



DEPARTMENT OF THE NAVY
SPACE AND NAVAL WARFARE SYSTEMS COMMAND
WASHINGTON, D. C. 20363-5100

IN REPLY REFER TO:

SPAWARINST 3960.3E
SPAWAR 213
23 June 1992

SPAWAR INSTRUCTION 3960.3E

From: Commander, Space and Naval Warfare Systems Command

Subj: TEST AND EVALUATION

Ref: (a) DoD Directive 5000.1 of 23 February 1991
(b) DoD Instruction 5000.2 of 23 February 1991
(c) DoD Manual 5000.2-M of 23 February 1991
(d) SECNAVINST 5000.2()
(e) OPNAVINST 3960.10()

Encl: (1) Certification of Readiness for OT&E/OPEVAL (w/attachment)
(2) DT&E Reports and Distribution (w/attachments)

1. Purpose. To provide Test and Evaluation (T&E) policies and procedures for acquisition programs of the Space and Naval Warfare Systems Command (SPAWAR).

2. Cancellation. SPAWARINST 3960.3D is cancelled.

3. Background. T&E provides assessments of technical risk, indications of program progress, the early exposure of problem areas, and a systematic method of ensuring that operational effectiveness and operational suitability requirements and issues are addressed/resolved in support of the development and acquisition of SPAWAR programs. Department of Defense (DoD) and Navy policies require the conduct of developmental and operational T&E and the use of T&E results in major program approval decisions. References (a) through (e) provide DoD and Navy T&E policies and their relationships to the acquisition process. This instruction provides this Command's policies and procedures for implementing references (a) through (e) in documenting and conducting T&E of SPAWAR's development and acquisition programs.

4. Scope. This instruction applies to all SPAWAR material acquisition programs. It applies to new systems, leased equipment, contractor-furnished equipment (CFE), government-furnished equipment (GFE), and to significant alterations and modifications of existing systems, including those that involve integration of new or existing equipment and systems into different platforms.

5. Policy. In implementing Navy and DoD policy, SPAWAR will:

a. Ensure that the developmental T&E portion of each acquisition program is consistent with policy guidance and directions and is integral to and supportive of the strategy of the program, including being tailored to its risks. T&E will support development and engineering design, verify attainment of technical performance requirements, evaluate logistics supportability aspects, and assess system operational effectiveness and suitability. Top level T&E planning for each acquisition program will be documented in a T&E Master Plan (TEMP), which will be directly traceable to the program's requirements documents.

b. Consolidate T&E documentation within the Acquisition, Logistics, and Engineering Support Directorate (SPAWAR 20) to assist program managers by drafting TEMPs for all ongoing programs. For new programs requiring an Integrated Program Summary (IPS) and Operational Requirements Document (ORD), SPAWAR 20 will draft for program office approval, the IPS as well as the TEMP. These activities will be executed in close coordination with the program manager.

c. Conduct a review of each system to assess its readiness to proceed to operational evaluation (OPEVAL) and follow-on operational T&E (FOT&E). Procedures for the SPAWAR certification process to CNO and COMOPTEVFOR are contained in enclosure (1). If deferred OPEVAL objectives are to be addressed in FOT&E, a certification process is also required.

d. The Technology, Acquisition, Logistics and Engineering Support Directorate will provide centralized T&E policy oversight of SPAWAR T&E activities, cost effective functional support to SPAWAR Program Directors in the planning, documentation, and execution of T&E, and serve as the Command T&E focal point.

6. Action

a. SPAWAR Program Directors will:

(1) Manage and conduct the T&E portion of their programs in accordance with references (a) through (e) and this instruction.

(2) Approve Draft T&E Master Plans to be forwarded by SPAWAR 20 to OPNAV and COMOPTEVFOR for formal review/concurrence/approval for acquisitions programs under their cognizance.

(3) Approve Draft Integrated Program Summaries prepared by SPAWAR 20.

(4) Ensure that test plans are prepared directly from the TEMP and reflect the thresholds and critical issues established therein. Additionally, ensure that all tests conducted reflect the specific test objectives, scope of testing, and basic scenarios established in the TEMP.

(5) Ensure that required resources for T&E are included in the planning for acquisition programs.

(6) Plan, program, budget, and fund the costs of all resources required for T&E.

(7) Provide DT&E reports as indicated in enclosure (2).

(8) Prepare certifications of readiness for OPEVAL and FOT&E and forward them for signature in accordance with enclosure (1)

b. The SPAWAR Test and Evaluation and program review office within SPAWAR 20 will:

(1) Formulate SPAWAR T&E policies and instructions for approval by COMSPAWAR.

(2) Prepare and submit all T&E identification number (TEIN) requests to CNO for COMSPAWAR and maintain a data base of all command acquisition programs. Recommended acquisition categories and proposed TEMP due dates will be coordinated with program managers.

(3) Provide T&E program policy guidance, technical assistance and functional support to SPAWAR program and acquisition managers. In support of this action SPAWAR 20 will, for each SPAWAR acquisition program:

(a) Review, in cooperation with the project office, the Mission Need Statement, the status of the ORD, available input for the IPS and TEMP, and program funding to provide a cost and schedule estimate for the preparation of the system TEMP, IPS, and any other required T&E documentation. Where appropriate, SPAWAR 20 will recommend to the PD the preparation of a CAPSTONE TEMP.

(b) Upon PD funding, prepare draft and final TEMP, draft and final CAPSTONE TEMP where applicable, IPS, and other required documentation in cooperation and coordination with the program office, other SPAWAR participants, and other DoN and agency participants as appropriate.

(c) Coordinate with program office all comments from OPNAV/COMOPTEVFOR/SPAWAR 30 and incorporate in the revised draft TEMP.

(d) Coordinate the formal TEMP review, concurrence, and approval process in accordance with reference (e).

(4) Serve as the Command T&E focal point and provide interface with activities and agencies involved with T&E (e.g., COMOPTEVFOR, OP-91, field activities, laboratories) on generic T&E issues.

(5) Review and evaluate test plans and reports and provide comments to the program manager regarding the adequacy of T&E, support of established thresholds, resolution of critical issues, effect on program risk, and impact on future T&E as well as milestone decisions.

(6) Review proposed certifications of readiness for OPEVAL and forward to COMSPAWAR in accordance with enclosure (1).

(7) Keep COMSPAWAR fully informed of T&E needs and results.

c. The Naval Warfare System Architecture and Engineering Directorate (SPAWAR 30) will:

(1) Provide assistance to SPAWAR 213 in reviewing SPAWAR systems requirements documentation to identify multi-warfare, interoperability, and SEW/Copernicus compliance T&E requirements and issues.

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(2) Review SPAWAR TEMPs, test plans, and test reports and provide comments to SPAWAR 213 and program managers regarding warfare system interoperability, CAPSTONE TEMPs and SEW/COPERNICUS compliance testing.

ROBERT H. AILES
Rear Admiral, U.S. Navy

Distribution:
SPAWAR List 5

Copy to:
SNDL Part II:
C81 (SPAWAR Detachments Only)
C84B (NAVMATDATASYSGRU)
FKQ (SPAWAR Activities)
FR10 (SPAWAR Reserve Units Only)

Stocked:
SPAWAR 08-511 (25 copies)

Checklist for Certification of Readiness for OPEVAL

(Annotate and expand as appropriate. Use additional sheets as necessary.)

1. Preliminary

a. Do you have a requirements document?

(1) Draft or approved?

(2) When last updated?

(3) Does it provide realistic, quantitative guidance?

b. Do you have an approved TEMP?

(1) When last updated?

(a) If approved or updated more than a year prior, has COMOPTEVFOR been consulted as to currency of Part IV?

(b) If not, explain how you can assess their present position with respect to conduct of an OPEVAL.

(2) Is the TEMP consistent with the requirements document?

(a) Does the TEMP provide quantified technical and operational characteristics, and critical issues?

(b) Are the sources of these requirements authoritative?

(c) Are there any disagreements or unresolved issues so far as OPTEVFOR is concerned? If yes, how do you propose to overcome them? Has the sponsor been consulted? What is his reaction?

c. Certification of Readiness for OPEVAL should be submitted not later than 14 days prior to test. If OPEVAL is less than two weeks away, what caused the delay of the certification request?

2. Certification Criteria

a. "All TEMP-specified DT-II has been completed and reports (including TECHEVAL report) have been published." Elaborate.

b. "All TEMP-specified DT&E objectives and performance thresholds have been met."

(1) How was this determined?

(a) who witnessed the development testing?

(b) Were any of the results marginally acceptable or of questionable validity. If so, how important are the marginal factors?

(2) Was the final phase of development testing (TECHEVAL) conducted on the OPEVAL platform? If not, explain.

(3) Was OPTEVFOR a party to any or all development testing? If yes, what was their response? If no, explain.

c. "The results of DT&E demonstrate that: (1) engineering is complete; (2) all significant design problems (including those affecting compatibility, electromagnetic environmental effects, interoperability, survivability/vulnerability, safety, availability, producibility, reliability, maintainability, and logistic supportability) have been identified and solutions to the problems are in hand, and (3) the system is functioning in a technically acceptable manner."

(1) How did you determine the degree of completeness?

(2) What significant design problems did you identify? How did you derive solutions to these design problems? Will the solutions be implemented prior to OPEVAL? If yes, how do you know they work? If no, isn't there a high risk of failure?

d. "There is high probability that the system will perform successfully in OPEVAL, and will meet AFRP on completion of OPEVAL."

(1) How was this determined?

(2) Did you conduct - (Explain any "no" answers.):

(a) A reliability demonstration?

(b) A maintainability demonstration?

(c) An interoperability demonstration? On the platform?

(d) TECHEVAL testing in a manner similar to expected OPEVAL testing? On the platform?

e. "System operating and maintenance documents, including Maintenance and Material Management (3M) and preliminary allowance parts list (PAPL), have been distributed to COMOPTEVFOR for OPEVAL."

(1) Are these final documents (or at least final drafts) in correct format?

(2) Have they been reviewed and accepted by proper authority?

(3) Have they been verified by operational personnel?

(4) How far in advance of OPEVAL were they distributed? Is this time enough to permit proper planning and review?

f. "The system integrated logistic support plan (ILSP) and technical documentation such as failure mode and criticality analyses, level of repair analyses (LORA), life-cycle cost (LCC) and logistic support analyses (LSA) have been provided to COMOPTEVFOR."

(1) Are these preliminary or final plans/documents? Have they been approved? Concurred in by SPAWAR 20? Has a SPAWAR number been assigned?

(2) When were they submitted to COMOPTEVFOR?

g. "Adequate logistic support, including spares, repair parts, and ground support equipment, are available for OPEVAL and this logistic support is representative of that planned for the system."

(1) How was the "adequate logistic support" level determined?

(2) Have lot one and lot two (insurance) spares been provided?

(3) Are there any high-risk areas?

(4) Does SPAWAR 20 concur in the assessment?

h. "The OPEVAL manning of the system is the same (in numbers, ratings, and experience level) as is planned for fleet units under normal operating conditions."

(1) How was this determined?

(2) Was the platform surveyed to determine if on-board personnel correspond to the planned manning level?

(3) Explain any risks?

i. "The Navy Training Plan has been provided to COMOPTEVFOR."

(1) Is this an approved plan? If not, explain.

(2) When was it submitted to COMOPTEVFOR?

(3) Does SPAWAR 20 concur in this plan?

j. "Training for personnel who will operate and maintain the system during OPEVAL (including OPTEVFOR personnel) has been completed and this training is representative of that planned for fleet units as identified in the Navy Training Plan."

(1) Where and by whom was the training conducted?

(2) Were personnel scheduled for training screened to determine whether they will be available for OPEVAL?

(3) How was adequacy of training determined? Did it include hands-on training?

(4) Does SPAWAR 20 concur in this assessment?

k. "All resources required for OPEVAL, including instrumentation, simulators, targets, and expendables, have been identified and all appropriate documents are available."

(1) How did you determine what was required?

(2) How have you verified actual availability?

l. "The system provided for OPEVAL, including software and the total logistic support system, has the same configuration and interfaces as the expected production system. (Note: If this is not the case, specify in detail the production configuration and state differences.) All software has been exercised in production representative hardware to ensure it correctly performs its intended function (is technically ready for fleet release), and thoroughly tested and validated to meet CNO performance requirements. The computer resources life-cycle management plan (CRLCMP) has been updated as required for the current phase of testing."

(1) Who made this determination? How was it verified?

(2) What risk will known deviations introduce?

(3) If software is not ready for fleet release, how will this impact OPEVAL? Have CNO performance requirements been met? If not, what alternatives are planned.

(4) Does SPAWAR 20 concur in this assessment?

m. Does OPTEVFOR agree all threat information for OPEVAL is available?

n. Is the system safety program fully documented? Does SPAWAR 20 agree that the system safety program has been satisfactorily completed and the system can be safely operated in its intended environment? If the system uses a laser has it received the approval of the Navy Laser Safety Review Board (LSRB)? If the system uses explosives, pyrotechnics, or propellants has it received the approval of the Navy Weapon Systems Explosives Safety Review Board (WSESRB)?

o. If Navy occupational safety and health/hazardous waste requirements apply, what steps have been taken to ensure their compliance?

p. Are there any special requirements for the protection of weapon system and performance data?

q. Has a frequency assignment been applied for in accordance with NTP-6?

3. Are embedded computer resources (hardware, software and/or firmware) employed in your system? If so:

a. Did you use Navy approved standard computer hardware and high-order language (HOL) for your system? If not, have you obtained written waivers? (TADSTANDs B and C apply.)

b. Have you complied with TADSTAND D and section 5.2.2.4 of DOD-STD-2167 to provide at least a 20 percent reserve capacity exclusive of known future growth requirements? If not, have you obtained a written waiver?

c. Has OPTEVFOR been involved in all reviews and audits required by DOD-STD-2167? If not, why?

d. Have you acquired computer software and firmware documentation for post-development support of your system? Has it been reviewed by competent software engineers?

e. Have you acquired the support software and associated documentation required for post-development support of your system? Has it been reviewed by competent software engineers?

f. Did you address computer resources issues in your TEMP? If yes, has this document been reviewed by SPAWAR 20? Have you complied with DOD-STD-2167 concerning software quality and endurance testing requirements?

g. Have all software and firmware problems, uncovered during development and during TECHEVAL, been resolved?

h. Has post-development software and firmware support been provided for in the ILSP or CRLCMP? (Appendix E of SPAWARINST 5200.23).

4. Have you reviewed the operational test plan? Does it reflect any misunderstanding between you and the operational test director with respect to installation and operation of the system? Can the system be certified?

DT&E REPORTS

1. All TEMP-designated development test reports will be in the format prescribed by attachment (1) of this enclosure. The distribution for these reports is prescribed by attachment (2) of this enclosure.
2. The body of the report should be concise. Details, especially significant test results, should be included as annexes and should be keyed to the appropriate paragraph(s) in the main body of the report. Raw data need not be included unless it is essential to the report.
3. The report will be signed by both the test director and the commanding officer of the command conducting the test.
4. TECHEVAL reports must be available prior to certifying readiness for OPEVAL. Other development test reports should be distributed within 30 to 60 days following completion of the test.

SPAWARSYSCOM DT&E Report Format

TEIN:

SYSTEM:

DT PHASE:

1. Purpose introduces the report by stating the reason for the phase of DT&E (i.e., the program decision under consideration) and the basis for the evaluation.
2. Equipment/System Description is a short description of what was tested. It emphasizes the function of the equipment, and significant differences between what was tested and the proposed production configuration.
3. Background briefly summarizes the reason the equipment is being developed and the T&E conducted before the phase of DT&E being reported. (Identify appropriate ORD, or other requirements document.)
4. Scope.
 - (a) Objectives. Define the objectives as they relate to program issues and operational effectiveness and suitability.
 - (b) Evaluation Criteria. Quantify the objectives.
 - (c) Limitations to Scope. Indicate the ways in which the evaluation was limited. Identify objectives (or portions of objectives) that could not be fully assessed.
5. Test Conduct is a brief narrative that describes how, where, and when testing was conducted. It includes scenarios and the magnitude of testing (e.g., how many bombs were dropped, how long the equipment was operated). It gives the reader an idea of the data base.
6. Results present the major results of testing and analysis keyed to the objectives. All objectives and all the evaluation criteria associated with them are addressed in this paragraph, except those specifically excluded by limitations to scope.
7. Remarks can be used to: apply reasoning to test results, substantiate conclusions or recommendations (or both) that are not directly derivable from the results, and inform readers of significant aspects of the results.

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8. Conclusions assess results and answer the fundamental questions implied in paragraph 1.

9. Recommendations are based on results, remarks, and conclusions.

(Signature)
Test Director
Code _____, (name of activity)
Date:

(Signature)
Commanding Officer
(Name of Command)
Date:

Annexes as appropriate

Distribution of DT&E REPORTS

1. The culmination of each formal development test phase or subphase is the preparation and distribution of a formal DT&E report. One copy of each DT&E report will be forwarded to SPAWAR 00, SPAWAR 01, SPAWAR 20 and SPAWAR 30.

2. In addition to SPAWARSYSCOM distribution, copies of each DT&E report will be provided within Navy as shown below:

ACQUISITION CATEGORIES

	<u>I</u>	<u>II, III, and IVT</u>	<u>IVM</u>
OP-04	1	1	0
OP-07	1	1	1
OP-08	1	1	0
OP-091	6	2	2 (if support required)
CNO Sponsor	2	2	2
COMOPTEVFOR	2	2	0

3. TECHEVAL reports (or quicklooks) must be sent to these activities before or with certification of readiness for OPEVAL.

4. Copies of all DT&E reports for all systems shall be provided to the Defense Technical Information Center with the Report Documentation Page (DD Form 1473).

5. Test reports for DOT&E programs will be submitted to DOT&E and DDDRE (T&E) at least 45 days prior to a milestone decision or the final decision to proceed beyond low rate initial production. An interim summary of the test report shall be submitted if the formal report is not available 45 days prior to the milestone review.