved by: _____ _____ _____ 5.1G rep (signature) (title) (date) Approved by: _____ _____ _____ 5.1.X rep (signature) (title) (date)

SUPPORT PLAN GUIDE

(Originator's Code)
(Date)

From: Project Officer/Engineer
To: Test Squadron and ISEET Representative
Via: Appropriate Routing

Support Plan No.: _____
Support Plan Expiration Date: _____

Subj: TITLE OF SUPPORT EFFORT

INTRODUCTION

1. It should be clear that the effort is a support event and not a test. The introduction section will include background information including a description of the aircraft, equipment, facility, etc to be utilized and a brief statement of the purpose of the support.

SCOPE OF SUPPORT

2. Include brief statements of flights to be conducted, flight conditions, envelope, loadings, and configurations.

METHOD

3. Include brief statements of methods and procedures to be used. Reference appropriate approved test plans, maintenance procedures or SOPs.

SPECIAL PRECAUTIONS

4. Include brief statements of safety and security precautions to be observed. In lieu of a Safety Checklist, emphasis will be placed on this paragraph to identify and discuss pertinent safety-related issues.

MANAGEMENT

5. It may be appropriate to include amplifying statements on funding and manpower requirements, schedules, and personnel assignments.

From: Test Coordination Team
To: Project Officer/Engineer
Subj: TITLE OF SUPPORT EFFORT

1. Returned approved/disapproved.

_____
AIR-5.1.X Representative Date

2. Returned approved/disapproved.

_____
AIR-5.1G Representative (if required) Date

3. Returned approved/disapproved.

_____
Applicable if involving more than 1 Test Squadron or T&E Dept Representative)

TEST PLAN AMENDMENT GUIDE

(Originator's Code)
(Date)

MEMORANDUM

From: _____ (Project Team),
To: Test Squadron and ISEET Representative
Via: Appropriate Routing

Subj: AMENDMENT NO. ____ TO _____ TEST PLAN
(identify by number and title)

Encl: (1) (Amended pages)
(2) Copy of original test plan with all currently approved amendments incorporated)

1. Approval authority for amendments will normally be at the same level and follow the same review chain as the original test plan. Approval authority for amendments may be delegated to individuals in writing for such things as aircrews or project team changes, aircraft (BUNO) changes, and test point changes which are equal to or reduced risk from the originally approved tests.

2. This memorandum is intended to provide background information. The first paragraph should explain why the amendment is necessary.

3. Amended pages should clearly identify the changes made to the previous version of the test plan.

4. After approval, have all the appropriate aircrew or engineers review and sign that they have read and understand this test plan amendment. The test plan amendment can be approved without these signatures, but all appropriate aircrew/testers must sign and date an approved amendment in this section prior to executing the test(s).

(list all appropriate aircrew/engineer with signature/dates)

_____
Originator

From: Test Squadron and T&E Engineering Approval Authority
To: Originator of the amendment

Subj: AMENDMENT NO. ____ TO _____ TEST PLAN

1. Returned approved / disapproved. _____
AIR-5.1G Representative Date

2. Returned approved / disapproved. _____
AIR-5.1.X Representative Date

3. Returned approved / disapproved. (Applicable if involving more than 1 Test Squadron _____
or T&E Dept (AIR-5.X) Representative) Date

GUIDE FOR ADDITION OF FLIGHT CREW AND/OR ENGINEERS

(Originator's Code)
(Date)

MEMORANDUM

From: Project Officer/Engineer
To: Chief Test Pilot (for aircrew addition)/Chief Test Engineer (for engineer addition)
Via: (1) Platform Coordinator (both aircrew/engineer)
(2) Operations Officer (for aircrew addition only)
(3) Safety Officer (for aircrew addition only)
(4) Competency Manager (NAWCAD)/ Platform Chief Engineer (NAWCWD) (for engineer addition only)

Subj: AMENDMENT NO _____FOR THE ADDITION OF FLIGHT CREW/ENGINEERS TO _____ TEST PLAN

Encl: (1) (Copy of currently approved test plan, including approved amendments incorporated)

1. Request authorization for _____ to act as _____ on subject test plan.

2. I have reviewed and understand the test requirements of the subject test plan and have signed the original test plan and all applicable amendments:

_____
(Signature of personnel/addition)

3. (List the category of the test and a brief summary of the reasons for the change.)

4. Crew qualifications as of _____.
Total Flight Time: _____.
Total Hours in Model: _____.
Flight Hours Last 30/60 Days: _____.
Category Qualified: _____.
Remarks: (NVG Time, Night Time, Ship LDS, etc.)

_____ _____
Operations Officer Originator

JUN 0 7 2005

From: Chief Test Pilot/Chief Test Engineer
To: Project Officer/Engineer

Subj: AMENDMENT NO _____FOR THE ADDITION OF FLIGHT CREW/ENGINEERS TO _____ TEST PLAN

1. Approved/disapproved.

_____	_____
AIR-5.1.X Representative (for aircrew addition)	AIR-5.1G Representative (for engineer addition)

Copy to:
Operations Officer

Enclosure (8)

Change Number *(CTE/CTP Use Only)*

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: