# OPERATIONAL TEST DIRECTOR'S GUIDE

*COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE*

*NORFOLK, VIRGINIA*

# COMOPTEVFORINST 3960.1H

## Subj: OPERATIONAL TEST DIRECTOR'S GUIDE

**1. PURPOSE**. To provide the operational test director with guidance on the various aspects of operational test and evaluation.

**2. DISCUSSION**. Major revisions to this instruction were required to incorporate policy guidance provided by COMOPTEVFOR policy and information notices (P&I Notes).

**3. DISTRIBUTION**. Distribution of this guide will be limited. All requests for additional copies should be addressed to Plans and Policies, Code 01B, in writing, via official correspondence. This will be the last revision distributed by hard copy. Future revisions will be distributed by CD-ROM and will be available on the local area network with hypertext links for ease of use.

**4. CANCELLATION**. COMOPTEVFORINST 3960.1G and all policy and information notices prior to and including 95-3.

**5. ACTION**

**a.** This guide is published for use by OPTEVFOR operational test directors, operational test coordinators, and their chains of command.

**b.** Personnel noting required or desired changes to this instruction should provide recommended changes via their chain of command to Plans and Policies, Code 01B.

**c.** Deputy/assistant chiefs of staff should draft recommended P&I Notes for Deputy Commander and Chief of Staff publication when required. A P&I Note immediately implements a change, and will remain effective until it is included in the next formal change.

V. L. TOALSON
Deputy

Distribution:
(COMOPTEVFORINST 5216.2J)
List I, A, B 3,4,5,6,8
List II, 4,5
List III, Case B

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| RECORD OF CHANGES | | |
|---|---|---|
| **Change Number/Topic/Chapter** | **Affected Pages** | **Effective Date** |
| P&I Note 97-01 change 2 - - DT Assist | Addition of sample DT Assist MOA (chapter 5, sample 5-11, page 5-55) and sample DT Assist Letter of Observation (chapter 8, sample 8-8, page 8-95)<br>Also see chapter 4, page 4=11, par. 407, and table 4-1, page 4-12 | 21 October 1997 |
| P&I Note 98-01, TEMP Part IV Limitations Guidance | Chapter 5, page 5-39, sample Part IV OT&E Outline, Limitations | 23 February 1998 |
| Policy Memorandum, Establishment and Use of Observation of Operational Capability | Chapter 4, page 4-12, par. 410 | 4 September 1998 |
| P&I Note 98-02, Supervisory Evaluation Procedures for Remotely Located Civilian Personnel. | This Note does not pertain to OT&E matters, and is not incorporated in the OTD Guide. | 21 September 1998 |
| P&I Note 98-03, Y2K Guidance for Operational Test and Evaluation Documentation | Chapters 5 and 6 -- Addition of Y2K COI examples | 8 December 1998 |
| P&I Note 99-01, COMOPTEVFOR Modeling and Simulation Accredita-tion Documentation | This Note is incorporated into COMOPTEVFORINST 5000.1, Use Of Modeling and Simulation (M&S) In Operational Testing | 13 May 1999 |
| P&I Note 99-02, Advanced Concept Technology Demonstration (ACTD) Program Procedures | Affected pages are:<br>Chapter 1 - page 1-5, par. 104j(5)<br>Chapter 4 - page 4-13, par. 410<br>Chapter 6 - page 6-3, par. 603c<br>Chapter 8 - page 8-12, par 811 | 8 July 1999 |
| P&I Note 99-03, COMOPTEVFOR Warfare Division Use of External Technical or Analytical Support Resources | | 16 August 1999 |
| The latest changes are minor word changes to letters and messages, per the Commander's preferences. | Any letter or message that mentions a TEMP number/system (i.e., in the subject/reference/ enclosure lines) has been amended by the abbreviation "No." before the TEMP number, and the word "Program" following the system name. This impacts almost all of the OT&E document formats and the samples of those documents shown in chapters 2, 5, 6, 7, and 8. | 20 October 1999 |
| P&I Note 00-1, Definitions for Deficiency<br>Levels and COI Resolution | This change implements four categories of deficiencies: severe, major, minor, and other. It includes:<br>- A new paragraph 805, Deciding the Deficiency Levels.<br>- Renumbering subsequent paragraph numbers 806 - 813.<br>- Changes in paragraphs 806-808, involving resolving COIs.<br>- Addition of the Baseline Deficiency Decision Tree, Page 8-97 | 23 March 2000 |
| P&I Note 98-03, Y2K Guidance for Operational Test and Evaluation Documentation | This P&I Note is rescinded, effective immediately. The Y2K COI examples in chapters 5 and 6 were removed. | 21 April 2000 |
| Chapter 5, TEMP Forwarding Letter, signed with contingency. | This letter is discontinued for general use. The Com-mander will entertain a contingent signature strictly on a case-by-case basis. Contact COMOPTEVFOR Code 01B for initial approval. | 26 January 2001 |
| Chapter 5, TEMP Forwarding Letter, with no comments. | This letter added a reference (b) (the TEMP) and modified paragraph 1 for clarity. | 15 February 2001 |
| Chapter 7, Sample 7-2, Trusted Agent Form | The COMOPTEVFOR Trusted Agent Form has been reworded to include nondisclosure of information. | 13 April 2001 |
| Chapter 8, Evaluation Reports | Incorporation of a new evaluation report format; deletion of letter report and summary report message formats. | 4-18-02 |
| Chapter 7, Test Operations. | Revision of Anomaly Report Sample #1. Deletion of Anomaly Report Sample #2 | 5-14-02 |

| RECORD OF CHANGES | | |
|---|---|---|
| **Change Number/Topic/Chapter** | **Affected Pages** | **Effective Date** |
| Chapter 4, Test and Evaluation Process | Correction: added paragraph 410, Observation of Operational Capabilities. | 6-10-02 |
| Chapter 8, Evaluation Reports | Deletion of the Software Qualification Test (SQT) Message Report. SQTs are phases of OT&E and will use the standard 3-part report template | 7-13-02 |
| Addition of new command in Chapter 8, Evaluation Reports, evaluation report format, and Q/L, QRA, VCD messages. | In the report distribution appendix, and the INFO block in messages: Added Commander, Naval Network Warfare Command (COMNAVNETWARCOM). This applies to projects related to C4I only. Add them to test plan distribution if needed for that particular test plan. | 8-15-02 |
| Chapter 8, Evaluation Reports. Revision of classification markings and paragraph numbering in the OPTEVFOR evaluation report. | This involves the cover, executive letter, and the enclosure. Call-outs were added to the cover (page 8-17) and letter (page 8-19) to explain where and when to add or delete information. Paragraph classification markings and numbering in the enclosure (beginning on page 8-29) were revised for clarification and correctness. | 10-2-02 |
| Changes in fleet commander's titles from "CINC" to "COM." | All references to "CINC" (CINCPACFLT, CINCLANTFLT, CINCUSNAVEUR) were changed to "COM" throughout the OTD Guide, except references to specific "CINC" instructions already in existence. Changes were in chapters 3, 6, 7, 8, and 9. This also necessitated changes to the QRA and VCD report format messages. | 11-4-02 |
| Chapter 3, Table 3-5, Staffing Matrix/Signature Requirements<br><br>Chapter 8, Evaluation Reports. Changes in the DT Assist Letter of Observation top bold note, the signature block, and distribution statement.<br>Changes in the report "Copy to" for all report formats. | DT Assist Letter of Observation and the letter for Observation of Operational Capabilities shift from the ACOS' signature to the admiral's.<br><br>Due to a SECNAV reorganization, the required "** ASSTSECNAV RD&A (DASN(PPR))" has been changed to"** ASSTSECNAV RD&A (DASN(RDT&E))." Also, "CG FMFLANT" and "CG FMFPAC" have been changed to "COMMARFORLANT" and "COMMARFORPAC." These changes have been made throughout all report examples in Chapter 8 and in the report formats where they appeared. | 1-8-03 |
| Chapter 5, Test and Evaluation Master Plan.<br><br>Chapter 8, Evaluation Reports<br><br>Final Evaluation Report Enclosure format | Due to reorganizations at NAVSEA and SPAWAR, there were code changes to principal T&E points of contact where we send TEMPs and reports.<br><br>Pages 5-15 (par. 508) and 5-22 (last bold note): Change in NAVSEA code from SEA-91T to SEA- 63. Change in SPAWAR code from SPAWAR-00A-AR-3 to SPAWAR-053-4.<br><br>Page 8-63 (Distribution of Report appendix), same changes as above.<br><br>Distribution of Report appendix, same changes as above. | 1-14-03 |

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## Acronyms and Abbreviations

| | |
|---|---|
| Ao | operational availability |
| ACAT | acquisition category |
| ADCAP | advanced capability |
| APL | allowance parts list |
| ASUW | antisurface warfare |
| ASW | antisubmarine warfare |
| BIT | built-in test |
| CASREP | casualty report |
| CCP | consolidated cryptologic program |
| CDS | congressional data sheet |
| CIWS | Close-in Weapon System |
| COEA | cost and effectiveness analysis |
| COI | critical operational issue |
| COSAL | consolidated shipboard allowance list |
| COTD | chief operational test director |
| CTP | coordinated test program |
| DA | developing agency |
| DCP | decision coordinating paper |
| DOP | designated overhaul point |
| DT | developmental testing |
| DTRC | David Taylor Research Center |
| DVAL | data link vulnerability assessment |
| EA | evolutionary acquisition |
| ECM | electronic countermeasures |
| EMI | electromagnetic interference |
| EOA | early operational assessment |
| ESM | electronic surveillance measures |
| EW | electronic warfare |
| FA | false alarm |
| FAh | false alarms per hour |
| FMC | full mission capability |
| FOT&E | follow-on operational test and evaluation |
| FRP | full rate production |
| FWE | foreign weapons evaluation |

**Acronyms and Abbreviations (Cont)**

| | |
|---|---|
| ILS | integrated logistic support |
| ILSMT | integrated logistic support management team |
| ILSP | integrated logistic support plan |
| IOC | initial operational capability |
| IOT&E | initial operational test and evaluation |
| IPS | integrated program summary |
| JT&E | joint test and evaluation |
| LBTS | land based test site |
| LFT | live fire testing |
| LFT&E | live fire test and evaluation |
| LOI | letter of instruction |
| LOR | level of repair |
| LRG | logistics review group |
| LSA | logistics support analysis |
| LSAR | logistics support analysis record |
| M&S | modeling and simulation |
| MAOPR | minimum acceptable operational performance requirements |
| MaxCMTOMF | maximum corrective maintenance time between operational mission failures |
| MCma | mission capability by mission area |
| MCMTOMF | mean corrective maintenance time between operational mission failures |
| MCMTOMFsw | mean corrective maintenance time between operational mission faults, software |
| MCR | maintenance correction ratio |
| MDA | milestone decision authority |
| MDS | maintenance data system |
| MESM | mission essential subsystem matrix |
| MET | meteorological |
| METOC | meteorological/oceanographic |
| MFHBOMF | mean flight hours between operational mission failures |
| MFHBUM | mean flight hours between unscheduled maintenance |
| MMA | model manager agent |
| MNS | mission need statement |
| MOA | memorandum of agreement |
| MOE | measure of effectiveness |
| MOP | measure of performance |

**Acronyms and Abbreviations (Cont)**

| | |
|---|---|
| MOS | measure of suitability |
| MOT&E | multiservice operational test and evaluation |
| MR | maintenance ratio |
| MRT | mean reboot time |
| MRTc | mean reboot time, cold |
| MRTw | mean reboot time, warm |
| MTBOMF | mean time between operational mission failures |
| MTBOMFhw | mean time between operational mission failures, hardware |
| MTBOMFsw | mean time between operational mission faults, software |
| MTBOMFsys | mean time between operational mission failures, system |
| MTBUM | mean time between unscheduled maintenance |
| | |
| NDC | Naval Doctrine Command |
| NEC | Navy enlisted classification |
| NIB | not-to-interfere basis |
| NOI | notice of intent |
| NPRDC | Naval Personnel Research and Development Center |
| NSG | Naval Security Group |
| NSN | national stock number |
| NTP | Navy training plan |
| NWP | naval warfare publication |
| | |
| OA | operational assessment |
| OCE | officer conducting the exercise |
| OLSS | operational logistics support summary |
| OMF | operational mission failure |
| ONI | Office of Naval Intelligence |
| OPCON | operational consideration |
| OPSEC | operations security |
| ORD | operational requirements document |
| OT&E | operational test and evaluation |
| OTC | operational test coordinator |
| OTD | operational test director |
| OTG | OPTEVFOR Tactics Guide |
| | |
| Pc | probability of classification |
| Pcd | probability of correct detection |
| Pcfi | probability of correct fault isolation |
| Pd | probability of detection |
| Ph | probability of hit |

**Acronyms and Abbreviations (Cont)**

| | |
|---|---|
| Pk | probability of kill |
| Pl | probability of localization |
| Ps | probability of survival |
| PEDS | program element descriptive summary |
| PHS&T | packaging, handling, storage, and transportation |
| PM | program manager |
| PMS | planned maintenance system |
| POPS | project operations |
| QRA | quick reaction assessment |
| R | reliability |
| RDA | research, development, acquisition |
| RF | radio frequency |
| S&T | science and technology |
| SDTS | self-defense test ship |
| SELEX | selected exercise |
| SIGSEC | signal security |
| SORM | staff organization and regulations manual |
| SPECWAR | special warfare |
| SSA | software support activity |
| SSVA | signal susceptibility and vulnerability assessment |
| STAR/ONI TA | system threat assessment report/Office of Naval Intelligence threat assessment |
| SYSCOM | systems command |
| TAC D&E | tactical development and evaluation |
| TECG | test and evaluation coordinating group |
| TLR | top level requirements |
| TLS | top level specifications |
| TPWG | test planning working group |
| VCD | verification of correction of deficiencies |

# CHAPTER 1

# INTRODUCTION

**101. PURPOSE**. The purpose of this guide is to familiarize the reader with the role of operational test and evaluation (OT&E) conducted in connection with the acquisition and procurement of Naval weapons and warfare support systems, and to prescribe procedures for the planning, conduct, and reporting of OT&E of new and improved systems.

**102. BACKGROUND**. By direction of the CNO, the Commander, Operational Test and Evaluation Force (COMOPTEVFOR) is chartered to conduct OT&E of systems in acquisition category (ACAT) I, II, III, and IVT procurement programs (see the Glossary for definitions). OT&E is conducted in as near a realistic operational environment as possible with fleet personnel operating and maintaining the system under test. Wherever possible, simulated hostile threat action is employed to stress the system and to provide pseudo-realism. Although operational experience of the Naval personnel conducting OT&E is not specifically addressed in this guide, it is of utmost importance to the validity of OT&E results, conclusions, and recommendations. To that end, meticulous planning, preparation, prosecution, and reporting of OT&E are mandatory.

**103. DOCUMENT REVIEW**. The following OT&E documents receive two reviews (an initial, double-spaced rough draft review for technical and editorial issues, and a final, smooth single-spaced review for format and typos prior to signature) from the Staff Editor's office (Code 01E) (see chapter 3, table 3-5 for signature requirements for all documents):

- Operational requirements document (ORD) comment letters
- Test and evaluation master plan (TEMP) input, comment, and forwarding letters*
- All test plans
- All evaluation reports
- Memorandums of agreement
- TEMP and test plan change letters

* TEMPS for signature which require no changes, and involve nothing more than a new cover letter, need not to be routed in the rough. Only a smooth route is required.

**104. COMOPTEVFOR OT&E POLICY**. Although this entire instruction encompasses COMOPTEVFOR's policies on OT&E matters, the following are listed to provide specific guidance:

**a. Operational Test Director (OTD) Functions**

**(1)** In assigned area(s) of responsibility, you, the OTD, function for COMOPTEVFOR in the detailed planning, the supervision of test execution, and documenting the evaluation of test results. These functions are highlighted in more detail in chapters 5, 6, and 7 of this guide, and COMOPTEVFORINST 5400.1J, COMOPTEVFOR Staff Organization and Regulations Manual (SORM) (see y:\general\sorm on the command's LAN).

**(2)** You are the primary source of information on all aspects of a project. You brief at high (Flag) levels; answer questions; and draft responses to reports, incoming messages, letters, etc., relating to a project. The more you know about a project, the easier the job. Keep the Commander informed (through memos, trip reports, requests to brief, etc.). Don't let him be surprised!

**(3)** Because of our charter to monitor developmental testing (DT) we always have the option, if we elect, to write a report to CNO based on our observation.

**(4)** With few exceptions, each phase of OT&E that you identify as such requires that you draft/write a test plan and an evaluation report.

**(5)** OTD project assignments will normally be transitioned to the reporting replacement.

**(6)** Newly assigned projects for a VX OTD will be by letter from the Assistant Chief of Staff for Air Warfare via the Commanding Officer of the air test squadron.

**b. Headquarters, Operational Test Coordinator (OTC) Functions**

**(1)** The OTC responsibility is to participate, support, and expedite documentation and test preparation functions for projects assigned. For projects with an OTD assigned at Headquarters, the OTD and you, the OTC, may be the same person, or you may act in a normal section head capacity (as the OTD's day-to-day supervisor, who acts for him in his absence).

**(2)** For some large projects (e.g., ship evaluation), you may be from one warfare division, with a team of OTDs from other divisions.

**(3)** For projects assigned to a VX OTD you will maintain a level of knowledge of program status, including schedule, execution and program issues to brief Headquarters staff when requested. You must be intimately familiar with the program both technically and programmatically and Headquarters policies regarding the program as follows:

**(a)** Act as a liaison between the VX squadron OTD/section heads and HQ, and provide assistance on the project as necessary to the assigned OTD through the organizational structure.

**(b)** Provide the interface between Headquarters and systems commands (SYSCOM), other operational test agencies (OTA), and DOT&E (including negotiations on project matters). You are the primary interface with the PMAs/PMOs and SYSCOMs (including negotiations on project matters) and outside organizations at the action officer level and below flag/general officer level.

**(c)** Be the Headquarters' focal point on project matters. Participate in writing and staffing, as appropriate, of all project-related documentation, from initial rough draft to smooth, ready for signature.

**(d)** The VX OTD/section head will coordinate directly with the OTC regarding all project-related staffing between the squadron and Headquarters.

**c. Project Analyst Functions**

**(1)** You, the analyst, act as a consultant and aid in the development of test scenarios, critical operational issues (COI), measures of effectiveness (MOE), measures of suitability (MOS), measures of performance (MOP) and act as an information resource for current COMOPTEVFOR testing policies. Support to the OTDs must be your top priority.

**(2)** The relationship between the OTD, OTC, and you must be established as early as possible. Especially with regard to document preparation, you must be consulted as early as possible (even before the document is written) for guidance on planning or reporting policies.

**(3)** For large or highly contentious programs, you may need to participate in a document preparation working group. If you cannot attend the working group, you shall receive a draft document for your input prior to the group convening.

**(4)** See COMOPTEVFORINST 5400.1J, COMOPTEVFOR SORM, for additional analyst information.

**d. Software**. See COMOPTEVFORINST 5235.1A (y:\OT&E Reference Library\Software\COTF_Software_Instruction.doc) on the command's LAN, and paragraph 403d(3) of this guide.

**e. Modeling and Simulation**. See COMOPTEVFORINST 5000.1 (y:\OT&E Reference Library\Modeling & Simulation\COTF_Modeling&SimulationInstruction.doc) on the command's LAN, and paragraph 418 of this guide.

**f. Selected Exercise (SELEX) Observation**. You (OTCs and OTDs) will not act as SELEX observers during any phase of OT&E. This does not reflect a lack of confidence in your

ability and qualification to act as SELEX observers; rather, such observation may detract from your primary objective (i.e., execution of the test plan).

**g. Missile Firing Reports**. To protect OT&E data until after evaluation, all missile firing reports directed by higher authority will be forwarded directly to COMOPTEVFOR with no information addees. The cognizant warfare division will readdress the report as required.

**h. Missile System Effectiveness.** Of particular interest is the analysis and evaluation of missile system effectiveness against air targets. The following criteria will be applied within the Force for surface-to-air and air-to-air missile system test and evaluation. (They may also be applicable to other types of munitions.) The results of each missile firing will be reported as delineated below. These results provide the basis for evaluating the attainment of "probability of success" and/or "probability of kill." These criteria are not applicable to those programs that use "probability of hit" as an effectiveness parameter.

**(1) Success**. The basic requirement for a success is achievement of target kill (warhead-configured missiles) or, when a nonwarhead missile is fired, satisfactory fusing operation within kill radius of the target, including allowance for direct hits.

**(2) Failure**. Any firing test when the criterion for success was not achieved.

**(3) Incomplete**. Any firing aborted because of a circumstance peculiar to the test, or where a valid target is not present throughout the firing test and no data are obtained.

**(4) Undetermined**. Any firing where data are insufficient to permit an assessment of success or failure.

**i. OT&E in Self-Defense Test Ship (SDTS)**

**(1)** Realistic OT for softkill and short range hardkill self-defense weapon systems is often restricted by safety considerations that prohibit threat representative target presentations for manned ships. The following is policy for use of the SDTS in OT and subsequent resolution of COIs:

**(a)** SDTS testing will normally be conducted as a combined DT/OT phase with an accompanying memorandum of agreement (MOA).

**(b)** SDTS firings may be used to resolve effectiveness COIs if appropriate.

**(c)** SDTS system data may be used to aid in resolution of some suitability COIs.

**(2)** SDTS testing alone will not replace OPEVAL. Fleet representative installations operated and maintained by fleet representative personnel will be required to resolve suitability COIs. Accordingly, an independent phase of OT, including complete detect-to-engage scenarios with live weapons firing events, as appropriate, must be conducted in fleet units with systems operated by fleet personnel to verify effectiveness COIs and resolve suitability COIs.

**j. Conflict of Interest in Contractor Support**. The specialized nature of weapon systems development leads to an inherent risk of conflict of interest on the part of contractors involved in project development and those supporting COMOPTEVFOR's operational testing **((PIN 99-02) except as noted in Advanced Concept Technology Demonstrations (ACTD), below).** You, the OTD, are responsible for reviewing the level of contractor involvement in project development, including developmental testing.

**(1) Title 10, U.S. Code Section 2399 states:**

"(a) A contractor that has participated in (or is participating in) the development, production, or testing of a system for a military department or Defense Agency (or for another contractor of the Department of Defense) may not be involved (in any way) in the establishment of criteria for data collection, performance assessment, or evaluation activities for the operational test and evaluation."

**(2)** The Fiscal 1993 Defense Authorization Bill, Section 519 amplifies the above statement:

"(b) The limitation in subparagraph (a) does not apply to a contractor that has participated in such development, production, or testing solely as a representative of the Federal Government."

**(3)** You shall request a list of contractors, and their level of support, from the developing agency to determine if a conflict of interest exists. This correspondence should take place at the earliest opportunity to ensure required OTD support is not delayed. You shall notify the Force Contract Specialist and cognizant ACOS of potential conflicts of interest.

**(4)** In the event of a potential conflict of interest, you shall obtain COMOPTEVFOR approval prior to using OPTEVFOR support contractors. COMOPTEVFOR or his designated representative will determine if a conflict of interest exists and decide if other analytical support is warranted. The Force Contract Specialist will obtain additional analytical services as required.

**(5) ACTDs.** ACTDs are not subject to the rules of formal acquisition, and Title 10 U.S. Code does not apply; therefore, contractors can be expected to participate in ACTDs. We will not attempt to influence this arrangement. If and when the ACTD transitions to formal

acquisition, we will ensure the independence of our OPEVAL. See chapters 4, 6, and 8 for more information.

**k. DT Assist**. DT assist is like an early phase of combined DT/OT, with a predominantly DT flavor, but is not assigned an OT number and is not a formal phase of OT. OT testers help execute the DT test plan. There is no OT test plan, and no OT report is prepared. DT assist is often done to allow OTDs to become more familiar with a system; to supplement DT personnel; or to allow DT on VX squadron aircraft. See chapter 4, paragraph 407 for full details.

**l. Combined TECHEVAL/OT**. We normally don't combine TECHEVAL and any phase of OT. But, where proof of risk reduction can be demonstrated, it is possible to schedule a combined phase. This will be done on a case-by-case basis.

**m. Combined OPEVAL/DT**. OPEVAL will never be combined with a phase of DT.

**n. Start Test**. We do not commence OT&E without an approved COMOPTEVFOR test plan. In general, we also do not commence testing without an approved TEMP. However, any departure from TEMP approval policy will be on a case-by-case basis, approved by the Commander. For ACAT I, II, and III TEMPs, approval occurs when the TEMP is signed by ASN (RDA), or DOT&E and DDRE (T&E), or N091 as appropriate. For ACAT IVT TEMPs, approval occurs when the TEMP has been signed by the systems commander (e.g., COMNAVSEASYSCOM) or program executive officer (PEO) and COMOPTEVFOR.

**o. Operational Assessment (OA) Conclusions and Recommendations**. There are times when we may not provide conclusions regarding operational effectiveness/suitability, or recommendations regarding limited fleet introduction/fleet introduction in our OA reports (see paragraphs 405b(1), (2), and (3) for details of the following examples):

**(a)** When tasked by CNO to test a system or equipment that has not yet entered the Navy acquisition process (no test and evaluation identification number (TEIN) assigned) (includes non-ACAT research and development programs) or to test a system improvement and the testing is not governed by a CNO approved TEMP.

**(b)** When directed by CNO to assess a system to support a milestone decision and the assessment will consist of monitoring DT with no active OPTEVFOR participation.

**(c)** When tasked by CNO to conduct an assessment between phases of TEMP-scheduled OT&E. This is to review status of correction of deficiencies affecting outstanding COIs and project the impact on operational effectiveness and operational suitability conclusions to support a pending milestone decision.

**p. Test Plan Requirements**. Test plans are required for each identified phase of OT&E (e.g., OT-I (EOA), OT-IIB, OT-IIIA, etc.).

**q. Determining End of Test**. The completion of testing may not necessarily be the time that test operations actually ceased, but may accommodate delays caused by ship or detachment transit times and shipping of data back to home bases. The ACOS or CO with cognizance over the test will make the decision on what time constitutes completion of the OT

**r. Redesignating OPEVAL**. In the event all COIs were scheduled for testing (i.e., the phase before OPEVAL) and in fact resolved satisfactorily and the testing was performed on a production-representative test article, we could conclude that the system was operationally effective and operationally suitable. This could result in a recommendation that the phase of IOT&E be designated as OPEVAL and the scheduled OPEVAL phase be deleted.

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# CHAPTER 2

# FOUNDATION DOCUMENTS

## 201. INTRODUCTION

**a**. This chapter provides a basic description of the foundation documents, the questions you, the OTD, should ask, and your responsibility in the review of the documents. Resources (chapter 3) will provide you with additional information relative to this topic.

**b**. OTDs have an obligation to get involved as early as possible in the development of a new weapon system. This includes providing meaningful inputs to various foundation documents. This chapter focuses on:

- Mission Need Statement (MNS)
- Operational Requirement Document (ORD)
- Cost and Operational Effectiveness Analysis (COEA)
- Top-Level Requirements (TLR)
- Top-Level Specifications (TLS)
- Integrated Program Summary
- Acquisition Program Baseline
- Program Element Descriptive Summary (PEDS)
- Congressional Data Sheet (CDS)

**202. MNS**. DoD Regulation 5000.2R requires DoD components to document deficiencies in current capabilities and opportunities to provide new capabilities in an MNS expressed in broad operational terms. System performance objectives and minimum acceptable requirements are developed from the MNS as part of the development of the ORD. COMOPTEVFOR may be asked to comment on the MNS during the Concept Exploration and Development Phase (Phase 0) prior to Milestone I and the development of the ORD. Comments should be provided from the operational viewpoint only and supported with operational rationale. Do not try to design systems or define technical characteristics of a system. Confine your comments to areas of operational need to counter projected threats.

**203. ORD**. The ORD is addressed in DoD Regulation 5000.2R, Appendix II. Although COMOPTEVFOR is not officially part of the formal ORD process, the OPNAV resource sponsor will usually provide the draft ORD to COMOPTEVFOR for review and comment. In conducting the review of the document, concentrate on the acquisition strategy (program structure). If a requirement appears too hard or too easy, or if it is not testable, this is our chance to say so.

Comments should be made if the list of performance parameters is incomplete. See sample 2-1 (next page) for a sample ORD comment letter.

**Sample 2-1. ORD Comment Letter**

3961
Ser XX/

From: Commander, Operational Test and Evaluation Force
To: Chief of Naval Operations (NXXX)

Subj: COMMENTS ON (**DRAFT**) (**REVISED**) OPERATIONAL REQUIREMENTS DOCUMENT (ORD) FOR THE NEW WEAPON SYSTEM PROGRAM

Ref: (a) CNO ltr XXXX Ser XXX of 8 May 91

1. Per reference (a), the (**draft**) (**revised**) ORD has been reviewed and there are no comments.

**or**

1. Per reference (a), the (**draft**) (**revised**) ORD for the New Weapon Systems has been reviewed. The following comments are provided:

a. Page 3, par. 4, Measures of Effectiveness and Suitability. Insert the following parameters and associated thresholds as measures of effectiveness and measures of suitability:

**or**

1. Per reference (a), the **(draft) (revised)** ORD for the New Weapon System has been reviewed. Detailed comments are provided in enclosure (1).

"A. Measures of Effectiveness and Suitability

| **Measures of Effectiveness and Suitability** | | | |
|---|---|---|---|
| **Characteristics** | **Parameter** | **Threshold** | **Objective** |
| **Operational Effectiveness** | | | |
| Detection | Probability of Detection ($P_d$) (Note 1) | * | * |
| Classification | Probability of Classification ($P_c$) (Note 2) | * | * |
| Localization | Probability of Localization ($P_L$) (Note 3) | * | * |

## Sample 2-1. ORD Comment Letter (Cont)

| Measures of Effectiveness and Suitability | | | |
|---|---|---|---|
| **Characteristics** | **Parameter** | **Threshold** | **Objective** |
| **Operational Suitability** | | | |
| Reliability | Mean Time Between Operational Mission Failures (MTBOMF) (Note 4) | $\geq$750 hr | * |
| Maintainability | Mean Corrective Maintenance Time for Operational Mission Failures (MCMTOMF) | $\leq$1 hr | * |
| Availability | Operational Availability ($A_o$) $A_o = \frac{\text{Uptime}}{\text{Uptime + Downtime}}$ | $\geq$0.97 | * |

*To be provided by CNO.

Notes:

1. $P_d$ will be calculated based on the number of correct detections that occurred compared to the number of detection opportunities that existed. A correct detection occurs when an actual target exists in the location where a detection is said to occur.

$$P_d = \frac{\text{Number of Correct Detections}}{\text{Number of Detection Opportunities}}$$

2. A note may be required to define $P_c$ and a valid classification.

3. A note providing the same information may be required for $P_L$.

4. A note defining MTBOMF and operational mission failures (as provided in paragraph 613a(2)) must be included.

$$\text{MTBOMF} = \frac{\text{Total System Operating Time}}{\text{Number of Operational Mission Failures}}$$

**Where possible include the formula along with the parameter.**

**Short notes (one or two lines in length) should be placed in parentheses after the parameter. Notes of greater length (e.g., those defining a probability or reliability) should be included as a numbered note.**

Rationale: Correctness, per DOD Regulation 5000.2R.

**Sample 2-1. ORD Comment Letter (Cont)**

**This is your best opportunity to add new parameters for use in evaluating COIs in OT&E.**

**Assignment of threshold values to parameters is CNO's purview. Indicate the need for CNO to provide values by an asterisk and footnote. Where threshold values have already been assigned, they should be included for the appropriate parameter.**

b. Page 5, par. d, Computer Resources. Identify any unique user interface requirements and life cycle support plans.

Rationale: Correctness, per DoD 5000.2R.

**Comments should address those issues discussed in par. 203 of this manual. The initial DRAFT ORD review will provide the primary opportunity for us to introduce the parameters we desire to evaluate performance against in OT&E and to ask CNO for threshold values. After the ORD and TEMP are issued, we can expect significant opposition to any requests to modify the minimum acceptable operational performance requirements.**

SIGNATURE BLOCK
Deputy

Copy to:
CNO (NXXX, )
COMNAVXXXSYSCOM ( )

**204. COST AND OPERATIONAL EFFECTIVENESS ANALYSIS (COEA)**. The use, format, and content of a COEA are described in DoD Regulation 5000.2R. MOEs must be consistent between the COEA, ORD, Acquisition Program Baseline, and the TEMP.

**a**. A common problem for OPTEVFOR is that the COEA develops theater-level battle outcome MOEs. These are fine for the purpose of the COEA, but often are not realistically measurable in our OT scenarios. In such cases, we must develop testable MOEs and show "linkage" with those of the COEA.

**b**. When possible, CNO (N091) will forward MOEs and MOPs developed during the COEA to COMOPTEVFOR for review with respect to their testability.

**c**. Concentrate your review on the operational risks associated with each alternative and the actions needed to reduce those risks, on the significant T&E issues, and on the performance thresholds as they relate to satisfying mission needs. You may comment on any portion of the COEA as long as you provide an operational rationale for your comment.

**205. TOP LEVEL REQUIREMENTS (TLR) AND TOP-LEVEL SPECIFICATIONS (TLS)**. For ship development and ship acquisition programs, TLRs and TLSs are prepared after the ORD or MNS. This additional set of documents is necessary because of the length and complexity of the ship design process. Your review and comments will follow the guidelines discussed above for ORDs and MNSs.

**206. INTEGRATED PROGRAM SUMMARY**. The Integrated Program Summary is discussed in DoD Regulation 5000.2R. The entire document should be reviewed, but pay particular attention to the Executive Summary and Annex A, Program Structure. When you review this document, concentrate on operational performance achieved and the T&E events required prior to the next milestone. Check to ensure that TECHEVAL and OPEVAL are not scheduled to occur simultaneously or so close together that we would have insufficient time to receive and read the TECHEVAL results prior to OPEVAL. Note any program decisions that may require changes to the program structure or performance parameters. Ensure these changes are reflected in other program documentation.

**207. ACQUISITION PROGRAM BASELINE**. The program manager (PM) initially develops the acquisition program baseline as a concept baseline for the Milestone I decision point. A development baseline and a production baseline are prepared for Milestones II and III. These baselines capture the key parameters that define the system. The objectives and thresholds are listed in Section A, in tabular form. Key parameters are the MOEs and MOSs identified in the ORD. This document should be reviewed to ensure consistency between the ORD, the baseline, which establishes explicit performance (operational effectiveness and suitability) COIs and thresholds, and the TEMP.

**208. PROGRAM ELEMENT DESCRIPTIVE SUMMARY (PEDS) AND CONGRESSIONAL DATA SHEETS (CDS)**. These documents are prepared annually by the DA. COMOPTEVFOR reviews drafts of these documents and provides the OT&E write-ups in their T&E sections. Guidance is set forth by the Project/Policy Manager (Code 01B) as each annual cycle begins. The "season" for these reviews runs from late November through February.

**209. REVIEWING FOUNDATION DOCUMENTS.** When reviewing these documents, consider the following:

**a.** From an operational viewpoint, why develop it?

**b.** How will it be used? In what installations or platforms? In what environments (natural and manmade)?

**c.** How well must it work? When?

**d.** What must DT&E and OT&E do to prove the system's operational effectiveness and suitability? When?

**210. MATRIX**. Consider developing a cross correlation matrix which relates to the requirements of the upper-level documents (MNS, ORD, TLR, etc.), the MOEs/MOSs of Part I of the TEMP, the COIs, the tests, the test plan run matrix, and, ultimately, the final results. This approach ensures accountability to requirements.

**211. RESOURCES**. Chapter 3 provides a complete list of all resources available to the OTD. The following are those peculiar to the foundation documents discussed above.

| Resource | Title | Location in the Command |
|---|---|---|
| DoD 5000.2-R | Mandatory Procedures for Major Defense Acquisition Programs and Major automated Information System Acquisition Programs (Sec 3 for MNS) (Sec 4E for COEA) | Division Admins |

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# CHAPTER 3

# RESOURCES

**301. INTRODUCTION.** This chapter focuses on resources available to you as an OTD. They range from instructions and their locations to points of contact for obtaining range services. This chapter is intended to provide an overview of the tools necessary to accomplish your job.

**302. PAPER RESOURCES.** With the advent of electronic publishing, there are very few paper resources left. Almost all of what used to be in Table 3.1 is now shown in Table 3-2, Electronic Resources. What remains here is a list of paper resource documentation by component (i.e., OPNAVINST, etc.), number, title, and where it's found in the command. These, too, will disappear as we locate the electronic files.

**Table 3-1. Paper Resources**

| Instruction | Title | Location |
|---|---|---|
| **OPNAVINST (unable to locate, at this time, electronic files of the below CNO instructions)** | | |
| S3070.3 | War Reserve Mode (WARM) | |
| 5440.47 | Missions & Functions of OPTEVFOR | |
| 5510.143 | Signal Security | |
| | (MIL-PRF-49506 - - Performance Specifications Logistics Management Information (11 Nov. 1996)<br>MIL-HDBK-502<br>DOD Handbook Acquisition Logistics (30 May 1997)<br>US Army Logistics Support Activity | |
| **COMOPTEVFORINST (for these instructions, see the "library.htm" file in y:\OT&E Reference Library)** | | |
| **CINCLANTFLTINST** | | |
| 3120.26 | LANTFLT OPAREA Guide (will soon have this in electronic form | |
| OP ORD 2000 | Letters of Instruction | SIPRNET CLF page |
| Note C3120 | Official Quarterly Schedule & RDT&E Results | SIPRNET CLF page |
| **CINCPACFLT** | | |
| OP ORD 201 | Letters of Instruction (searching for this one) | |

**Table 3-1. Paper Resources**

| Instruction | Title | Location |
|---|---|---|
| **SPAWAR NWP/NTP/STD (searching for electronic copies of the below)** | | |
| NWP 3 | Naval Terminology | |
| NWP 4 | Communication Plans | |
| NTP 6 | Communication Plans | |
| NWP 12 | Intelligence | |
| **Miscellaneous Navy Resources** | | |
| FACSFAC JAXINST 3510.1 | Range Scheduling (coming in paper form, will be scanned and posted) | |

**303. ELECTRONIC RESOURCES**. Table 3-2 is a list of resources available on the command's LAN in y:\OT&E Reference Library. The folders within the directory are listed by category.

**Table 3-2. Electronic Resources**

| |
|---|
| **See "library.htm" in the Reference Library for access to all COMOPTEVFOR instructions.** |
| **Acronyms and Abbreviations ("Acronym and Abbreviation List" folder)** |
| COTFINST 3960.12E COMOPTEVFOR Acronym and Abbreviation List (10 September 1997 (updated Feb.99)) |
| **Administration and Document/Program Security References ("Admin & Security" folder)** |
| COMOPTEVFORINST 7040.2D - - Guide to Using Analytical Support Contracts |
| COMOPTEVFORINST 3070.1 - - Operations Security |
| OPNAVINST 5510.161 - - Withholding of Unclassified Technical Data From Public Disclosure (29 July 1985) |
| OPNAVINST 5513.1E - - Department of the Navy Security Classification Guides (16 October 1995) |
| SECNAV Notice 5720 - - Clearance, Security, and Policy Review of DOD Information for Public Release (3 Feb. 1997) |
| SECNAVINST 5510.36 - - Department of the Navy (DON) Information Security Program (ISP) Regulation |
| SECNAVINST 5216.5D - - Department of the Navy Correspondence Manual (29 August 1996) |
| SECNAVINST 5212.5D - - Navy and Marine Corps Records Disposition Manual (22 April 1998) |
| **DoD Directive/Regulation/Instruction/Manual ("DoD T&E Instructions" folder)** |

**Table 3-2. Electronic Resources**

| |
|---|
| Directive 5000.1 - - Defense Acquisition |
| Regulation 5000.2-R (w/change 4) - - Mandatory Procedures for Major Defense Acquisition Programs and Major Automated Information System Acquisition Programs |
| Instruction 5000.3-M-2 - - Foreign Comparative Testing (FCT) Program Procedures Manual (Jan. 25 1994) |
| Instruction 5000.2-M-4 - - Joint Test and Evaluation Procedures Manual (August 1988) |
| Directive 5010.41 - - Joint Test and Evaluation (JT&E) Programs (23 February 1998) |
| **SECNAV T&E Instructions ("SECNAV T&E Instructions" folder)** |
| 5000.2B - - Implementation of Mandatory Procedures for Major and Nonmajor Defense Acquisition Programs and Major and Nonmajor Information Technology Acquisition Programs |
| **OPNAV T&E (and other related) Instructions ('OPNAV T&E Instructions" folder)** |
| 1500.76 - - Navy Training System Requirements, Acquisition, and Management (21 July 1998) |
| 3811.1C - - Threat Support to Weapon Systems Planning and Acquisition (16 May 1995) |
| 5442.4M - - Aircraft Material Condition Definitions, Mission-Essential Subsystems Matrices (MESMS), and Mission Descriptions (17 October 1990) |
| **Memorandums of Agreement ("Memorandums of Agreement" folder)** |
| Operational Suitability Terminology (April 1999) (1999 Operational Suitability TerminologyMOA.doc) |
| Multiservice/Joint Service Operational Test and Evaluation (April 1999) (MOT&E-JT&E MOA.doc) |
| COMOPTEVFOR/NAVAIR Capstone TEMP |
| U.S. Air Force MOA with USSOCOM - Research, Development, and Acquisition (RD&A) Responsibilities 20 October 1993 http://web.deskbook.osd.mil/reflib/MSOCOM/003SD/003SDdoc.htm#T2 |
| U.S. Army MOA with USSOCOM - Research, Development, and Acquisition (RD&A) Responsibilities 20 September 1996 http://web.deskbook.osd.mil/reflib/MSOCOM/004SD/004SDdoc.htm#T2 |
| U.S. Navy MOA with USSOCOM - Research, Development, and Acquisition (RD&A) Responsibilities 14 October 1997 http://web.deskbook.osd.mil/reflib/MSOCOM/005SD/005SDdoc.htm#T2 |
| **Modeling and Simulation ("Modeling & Simulation" folder)** |
| CN Modeling and Simulation Accreditation Letter (AFOTEC) |
| COMOPTEVFORFINST 5100.1 - - Use of Modeling and Simulation in Operational Testing |
| DoD Directive 5000.59 - - DoD Modeling and Simulation (M&S) Management (4 January 1994 |

## Table 3-2. Electronic Resources

| | |
|---|---|
| DoD Instruction 5000.61 - - DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A) (29 April 1996) | |
| SECNAVINST 5200.40 - - Verification, Validation, and Accreditation (VV&A) of Models And Simulations (19 April 1999) | |
| **Operational Test Director's Guide ("OTD Guide" folder)** | |
| COMOPTEVFORINST 3960.1H - - Operational Test Director's Guide | |
| **Software Information ("Software" folder)** | |
| COMOPTEVFORINST 5235.1A - - Software Development Appraisal Methodology (16 August 1996) | |
| MIL-STD-498 - - Software Development and Documentation (pdf format that also compiles the Overview and Tailoring Guidebook and Application and Reference Guidebook) | |
| DOT&E Guidelines For Conducting Operational Test And Evaluation For Software-Intensive System Increments | |
| **Tactics Information ("Tactics Information" folder)** | |
| COMOPTEVFORINST 3511.1C - - Aircraft Tactical Manual (AIRTACMAN) Program (3 March 1997) | |
| **Range Assets ("Test Range Information" folder)** | |
| FACSFAC VACAPES Instruction 3120.1H, Manual For The Utilization Of Fleet Area Control And Surveillance Facility, Virginia Capes Operating Areas (FACSFAC VACAPES Operations Manual). | |
| Atlantic Fleet Weapons Training Facility | |
| FACSFAC JAX Instruction | |
| **Miscellaneous (but useful and relevant) References** | |
| Chairman, Joint Chiefs of Staff Instruction 3170.01A - - Requirements Generation System (10 August 1999) | |
| COMOPTEVROR ltr 3960 Ser722/0685 June 15 1995 - - Use of Self-Defense Test Ship (SDTS) in Operational Testing | |
| Multiservice Lexicon (April 1999) [this is Army, Navy, Air Force, Marine Corps T&E terminology] | |
| **COMOPTEVFOR OT&E Document Formats ("OT&E Formats" folder)** | |
| **"Messages" Folder** (alphabetical left to right) | |
| Anomaly Report Message (AnomalyReports.txt) | Commencement of OT Message (OT_Commencement.txt) |
| Completion of OT Message (OT_Completion.txt) | Letter of Instruction Format (LOI_Format.txt) |
| Quick-Look Report Message (QuickLookRpt.txt) | Quick Reaction Assessment Report Message (QuickReactionAs-sessRpt.txt) |
| Software Qualification Testing Report Message (sqtrpt.txt) | Summary Message for Final Report (SummaryReport.txt) |

**Table 3-2. Electronic Resources**

| | |
|---|---|
| Verification of Correction of Deficiencies Report (VCD_Report.txt) | |
| **"MS Word" Folder** (alphabetical left to right) | |
| DT Assist Memorandum of Agreement (DT_Assist_moa.doc) | DT Assist Letter of Observation (DT_Assust_ObservLetter.doc) |
| Final Report Format (FinalReport.doc) | Flag-to Flag-Support Letter (TestUnitISICLetter.doc) |
| Forwarding Unit Commander's Report to His ISIC (COsISICLetter.doc) | FOT&E Support (First Time) (Fot&eSupportLetter_FirstTime.doc) |
| Initial TEMP Input Letter (TEMPinputLetter.doc) | IOT&E Support Letter (First Time) (Ot&eSupportLetter_FirstTime.doc) |
| Letter Addressing Release of Test Data (DataReleaseLetter.doc) | Letter-Only Report Format (LetterReport.doc) |
| Standard Memorandum of Agreement (Moa.doc) | ORD Comment Letter with Comment (ORD_Ltr-Com.doc) |
| ORD Comment Letter with no Comment (ORD_Ltr-NoCom.doc) | OT&E Support Letter (Previous Support Provided) (Ot&eSupportLetter_PrevSupport.doc) |
| Project Assignment Letter (AssignmentLetter.doc) | Sample Data Sheet for Classified Data (DataSheet2.doc) |
| Sample Data Sheet for Unclassified Data (DataSheet1.doc) | TEMP Change Transmittal Letter Format (TEMPchangeLtr.doc) |
| TEMP Comment Letter with Major Comment (TEMPcomLtr-MajCom.doc) | TEMP Comment Letter with no Major Comment (TEMPcomLtr-NoMajCom.doc) |
| TEMP Forwarding Letter with no Comment (TEMP-forwardLtr-NoCom.doc | TEMP Forwarding Letter with Comments (TEMPforwardLtr-Com.doc) |
| TEMP Part IV (Part_IV.doc) | Test Plan Format (TestPlan.doc) |
| Test Plan Change Transmittal Letter Format (Test-PlanChangeLtr.doc) | Trusted Agent Form (TrustedAgentForm.doc) |

**304. PHYSICAL RESOURCES.** You need to be aware of the following to arrange for support (i.e., data collection/analysis/reduction, ranges, etc.). Table 3-3 lists available physical resources. Table 3-4 lists Navy facilities used to measure ship signatures. Also, see this Test and Evaluation Community Network (TECNET) page (http://tecnet0.jcte.jcs.mil/htdocs/mrtfb/resource.htm), which lists virtually every testing resource you will need. These include resources from the other U.S. military services or from civilian services, either nationally or internationally. Additionally, information from the TECNET Contents page (http://tecnet0.jcte.jcs.mil/) will lead you to many other useful resources. *These two tables are in the process of being updated.*

**Table 3-3. Physical Resources**

| Resource | Location | POC | Telephone | Project |
|---|---|---|---|---|
| David Taylor Research Center (DTRC) | Annapolis, MD | Janet Buyer (Code 2721) | (301)267-3836 | DDG 51 DMS/HM&E |
| Naval Air Warfare Center, Weapons Division | Pt. Mugu, CA | Avai Balkin; LCDR Williams; LCDR Converse | (805)989-9669 | HARPOON BLK 10D, RIM-7R, TOMAHAWK |
| Naval Civil Engineering Lab | Port Hueneme, CA | Mr. W. Bretz; Mr. J. Wilson; Mr. T. Kretschmer; Mr. E. Lory | (805)982-0028<br>(805)982-1188<br>(805)982-1186 | Canteccas Busy 5PM FDS, Ariadn LFA/CST SCRS-N |
| Naval Research Lab | Washington, DC | Mr. R. Lamontagne | (202)767-2332 | SACP, CRS |
| Naval Undersea Warfare Center | Keyport, WA | Roger Bergestrom<br>Delores Cabeling | DSN 744-2667<br>(206)396-2569 | Mk 50, Mk 48, SSTD, BQE-5E, SUB |
| Naval Undersea Warfare Center | Newport, RI | Gene Johnson | DSN 948-2110 | TOMAHAWK |
| Naval Warfare Assessment Center | Corona, CA | Norm Cohen | (909)273-4574<br>DSN 933-4574 | HARPOON, DDG-51, SLAM, S-3B, SPY-1B/D, SM-2, TOMAHAWK |
| Naval Surface Warfare Center Coastal Systems Station | Panama City, FL | | DSN 436-5195<br>(904)235-5195 | RDT&E center for mine & undersea CM, SPECWAR, amphibious |
| Naval Air Warfare Center, Aircraft Division | Warminster, PA | Code 30D | DSN 441-2000<br>(215)441-2000 | FMEA, SAM & AAA, A/C Combat loss analysis & A/C failure analysis |
| Naval Air Warfare Center, Weapons Division | China Lake, CA | | DSN 437-9011<br>(619)939-9011 | RDT&E for air warfare systems (except ASW) & missile weapons systems |
| Naval Command Control and Ocean Surveillance Center, RDT&E Division | San Diego, CA | | DSN 253-2101<br>(619)553-2101 | RDT&E for C3, surveillance systems, surface & airlaunched undersea weapon systems, and supporting technologies |
| Naval Undersea Warfare Center | New London, CT | | DSN 636-4000<br>(203)939-9011 | RDT&E for submarine warfare and submarine weapons systems |

**Table 3-4. Navy Facilities Used for Measuring Ship Signature**

| Facility | Owned By | Capability |
|---|---|---|
| Atlantic Undersea Test and Evaluation Center (AUTEC), Andros Is., Bahamas | Naval Undersea Warfare Center Detachment (NAVUNSEAWARCEN) Det | Acoustic range is a deep water facility using fixed hydrophones |
| Atlantic Fleet Weapons Training Facility (AFWTF) Roosevelt Roads, PR | Navy | Multitest range site capable of conducting ASW, ASUW, AAA, BG, and multiwarfare exercises. Also conducts live-fire testing |
| Pacific Missile Range Facility, Kekaha, HI (PACMISRANFAC) HAWAREA Barking Sands, HI | Naval Air Warfare Center Weapons Division (NAVAIRWARGENWEPDIV) Pt. Mugu, CA | Weapons tracking range calibrated with a capability for precise tracking of missiles and torpedoes and for precise position fixing of ships and submarines |
| California Coastline | Naval Command and Control Ocean Systems Center (NCCOSC), San Diego, CA | West coast radar cross section (RCS) far-field measurements in the x-band. Also possess an experimental 5-band radar system which could be used for RCS measurements |
| Carr Inlet, Fox Island, Bremerton, WA | Puget Sound Naval Shipyard | Shallow-water facility employing moored fixed hydrophone array systems |
| Combat Systems Test Activity, Aberdeen, MD | U.S. Army | Live fire vulnerability testing |
| David Taylor Research Center (DTRC) Annapolis, MD | David Taylor Research Center | Land-based test site for making magnetic measurements on full-sized ship equipment |
| Electromagnetic Pulse Radiation Simulator for Ships (EMPRESS) II Virginia Beach, VA | NAVSURFWARCEN | EMP platform hardening effectiveness tests on larger ships |
| EMPRESS Facility, Solomons, MD | NAVSURFWARCEN | Subthreat-level simulator designed for performing coupling studies of electrical and electronic systems aboard ships |
| Electromagnetic Pulse Simulator for Aircraft (EMPSAC) Patuxent | NAVAIRWARCENACDIV | EMP testing capability for aircraft |

**Table 3-4. Navy Facilities Used for Measuring Ship Signature**

| Facility | Owned By | Capability |
|---|---|---|
| River, MD | | |
| EMPSAC NAVES Patuxent River, MD | NAVSURFWARCEN | EMP simulator for aircraft and vertically polarized Navy aircraft vulnerability EMP simulator |
| Ft. Lauderdale, FL<br>Ft. Monroe, VA | Naval Surface Warfare Center White Oak, MD | Ship pressure signature measurements |
| Naval Station (NAVSTA) Charleston, SC | Commanding Officer NAVSTA | Degaussing range |
| NAVSURFWARCEN Ft. Lauderdale, FL | NAVSURFWARCEN | Acquiring magnetic signatures of ships and submarines |
| NAVSTA Mayport, FL | CO NAVSTA, NAVSEA | Degaussing range |
| NAVSTA Norfolk, VA | CO NAVSTA, NAVSEA | Degaussing range |
| NAVSTA Pearl Harbor, HI | CO NAVSTA, NAVSEA | Degaussing range |
| NAVSTA San Diego, CA | CO NAVSTA, NAVSEA | Degaussing range and additional capability of arrays of bottom-mounted magnetometers for making magnetic measurements of moored ships |
| Santa Cruz Acoustic Range Facility (SCARF), Santa Cruz Island, CA | General Motors | Data acquisition |

**305. OTHER SUPPORT RESOURCES**. There are additional resources available to you as an OTD that you need to be aware of. The following is by no means all-inclusive, however it will help you get started in the right direction in your search for information.

**306. CONTRACTOR SUPPORT.** This command has two analytical support contracts in place to assist you. Currently, the contracts are with PRC, Inc., and Eagle Systems of Virginia Beach, VA. Information regarding these resources can be obtained from the contract specialist, Code 104.

**307. RESOURCE SCHEDULING**. RDT&E support is the operating and nonoperating support provided by operational Naval forces and other agencies to the DA, COMOPTEVFOR, INSURV, or other research and development agencies for accomplishment of T&E.

**308. FLEET SERVICES**

**a**. Per SECNAVINST 5000.2B, COMOPTEVFOR acts as CNO's agent in obtaining fleet support at the CINCLANTFLT and COMTHIRDFLT quarterly scheduling conferences.

**b**. The primary method to identify fleet support for acquisition projects is in Part V of the TEMP. TEMP inputs should be as specific as possible. These are used to plan and program not only fleet support but also financial support, ranges, targets, simulators, and other required support.

**309. REQUESTING FLEET SERVICES**. There are two types of fleet service requests, standard and emergent.

**a. Standard Fleet Service Requests**

**(1)** Approximately 6 months prior to the fleet scheduling conference (9 to 12 months prior to the actual operation period), CNO (N091) sends the "Quarterly Call for Fleet RDT&E Support Requirements for ...Quarter FY..." to all RDT&E agencies soliciting fleet support requirements. COMOPTEVFOR scheduler (Code 15S) will forward the COMOPTEVFOR integrated data base's forecast data to all divisions for review by all OTCs and OTDs for their inputs. All inputs (COMOPTEVFOR's and VXs) are forwarded by Code 15S to CNO (N912F) for inclusion into the appropriate CINCs "Fleet RDT&E Support Requirements for ...Quarter FY...." This document is then promulgated about 6 weeks prior to the quarterly scheduling conference. Any changes will be forwarded to CNO (N912F) by Code 15S for inclusion in CNO supplemental requests.

**(2)** CNO (N912F) assigns a priority to each request. Understanding three facts about these priorities is essential: First, a priority applies only to one fiscal quarter; second, a priority is only assigned if fleet support is requested; and third, these are CNO priorities applying only to fleet RDT&E support and must be integrated into the other fleet priorities. Further details concerning this prioritization are discussed in SECNAVINST 5000.2B.

**(3)** If your request for fleet support does not appear in the appropriate Fleet RDT&E Support Requirements forecast data, or is inaccurate, contact Code 15S and ensure an accurate, up-to-date Fleet Service Request Form (Sample 3-1) is on file. This request should be as accurate, detailed, and as flexible as possible to allow Code 15S the maximum leeway to schedule the required assets. This will help prevent a "no fill" at the scheduling conference and ensure that all assets required are obtained. See the below list of recurring service request questions to ensure comprehensive request data.

- Hours per day?
- Day or night?
- Hours per sortie?
- Sorties per day?
- Dedicated or NIB?
- Consecutive? If not, minimum and maximum time between periods?
- In connection with other units?
- Can this be in connection with transit, fleet exercise, or other project ops (POPS)?
- Why these specific date(s)? How rigid are these dates?
- Which day(s)? (When in connection with other assets)
- Can these tests be done simultaneously?
- DT or OT?
- Phase?
- Why this specific unit?
- Is same unit(s) required each day (period)?
- Installation time?
- Removal time?
- Is this required or preferred?
- Is range required? If so, which range?
- Which units have this equipment?
- Does this affect deployability?
- Any riders? Justify number of riders.
- Was anything done with (DIRLAUTH) (SEPCOR) from last quarter?
- Is this a continuation of previous quarter services?
- What type augmentation?
- Can more testing be done each day (period)?
- If this asset is not available, are remainder of services required?
- Where?
- Is this time maximum or minimum?

## Sample 3-1. Fleet RDT&E Support Request

TEIN: _____ Title: _____
QUARTER FY: _____
TYPE: (DT/OT) ____ Phase: _____
CLASSIFICATION: U/ C/ S
FLEET: (LANT/PAC) _____ Start Date: _____ End Date: _____
SOURCE - COMMAND:
REFERENCE:
POINTS OF CONTACT:
OTD:
DT COORD:
OTC:
OPNAV SPONSOR:
Purpose of this phase of testing is: _____
_____
_____
Recommended Priority: _____

SUPPORT REQUIRED: (use additional pages if more units are needed)
A. 1. Start Date: _____ Stop Date: _____
Preferred dates: _____
Start no later than: _____ Complete no later than: _____
2. Unit's Scheduling Authority: _____
3. Unit Type & NR Requested: _____
Special Equipment to be installed: _____
4. Test location: (OPAREA) _____
5. Level of Support: (NIB, CONCurrent, DEDicated) _____
6. Calendar Days Req: ___ Hours/Day: ___ Air Sorties Req: ___
Sorties/Day: ___ Hrs/Sortie: _____
7. Remarks: _____
_____
_____

B.. 1. Start Date: _____ Stop Date: _____
Preferred dates: _____
Start no later than: _____ Complete no later than: _____
2. Unit's Scheduling Authority: _____
3. Unit Type & NR Requested: _____
Special Equipment to be installed: _____
4. Test location: (OPAREA) _____
5. Level of Support: (NIB, CONCurrent, DEDicated) _____
6. Calendar Days Req: ____ Hours/Day: ____ Air Sorties: _____
Sorties/Day: ____ Hrs/Sorties: _____
Minimum time between sorties/test periods: _____
7. Remarks: _____
_____

**Sample 3-1. Fleet RDT&E Support Request (Cont)**

Notes:

1. Make request as general as possible to allow the schedulers enough flexibility, but be specific enough to permit satisfactory completion of your test.

2. If a specific type of equipment is required on board a ship to support your test, give the scheduler a list of ships that have that equipment installed to pick from.

3. If fleet personnel are required in addition to those attached to units requested, request them as a separate unit (i.e., SEAL Teams, ULQ-13, Van/Crew).

4. Service request remarks: State time required to install/remove equipment, who will do the installation/removal, can it be installed pierside (drydock/SRA/ROH)? Has equipment installation been approved? By whom? Will installation affect unit operation or other equipment on board? Is any crew training required? How many riders are required to embark (keep to a minimum)? If more than one unit is required, state which units must work together and the minimum concurrent time.

5. An A/C sortie is defined as one (1) A/C flight (Example: If your test requires 3 F-14's for 2 hours for 1 day in VCOA this would be requested as follows:

A. 1. Start Date 01 Oct 95 Stop Date 31 Dec 95
Preferred dates: 15 Nov 95
Start no later than: 15 Nov 95 Complete NLT: 31 Dec 95
2. Unit's Scheduling Authority: CNAL
3. Unit Type & NR Requested: F-14 (3)
Special Equipment to be installed: None
4. Test location: (OPAREA) VCOA
5. Level of Support: (NIB,CONCurrent, DEDicated) DED
6. Calendar Days Req: 1 Hours/Day: 6 Air Sorties Req: 3
Sorties/Day/Aircraft: 1 hr/Sortie: 2
Minimum time between sorties/test periods: _____

7. Remarks: _____
_____
_____

This would show up at the scheduling conference as:
F-14 (3)
1 Day, 1 2-HR/SORTIE/AIRCRAFT/DAY, DEDICATED.

**Sample 3-1. Fleet RDT&E Support Request (Cont)**

**(4)** If your project appears in the forecast with a priority 1, 2, or 3, it may be reviewed in the data base. If it appears with a priority 4, your request has not been entered and may be reviewed by contacting Code 15S. If changes are required, contact Code 15S who will enter or modify all requests.

**(5)** When the conference is completed, notices will be routed to all OTCs and OTDs advising of services obtained. The following is a list of possible conference results:

**(a) Unit Assigned.** When a specific unit is assigned, you should, at the earliest opportunity, contact either the unit assigned or the command or activity he is given DIRLAUTH with to ensure that his requirements are known and integrated into the unit's planning at an early stage. This DIRLAUTH should not be delayed awaiting an official, (i.e., written) assignment. Once the assignment is made at the fleet scheduling conference, it is official. The written document only promulgates this assignment.

**(b) DIRLAUTH Only**. No services have been assigned, but you must contact the provider to coordinate project needs.

**(c) No Fill.** No services are assigned. You can try again next quarter or, if services are a must for the time requested, you should prepare an impact statement for CNO. All impact statement messages will be sent from COMOPTEVFOR.

**(d) Defer.** Usually brought about because the required unit is deployed or in ship's selected restricted availability. This request will not automatically be reinstated for the next quarterly conference, but will require resubmission of the service requested by you or the DA.

**(6)** In all cases, it is advisable that you contact the developing agency (DA) regarding assigned services to close the loop. Record traffic with the service provider is highly recommended to avoid misunderstanding of requirements or having "the ball dropped."

**b. Emergent Requirements**

**(1)** Emergent requirements occur when a need arises for fleet support after the deadline for scheduling conference submission has passed, or services are required in addition to those that were considered at the scheduling conference. When the need occurs, you will conduct any necessary informal liaison to determine the feasibility (not a commitment) of the emergent services. If the feasibility check yields a "no way" or other negative response, a decision will be made as to whether or not an Emergent Request will be initiated. It is always a courtesy, and often a necessity, to initiate informal liaison at the Type Commander level prior to contacting units under their control. You should obtain permission of the person with whom he spoke or met to reference their phone call or meeting in the request by COMOPTEVFOR. VX-1 or VX-9

should transmit a message request to COMOPTEVFOR. COMOPTEVFOR will release all emergent service requests. COMOPTEVFOR Code 10 will release the message.

**CNO will support not-to-interfere basis emergent services only. If concurrent or dedicated services are required, program sponsor support at the VADM level will be required to justify the request.**

**(2)** Emergent requests or schedule change requests severely diminish the effectiveness of efforts to stabilize ship schedules, identify tasks which can be fulfilled concurrently by a single unit, and fill requests for fleet support. In order to minimize OPTEVFOR's contribution to such problems, the following conditions must be met prior to requesting emergent services:

**(a)** Certification of readiness for operational testing must have been received.

**(b)** The proposed testing, in the time frame specified, must be in response to a CNO-directed deadline.

**(c)** The emergent service request must state why services were not requested during the scheduling conference.

**(d)** A draft or final test plan must be available so that services required can be clearly identified.

**c. Asset Requests Not Scheduled at Conferences**

**(1) COMNAVRESFOR**. This is a Flag-to-Flag request and will be initiated by COMOPTEVFOR via the chain of command.

**(2) MCOTEA.** Handles emergent requests for Marine support for RDT&E. This is also a request initiated by COMOPTEVFOR, Code 15S.

**(3) Range Service and Operating Area (OPAREA) Support.** Range and OPAREA requests are normally coordinated directly with the facility's scheduling authority. This policy applies to AFWTF and AUTEC; however, due to the demand for these facilities, it is advantageous to request range services in conjunction with support requirements requested at the CINCLANTFLT Scheduling Conference.

**(4) Exercise Torpedoes (EXTORP)**. You must submit requests for EXTORPs via message to the cognizant Type Commander. The DA will normally provide the RDT&E funding for EXTORP turnaround.

**d. Sixth or Seventh Fleet Services**

**(1)** Requests for Sixth or Seventh Fleet services must be submitted to OPTEVFOR Code 15S, complying with the format, procedures, and lead time required for routine scheduling conference submissions. The requests will be sent to CNO (N912F) who will assign a priority and forward the consolidated requirements to CINCUSNAVEUR or CINCPACFLT by message. The DA will submit DT requests directly to CNO. Requests not meeting the lead time criteria must be submitted in accordance with procedures established for emergent requirements.

**(2)** Informal liaison is necessary to ensure that the required services are feasible, but you must ensure that the liaison is conducted carefully throughout the operational chain of command for those services desired.

**e. Canadian RDT&E Support.** All requests for Canadian RDT&E support (e.g., ranges, hosting, fleet support) will be coordinated through OPTEVFOR, Code 15S. Information concerning Canadian Forces' capability and informal inquiry into availability of support may be coordinated through the Canadian Navy Exchange Officer, Code 724.

## 310. RELATED COMMUNICATIONS

**a. Notice of Intent (NOI).** The primary purpose of an NOI is to reserve a submerged operating area and establish procedures which will minimize mutual interference between submerged submarines, and between submarines and other operations such as surface ships using variable depth sonar or dropping of explosive ordnance. COMSUBLANT/CTF 42 is CINCLANTFLT's Submarine Operating Authority and is assigned the responsibility of coordinating and approving NOI requests. CINCLANTFLTINST C3124.4 series provides the procedures for requesting an NOI. If the test area, participating units, and time frame are well defined, the NOI requests should be sent to CTF 42. If test operations are ill defined or inherently flexible, the responsibility for requesting the NOI rests with the primary participating unit.

**b. Communication Plans.** Communication plans are an integral component of any LOI. This first step in formulation of a comprehensive plan is the assignment of frequencies for short term tactical and training evolutions. Guidance for submitting frequency requests is contained in Annex K of CINCLANTFLT OPORD 2000 series.

## 311. PREPARING, ROUTING, AND BRIEFING OT&E DOCUMENTS

**a. Preparing.** Table 3-5 is a document requirements matrix. Its focus is on:

- TEMP input, comment, and forwarding letters
- test plans
- evaluation reports
- LOIs

- OTGs
- support documentation

The smooth documents for the VXs and rough and smooth for HMX-1 are to be provided to HQ Codes 40, 50, or 60, as appropriate, via E-mail. Coordination is also required with Code 50 for software intensive programs. Chapters 5, 6, and 8 provide specific guidance.

**Table 3-5. Staffing Matrix/Signature Requirements**

| T&E Document | Response Time | Brief Required | Signature Authority | | |
|---|---|---|---|---|---|
| | | | 00 | 01 | ACOS |
| TEMP forwarding letters | 5 days | Yes | X | | |
| All oversight test plans (Note 1) | 60 days prior to ops | Yes | X | | |
| All evaluation reports/Summary message (Note 2) | 65-90 days after test | Yes | X | | |
| Standard/Combined DT/OT memorandums of agreement | 30 days prior to test (at test plan signing) | Yes | X | | |
| All OT&E support letters (OTD & ACOS responsible for drafting) | 30 days prior to ops | No | X | | |
| Deficiency report messages | | Yes | X | | |
| Anomaly report messages | | Yes | X | | |
| All missile firing reports directed by higher authority (ACOS will readdress as required) | | No | X | | |
| Release of test data (test data retained by Navy labs requires N091 approval) | | No | X | | |
| Tasking letters requesting a signal susceptibility and vulnerability assessment (SSVA) | | No | X | | |
| M&S Accreditation Letter for OPEVAL/FOT&E | NLT 90 days prior to test | Yes | X | | |
| DT assist letters of observation (LOO) | 90 days after ops | No | X | | |
| Letters for Observation of Operational Capabilities (OOC) | 30 days after ops | No | X | | |
| ORD Comment Letter | | Note 3 | | X | |
| TEMP input letters | 90 days | No | | X | |
| TEMP comment letters | 30 days | No | | X | |
| Non-oversight test plans | 30 days prior to ops | Note 4 | | X | |
| All other correspondence as directed by 00 | | No | | X | |
| Support documentation (ILSP, NTP, etc.) | 15 days | | | | X (Note5) |
| M&S Accreditation Letter for non-OPEVAL or FOT&E | NLT 90 days prior to test | No | | | X |
| VX Squadron Project Assignment Letters | | No | | | X |
| Letters of instruction (Note 6) | 30 days prior to ops | No | | | X |
| Trusted agent forms | 30 days prior to ops | No | | | X |
| DT assist MOAs | 30 days prior to ops | No | | | ACOS/ VX CO |
| OT commencement messages | | | | | X |
| OT completion messages | End of test as determined by ACOS | | | | X |
| OPTEVFOR Tactics guides | 120 after evaluation | | | | VX CO |

**Table 3-5. Staffing Matrix/Signature Requirements**

| | | | | | |
|---|---|---|---|---|---|
| | report | | | | (Note 7) |

Notes:
1. Commander briefs and signs all ACAT I, DOT&E oversight, and controversial test plans. Also, the Commander may brief and sign all standard test plans *when desired,* 30 days prior to ops.
2. Normally 90 days; 00's direction is to try to achieve 65 days or better. Increased to 120 days if quick-look issued.
3. Briefs are on a case-by-case basis. 00 will sign ORD comment letters with contentious issues.
4. COS signs (briefs are on a case-by-case basis) standard ACAT II, III, and IVT test plans.
5. Use title, not "By Direction."
6. LOIs prepared at VX/HMX may be released by the squadron CO.
7. VX COs authorized to sign "By direction." 00 will sign controversial and special interest OTGs. Briefing requirements will be determined on a case-by-case basis.

**b. Routing.** Chapters 5, 6, and 8 provide guidance on timelines for routing documents for review and/or signature. Blank rough draft routing slips are found in each Division's Admin office. Routing procedures should be discussed with your section head and/or deputy ACOS code. Smooth documents require a blue blazer. A sample blue blazer is found on the LAN in y:\general\blazform.doc. When downloading this file to a floppy disk, rename the file.

**c. Briefing.** Sample 3-2 shows general briefing guidelines. Specifics for TEMPs, test plans, and final reports are found in Chapters 5, 6, and 8, respectively.

**(1) General Briefing Information**. OT&E briefings are like any other Navy briefing; they cover the facts as we know them in a logical, concise fashion. Guidance on OPTEVFOR OT&E briefs, including their content and format, and information on briefs in the Washington area or to decisionmakers are also discussed in this chapter.

**(2) Briefing Preparation Tips**. The following tips for briefs are provided to assist in the preparation of hard copy handouts and viewgraphs:

**(a)** Ensure your presentation slides or viewgraphs are of professional quality (i.e., correct spelling; proper English; all text print the same size) and are consistent in format and appearance (header and footer print; slides are all portrait or all landscape).

**(b)** Do not use copies of pages from documents. Extract the needed information and form bullets for the viewgraph.

**(c)** Avoid placing too much information on one slide or viewgraph; limit yourself to no more than a dozen lines. This may require spreading your message over several slides or viewgraphs, but that is much better than using small print and having the slides appear crowded.

**(d)** Briefers should include their first name or nickname on their introductory briefing slide.

**(e)** Ensure your slides or viewgraphs are in the correct order and are matched to your presentation. This is very important when it comes to keeping your audience with you and getting your message across.

**(f)** Bring all cited references to the brief.

**(g)** Keep your brief in operational terms. Use only the minimum required technical terms to accurately convey your meaning.

**(h)** You may be asked to revise one or more briefing slides for the Commander. Typically, you should correct and provide only those slides in question; concentrate on the directed changes. Provide a script with the new hard copy of the slides if necessary. Highlight the areas modified or changed by placing the old slides to the left. Mark modified areas of the document with a bar on the right-hand side.

**(i)** You may be asked to rebrief the material. Again, you want to present only the material that has been changed.

**(3) Briefing Presentation Tips**

**(a)** If you detect a typographical error or similar mistake in your viewgraph, ignore it. You should have made corrections before the briefing.

**(b)** Comment on the contents of each slide or viewgraph, emphasizing key points. Do not just present the slide or viewgraph and let the audience read it. You are there as the OT&E expert to provide answers and discuss the issues, not to hand out paper. Since your viewgraphs are all bulletized, you will find that you cannot just read the viewgraph to the audience. Instead, as each slide or viewgraph is presented, describe the important points. Avoid statements such as "This viewgraph is..." or "This viewgraph contains...." Instead, introduce your viewgraph in a sentence, such as: "We defined the limitations as..." or "Based on this testing, we concluded that...."

**(c)** Ensure that your discussion follows the same order as the viewgraph. If an item is not important enough to mention or discuss, don't list it on the viewgraph. Prepare backup slides on material you believe may interest the Commander, or things that may need more information. Present them only if the need arises.

**(d)** Never use an acronym or abbreviation without first defining it (e.g., Automatic Battery Monitoring System - hereafter referred to as ABMS). Limit your use of acronyms.

**(e)** Avoid the use of "trade jargon"; speak plain English. Be clear and concise in your delivery, and remember that you are the expert on your subject.

**(4) Preparing Washington Briefs (Acquisition Review Board (ARB), Navy Program Decision Meeting (NPDM), etc.).** The cognizant ACOS must provide the following information (using the POPS report and/or the morning meeting) to the Commander upon learning of a decision meeting involving a CNO project for which OPTEVFOR con-ducted OT&E:

- type of decision forum
- date, time, and place
- purpose of the decision forum (milestone and production level)
- schedule of preliminary briefs
- whether a formal presentation is required
- recommended COMOPTEVFOR briefer and other attendees
- whether attendance by the Commander is recommended

**By keeping the CNO data base up to date with regard to scheduled decision meetings, you also ensure an up-to-date POPS report. Inform Code 01B1 of any late-breaking changes to scheduled decision meetings.**

**(5) Presenting Washington Briefs (ARB, NPDM, etc.)**

**(a) Format**. We are typically limited in the number of slides we can present at an ARB or NPDM; the number varies with the scope and complexity of test. As a general rule, plan for 10 or fewer slides. A suggested outline is provided below. Sample briefing slides, sample 3-2, are provided beginning on the next page.

- introductory viewgraph (your name, etc.)
- test summary
- major conclusions
- COMOPTEVFOR recommendations

**(b) Results.** If the results are based on too small a sample size (e.g., insufficient data base), you should clearly state in your oral presentation that you are reporting an outcome. Avoid using words such as "inadequate test time," etc., in your presentation or on your viewgraphs. Limit the contents of your viewgraph to the parameter, result, and threshold. If you include remarks in your viewgraph, avoid making statements that others may perceive as being unsupported by fact or our results.

**(c) Correction of Deficiencies**. If the DA reports they have corrected some of the deficiencies we listed, you must be aware of this. This requires close liaison with the DA decision meeting. In your package to the Commander, you should inform the Commander that outstanding deficiencies are being reported as corrected by the DA. You should request direction on whether we should caveat these results in our briefing.

**(d) Negative Conclusions.** If we recommend against fleet introduction of the system, the briefing must fully substantiate negative conclusions and recommendations.

**(e) COMOPTEVFOR's Position.** You must ensure that the Commander's position is accurately conveyed at the proper time; in other words, during your brief and during any discussions that may follow. If you are unsure as to the COMOPTEVFOR position, see that the question is raised for the Commander's review. You are expected to propose a COMOPTEVFOR position, provided you can back it up.

CLASSIFICATION

**COMOPTEVFOR**
**OPERATIONAL EVALUATION**
**SHIPBOARD WEAPONS SYSTEM**
**MK XXX MOD X**

DOWNGRADING INSTRUCTIONS

NAVY PROGRAM DECISION MEETING (NPDM)
DATE OF PRESENTATION

CLASSIFICATION

The title slide is used as an announcement of the brief. It lets those arriving know what is coming.

**Sample 3-2. Briefing Slides**

CLASSIFICATION

## INTRODUCTION

* PURPOSE
  - PROVIDE COMOPTEVFOR'S REPORT OF OPERATIONAL EVALUATION OF THE SHIPBOARD WEAPONS SYSTEM MKXX MOD X
  - PROVIDE COMOPTEVFOR'S RECOMMENDATIONS REGARDING FLEET INTRODUCTION

* OUTLINE
  - SUMMARY OF TESTING
  - OPEVAL OBJECTIVES
  - LIMITATIONS
  - MAJOR TEST RESULTS
  - CRITICAL OPERATIONAL ISSUES
  - OPERATIONAL CONSIDERATIONS
  - CONCLUSIONS
  - RECOMMENDATIONS

- Lead off with an "introduction viewgraph," which will include the purpose and outline of the brief.

- If you are limited in the number of slides you can present, this slide may be "expendable."

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## SUMMARY OF TESTING

* USS SPRUANCE (DD 963) 2 MAY - JUNE 1991

* DETECTION, TRACKING, AND FIRING EXERCISES
  - SINGLE AND UP TO 6 SIMULTANEOUS TARGETS
  - CLEAR AND JAMMING ENVIRONMENTS

* EXTENT OF TESTING
  - 212 DETECTION/TRACKING RUNS
  - 38 VALID FIRING RUNS
  - 15,083 ROUNDS FIRED
  - 1,019 HOURS SYSTEM OPERATION

On this slide, highlight the test program to give the audience a feel for the test scope and magnitude of the data base.

The information presented here is similar to that contained in the Project Operations paragraph of the letter report.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## OPEVAL OBJECTIVES

* DETERMINE CAPABILITY TO DETECT AND TRACK THREAT REPRESENTATIVE TARGETS
* DETERMINE CAPABILITY TO ENGAGE (KILL) AIRBORNE TARGETS
* DETERMINE RELIABILITY, MAINTAINABILITY, AND AVAILABILITY
* ASSESS COMPATIBILITY AND SUPPORTABILITY IN INTENDED ENVIRONMENT
* DETERMINE ADEQUACY OF PERSONNEL AND TRAINING REQUIREMENTS

These are the OPEVAL objectives of the test plan or TEMP, abbreviated or condensed where possible, to keep the slide from being too busy. For example, the actual test plan objectives for this program included words about jamming and single and multiple targets. These words have been left off this slide because they were just used on the preceding slide.

List "effectiveness" objectives first, then "suitability" objectives.

This slide may be removed if you are limited to a small number of slides.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## LIMITATIONS

* PRECLUDED EVALUATION OF OPERATIONAL EFFECTIVENESS AND OPERATIONAL SUITABILITY

* REQUIRE ADDITIONAL TESTING

A back-up slide with more details should be prepared and available.

These are limitations similar to those presented in paragraph 1f (Limitations) of the letter evaluation report.

This slide concludes the "Summary of Testing" section of the briefing. The audience now knows:

1. What we did
2. Why we did it (our objectives).
3. What we couldn't do

We are now ready to address the major test results -- keyed to objectives.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## MAJOR QUANTITATIVE TEST RESULTS

| COI | PARAMETER | RESULT | THRESHOLD | SUCCESSES |
|---|---|---|---|---|
| Detection | Pd | 1.0 | ≥0.90 | 9 of 9 |
| Classification | Pc | 1.0 | ≥0.92 | 9 of 9 |
| Reliability | MTBOMFhw | 520 hr | ≥400 hr | 1 HOMF |
| Maintainability | MCMTOMF hw | 1.2 hr | ≤2.0 hr | 1 HOMF |
| Availability | $A_O$ | 0.98 | ≥0.94 | 1.9 hr DT<br>1698.1 hr UT |

Pd probability of detection
Pc probability of correct classification
MTBOMFhw mean time between operational mission failures-hardware

This slide presents quantitative results in tabular form, similar to our final report formats.

If results are good across the board, then this slide alone is sufficient. But, if the numbers indicate a problem, this should be addressed by a follow-on slide.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## MAJOR QUALITATIVE EFFECTIVENESS TEST RESULTS

| CAPABILITY | DEMONSTRATED | COMMENT |
|---|---|---|
| Localization | Yes | 9 of 9 |
| Tracking<br>- Clear Environment<br>- ECM Environment | <br>Yes<br>No | <br>9 of 9<br>3 of 9 |

This slide addressed qualitative results and is similar to the Qualitative Results table in our final reports.

Significantly, it shows what capabilities were or were not demonstrated.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## CRITICAL OPERATIONAL ISSUES

| COI | RESOLUTION |
|---|---|
| Detection | Partially Resolved (* for limitation) |
| Classification | Partially Resolved |
| Localization | Resolved (SAT) |
| * See Limitations. | |

-The goal is to have all COIs resolved by OPEVAL. This often means that limited test data must be augmented somehow, either through additional fleet data or applicable data from previous testing. If a COI must remain partially resolved or unresolved (in any phase of testing) because of a limitation, indicate this in the "Resolution" column by use of an asterisk note, as shown above.
- For EOAs, OAs, and other pre-OPEVAL phases (case-by-case basis), the following color rating system will be used to provide OPTEVFOR's assessment of risk associated with each COI:
Green - Little or no risk identified; Yellow - A moderate level of risk is identified; Red - There are areas of significant risk; White - Not evaluated or assessed.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## CONCLUSIONS

* OPERATIONALLY EFFECTIVE
  - SOFTWARE ANOMALY REQUIRES INVESTIGATION/RESOLUTION

* POTENTIALLY OPERATIONALLY SUITABLE
  - COMPATIBILITY PROBLEMS WITH SPS-XX
  - INTEROPERABILITY WITH COMBAT SYSTEM MUST BE DEMONSTRATED

If the report contains operational considerations, a viewgraph(s) must be included prior to the conclusions.

The conclusions of a briefing on OT&E results always address operational effectiveness and operational suitability.

When the finding is "for" operational effectiveness or operational suitability, it is usually not necessary to say why - this should be obvious.

When the finding is "not for," as is the case here regarding operational suitability, it is necessary to highlight the reasons for the down-check.

**Sample 3-2. Briefing Slides (Cont)**

CLASSIFICATION

## RECOMMENDATIONS

* LIMITED FLEET INTRODUCTION TO DEPLOYING UNITS

* RESOLVE COMPATIBILITY PROBLEM AND DEMONSTRATE SOLUTION DURING FOT&E

* RESOLVE SYSTEM SOFTWARE ANOMALY

* AT EARLIEST OPPORTUNITY, CONDUCT OT-III TO
  - VERIFY INTEROPERABILITY WITH COMBAT SYSTEM
  - PROVIDE BASIS FOR FLEET INTRODUCTION RECOMMENDATION

* EXPAND MAINTENANCE TRAINING

These management-oriented recommendations lay out a get-well plan. They cover all reported discrepancies -- and do not introduce new thoughts.

**Sample 3-2. Briefing Slides (Cont)**

## 312. METEOROLOGICAL AND OCEANOGRAPHIC (METOC) ENVIRONMENTAL SUPPORT

### a. METOC Support for OT&E

**(1)** All METOC support requirements should be coordinated with the Staff Oceanographer, Code 501. Liaison with the appropriate Naval Oceanographic Center will be coordinated with Code 501. A majority of projects can benefit from METOC support from Code 501 or from an outside source like Navy Mobile Environmental Team (MET) personnel.

**(2)** SECNAVINST 5000.2B addresses the mission and availability of MET personnel tasked with providing meteorological and/or oceanographic support to ships conducting special operations and Navy R&D work. The primary mission of the teams is to provide METOC environmental forecasting and observation support for temporary requirements (less than 120 days) in the Atlantic, Pacific, and Indian Ocean regions (including adjacent bodies of water such as the Mediterranean and Norwegian Seas, Sea of Okhotsk, Gulf of Mexico, Persian Gulf, etc.). The support they provide includes:

**(a)** Oceanographic and meteorological forecasting and interpretation.

**(b)** Sensor and weapon system performance prediction (integrated refractive effects predictions (IREP), tailored acoustic propagation loss and raytrace forecasts, etc.).

**(c)** Tactical recommendations for optimum sensor performance.

**(d)** Ship weather, bathythermograph, oceanographic, and upper air observations.

**(3)** DoD Regulation 5000.2R includes policy guidance which states,"...all Navy RDA programs shall consider appropriate environmental factors in Navy weapon/sensor systems from program initiation through test and evaluation to full operational capability." It is important that the OTD receive adequate and timely environmental support (predictions, observations, interpretation of data) during all phases of OT&E. Often the test platform will not have organic oceanographic or meteorological personnel on board to support the OTD. Support from FLENUMMETOCCEN Monterey is often time-late and, most important, based on observations not necessarily representative of the test area (such as predictions for refractive conditions over water, based on nearby land station upper air observations).

**(4)** NAVOCEANCOMINST 3140.13 states that, travel and per diem expenses to provide support to fleet test and evaluation of weapon and sensor systems is a nonreimbursable (i.e., we don't pay). The ship or submarine provides berthing and a workspace for the team (usually a one- or two-person team). MET support provides an excellent opportunity for you to obtain accurate environmental data at no cost to OPTEVFOR or the project.

**(5) Request Procedures.** All MET support will be requested through Code 501. Requests for MET services will be from the nearest Naval Meteorology and Oceanography Command activity which is MET-capable. The following areas of responsibility exist:

| | |
|---|---|
| NAVLANTMETOCCEN Norfolk | Atlantic Ocean |
| NAVLANTMETOCFAC Jacksonville | Caribbean Region |
| NAVEURMETOCCEN Rota, Spain | Mediterranean Sea |
| NAVPACMETOCFAC San Diego | Pacific Ocean east of 180° |
| NAVPACMETOCFAC Yokosuka | Indian Ocean and Pacific Ocean west of 180° |

Requests for MET support should include:

- type of support (forecasting, observing, upper air, or acoustics and ASW)
- nature of deployment (include CNO project number)
- name of ship(s) MET will be embarked upon
- Embarkation and disembarkation dates and locations

**313. OCEANOGRAPHER RESPONSIBILITIES.** The OPTEVFOR Oceanographer will:

**a.** Advise the Commander on METOC environmental impact on naval weapons systems, particularly during OT&E.

**b.** Assist in the Integrated Program Summary (IPS), MNS, or ORD review process to ensure METOC environmental factors are considered in establishing thresholds.

**c.** Review TEMPs, test plans, and other T&E related documents from a METOC specialist perspective.

**d.** Assist the OTCs and OTDs in both the DT monitoring and OT&E phase of weapons system acquisition to ensure that METOC environmental considerations are factored into the evaluation process. He also assists OTDs in obtaining MET support services from the appropriate NAVOCEANCOM activity.

**e**. Assist in the tactics development phase of operational testing to ensure any system can be effectively employed within METOC environmental constraints.

**f.** Obtain, manage, and issue all necessary hydrographic, topographic, or aeronautical charts for OPAREAs where testing will be conducted.

**g.** Monitor METOC forecasts and conditions during operational testing and brief appropriate staff personnel of the effects on test platforms and systems.

## 314. LOGISTIC SUPPORTABILITY

**a.** The staff Integrated Logistics Support (ILS) Officer, Code 651, is available to assist you with evaluation of logistics supportability. An ILS checklist is provided to you during the introductory OTD course. If you were not given a copy, Code 650 has the ILS checklist on floppy disk. ILS documentation, i.e., ILSP, Navy Training Plan (NTP), or operational logistics support summary (OLSS) should be routed to Code 651 for review.

**b.** Figure 3-1 is another tool to assist you when reviewing ILS documentation. Support planning should be compared to the milestones in Figure 3-1. The figure graphically depicts the progression and what is required at the various stages of system development.

**315. NTPs.** NTPs are prepared in accordance with OPNAV P-111-1.86 (NTP Manual) and OPNAVINST 1500.76. The ILS Officer, Code 651, retains the manual and instruction. Code 651 is available for assistance in reviewing NTPs. The following is a guideline for reviewing the seven sections of an NTP:

**a. Part I, Technical Program Data.** Ensure this section includes the title of the program, security classification, NTP principals, operational uses, technical and operational evaluation requirements, description of the equipment, system or subsystem being replaced, significant interfaces with other systems, maintenance levels (organizational, intermediate, or depot), logistics, schedules, manpower requirements, and training concept.

**b. Part II, Billet and Personnel Requirements**. Ensure this section identifies the quantity and quality of billets required to support the new system, based on projected installation. If a new system replaces an old system, the billets to be phased out should be considered in manpower determination.

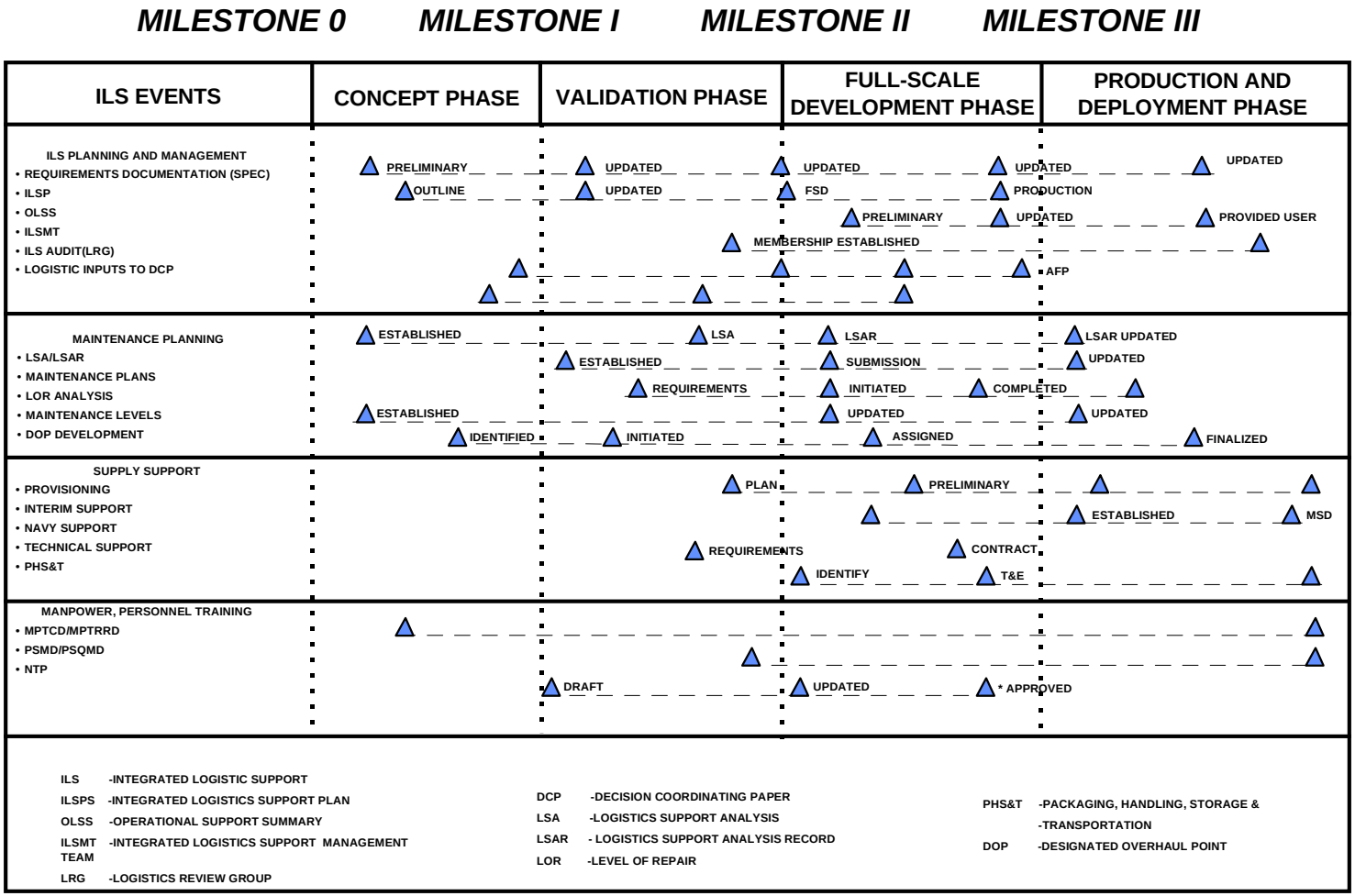


**Figure 3-1 Major ILS Events in the Acquisition Process**

**c. Part III, Training Requirements.** This section describes in detail the data reflected in Parts I and II. The reviewer should ensure that this data are accurately reflected in this section.

**d. Part IV, Training Logistics Support Requirements**. This section identifies training hardware requirements such as technical training equipment, test equipment, general purpose and special test equipment, special purpose and special tools, electronic test equipment and repair parts needed to maintain these equipments. Requirements for facility, training services, curricula materials, training aids, and technical manuals should be included.

**e. Part V, Major Milestones.** Ensure the milestones developed for the new system are stated in this section. The milestones should identify the key controlling events pertaining to the introduction of the new equipment, system, or subsystem. The key lead times and events are those used in planning the identification, acquisition, detailing, and sequence for manning and training personnel.

**f. Part VI, Actions and/or Decisions**. This section briefly describes the actions required to solve pertinent problems in the development process and a concise statement of all appropriate conference decisions affecting the required elements of the NTP.

**g. Part VII, Points of Contact.** Ensure all points of contact applicable to the development of the NTP are listed. All NTP principals listed in part I of the NTP should be included.

## 316. RETENTION OF TEST-RELATED INFORMATION

**a**. Upon completion of project(s), you should turn in all related historical material in an accordian folder to the division administration office. A cover letter will be submitted with the folder indicating: project number, subject, start and completion dates, and project officer's name.

**b.** The divisional administrative personnel will turn in the project folder to central files/mailroom where all completed project files are stored.

# CHAPTER 4

# TEST AND EVALUATION PROCESS

**401. INTRODUCTION**. Per SECNAVINST 5000.2B, T&E programs shall be structured to:

- Provide essential information for assessment of acquisition risk and for decisionmaking.
- Verify attainment of technical performance specifications and objectives.
- Verify that systems are operationally effective and suitable for intended use.
- Provide essential information in support of decisionmaking.

To accomplish these objectives, two principle types of T&E are conducted; DT&E and OT&E. Each is discussed in detail in SECNAVINST 5000.2B. The relationship between DT&E and OT&E is discussed in detail throughout this chapter. Read the DT&E part as carefully as the OT&E part so you understand the relationship well. The OTD has an important role to play in both DT&E and OT&E, as you will see in subsequent chapters.

**402. PHILOSOPHY OF OT&E**. Prior to OPEVAL, a new weapon system should have thoroughly proven its capability to meet technical specifications, through DT&E culminating in TECHEVAL. It is then COMOPTEVFOR's responsibility to structure and conduct an OPEVAL that will prove the weapon system's capability in a realistic operational environment, when maintained and operated by sailors, subjected to routine wear-and-tear, and employed in typical combat conditions against a simulated enemy who fights back. The purpose of OPEVAL is to allow an accurate evaluation of the true operational effectiveness and operational suitability of the weapon system in actual fleet use and combat employment. While TECHEVAL deals principally with instrumented tests and statistically valid data, OPEVAL should deal with operational realism and the uncertainties of combat. Efforts should be made to expose the weapon system to as many real-world operational circumstances and scenarios as possible. The objective is not always to acquire statistically significant data, or a box score of successes and failures (since replications are seldom possible), but rather to gain the most complete understanding possible of the weapon system's capabilities under stress. In technical testing, it is generally possible to state the purpose of the test with certainty. In OT, the principal value derived is often unplanned, resulting not from the basic purpose of the test, but from realistic aspects that were injected simply because they are likely to exist in actual fleet or combat employment. Thus, OT involves more than mere scientific observation and data collection, and reasonable opportunity should be provided in test planning (chapter 6) for the unexpected to occur (as it usually does in combat).

## 403. CONCEPTS OF T&E

**a. DT&E**. DT&E is planned and conducted by the DA (usually a systems command (SYSCOM)). Per SECNAVINST 5000.2B, DT&E programs shall:

- Identify potential operational and technological limitations of the alternative concepts and design options being pursued.
- Support the identification of cost-performance trade-offs.
- Support the identification and description of design risks.
- Substantiate that contract technical performance and manufacturing process requirements have been achieved.
- Support the decision to certify the system ready for OT&E.

**b. OT&E**. In the Navy, OT&E is planned and reported directly to CNO by COMOPTEVFOR. OT&E is required for all ACAT I, II, III, and IVT programs. OT&E is not required for ACAT IVM programs. OT&E has the following distinguishing characteristics:

**(1)** Threat representative forces (ours and theirs) shall be used whenever possible, and will employ realistic tactics against targets that fight back.

**(2)** Typical users (fleet personnel) are required to operate and maintain the system or item for OT under conditions simulating combat stress and peacetime conditions. Contractor operation in phases other than those using modeling and simulation (normally OT-I EOAs) voids OT. The same is not true of contractor maintenance. During early IOT&E, maintenance by fleet personnel is usually not possible. Only the maintainability portion of OT is voided by contractor maintenance. (Note that even when there is no OT, an operational evaluation of technical data is always possible.) On occasion, the Navy's maintenance plan states a continuing role for contractor personnel in organizational level maintenance. When testing a system with an approved plan of this kind, contractor personnel participation is permitted exactly as specified in the approved plan, and their performance is subject to review and analysis just as if they were sailors.

**(3)** The test article shall be representative (in so far as possible, considering the stage of development) of the intended production equipment. It shall also be installed (as close as possible) as is expected in the fleet.

**(4)** Production or production representative articles shall be used for the dedicated phase of OT&E that supports the full rate production (M/S III) decision.

**(5)** Sufficient (and correct) data must be recorded during the exercise to document all operationally significant system or equipment characteristics.

**c.** OT&E also includes the evaluation (analysis and interpretation) of data from an operational viewpoint, for the purpose of assessing or determining the operational effectiveness and operational suitability of a system.

**d. Two Major OT&E Categories**

**(1) IOT&E**. IOT&E is all OT&E (including early operational assessments (EOA) and operational assessments (OA)) conducted up to and including OPEVAL. IOT&E can be divided into two major phases:

**(a)** OT-1 (EOA) is conducted during the Demonstration and Validation phase (Phase I). Results assist decisionmakers at Milestone (M/S) II in determining whether to continue development and approve entry into Phase II. EOAs and OAs are discussed in detail in paragraph 405.

**(b)** OT-II (including OAs) is IOT&E conducted during Phase II. OT-II may be subdivided into discrete phases (e.g., OT-IIA, OT-IIB, etc.). Early phases of OT-II may be conducted to assess potential operational effectiveness and potential operational suitability, and to initiate tactics development. Results of early OT-II phases identify program risks and may support a recommendation regarding limited fleet introduction to facilitate additional phases of testing. In all programs, the final phase of OT-II is the OPEVAL, which is a pre-requisite for approval for full production or rate production and fleet introduction. OPEVAL will be conducted on a production-representative test article. OPEVAL (and earlier OT-II phases) results support the M/S III production approval decision and provide a recommendation regarding fleet introduction.

**(c)** Verification of correction of deficiencies (VCD) is included as a phase of OT. A VCD must be tied to the phase of testing it applies to; i.e., a VCD for OT-IIA would be "OT-IIA1(VCD)." VCDs are done to assist the milestone decision authority in ensuring that the deficiencies cited as corrected by the program manager from a previous phase of OT have actually been corrected prior to the authority making a limited or full rate production decision. This type of test will examine only those COIs that have been corrected, and will not require end-to-end testing of the system. The purpose is to show the deficiencies as demonstrated as corrected or not corrected, or as not demonstrated at all (pre-OPEVAL, no COI resolution). If a VCD enables us to resolve COIs (beyond OPEVAL), then they should be listed as resolved in the VCD report, thereby reducing or eliminating the need for later phases of OT. See chapter 8, table 8-1 for report requirements.

**(2)** Follow-on operational test and evaluation (FOT&E) is all OT&E conducted after the OPEVAL. FOT&E is divided into two major phases:

**(a)** OT-III is FOT&E conducted after OPEVAL (post-milestone III), using equipment of the same design as in OPEVAL or preferably production systems and includes completion of any deferred or incomplete OT&E. OT-III is described in detail in chapter 5.

**(b)** OT-IV is FOT&E conducted on production systems (unless previously covered in OT-III). The major objective of OT-IV is the validation of the operational effectiveness and operational suitability of production systems. OT-IV should be scheduled and conducted in every program in which production articles have not undergone previous OT&E.

**(3) Software Testing**

**(a)** Software shall be operationally tested in the system in which the software application is installed or implemented when fielded. The software to be used for OPEVAL and FOT&E shall be the software intended for fleet use. Software improvements shall be reflected in sequential releases. Software releases fall into three categories: major; minor; or maintenance. CNO (N091) shall resolve issues on the category of a software release as it relates to T&E.

**1.** Major releases require operational testing by COMOPTEVFOR. These involve a change that adds new functions or warfare capabilities, interfaces with a different weapon system, redesigns the software architecture, or rewrites the software in a different language.

**2.** Minor releases are improvements that do not add any significant functions or interfaces and will be tested by COMOPTEVFOR if requested by the program manager and approved by CNO (N091).

**3**. Maintenance releases are "fixes" for minor problems and do not require testing by COMOPTEVFOR prior to release.

**(b) Software Qualification Testing (SQT).** Post-milestone III software testing, which is solely intended for a fleet release recommendation, shall be conducted by COMOPTEVFOR as SQT. SQT applies to software modifications of limited scope, as determined by CNO (N091), such as aircraft and weapons systems operational flight programs (OFP) and other systems in which software provides a similar function. When a program is approved for SQT, CNO (N091) will assign a TEIN, and an SQT TEMP shall be written using the title page format of SECNAVINST 5000.2B, enclosure (7), Appendix III, page III-28. For SQT, a statement of functionality (SOF) prepared by the DA and approved by the program sponsor will be used to develop the SQT TEMP. **SQT reports will be messages no longer than 10 pages in length. If longer, generate a letter-only report. Approval (case-by-case basis) for messages longer than 10 pages will be from Codes 01B/01.**

**1. Software Release to the Fleet for Existing Hardware Platforms.** There is no need to reevaluate hardware reliability, maintainability, availability, and logistic supportability for new software releases for existing hardware platforms.

**2. Software Release to the Fleet for New Hardware Platforms**. An OPEVAL is required for fleet release of existing software ported to a new hardware platform.

**(c) Statement of Functionality.** The PM shall forward an SOF to COMOPTEVFOR, via the program sponsor, copy to CNO (N912). The program sponsor's endorsement will serve as validation of software requirements for that intended release. The statement of functionality shall define:

**1.** New capabilities of the improved software.

**2.** Corrections to previous deficiencies that the new software is intended to correct.

**3.** Any capabilities that were deleted.

**4.** Description of the breadth and depth of regression testing conducted.

**5.** Specific operational requirement(s) the new software will address.

**6**. Safety and /or security issues or functions added, modified, or deleted.

**e. The two products of OT&E are**:

- The evaluation report (see chapter 8)
- The OPTEVFOR Tactics Guide (OTG) (see chapter 9). (Not every test will result in an OTG. The preponderance of OTGs are produced in support of air warfare systems. Surface and undersea tactics are usually not addressed by OTGs, but rather by Surface Warfare Development Group and Submarine Development Squadron 12, respectively.)

**404. APPARENT OVERLAP OF DT&E AND OT&E**. DT&E and OT&E necessarily examine the same features of a system -- performance features. This is because their viewpoints are completely different. This fundamental difference (viewpoint) means that DT&E and OT&E actually are completely different; there is no overlap or duplication between the two. (If there is, T&E is not being planned properly.) DT&E and OT&E normally differ in: the way tests are conducted; what is being tested; the evaluation criteria; and the test measurements and the data base.

**a. How Are Tests Conducted**?

**(1)** Although DT&E frequently serves as a rehearsal for the OT&E to follow, and measures many of the same performance characteristics, the primary thrust of DT&E is technical and focused on factors necessary to ensure contract technical performance and manufacturing process requirements have been met. DT&E is properly conducted:

- In a controlled environment that minimizes the chance that unknown or unmeasured variables will affect system performance.
- By technical personnel skilled at "tweaking" to maximize performance.
- Against simulated threats tailored to demonstrate various aspects of specified system technical performance.

**(2) OT&E is properly conducted**:

- In an operationally realistic environment (e.g., high seas, temperature extremes, high-density electromagnetic environments) under conditions simulating combat stress and peacetime conditions.
- With fleet operators and maintenance personnel.
- Against threats which replicate, as closely as possible, the spectrum of real-world characteristics.
- Using fleet tactics.

**b. What Is Being Tested**?

**(1)** DT&E tests a weapon, or a "black box," whatever the development program involves. (Seldom does a development program involve a complete weapon system.)

**(2)** OT&E tests total weapon systems. If a missile is being developed, OT&E does not test only the missile itself, but rather the missile system, which includes the firing platform, that platform's detection, classification, and targeting systems, the people who man it, logistic support, interfacing equipment, and so forth.

**c. What Are the Evaluation Criteria**?

**(1) DT&E**. Technical criteria are parameters measured during controlled DT&E tests.

**(2) OT&E**. Operational criteria are the CNO-provided minimum acceptable operational performance requirements (older programs) or measures of effectiveness/suitability (newer programs), or thresholds, which quantify the critical operational issues (COI).

**d. What's Measured and How Often**?

**(1)** In DT&E, the DA generally knows what he wants to measure (some particular parameter: launch velocity; the number of g's pulled as the missile acquires; time-to-climb; etc.). DT&E tests are structured to hold many things constant, isolate others, and allow measurement of the one or two parameters of interest. In OT&E, it often is not possible to specify measurements. The objective is often simply to create combat conditions as closely as possible and record data as events unfold. For aviation OT&E, with highly time-compressed test events and a high cost for OT&E, it is mandatory that OTDs know exactly what parameters of their system must be examined to resolve the specified COI. OT&E cannot enjoy the luxury of isolating variables as DT&E does. You must devise methods to capture your data during these highly dynamic OT&E flight evolutions or during postflight analysis.

**(2)** In DT&E, it is generally possible to verify data statistically through replication of tests. In OT&E, this is often not possible, because interactions during testing are as unique as a combat experience is unique.

**(3)** You should review data collection instrumentation used for DT to determine if anything new developed for the system or used during DT can assist in data collection during OT.

## 405. OPERATIONAL ASSESSMENTS

**a.** OAs are phases of OT (OT-1 and OT-IIA) using technology demonstrators, prototypes, mockups, engineering development models, or simulations. The focus of an OA is on:

- Significant trends noted in development efforts.
- Programmatic voids.
- Areas of risk.
- Adequacy of requirements.
- Ability of the program to support adequate OT.

Assessments can be applied to aspects of testing that require judgment and experience in addition to those lending themselves to specific, quantifiable measurement. The objective of measuring whether mission requirements can be met remains the same regardless of when in the acquisition cycle the assessment is made. For OAs the key questions to be answered may be phrased as follows:

- At MS-0 and MS-I, "Can it be forecast that the system as defined, planned, and proposed will meet the stated mission requirements?"

- At MS-II the question becomes, "Is the system in development satisfactorily progressing toward meeting the requirements, and will it be ready for an independent OPEVAL to support MS-III?" This is a major question to be answered, since it is during this time frame that most major decisions concerning long-term commitment of funds are made.

**b.** An OA is not just a formal, one time, final evaluation of a system. The OA will assess the system's capability to meet mission requirements and shall assess, if required, whether a formal OPEVAL may be successfully passed. Thus, OAs shall assess a system's capability to meet, or continue to meet, mission requirements. OAs fall into two categories:

**(1) OT-1 EOAs**. EOAs are conducted prior to MS-II, when there is no test article available or only a prototype, to provide an input to the decisionmaker to support that milestone decision. For OT-1 the questions to be answered are:

- Is the system likely to satisfy the requirements of the ORD?
- Is the system likely to counter the threat and/or projected threat as stated in the System Threat Assessment Report/Office of Naval Intelligence Threat Assessment (STAR/ONI TA)?
- Can we assess that it will do what it is supposed to do?
- Are there any reasons why the program should not proceed?
- For each COI, what level of risk exists?

You may provide a conclusion regarding the system's assessed potential to be operationally effective and operationally suitable. If you cannot provide conclusions due to system maturity or lack of adequate OT data, state that in the OT-1 (EOA) report.

**(2) OT-IIA OAs**. In general, OAs are conducted after M/S-II when an early test article is available, to provide an assessment of system operational effectiveness and operational suitability based on our operational judgment.

**c.** CNO may direct other types of OAs to provide an operational input to the decisionmaker:

**(1) No TEIN or TEMP/Non-ACAT Programs**. COMOPTEVFOR can be tasked to test a system or equipment that has not yet entered (or may never enter) the Navy acquisition process (no TEIN assigned) or to test a system improvement or observe a technology demonstration and the testing is not governed by a CNO approved TEMP. When reporting on these assessments, conclusions regarding operational effectiveness and operational suitability, and recommendations regarding limited fleet introduction or fleet introduction will normally not be

made (this will be decided on a case-by-case basis, per CNO tasking). Recommendations may address the potential for continued development, design changes needed, future testing required, and tactical utility. In those cases where testing is being conducted on a system improvement or a non-ACAT program, an MOA will be executed between COMOPTEVFOR and the cognizant SYSCOM commander, and will be the governing document for conduct of the tests. This procedure will not be used as a "work-around" for an outdated or otherwise deficient TEMP.

**(2) Monitor DT**. COMOPTEVFOR generally does not produce a test report unless there has been active OPTEVFOR participation in the test, complete with an OPTEVFOR test plan. In rare cases, however, OPTEVFOR can be directed by CNO to test a system to support a milestone decision, and the assessment will consist of monitoring DT with no active OPTEVFOR participation. In cases such as this, the OTD must obtain a copy of the DT&E test plan so that we may review the system's technical characteristics and test objectives, and further our understanding of the test's purpose prior to its start. In keeping with COMOPTEVFOR's policy, the results of such an assessment will normally not be used to resolve COIs or to provide a conclusion regarding operational effectiveness and operational suitability or a recommendation regarding the pending decision.

**(3) Quick Reaction Assessment (QRA)**. Operational necessity may, at times, dictate modifying the established OT process to achieve a rapid capability in the fleet. In these cases, the program sponsor may want a quick assessment by COMOPTEVFOR concerning operational considerations and capabilities of the system. If a QRA is needed, the program sponsor will send a request to CNO (N091), info COMOPTEVFOR. If approved, COMOPTEVFOR will conduct the assessment and issue a report as soon as possible. Information obtained that is critical to the fleet may be issued via interim reports on an as-required basis. ***A QRA may be used to assess operational effectiveness/suitability; however, this will be limited to "....has the potential to." A QRA will not be used to resolve COIs, or provide a limited fleet introduction/fleet introduction/fleet release decision.*** The following information must be included in the QRA request:

- Purpose of the assessment and, specifically, what questions the program sponsor wants answered.
- Length of time available for the assessment.
- Funding available for the assessment.

**406. COMBINED AND CONCURRENT DT AND OT**. SECNAVINST 5000.2B requires that planning for DT and OT be coordinated at the test design stages so that each test phase uses resources efficiently to yield the data necessary to satisfy common needs of the DA and the OT&E agency.

**a. Combined**. Combined DT/OT, in its strictest sense, is a test phase in which DT and OT testers share test assets and data, and in which the events meet both DT and OT require-

ments. An example of this would be a test in which both DT and OT testers collect data from every event or flight. The term "combined DT/OT" is also used widely in a broad sense, to refer to any test phase during which DT and OT testers share assets and/or data. A final independent phase of OT&E shall be required for beyond low-rate initial production decisions. The following comments apply to combined DT/OT in the broad sense:

**(1)** While combined testing may be possible in some cases, the widely differing objectives of DT&E and OT&E make it more difficult than may first appear to combine the two. Subparagraphs (a) and (b) below explain:

**(a)** DT&E is properly conducted to test some individual specification or parameter (e.g., the number of "g's" pulled by a projectile) with other parameters held constant. The test is designed to measure technical performance of a system.

**(b)** In OT&E, proper technical performance with regard to individual specifications and parameters is assumed. The mission of OPTEVFOR is to assess whether, given this technical performance, the weapon system can be operationally effective and operationally suitable when employed under typical combat and environmental conditions by fleet personnel against an enemy who fights back. Thus, OT&E is conducted on a mission-by-mission basis, varying such factors as sea state, visibility, own-ship speed and maneuvers, the method of illumination, range, firing doctrine, target maneuvers, enemy countermeasures, etc.

**(2)** Early planning for combined DT and OT is essential to ensure efficient use of resources. Participation by OPTEVFOR in the planning and execution of combined tests must ensure that the tests conducted and data collected are sufficient and credible to meet OT&E requirements. This is particularly critical in planning for tests of systems with software block upgrades.

**(3)** In all cases, a separate and independent OT test plan will be provided, and separate and independent evaluation of operational test results will be conducted and reported.

**(4)** COMOPTEVFOR will also support combined DT/OT for revised or upgraded operational flight programs (OFP).

**(5)** Prior to combined DT/OT, you should review a copy of the DT&E test plan for the technical characteristics and test objectives to understand how the DA intends to test the system. We need to know what will be tested and how it may impact OT.

**(6)** Combined DT/OT requires an MOA between the DA and COMOPTEVFOR that outlines the test objectives (DT), capabilities/functions to be demonstrated (OT), the test conditions, test operations, etc. A file of current MOAs is maintained by Code 01B1 and may be used

to assist in drafting MOAs. A sample MOA is provided in chapter 5; the MOA format for publication is on the LAN under y:\general\ot&efmts\ msword\moa.doc.

**b. Concurrent**. If combined DT/OT is broadly defined, as explained above, then concurrent DT/OT is a category or type of combined DT/OT in which events are generally broken into DT and OT events. A snapshot taken during concurrent DT/OT would appear as DT or OT, but not both. An example of this would be having both DT and OT testers on a ship, conducting separate and distinct test scenarios, some for DT, some for OT.

**It's generally sufficient to use the term "combined DT/OT" to refer to a test phase without further categorizing it as concurrent, sequential, etc.**

**407. DT ASSIST**. DT assist is like an early phase of combined DT/OT, with a predominantly DT flavor, but <u>is not</u> assigned an OT number and <u>is not a formal phase of OT</u>. OT testers help execute the DT test plan. There is no OT test plan, and no OT report is prepared. DT assist is often done to allow OTDs to become more familiar with a system; to supplement DT personnel; or to allow DT on VX squadron aircraft. In all cases, we provide the system's developers with an early operational perspective. Though COMOPTEVFOR does not provide a formal report, if desired by program management we may provide a two or three page letter (see the "Letter of Observation" format on page 8-85) indicating our early assessment from our exposure to date. Table 4-1 (below) is provided to highlight the differences between DT assist and formal combined DT/OT phases of testing.

**a.** In DT assists, we <u>do not</u> attempt to resolve COIs, reach conclusions regarding operational effectiveness or suitability, or make recommendations regarding limited fleet introduction or fleet introduction.

**b.** DT assist is more than a mere observation of DT. OTDs have routinely monitored DT, and that should continue. Only when we take an active role in the DT effort should our involvement be characterized as DT assist. DT assist should be characterized on the program integrated schedule just as combined DT/OT is shown, with simultaneous DT and OT activity. However, if it is not included on the schedule, a DT assist may still be pursued and accomplished.

**c**. The developer, in preparation of a DT report, may use data produced. Also, as is the case for all DT data, if the data meets OT requirements it can be used to supplement OT data and help resolve COIs in future phases.

**d.** DT assist requires an MOA. Use the DT Assist MOA format (page 5-54, sample 5-11) and tailor it for your needs.

**Table 4-1. DT Assist-DT/OT Comparison**

| **DT Assist** | **Combined DT/OT** Note: Program documentation signatory authority is per OTD Guide Table 3-5. |
|---|---|
| No OT number assigned – because we're assisting in DT. It is not a formal phase of OT. | This is a formal phase of OT, complete with OT number, such OT-IIA. |
| Memorandum of Agreement (MOA) signed by COTF ACOS or VX CO required with program manager (PM). | MOA required with PM. |
| No OT test plan. | OT test plan required. |
| No OT report; at most a 2-3 page letter signed by COTF ACOS or VX CO to PM. | OT report required. |
| COIs not specifically addressed, and not resolved. | COIs always addressed, with either color codes or SAT/UNSAT/Partially Resolved. |
| No conclusions reached WRT effectiveness and suitability, and no recommendation regarding fleet introduction/release. | Conclusions always reached WRT effectiveness and suitability - (or potential for), and a recommendation regarding fleet release. |
| Certification message not required from PM. | Certification message generally required from PM. |
| Operational Test Readiness Review (OTRR) not required. | OTRR generally applies. |
| May be discussed in TEMP Part IV - (Optional). (See page 5-36 for sample paragraph to be inserted) | Must Be discussed in TEMP Part IV. |
| Data may be used to support COI resolutions - later. | Data may be used to support COI resolutions - now or later. |
| Not appropriate for verification of correction of deficiencies (VCD). (VCD requires a brief report and OT number.) | Good for VCD (report can be "short and sweet"). |
| Recommended for inclusion in TEMP, Part II Integrated Schedule - (Optional)<br>Example:<br>DT XXXXXXX DT-IIB<br>OT XXXXXXX DT ASSIST | Required for inclusion in TEMP Part II Integrated Schedule.<br>Example:<br>DT XXXXXXX DT-IIB<br>OT XXXXXXX OT-IIA |

**e. DT Assist After Milestone III**. DT assist can be employed during any phase of the acquisition process, including post-M/S III. However, it is most appropriate for "fly and fix" applications where COI resolution and conclusions regarding effectiveness and suitability are neither needed nor desired. Because most programs are seeking "effective and suitable" conclusions after M/S III, the DT assist approach is often not the vehicle of choice. It could be used effectively, though, as a lead-in to formal OT.

**408. PERFORMANCE BASELINE**. We occasionally encounter a requirements document which specifies that a new system must be "equal to or better than" its predecessor. In such cases, we need a performance baseline against which to evaluate the new system. This has sometimes caused us to conduct extra testing just for the purpose of collecting baseline data on the existing system. Where possible, however, it is preferable to use results of previous OT on the existing system for our baseline. DOT&E has endorsed such an approach.

**409. EVOLUTIONARY ACQUISITION (EA)**. EA is an acquisition strategy that applies to advanced technology, electronic, and software-intensive systems; and keys on the dynamics of technology and development and the potential of a system to evolve in incremental steps to a capability beyond the current technological capability (or core system). SECNAVINST 5000.2B is the primary guidance for developing an EA strategy with regard to acquisition. Additional guidance to T&E applies:

**a.** If an EA strategy is envisioned for a program, CNO (N912) and COMOPTEVFOR must be notified.

**b.** EA is based on defining a basic core capability and a series of evolutionary increments that lead to a final system that will evolve further without a complete redesign (without becoming a new initiative or program).

**c.** The production decisions for the basic core and each increment will be phased M/S III decisions (i.e., M/S IIIA, IIIB, IIIC, etc.). The first M/S III decision will be in support of a full rate production (FRP) decision of the majority of the hardware in the system and the basic core software capability. Subsequent decision forums will be for full release of the major software evolutionary increments. These are equivalent to FRP decisions.

**d.** A phased OPEVAL approach will be used in support of this phased M/S III strategy. There will be FOT&E between increments for major software releases that require testing by COMOPTEVFOR.

**e.** OT requirements for EA programs may preclude updating and revising the required TEMP in a sufficiently timely manner to provide the required T&E guidance. For EA programs, the initial TEMP will be in accordance with SECNAVINST 5000.2B. The TEMP will outline the basic core system, the increments, and the final desired system. DT&E and OT&E will concentrate on the T&E required for the basic core system and the first increment. TEMP appendices will be used for all subsequent testing of increments. The specific format for the appendices will be coordinated with CNO (N912). The program ORD must reflect the updates to system requirements prior to TEMP updates or revision.

## 410. OBSERVATION OF OPERATIONAL CAPABILITY (OOC)

**a. Applicability and Scope.** Occasionally, due to acquisition or programmatic issues, systems or equipment enter the fleet with no previous OT&E. In these cases, COMOPTEVFOR will conduct an OOC. This is not a phase of formal OT, and, therefore, cannot be used to support an acquisition decision. This is an accounting of the capability of a system as gauged against either the previous (i.e., replaced system) capability, or the system's ORD. Outcomes of the OOC for each system capability will be addressed as one of the following:

**(1) Capability Observed**

**(a) Successfully Demonstrated.** The system successfully demonstrated the operational capability and equaled or exceeded performance requirements (Pass).

**(b) Not Successfully Demonstrated.** The system failed to demonstrate the operational capability (fail).

**(2) Capability Not Observed.** The system was unable to demonstrate a capability which was available on a previously fielded system or is identified in the system ORD (Capability Regression).

**b. Conduct of OOC**

**(1)** An OOC can be at the request of fleet units or at the discretion of COMOPTEVFOR, and does not require certification from the applicable program office. Coordination will be directly between CNO (912), COMOPTEVFOR, and the chain of command of a fleet unit on which the system is installed; and will normally be on a not-to-interfere basis.

**(2)** An OOC is applicable to new systems, improvements/modifications to existing systems, including ECPs, SHIPALTs, ORDALTs, and software modifications (major, minor, or maintenance). As this is not a formal phase of OT, we will not publish a test plan. However, we will use a similar legacy system test plan if appropriate, when one is available.

**c. Reporting OOC**

**(1)** Due to the inherent limitations associated with conducting an OOC, we will not make any determination or assessment of system effectiveness or suitability. However, provide a recommendation regarding continued fleet release and the need for formal OT based on an overall observation of system performance to enhance mission capability.

**(2)** Report OOC results within 30 days of completion via quick-look message format, or by letter, as appropriate, and send to: CNO (N912); CNO sponsor; the chain of command of the fleet unit(s) on which the system is installed; the appropriate SYSCOM; and appropriate program office.

## 411. ADVANCED CONCEPT TECHNOLOGY DEMONSTRATIONS

**a. Background.** An ACTD is an integrating effort to assemble and demonstrate a significant new military capability, based on maturing advanced technologies, in a realistic environment, to clearly establish military utility. The Deputy Undersecretary of Defense for Advanced Technology (DUSD/AT) must approve a new-start ACTD by issuing an approval memorandum. Each ACTD is assigned a sponsor, typically a unified command, which also is the ultimate user of the system or capability. A program manager develops the ACTD, usually through use of the integrated product team (IPT) concept. The sponsor provides funding, but also conducts the demonstration(s) to show operational utility and system integrity. Following the demonstration(s), and depending on their success, and ACTD may transition to a formal acquisition program at the appropriate milestone; may be produced in small quantities and introduced to the fleet; or it may be shelved. In any case, the original system or capability remains funded and operational for 2 years, available to the warfighter.

**b. ACTD Working Group.** The four operational test agencies (OTA) have formed an ACTD working group which provides coordination for OTA participation in ACTDs. They track the status of all approved ACTDs, monitor the evolving ACTD process, make recommendations for OTA participation (many will require joint participation), interface with DUSD/AT and DOT&E, and brief the OTA commanders as necessary. Note that while DOT&E maintains a keen interest in ACTDs, they are not oversight programs.

**c. COMOPTEVFOR Participation.** Many ACTDs will have little or no Navy interest, while a few may be developing an important new capability for the fleet. COMOPTEVFOR, in conjunction with the ACTD working group, will determine which ACTDs merit our attention and assignment of an OTD. We must be discerning, in view of our limited manpower and growing workload. We have already been involved in several ACTDs, and this involvement is expected to continue. Since ACTDs are not formal acquisition, we have no official mandate for participation in the process. But, given that ACTDs may eventually transition to formal acquisition and the rigors of OT, our early involvement in selected ACTDs can be critical to rapid development and deployment to the fleet. Selected ACTDs, as approved by COMOPTEVFOR, will be assigned an OTD, and will receive an appropriate level of attention. This level could well exceed that normally expended on a formal acquisition program.

**d. Documentation.** Because an ACTD is not a formal acquisition program, it will not have the traditional DoD and SECNAV documentation. Each ACTD is required to have a

management plan, which is basically an agreement between the developer and sponsor. Included should be an overview of the ACTD, a schedule of planned events and demonstrations, programmatic and organizational details, funding information, and a description of the residual operational capability expected upon completion of the demonstration(s). There may be an ORD, or requirements may be incorporated in the management plan, or requirements may not be documented at all. Many ACTD sponsors have developed a concept of operations, which addresses theater level interoperability, compatibility, and integration issues.

**e. Requirements.** As ACTDs are by nature technology demonstrations, most will not have a formal set of performance requirements. The demonstration is often used to quantify system capabilities and define requirements. If there are no thresholds or objectives, do not "shake the tree" for them. Simply ascertain what the ACTD is meant to do and determine what COIs, MOEs/MOPs are needed to reflect those capabilities. Also, ask yourself how the ACTD could be used. Brainstorm. Bring your ideas before the IPT and get agreement, then do your test planning. Our participation in ACTDs should be focused on accomplishment of the following:

- Provide a sound operational test methodology, complete with COIs, MOEs, and MOPs.
- Assist in developing COIs and MOEs/MOSs.
- Ensure that suitability is not inadvertently overlooked in the demonstration(s).
- Assess and document the demonstration results, so that transition to formal acquisition will be as easy as possible.
- Make recommendations for system improvement.
- Identify strengths and weaknesses observed.

**f. COIs, MOEs, and MOSs.** We prefer that COIs be documented. If involved early enough, we can arrange to include them in the management plan. If not, then they should be documented in some other way, either in an MOA with the sponsor and program manager, or possibly in a TEMP-like document called the Demonstration and Evaluation Master Plan (DEMP (See chapter 6, paragraph 603c for information on ACTD test plans.)

**g. Embedded Programs Within an ACTD.** An ACTD may include any number of sub-level programs, some of which may be other ACTDs of advanced technology demonstrators, or even a formal acquisition program. For example, the Mountain Top ACTD includes Combined Engagement Capability, a formal acquisition program, as a sub-element.

**h. CNO Data Base.** Selected ACTDs are just as important to our Navy and our business at OPTEVFOR as formal acquisition programs. Therefore, they will be assigned an OTD and their progress will be tracked in the CNO Data Base. Because a Navy TEIN will not have been assigned, we will assign a local 3000 series TEIN for tracking purposes.

**i. More Information**. For ACTD modeling and simulation, see this chapter, paragraph 418. For contractor participation, see chapter 1, paragraph 104j(5). For reporting procedures, see chapter 8, paragraph 811.

**412. ADDRESSING THE THREAT IN OT&E**. SECNAVINST 5000.2B and OPNAVINST 3811.1 require that OT&E be conducted in a realistic, threat-representative environment using applicable threat systems or simulated systems as well as actual threat tactics. SECNAVINST 5000.2B requires that an initial threat assessment be prepared to support program initiation at M/S I and maintained in a current and approved or validated status throughout the acquisition process. The ONI TA/STAR is the basic authoritative system threat assessment tailored for and focused on a particular acquisition program. You must be aware of the ONI TA/STAR that defines and discusses the threats affecting your programs. The time frame of the threat to be addressed will start at IOC of the program and extend to the end of its expected operational lifetime. Assigned command intelligence officers at headquarters, VX-1, VX-9, and VX-9 Det are cognizant of threat related matters and concerns, and OTDs must effect close liaison with these personnel. You must also ensure consideration is given to the threat throughout the OT&E process, and the threat is properly addressed in TEMPs, (see chapter 5); test plans (see chapter 6); and evaluation reports (see chapter 8).

**a. Type of Intelligence Available**. There are two categories of intelligence data that are of interest to you; finished intelligence products and operational intelligence.

**(1)** Finished Intelligence includes validated scientific and technical (S&T) data on both the current and projected characteristics and capabilities of foreign weapon systems, platforms, etc. Also of interest is validated data on enemy tactics and strategy for the employment of their forces and weapon systems.

**(a)** The Office of Naval Intelligence (ONI) produces S&T intelligence to support Navy development and acquisition programs. The ONI products of greatest interest to you are the TA and the system specific STAR. STARs are validated by DIA and represent the official service and DoD position regarding the known and projected threat. You must understand the threat your system is designed to counter, and incorporate threat intelligence into the OT&E process in order to ensure effective OT&E of the Navy's future weapons systems.

**(b)** ONI produces finished intelligence on enemy tactics, strategy, and employment of forces, and produces the NWP-12 series and related analytical studies and assessments. The NWP-12 series and USAF MCM Manual 3-1, Vol. II (Threat Reference Guide and Countertactics) publications are particularly important for test scenario development.

**(2)** Operational Intelligence in the OT&E environment concerns primarily routine reporting of perishable data on foreign ship or aircraft locations, and reporting on foreign sur-

veillance and collection activities directed against friendly forces or at-sea testing. You can request operational intelligence support to minimize OPSEC vulnerabilities and reduce the threat from hostile intelligence-collection efforts.

**b. When to Use Intelligence**. You will find threat support intelligence particularly important in developing TEMP requirements and constructing test plans. By using validated S&T and tactical intelligence products, you can develop a thorough understanding of the threat to your system that will help you to:

- Identify critical operational issues.
- Develop realistic test scenarios.
- Determine required operational test resources (e.g., numbers and types of targets and simulators).
- Articulate threat related test limitations.

You are encouraged to coordinate closely with assigned intelligence personnel to obtain the threat support needed for effective operational testing.

## 413. JOINT SERVICE PROGRAMS

**a.** A joint program is any DoD acquisition system, subsystem, component, or technology program that involves formal management or funding by more than one DoD component during any phase of a system's life cycle. This includes programs where one DoD component may be acting as acquisition agent for another DoD component by mutual agreement.

**b.** There are two basic types of joint service programs; joint test and evaluation (JT&E) and multiservice operational test and evaluation (MOT&E):

**(1) JT&E**

**(a)** JT&E evaluates concepts and addresses needs and issues that occur in joint environments. It is funded and sponsored by OSD. A discussion of JT&E can be found in DDT&E JT&E Handbook of November 1994.

**(b)** Where Navy expertise and liaison is required, CNO (N091) will task COMOPTEVFOR and appropriate warfare division to provide an OTD to act in a Navy operational oversight function. This is done only on a case-by-case basis.

**(2) MOT&E**. A lead organization will be designated to coordinate all testing involving more than one military department or defense agency. This lead organization will prepare a single TEMP and a single T&E report on the operational effectiveness and suitability of the

system for each participating organization. The basic framework for the conduct of MOT&E is contained in the MOA on Multiservice OT&E and JT&E.

**(a) Navy Lead Service**. When the Navy is lead service, OT&E will be conducted in accordance with the provisions of SECNAVINST 5000.2B. COMOPTEVFOR performs essentially the same functions as in normal OT&E, with the following modifications:

**1**. All planning will be coordinated with other service OT&E agencies.

**2.** COMOPTEVFOR will begin the planning process by issuing a call to other service OT&E agencies for critical issues and their test objectives. These issues and objectives will then be consolidated into a single list and coordinated with other service OT&E agencies.

**3.** Formal coordination action on the TEMP will accommodate other service OT&E requirements and inputs.

**4.** Participating OT&E agency test directors and/or project officers will meet to assign responsibilities for accomplishment of the critical issues/test objectives (from the consolidated list).

**5.** Each participating agency will then prepare the portion of the overall test plan for their assigned critical issues/objectives, in OPTEVFOR test plan format, and will identify their data needs. OPTEVFOR will then prepare the multiservice OT&E test plan.

**6.** When the Navy is the lead service, the ONI TA/STAR will be the system TA used for overall program and Navy unique threat issues. Other services may supplement the threat requirements of the ONI TA/STAR through use of their service-unique TAs.

**(b) Other Lead Service**. When another service has the lead, either a fully integrated TEMP or a Navy appendix to the lead service TEMP will be prepared that clearly reflects the unique Navy testing aspects of the program, in addition to addressing joint or multiservice testing. The threat for overall program issues, based on the ONI TA/STAR, will also be addressed in the integrated TEMP or Navy appendix. This integrated TEMP or Navy appendix will provide the basis for planning and executing Navy unique testing.

(**c) Discrepancy Reporting**. The lead OT&E agency is responsible for ensuring a system is established to track discrepancies and to provide periodic status reports to participating OT&E agencies. Control of promulgation of such reports should be included in an MOA between the participating OT&E agencies. An example of another agency's reporting is the Service Reports that can be issued by any Air Force organization. These reports have been issued in two types:

**1. System Service Reports**. Service reports are issued when a system in RDT&E has a major or minor failure. They may be issued during any phase of T&E or between scheduled phases of T&E. OTDs and OTC should ensure that data are not released prior to COMOPTEVFOR's issuing the final evaluation report.

**2. Maintenance Deficiency Reports (MDR)**. Project management responsibility turnover occurs in the Air Force when the Logistics Command accepts management of a program. RDT&E is then normally terminated and Service Reports are then called MDRs.

**a**. These reports are assigned three failure categories: Category I -- stop testing or safety deficiency; Category II -- normal failure modes; and Category III -- oh, by the way.

**b**. These mission categories are used: mission essential; mission degrade; and mission enhancement.

**(d) Deviations from Lead Service OT&E Procedures**. Deviations from lead service OT&E procedures may be authorized by written agreement between participating OT&E agencies. Close coordination will be required to ensure the requirements of Navy OT&E are met.

**(e) Test Reporting**. For major programs, the lead service will prepare and coordinate the single (interim or final) report reflecting the system's operational effectiveness and operational suitability for each service. The participating services' independent evaluation reports will be appended to final reports.

**414. MARINE CORPS OPERATIONAL TEST AND EVALUATION ACTIVITY (MCOTEA) COORDINATION**. During the OT&E planning process (e.g., preparation of the part IV input, comment letter, etc.), you must consider the project's applicability to USMC use. Check with the Marine Corps Liaison Officer for advice. If so, you must coordinate with MCOTEA to determine their interest and need for further involvement. If MCOTEA needs to be involved, you should make the DA and program sponsor aware of their interest. Once the CNO has directed MCOTEA involvement, OPTEVFOR will perform additional coordination and provide MCOTEA with program documentation in accordance with SECNAVINST 5000.2B. Should the Marine Corps desire OT&E support from OPTEVFOR, they will request such support from CNO (N091), who will then provide direction to COMOPTEVFOR.

**415. U.S. SPECIAL OPERATIONS COMMAND (USSOCOM) NAVY SPECIAL WARFARE (SPECWAR) RESEARCH, DEVELOPMENT, AND ACQUISITION (RDA) POLICY**. Procedures for USSOCOM (and its component SPECWAR) systems and equipment

need be streamlined to ensure the most rapid possible progress from the concept stage through final development. In many instances, USSOCOM/SPECWAR systems are needed to meet preparedness requirements for contingency operations around the world. The following guidance applies for RDA procedures for USSOCOM/SPECWAR systems or equipment:

**a.** For urgent requirements where commercially available domestic or foreign equipment is suitable see USSOCOM Directive 70-2 of 23 February 1994 (held by Code 43).

**b.** For urgent requirements where adequate commercial products are not available and development work is required see USSOCOM Directive 70-1 of 8 November 1993 (held by Code 43).

## 416. FOREIGN WEAPONS EVALUATION (FWE) AND NATO COMPARATIVE TEST PROGRAMS (CTP)

**a.** FWE and NATO CTP programs evaluate foreign weapons systems, equipment, and technologies that have the potential to satisfy a specific U.S. requirement. FWE and NATO CTP are essentially the same, except:

**(1)** FWE applies to any system, subsystem, or component purchased from a friendly or neutral country which is available for procurement by the U.S.

**(2)** NATO CTP applies only to items of NATO origin.

**b.** CNO, under the policy guidance of the Assistant Secretary of the Navy (Research, Development, and Acquisition), has responsibility within the Navy for management and program execution of FWE and NATO CTP.

**c.** When procurement of a foreign weapon system is planned, CNO will direct the DA and COMOPTEVFOR to assess the adequacy of any previously conducted DT&E and OT&E and to provide recommendations on the need for additional T&E prior to procurement. If additional T&E is required, CNO (N091) will assign an ACAT and TEIN. T&E will then be conducted using normal system procurement procedures.

**d.** Close liaison between the FWE and NATO CTP project personnel and COMOPTEVFOR is required during test planning and evaluation periods to ensure data can be effectively used in follow-on technical and operational testing.

**e.** Additional information on FWE and NATO CTP is available in SECNAVINST 5000.2B.

## 417. LIVE FIRE TEST AND EVALUATION (LFT&E)

**a.** Live fire testing (LFT) is conducted to provide a timely and thorough assessment of the vulnerability and lethality of a system as it progresses through its development and subsequent production phases. The primary emphasis of LFT is on realistic testing as a source of personnel
casualty, vulnerability, and lethality information, taking into account the susceptibility to attack and combat performance of the system. LFT shall include, when feasible, the firing of threat munitions (or surrogates) at operational, combat-loaded U.S. weapon systems to test their vulnerability, and/or the firing of U.S. munitions or missiles against operational, combat-loaded threat targets (or surrogates) to test the lethality of those munitions or missiles. Guidelines for the conduct of LFT&E are provided in SECNAVINST 5000.2B.

**b.** The basic planning document for LFT&E is the TEMP. The TEMP Part IV will contain a separate section (paragraph E) which charts the LFT&E course of action during the acquisition process. Although cognizance of LFT&E has been shifted to DOT&E, the LFT&E section of Part IV of the TEMP will be developed by the DA, and will include a description of the overall LFT&E strategy for the item; critical LFT&E issues; required levels of system vulnerability/lethality; the management of the LFT&E program; LFT&E schedule, funding plans, and requirements; related prior and future LFT&E efforts; the evaluation plan and hot selection process; and major test limitations for the conduct of LFT&E. LFT&E resource requirements (including test articles and instrumentation) will be appropriately identified in the TEMP Part V T&E Resource Summary. See chapter 5 for TEMP details.

**c.** Within the Navy, LFT&E is a requirement of OT&E, with COMOPTEVFOR's major interest being system vulnerability and lethality. Your role as the OTD in LFT&E will be:

**(1)** Review the LFT&E section of the TEMP.

**(2)** Request a copy of the detailed LFT&E plan for review.

**(3)** Monitor the LFT to obtain a firsthand impression of the vulnerability or lethality of the system under test.

**(4)** Obtain a copy of the detailed LFT&E report for review.

**418. MODELING AND SIMULATION IN OT&E**. DoD directives encourage the use of modeling and simulation to assist in projecting operational effectiveness and operational suitability prior to M/S II, but limit its use in subsequent OT&E to that of supplementing OT&E test data. Because of the increased emphasis on the use of simulation in early OT&E, you must give careful consideration to requirements for the use of threat simulation. COMOPTEVFORINST

5000.1, Use of Modeling and Simulation (M&S) in Operational Testing, provides guidelines for the use of simulation in OT.

**419. LAND BASED TEST SITES (LBTS)**. An LBTS is a facility that duplicates, simulates, or stimulates the employment of a system's planned operational installation and use for the purpose of conducting DT. Intent to use an LBTS in lieu of the actual host platform shall be approved by CNO (N091). See Chapter 6, Test Planning, for additional details.

**420. SIGNIFICANT ALTERATIONS**. It's not possible to provide an explicit definition of a significant alteration -- which for system acquisition purposes is handled much like a new system. The decision to classify a modification, ECP, ordnance alteration, block upgrade, product improvement, etc., as a significant alteration or not is based on the scope of the change, the funding level, the importance of the system, the numbers to be produced, etc. CNO (N091) will consider all factors such as these in making the decision. In general, where an alteration is intended to improve a warfighting capability vice suitability, the alteration would require some measure of OT&E prior to fleet introduction. The judgment of COMOPTEVFOR, the DA, the CNO Resource and Program Sponsor, and (where applicable) the Naval Board of Inspection and Survey (INSURV) will be major factors considered by N091 in determining the applicability and scope of testing of significant alterations.

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# CHAPTER 5

# THE TEST AND EVALUATION MASTER PLAN

**501. INTRODUCTION**. The TEMP is the single most important T&E document associated with an acquisition program. It is the controlling T&E management document for all acquisition programs and, in general, the TEMP must be approved prior to commencement of OT&E. Any departure from TEMP approval policy will be on a case-by-case basis, approved by the Commander. The TEMP is directive in nature and defines and integrates test objectives, critical issues, system characteristics, test responsibilities, resource requirements, and test schedules.

**a.** The contents of the TEMP and the relationship of key portions to the successful completion of the overall OT&E program cannot be overstated. An approved TEMP or an approved TEMP revision constitutes direction to conduct the specified T&E program, including the sponsor's committed support, and constitutes approval of the COIs. Test plans will be prepared directly from the TEMP and will carry out its provisions. The basic format is described in succeeding paragraphs. Each OTD and OTC must be familiar with this chapter and SECNAVINST 5000.2B.

**b.** TEMPs may be reviewed in their entirety twice; once when the DA gives us a draft for comment, and again when the final version is received for the Commander's signature. Before the first review, you should have provided the DA with OT&E schedule inputs for part II, a complete part IV, and OT&E resource requirements for the part V T&E Resource Summary. At that time, OT-III and OT-IV should be included in the schedule. Your review of the complete TEMP should address all parts, including replacement of your own draft part IV, if necessary. You should be especially sensitive to resource and schedule inadequacies in the final draft TEMP and ensure that COMOPTEVFOR points them out to CNO. The DA is responsible for ensuring the TEMP is updated at milestones, when the program baseline has been breached, or on other occasions when the program has changed significantly. Work closely with the DA to ensure the COMOPTEVFOR input is provided in sufficient time to support the required update. Don't allow OPTEVFOR to be the cause for program delays while preparing TEMP updates.

**c. Updates**. The TEMP must be updated at all milestones, when significant program changes occur, or when the program baseline has been breached. TEMPs and TEMP updates are considered "overdue" by N091 if not approved at the OPNAV level 60 days prior to commencement of testing related to the next milestone. Certification of TEMP currency (i.e., no change required for next milestone) should be sent to the office of the Director of Defense Research and Engineering (DDR&E) via N091. Updates may be made by use of correction pages and by a letter indicating "no change." This chapter contains a discussion of TEMPs and the formats used for TEMP inputs, comments, and forwarding the signature page.

## 502. PURPOSE OF THE TEMP

**a.** The basic purpose of the TEMP is to combine the DA's DT&E plans and COMOPTEVFOR's OT&E plans into one integrated master plan approved by the CNO or higher authority (except ACAT IVT TEMPs which are approved by the Program Executive Officer (PEO)/DA and COMOPTEVFOR). Because the PEO/DA and COMOPTEVFOR have independent authority, within their respective areas, to determine program test periods and test resources it is imperative that these independent efforts be integrated into a single program structure.

**b.** Per SECNAVINST 50002.B, OPTEVFOR develops the COIs for each program and publishes them in part IV of the TEMP. The COIs are linked to CNO requirements established in the ORD.

**c.** The hardest part of this process is figuring out the essential elements of operational effectiveness and operational suitability, the COIs to be resolved in OT&E, and the questions which must be answered to resolve the issues. A contributing factor to the difficulty is the number of sources or agencies who appear to be helping (or think they are) when in reality they're not, simply because they don't think the way we must. Ideally, MOEs and MOSs will have been clearly established in an ORD, and COMOPTEVFOR will have already reviewed these for testability and appropriateness. When the DA provides a list of MOEs and MOSs on a first-draft TEMP, ensure that they are operational characteristics, not technical characteristics. Remember, the DA thinks technically, not operationally. If you're not constantly alert to the danger, you can make the same error. Don't let your technical background smother your operational background. Confronted with a new weapon system or equipment, and having understood why it's being developed, ask yourself:

- What must it do from an operational viewpoint?
- What must it <u>not</u> do from an operational viewpoint?

**d.** For example, consider a buoy carried externally on a submarine that is designed to release automatically if test depth is exceeded. The buoy surfaces and transmits an emergency message identifying the submarine and reporting its location at buoy release, etc., at regular intervals over the life of its battery. Viewed as part of an overall system, and this viewpoint is crucial to the process, there are two fundamental characteristics associated with operational effectiveness of the buoy:

- If test depth is exceeded, there must be a high probability that the ground station will receive an accurate distress message.

- The buoy must not release when it's not supposed to (e.g., during high-speed transits, maneuvers, etc.).

Note that parameters such as output power, battery endurance, etc., while related to the first operational characteristic, are, in fact, technical characteristics and are not to be directly evaluated in OT&E. However, if they are known or found to be inadequate for operational use, their impact on overall operational effectiveness should be considered.

- If the elements of operational effectiveness and operational suitability are defined correctly, that is, if the COIs are correctly stated, the rest of the job becomes almost bookkeeping. If the definition is wrong, the error may remain throughout test planning and test operations, only to be recognized in the reporting process -- and lead to a limitation that says we didn't ask the right questions. OTD responsibilities also include ensuring that validated intelligence threat data are considered throughout the entire OT&E process. This includes periodically reviewing the intelligence threat materials, knowing the critical intelligence parameters of that project, being sensitive to new intelligence data, and maintaining continuous liaison with assigned intelligence personnel.

**e.** CNO review and concurrence in ACAT I through III TEMPs is required because:

**(1)** Establishment of thresholds and objectives in the TEMP Part I is a CNO responsibility.

**(2)** Scope of testing affects RDT&E funding which CNO must provide.

**(3)** Most testing involves committing fleet units and schedules.

**(4)** CNO is the central T&E point of contact for both the DA and COMOPTEVFOR, thus enabling resolution of differences.

**f.** The TEMP serves several secondary purposes: (1) Allows all involved to see exactly what hurdles the system must clear and when; (2) allows the DA to project T&E costs, which he must fund; and (3) allows fleet, range, simulator, and target schedulers to plan, well in advance, for the required services. Specifics, including requirements for new or modified facilities, must also be identified in TEMPs.

## 503. TEMP BASICS

**a.** A TEMP is generally limited to 30 pages and prepared jointly by the DA and COMOPTEVFOR, with the involvement of both the OPNAV program sponsor and the N091

T&E coordinator in early draft reviews. During the TEMP review process, you should ensure the minimum acceptable operational performance requirements (older programs) or measures of effectiveness/suitability (newer programs) from the approved ORD are incorporated. COMOPTEVFOR contributes to all parts of the TEMP (in working sessions, through comment letters, etc.) and provides the OT&E portions of parts I, II, IV, and V. The parts specifically provided by COMOPTEVFOR are to be drafted by you. Formal review of the TEMP for all ACAT levels is initiated by transmission of the DA's proposed draft to COMOPTEVFOR. Do everything you can to make it brief, factual, and clear. Identify the COIs that must be resolved by OT&E.

**b.** The TEMP is required at Milestone I for all programs. Since the TEMP is prepared jointly by the DA and COMOPTEVFOR, it is essential for you to involve yourself in all stages of TEMP preparations. This requires familiarity with other program documentation (MNS, ORD, STAR/ONI TA, etc.) and close coordination with the DA, particularly during program changes.

**c.** If TEMP development is moving too slow, get your OTC and ACOS involved. Do not let it slide until it's too late!

**d.** Handle as much as you can at informal working sessions and through informal inputs. At all times ensure the DA understands that a formal COMOPTEVFOR review will take place. If the TEMP is not the way we want it, we will say so officially.

**e. Test and Evaluation Coordinating Group (TECG).** If agreement cannot be reached between the DA and COMOPTEVFOR, a draft will not be forwarded to CNO. The N091 T&E Coordinator will be notified, at which time he will consider forming a TECG to resolve the issues.

**(1)** A TECG will convene when T&E issues arise that cannot be resolved between the applicable commands or when extensive T&E coordination is required. A TECG may also be used to implement urgent required changes to TEMPs. In this case, either a page change will be issued or the formal report of the TECG will be attached to the TEMP as an appendix until the next required update or revision.

**(2)** TECGs will be convened by the Director, Test and Evaluation Division (CNO (N912)), via formal correspondence that outlines the purpose for convening the TECG, identifies the attendees, and provides an advance agenda for review prior to the meeting. Additional information on TECGs is in SECNAVINST 5000.2B.

**(3)** NSA has primary responsibility for developing and testing consolidated cryptologic program (CCP) systems. A CCP TECG will be used to identify Navy-unique effectiveness and suitability issues for emergent CCP programs, develop a coordinated Navy position

on cryptologic T&E issues, and determine the extent of Navy participation in multiservice testing. A CCP TECG may also be used to resolve issues relating to assignment or cancellation of CCP TEINs.

**f.** We normally prefer to have an approved MNS, ORD, and STAR/ONI TA prior to commenting on a TEMP. However, if COMOPTEVFOR has commented on a draft ORD and the DA or CNO is urging us to provide TEMP comments prior to ORD approval, we may try to provide them. Also, if reference documentation is too immature or there are too many contentious issues to allow us to provide meaningful comments, TEMP comments will not be forwarded until the reference documentation is approved at the CNO level and provided to COMOPTEVFOR.

**g.** There is a reason for each phase of OT&E -- association with a program-level decision regarding the system being tested. If there is a properly prepared TEMP, the reason for each phase of future OT&E will be stated in the appropriate "OT&E Objective" paragraph of part IV. The reasons most frequently associated with phases of OT&E are:

**(1) OT-1 (EOA)**. To support a recommendation on engineering and manufacturing development (milestone II), or to provide an assessment of new operational concept or systems involving significant operational risks.

**(2) OT-IIA (OA)**. To support a recommendation for LRIP quantities.

**(3) OT-II (OPEVAL)**. To support a recommendation regarding fleet introduction.

**(4) OT-III**. To complete any incomplete or deferred IOT&E and to verify correction of deficiencies identified in OPEVAL.

**(5) OT-IV**. To verify the operational effectiveness and operational suitability of the production version of the system.

**h.** For multiservice or joint programs, a single, integrated TEMP is required. Component-unique content requirements, particularly evaluation criteria associated with COIs, can be addressed in a component-prepared appendix to the basic TEMP. TEMPs for multiservice programs will be prepared in close coordination with other participating services' operational test agencies and will be approved jointly by CNO (N091) and the representatives of the military chiefs of the other participating services. When the Navy is designated as executive lead for development and T&E, TEMP preparation will be in accordance with SECNAVINST 5000.2B. The lead service will provide the baseline threat documentation. If the Navy is not the lead service, Navy-unique threat issues will be addressed in the integrated TEMP or Navy appendix, using the appropriate STAR/ONI TA.

**i.** For a program consisting of a collection of individual systems, a Capstone TEMP integrating the test and evaluation program for the entire system may be prepared. Individual system-unique content requirements are to be addressed in an appendix to the basic Capstone TEMP. The requirement for a Capstone TEMP is dependent upon the degree of integration and interoperability required to satisfy the total system's minimum acceptable operational performance requirements (older programs) or measures of effectiveness/suitability (newer programs).

**504. DO'S AND DON'TS REGARDING PROGRAM STRUCTURE**

**a.** Don't wait until the program has been established. Get together with the DA early and help him shape the program structure. The earlier the better.

**b.** Don't tell the DA to develop a rough draft of our section of the TEMP, or any other document, for our comment.

**c.** Do expend extensive effort on the measures of effectiveness and suitability in Part I. Work with the sponsor and the DA. Specify operational parameters and thresholds for OT&E. (Note that COMOPTEVFOR establishes the parameters — the actual threshold values are the CNO's responsibility.) Do not ignore technical thresholds — make sure they are consistent with operational thresholds.

**d.** Do define projected FOT&E early, and in detail, since FOT&E will always be required, unless no unresolved issues remain from IOT&E. If FOT&E requirements cannot be determined, ensure the program structure includes OT-III and OT-IV as "to be determined." Clarify the funding at the outset (don't let legitimate OT-III be moved into OT-IV).

**e.** Attend design reviews, and review system specifications from an operational viewpoint.

**f.** When reviewing the program structure, ensure a phase of OT&E is scheduled to support each milestone decision. Allow a minimum of 30 days between TECHEVAL and the commencement of OPEVAL so that we can study the results of TECHEVAL. Ensure the time allotted between the completion of an OT&E phase and the milestone decision allows 90 days for preparation of the evaluation report plus any additional time required by other activities to prepare for the decision forum.

**g.** We normally do not combine TECHEVAL and any phase of OT. But, where proof of risk reduction can be demonstrated, it is possible to schedule a combined phase. This will be done ***strictly*** on a case-by-case basis.

**h.** Become involved as a member of your TPWG (see paragraph 602), and, when necessary, with the TECG (see paragraph 504e) if the need arises.

**505. BASIC FORMAT**. The following summarizes each part of the TEMP and the recommended page length. Specific review criteria are discussed later in the chapter. This is what you should expect to see when reviewing a TEMP from the DA:

| | |
|---|---|
| **Title Page** | Program title, name and submittal, concurrence and approval signatures. |
| **Part I** | System Introduction (contains mission description, system threat assessment, measures of effectiveness and measures of suitability, system description, and critical technical parameters) (2 pages). |
| **Part II** | Integrated Test Program Summary (contains Integrated Test Program Schedule and Management) (2 pages) (See note 1). |
| **Part III** | Developmental Test and Evaluation Outline (10 pages) (See note 2). Contains: Developmental Test and Evaluation Overview; Developmental Test and Evaluation to Date; and Future Developmental Test and Evaluation; |
| **Part IV** | Operational Test and Evaluation Outline (10 pages) (See note 2). Contains: Operational Test and Evaluation Overview; Critical Operational Issues; Operational Test and Evaluation to Date; Future Operational Test and Evaluation; and Live Fire Test and Evaluation |
| **Part V** | Test and Evaluation Resource Summary (contains test articles; test sites and instrumentation; test support equipment; threat systems and simulators; test targets and expendables; operational force test support; simulations, models, and testbeds; special requirements; test and evaluation funding requirements; and manpower and training) (6 pages) (See note 1). |
| **Annex A** | Bibliography |
| **Annex B** | Acronyms |
| **Annex C** | Points of Contact |

Note 1. Foldouts, if desired.

Note 2. Every effort should be made to remain within the page limit guidelines. COMOPTEVFOR policy is to avoid using appendices if at all possible in Navy TEMPs; however for programs with complex and extensive histories, it may be useful to issue an annex for OT&E to date. The program manager may decide to do the same for technical phases.

**506. REVIEW AND INPUTS TO TEMPS.** We review the entire TEMP with particular attention to:

**a. Part I, System Introduction (about 2 pages)**

**(1) Mission Description (paragraph 1a**). The purpose of the system is clearly stated, and program documents (MNS, ORD, etc.) are referenced.

**(2) System Threat Assessment (paragraph 1b)**. The current STAR/ONI TA or other approved threat document is referenced and the threat environment is briefly summarized. OTDs, in coordination with the Staff Intelligence Officer, must ensure the system threat assessment paragraph in the initial TEMP and subsequent TEMP updates adequately references the ONI TA/STAR and briefly summarizes the threat environment described therein. The threat statement should include any restrictions on how the system will meet and/or counter the threat as provided for in ONI TA/STAR.

**(3) Measures of Effectiveness and Measures of Suitability (paragraph 1c).** (For older programs, this may still be referred to as minimum acceptable operational performance requirements.) The ORD is referenced and critical operational effectiveness and suitability parameters are accurately summarized. All the parameters needed for a complete operational evaluation have been provided. If not, develop appropriate parameters, in consultation with the assigned project analyst, and request a threshold (if appropriate) from CNO via the TEMP comment letter. Ensure threshold values provided by CNO make sense operationally (e.g., interoperable with TEMP specified systems, better than the current system, etc.). Where possible, ensure that all effectiveness and suitability parameters in this paragraph are quantifiable and have been assigned threshold values. For parameters that are not quantifiable (e.g., logistic supportability, compatibility, etc.), you need to ensure they are addressed as COIs in part IV of the TEMP.

**(4) System Description (paragraph 1d)**. All system key functions and interfaces are briefly described. All parts of the system are named and listed so there is no uncertainty as to what makes up the system. Interfaces with existing or planned systems are addressed, and interoperability requirements with other services, DoD components, or Allies addressed. Unique system characteristics that may require special test and analysis (resistance to countermeasures; development of new threat simulation; simulators, or targets) are adequately described.

**(5) Critical Technical Parameters (paragraph 1e)**. Hardware and software characteristics and thresholds contained in the ORD are consistent with the operational performance requirements.

**b. Part II, Integrated Test Program Summary (about 2 pages)**

**(1) Integrated Test Program Schedule (paragraph 2a)**

**(a) Test Program Schedule**. COMOPTEVFOR inputs the OT&E related portions of the Integrated Schedule. Ensure the schedule includes:

- A graphic presentation of program milestones, availability of test articles, DT and OT periods, and production schedules.
- A phase of OT&E to support each milestone decision beginning with Milestone II (OT-1 for EOAs, and OT-IIA for OAs).
- At least 30 days between completion of TECHEVAL and commencement of OPEVAL.
- Include past VCD phases. A VCD must be tied to the phase of testing it applies to; i.e., a VCD for OT-IIA would be "OT-IIA1 (VCD)."
- At least 90 days (plus any additional time required by other activities to prepare for the decision forum) between completion of a phase of OT and the milestone decision it supports.
- Scheduling for OT-III and OT-IV, even if dates have to be estimated or "Dates TBD" noted on the schedule.
- Scheduling of system Initial Operating Capability (IOC) and its definition included in a footnote.
- Event dates such as milestone decision points; test article availability; software version releases; low rate initial production deliveries; full rate production deliveries; initial operational capability; full operational capability; and statutorily required reports.
- A single schedule should be provided for multiservice or Joint and Capstone TEMPs showing all DoD Component system event dates.

**(b) Financial Data**

- Check RDT&E and procurement funding with source documents to ensure consistency. Check that the funding is broken down by FY and funding category.
- Ensure planned cumulative funding expenditures are presented by appropriation.

- Ensure financial data is consistent with the Integrated Program Summary Document.

**(2) Management (paragraph 2b)**. Ensure the responsibilities of participating organizations are clearly and properly defined, and, if agreed upon, combined DT and OT is properly addressed, including the requirement for an MOA.

**(a)** Ensure the DA provides the date (fiscal quarter) when the decision to proceed beyond low-rate initial production is planned. Low-rate initial production quantities required for OT&E must be identified for the Director of Operational Test and Evaluation approval prior to Milestone II for ACAT I programs, and other acquisition category programs designated for Office of the Secretary of Defense test and evaluation oversight.

**(b)** Identify and discuss any operational issues and vulnerability and lethality LFT&E requirements that will not be addressed before proceeding beyond low-rate initial production (unnoticed issues may prevent a close examination of the Lethality COI).

**c. Part III, DT&E Outline (about 10 pages)**

**(1)** Review for completeness, including survivability, lethality, special requirements, critical test items, and test limitations.

**(2)** Ensure dates coincide with the Integrated Program Summary Document.

**(3)** For those programs where a requirement to conduct LFT&E has been established, the TEMP will contain a separate section which charts LFT&E actions over the entire acquisition process. Review the LFT&E section and ensure:

- Planned testing supports the operational aspects of live fire testing of survivability, lethality, range, size/weight, etc.

- Continuous LFT&E (shown in Part IV, paragraph E) from component level testing and analysis during the concept demonstration and validation phase to full-up testing prior to major production decisions.
- Planned targets, threat systems or surrogates, and models and simulators are threat representative and based on the current threat assessment.
- Sufficient assets are provided to address system survivability and lethality.

**d. Part IV, OT&E Outline (about 10 pages)**. COMOPTEVFOR has sole responsibility for preparation of the OT&E outline. This should not normally exceed 10 pages in length. A

detailed format and additional guidance are included in this chapter. You should ensure that a new part IV is issued when the OT&E program changes. The only changes or alterations made to the part IV will be made by COMOPTEVFOR. If the OT&E outline must exceed 10 pages because of a complex or extensive OT&E history, an annex may be prepared. The key paragraphs of the Part IV OT&E Outline and their contents are:

**(1) Paragraph A, Operational Test and Evaluation Overview**. This paragraph discusses how OT&E is structured to provide operationally oriented evaluations or assessments to support each major milestone decision. It also discusses how the OT&E examines, or has examined, the system in a realistic operating environment, including threat-representative opposing forces and targets and the expected range of the natural environment.

**(2) Paragraph B, Critical Operational Issues**. These are the critical operational effectiveness and operational suitability issues that must be examined in OT&E to determine the system's capability to perform its mission. A COI is phrased as a question that must be answered in order to properly evaluate operational effectiveness (e.g., "Will the system detect the threat in a combat environment at adequate range to allow successful engagement?") and operational suitability (e.g., "Will the system be safe to operate in a combat environment?"). One of the most difficult tasks facing the OTD in evaluating a system's operational effectiveness is deciding on the COIs that constitute an operationally effective system. Governing directives addressing COIs are necessarily vague and speak in generalities. There is no standard cook-book approach to operational effectiveness COIs that applies in every case, since systems may be as simple as a hand-held radio or as complex as a DDG 51 or multimission aircraft. Since the COIs inform the DA early in the program of our critical issues and allow us to obtain approval of the COIs when the basic TEMP is approved, the following must be considered when developing COIs:

**(a)** COIs must address all aspects of the system necessary to determine its operational effectiveness and operational suitability.

**(b)** COIs are not thresholds. For example, do not say, "Is the system's MTBOMF at least 200 hours?" Instead say, "Will the reliability of the system support completion of its mission?" The demonstrated MTBOMF, compared to the threshold, is provided in the evaluation report. COMOPTEVFOR reserves the right to decide whether or not the system is sufficiently reliable from an operational viewpoint, regardless of comparisons of the results and thresholds. Should this decision be at odds with the comparison, a rationale for the decision will be provided in the Operational Considerations paragraph of the evaluation report.

**(c)** While observing this distinction between COIs and thresholds, be sure that every MOE and MOS in part I of the TEMP can be related to one or more COI. For example, if CNO has specified a required probability of detection, be sure that the detection stage of the en-

gagement sequence is included within your array of COIs and that you haven't overly concentrated on end-game considerations.

**(d)** COIs are not MIL-SPECs. Think operationally -- instead of trying to address a MIL-SPEC or other technical specification, ask the question, "Will the system be safe to operate and maintain?"

**(e)** Since our COIs address a system's capability or performance, begin the COI with "Will." List beneath the COI each capability or function that needs to be examined during your phases of testing. Ensure you have indicated the phase of testing at the end of each COI (e.g., (OT-IIA) (OT-IIIB) (OT-III)) or, if the COI will be tested in all phases that information is contained in the lead-in paragraph.

**(f)** The wording of COIs should be as specific as possible, to include a question for each capability/function the COI is intended to address, particularly in the case of operational effectiveness issues.

**(g)** If applicable, ensure joint interoperability, survivability and tactics are included as effectiveness issues.

**(h)** Ensure all the standard suitability issues, including safety, have been addressed.

**(3) Paragraph C, OT&E to Date**. This paragraph will address each phase of OT&E previously conducted and include:

**(a)** The test phase and dates conducted

**(b) Configuration Description**. A brief description of the system tested and where it was installed.

**(c) OT&E Events and Results**. This paragraph addresses where the tests were conducted, who operated and maintained the equipment, COMOPTEVFOR's conclusions regarding operational effectiveness and operational suitability, COMOPTEVFOR's major recommendations regarding the system (e.g., FSED, fleet introduction, etc.), the COIs intended for resolution, and how they were resolved.

**(4) Paragraph D, Future OT&E**. This section will separately address all future phases of OT&E and will include the following information for each phase of testing:

**(a)** The test phase and dates to be conducted.

**(b) Configuration Description**. Identify the system to be tested during each phase, and describe any differences between the tested system and the system that will be fielded, including where applicable, software maturity performance and criticality to mission performance, and the extent of integration with other systems with which it must be interoperable or compatible. Characterize the system (e.g., prototype, engineering development model, production representative or production configuration).

**(c) OT&E Objective**. This paragraph states the purpose of the phase of testing, and includes the COIs to be addressed by each phase and the milestone decision review(s) supported. The following should be considered when preparing the OT&E Objective paragraph:

**1.** When preparing the "purpose" statement, careful thought must be given to the phase of testing and the configuration of the equipment or system being tested. Ensure that tactics development is included if a Tactics Guide is required.

**2.** In those cases prior to Milestone II where an EOA (OT-1) is being conducted using breadboard systems, modeling or simulation, the purpose will be to assess the potential operational effectiveness and operational suitability of the system. (Note that this assessment will be accomplished through observations or monitoring of operation of the breadboard system, model or simulation, or DT.)

**3.** In early phases of OT&E (after Milestone II), where the equipment configuration is more closely representative of the final configuration or where testing is being conducted on a production-representative system prior to OPEVAL, the purpose will be to assess the potential operational effectiveness and operational suitability of the system.

**4.** For OPEVAL, the purpose will always be to determine the operational effectiveness and operational suitability of the system.

**5.** For FOT&E (e.g., OT-III), the objective will be to "verify" where the COI has been resolved during OPEVAL and "determine" or "assess" those COIs which were to have been determined or assessed in OPEVAL but require additional testing because they were not resolved. In those cases where the FOT&E is to determine the operational effectiveness and operational suitability of a system or software upgrade and its readiness for fleet introduction, or to determine its readiness for fleet introduction into a new platform, and the FOT&E is in effect an OPEVAL, the OPEVAL rules for determining and assessing COIs apply.

**6.** When a new or updated version of system software is proposed for fleet release, the OT&E Objective paragraph will state that the testing will be accomplished on the host system with the specific software version installed, e.g., the purpose of testing will be to "determine the operational effectiveness and operational suitability of the NWS with NWS-4

software installed." This will ensure the purpose of testing is stated in accordance with command policy regarding testing systems, not black boxes, etc., and will further ensure the test plan and evaluation report state the current purpose of testing.

**7.** When listing your COIs for the applicable phase of testing, show a column for operational effectiveness and a column for operational suitability. Ensure that the COIs listed in these columns agree with what you have listed in the Critical Operational Issues paragraph.

**(d) OT&E Events/Scope of Testing/Scenarios**

**1. Events**. Use this paragraph to quantify your testing (e.g., What will you be doing? How many runs? How many launches?) and to state the need for a maintainability demonstration.

**2. Scope of Testing**. Use this paragraph to state the period of time the testing will be conducted, to what degree the system will be tested, the type of resources to be used, the threat simulators and the simulation(s) to be employed, the type of representative personnel who will operate and maintain the system, and the status of the logistic support.

**3. Scenarios**. The scenarios for each phase of OT&E are the basis for the scenarios that will be used conducting the system OT&E. The scenarios must be well thought out and reflected in the scenarios provided in the test plan. Summarize the scenarios and identify the events to be conducted. Indicate that the scenarios will be based on the threat as derived from the applicable STAR/ONI TA. Refer to the STAR/ONI TA by number, title, and date. Indicate the environment in which the testing will occur.

**(e) Limitations**. This paragraph will be included for each Future OT&E phase and must identify those factors (e.g., threat realism, test target limitations, environmental constraints, etc.) that will preclude a full and completely realistic operational test. The limitations in OT&E phases must be well thought out and placed in the Part IV with the thought in mind that they will more than likely be a limitation when the time for OT&E occurs. When addressing test limitations, you must include:

**1.** Each limitation's impact on the resolution of COIs. (Indicate in parentheses after each test limitation the critical operational issue or issues affected, except for minor limitations.)

**2.** Each limitation's effect on the ability to draw conclusions regarding operational effectiveness and operational suitability.

**3.** Any resource requirements not available or which have been removed from the TEMP by CNO direction.

**4.** If a target or simulator is used that is not completely threat representative, how or in what way does it not fully represent the threat. A supporting matrix of threat-to-simulator characteristics and capabilities could be included to clearly identify the differences.

**(5) Paragraph E, Live Fire Test and Evaluation.** See paragraph 416.

**e. Part V, Test and Evaluation Resource Summary (10 pages)**. Confirm the T&E Resource Summary is prepared in accordance with SECNAVINST 5000.2B. OPTEVFOR provides input for the OT&E related portions of the T&E resource requirements. (A rationale is not required for our inputs to this section of the TEMP, however, the number of assets requested must be defensible.) SECNAVINST 5000.2B requires that major shortfalls in resources be included in the TEMP. You must include all required OT&E resources (e.g., threat simulators or surrogates against which the system will be tested) in the initial TEMP without regard to the objections of other agencies. Should CNO determine the program may proceed without the resource, he may direct its removal from the TEMP. Such items will also be included in the "Limitations" section.

**f. Annex A, Bibliography**. Review for completeness. This section should cite all documents referred to in the TEMP and all reports documenting DT&E and OT&E.

**g. Annex B, Acronyms**. Review for completeness. This section should list and define all acronyms and abbreviations used in TEMP. Ensure acronyms are defined at their first usage.

**h. Annex C, Points of Contact**. Review for completeness; should provide a complete list of points of contact.

**507. TEMP Approval**. Once all issues have been resolved, the smooth TEMP will be signed and dated by COMOPTEVFOR and the DA, then submitted to CNO (N091) for final staffing and approval at the appropriate level. For ACAT IVT programs, the TEMP will be effective once signed by the System Command's Commander, or PEO, and COMOPTEVFOR.

**508. DA COORDINATING OFFICES.** Each of the systems commands have an office responsible for coordinating all TEMPs and TEMP comment letters. To facilitate proper distribution of our TEMP comment letters, ensure that these offices are either "copy to" or "Action" addees, as appropriate, when TEMP comment letters are sent to PMs in those SYSCOMs. The cognizant offices are: SPAWAR (SPAWAR-053-4); NAVSEA (SEA-63); and NAVAIR (AIR-1.6).

**509. PREPARATION, ROUTING, AND RELEASE OF TEMP DOCUMENTS**

**a. TEMP Initial Input Letters**

**(1)** Initial inputs to new TEMPs are provided to the DA no later than 90 days after receipt of the CNO project TEIN assignment letter.

**(2)** The division ACOS and VX squadron CO are allotted 75 days from receipt of the project assignment letter to prepare a draft input letter. The OTD works in coordination with the scheduler, logistics specialist, analyst, oceanographer, and intelligence, and submits it to the technical editor, Code 01E, for technical review. Input letters are signed by the Chief of Staff. Briefings are normally not required. Timelines are summarized in table 5-1:

**Table 5-1. TEMP Initial Input Letter Timelines**

| Day | HQ Action | VX/HMX Action |
|---|---|---|
| 75 (Since receipt of TEIN Assignment Letter | Document starts rough route to: analyst, editors, intel, scheduler, resources,* mod/sim,* logistics,* and METOC.* | VX - Route rough draft to tech editor, intel, analyst (in squadron); scheduler, resources, mod/sim, logistics, METOC (at HQ).**<br><br>HMX - Send to HQ via Code 50 liaison for HQ review process.** |
| 80 | Originator receives comments from reviewers and makes appropriate changes. Code 50 liaison return HMX documents to originator for any major changes. | VX/HMX - Make appropriate changes. |
| 81 | Route "smooth rough" to 00T, 01B, and 01. | Get VX/HMX CO's approval of document. |
| 83 | Prepare smooth document. | Prepare smooth document, send to HQ via Code 50.** |
| 85 | Route smooth at HQ to 01E, 01B, 00T; 01, for signature. | N/A |
| 90 | HQ mailroom distributes | N/A |
| *HQ B codes may waive reviews if deemed not applicable.<br>**Use dial-up E-mail or modem for applicable sections for HQ/comments. | | |

**b. TEMP Comment Letters.** The originator prepares letters commenting on TEMP contents within 30 calendar days after receipt of the TEMP from the DA. Timelines are summarized in table 5-2:

**Table 5-2. TEMP Comment Letter Timelines**

| Day | HQ Action | VX/HMX Action |
|---|---|---|

**Table 5-2. TEMP Comment Letter Timelines**

| Day | HQ Action | VX/HMX Action |
|---|---|---|
| 15 (from receipt of TEMP) | Document starts rough route to: analyst, editors, intel, scheduler, resources,* mod/sim,* logistics,* and METOC.* | VX - Route rough draft to tech. editor, intel, analyst (in squadron); scheduler, resources, mod/sim, logistics, METOC (at HQ)*<br><br>HMX - Send to HQ via Code 50 liaison for HQ review process** |
| 20 | Originator receives comments from reviewers, makes appropriate changes; prepares and routes "smooth rough" to 01B, 00T, and 01. Code 50 liaison return HMX documents to originator for any major changes. | VX/HMX - Make appropriate changes and get CO's approval of document. |
| 25 | Prepare and route smooth to 01E, 01B, and 01 for signature. | Prepare smooth and provide to HQ via Code 50** |
| 30 | HQ mailroom distributes | N/A |
| *HQ B codes may waive reviews if deemed not applicable.<br>**Use dial-up E-mail or modem for applicable sections for HQ/comments and for smooth document. | | |

**c. TEMP Comment Letter Signature**. TEMP comment letters are signed by the Chief of Staff. Briefings are normally not required.

**d. TEMP Forwarding Letters**. Forwarding letters should be staffed and returned to the cognizant SYSCOM as soon as possible after receipt of the TEMP for signature. Staffing is the same as for TEMP comment letters, except timelines are to be minimized to the maximum extent. The Commander signs all TEMPs and TEMP forwarding letters. Briefings are normally required.

**e. Requesting Deadline Extensions for Input and Comment Letters**. An extension request will be submitted to the Policy/Project Manager (Code 01B) providing the reason for any delay and the projected new due date. This information will be used to update the weekly List of Overdue T&E Correspondence.

## Sample Formats

## Contents


| | | Page |
|---|---|---|
| Initial TEMP Input Letter | **Sample 5-1** | 5-19 |
| TEMP Comment Letter w/no Major Comment | Sample 5-2 | 5-21 |
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| **(Removed from the Guide on 1-25-01. See comment on page 5- 26** | | |
| Detailed Comments | Sample 5-6 | 5-27 |
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**Sample 5-1**
**Initial TEMP Input Letter**
**(Parts IV and V provided in response to**
**TEIN assignment number)**

3961
Ser XX/

From: Commander, Operational Test and Evaluation Force
To: Commander, (Cognizant Developing Agency) (Code XXX)

Subj: INPUT TO TEST AND EVALUATION MASTER PLAN (TEMP) NO. XXX FOR THE NEW WEAPON SYSTEM (NWS) PROGRAM

Ref: (a) CNO ltr XXXX Ser XXX of 10 Jan 97

Encl: (1) Part IV OT&E Outline
(2) Part V T&E Resource Summary Input

1. Per reference (a), enclosures (1) and (2) are provided for inclusion in TEMP No. XXX.

2. My point of contact is ... (Code...) DSN 564-.... /commercial 444-5546.

SIGNATURE BLOCK
Deputy

Copy to:
CNO (N091, N912, and appropriate warfare sponsor)
COMNAVXXXSYSCOM (PM and cognizant T&E Coordinator)
Appropriate VX or HMX-1

Distribution limited to U.S. Government agencies only; test and evaluation document dated _____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR.

**The above distribution statement is for unclassified and classified documents.**

**When a VX or HMX-1 is the originator of the letter, they will be "Copy to" and will receive enclosure (1).**

**Although it may be difficult to fully identify resource requirements for OT&E this early in a program's life, every effort should be made to identify those resources critical and unique to OT&E of the system.**

**Sample 5-2**
**TEMP Comment Letter**
**(No major comment; requires CNO action;**
**comments and Part IV included)**

3961
Ser XX/

From: Commander, Operational Test and Evaluation Force
To: Chief of Naval Operations (N091)

Subj: COMMENTS ON TEST AND EVALUATION MASTER PLAN (TEMP) NO. XXX FOR THE NEW WEAPON SYSTEM (NWS) PROGRAM

Ref: (a) COMNAVXXXSYSCOM ltr XXXX Ser XXX of 16 Jul 91

Encl: (1) Detailed Comments on TEMP No. XXX
(2) Part IV OT&E Outline

1. Per reference (a), TEMP No. XXX has been reviewed. There are no major comments. Detailed comments are contained in enclosure (1). A new Part IV OT&E Outline is provided as enclosure (2).

2. Request CNO provide threshold values for the parameters indicated by asterisks in enclosure (1).

SIGNATURE BLOCK
Deputy

Copy to:
CNO (NXXX)
COMNAVXXXSYSCOM (Code XXX)
Appropriate VX or HMX-1

Distribution limited to U.S. Government agencies only; test and evaluation document dated _____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR.

**The above distribution statement is for unclassified and classified documents.**

**CNO is action "to" (with the cognizant SYSCOM/PMA/PMO, etc., as "Copy to") if there are issues for CNO resolution, otherwise CNO is a "Copy to."**

**Paragraph 2 as appropriate when CNO action is required to resolve any issues addressed in the comments of enclosures.**

**"Copy to" addressees will be limited to commands and activities having a need to know. When CNO is 'Copy to," address the correspondence to flag level, as above. Also to codes such as "912G," etc., but only if that code is listed in the Points of Contact annex in the TEMP. When a VX or HMX-1 is the originator of the letter, they will be "Copy to" and will receive all enclosures. For letters addressed to developing agencies, the following codes will be used in the "To" line: AIR-1.6 for COMNAVAIRSYSCOM; SEA-63 for COMNAVSEASYSCOM; and SPAWAR-00A-AR-3 for COMSPAWARSYSCOM.**

**Sample 5-3**
**TEMP Comment Letter**
**(with a major comment)**

3961
Ser XX/

From: Commander, Operational Test and Evaluation Force
To: Commander, (Cognizant Developing Agency) (Code XXX)

Subj: COMMENTS ON TEST AND EVALUATION MASTER PLAN (TEMP) NO. XXX FOR THE NEW WEAPON SYSTEM (NWS) PROGRAM

Ref: (a) COMNAVXXXSYSCOM ltr XXXX Ser XXX of 16 Jun 85

Encl: (1) Detailed Comments on TEMP No. XXX
(2) Part IV OT&E Outline

1. Per reference (a), TEMP No. XXX has been reviewed. A major comment is provided below. Detailed comments are contained in enclosure (1). A new Part IV OT&E Outline is provided as enclosure (2).

2. The combined DT-IIA and OT-IIA testing cited in enclosure (2) will require a Memorandum of Agreement between COMOPTEVFOR and COMNAVXXXSYSCOM.

SIGNATURE BLOCK
Deputy

Copy to:
CNO (as appropriate)
COMNAVXXXSYSCOM (as appropriate)
Appropriate VX or HMX-1

Distribution limited to U.S. Government agencies only; test and evaluation document dated _____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR.

**The above distribution statement is for unclassified and classified documents.**

**When a VX or HMX-1 is the originator of the letter, they will be "Copy to" and will receive all enclosures.**

**Sample 5-4**
**TEMP Forwarding Letter**
**(TEMP signed, with no comments)**

3961
Ser XX/

From: Commander, Operational Test and Evaluation Force
To: Commander, (Cognizant Developing Agency) (Code XXX)

Subj: TEST AND EVALUATION MASTER PLAN (TEMP) NO. XXX FOR THE NEW WEAPON SYSTEM (NWS) PROGRAM

Ref: (a) COMNAVXXXSYSCOM ltr XXXX Ser XXX of 24 Jan 85
(b) TEMP No. XXX

Encl: (1) TEMP No. XXX Cover Page

1. Per reference (a), I have reviewed reference (b). I have signed and forwarded enclosure (1) for further signatures.

2. My point of contact is XXX (Code XXX) DSN 564-5546 ext. XXXX or commercial (757) 444-5546.

SIGNATURE BLOCK
(00 signs)

Copy to: (as appropriate)
Copy to: (w/o encl) (as appropriate)

**When a VX or HMX-1 is the originator of the forwarding letter, they will be "Copy to" and will receive enclosure (1).**

**Sample 5-5**
**TEMP Forwarding Letter**
**(TEMP signed contingent upon DA and/or CNO action)**

This letter has been discontinued for general use. COMOPTEVFOR will entertain a contingent signature *strictly on a case-by-case basis*. Contact COMOPTEVFOR Code 01B for initial approval.

**Sample 5-6**
**Detailed Comments**

Detailed Comments on TEMP XXX

**Detailed comments should only include programmatic/technical issues. Editorial corrections (format, punctuation, typos, etc.) should be handled at informal working sessions, by phone, memos, etc.**

1. Page I-1, par. 1a, Mission Description. Include statement on all weather operations to clarify purpose of the system.

Rationale: Completeness, per SECNAVINST 5000.2B.

2. Page I-1, par. 1b, System Threat Assessment. Include reference to the current system threat assessment report, STAR (number and title) and (date) and briefly summarize the threat environment described therein.

Rationale: Completeness, per SECNAVINST 5000.2B.

3. Page I-2, par. 1c, Measures of Effectiveness and Suitability. Delete the existing paragraph and insert:

"c. Measures of Effectiveness and Suitability

| Characteristics | Parameter | Threshold | Objective |
|---|---|---|---|
| **Operational Effectiveness** | | | |
| Detection | Probability of Detection ($P_d$) (Note 1) | * | * |
| Classification | Probability of Classification ($P_c$) (Note 2) | * | * |
| | Probability of Localization ($P_L$) (Note 3) | * | * |
| **Operational Suitability** | | | |
| Reliability | Mean Time Between Operational Mission Failures (MTBOMF) (Note 4) | $\geq$750 hr | * |
| Maintainability | Mean Corrective Maintenance Time for Operational Mission Failures (MCMTOMF) | $\leq$1 hr | * |

| Characteristics | Parameter | Threshold | Objective |
|---|---|---|---|
| | Mean Corrective Maintenance Time for Operational Mission Faults Software ($MCMTOMF_{sw}$) | * | * |
| Availability | Operational Availability ($A_o$) $A_o = \frac{\text{Uptime}}{\text{Uptime + Downtime}}$ | $\geq$0.97 | * |

*To be provided by CNO.

Notes:

1. $P_d$ will be calculated based on the number of correct detections that occurred compared to the number of detection opportunities that existed. A correct detection occurs when an actual target exists in the location where detection is said to occur.

$$P_d = \frac{\text{Number of Correct Detections}}{\text{Number of Detection Opportunities}}$$

2. A note may be required to define $P_c$ and a valid classification.

3. A note providing the same information may be required for $P_L$.

4. A note defining MTBOMF (as provided in chapter 6) must be included.

$$\text{MTBOMF} = \frac{\text{Total System Operating Time}}{\text{Number of Operational Mission Failures "}}$$

Rationale: Completeness.

**Where possible, include the formula along with the parameter.**

**Short notes (one or two lines in length) should be placed in parentheses after the parameter. Notes of greater length (e.g., those defining a probability or reliability) should be included as a numbered note.**

**Insert additional parameters required for completeness, and indicate where CNO action is required to provide threshold values with asterisks.**

**The addition of new parameters will also necessitate an update to the ORD. Expect resistance to addition of new pa-**

**rameters after M/S II.**

**If the new parameters are not formally incorporated in either the ORD or the TEMP, they could be incorporated under the appropriate E- or S-test in the test plan without benefit of a CNO-provided threshold.**

4. Page II-2, par. 2a, Integrated Test Program Schedule

a. Ensure there are 30 days between the completion of TECHEVAL and commencement of OPEVAL. Ensure the time allotted between the completion of OPEVAL and the Milestone III decision allows 90 days for preparation of the evaluation report plus any additional time required to prepare for the decision forum.

b. Insert "OT-III (Dates TBD)" and "OT-IV (Dates TBD)."

Rationale: Correctness, per SECNAVINST 5000.2B.

5. Page V-1, T&E Resource Summary. Add the following resource requirements for OT-IIB (OPEVAL):

| Resource | Required |
|---|---|
| Test Articles | 1 EDM |
| RDT&E Support | 1 BB, 1 FFG, 1 SSN (dedicated, concurrent, or NIB) |
| Threat Systems | 2 EXOCET |
| Simulators/Models/Test Beds | An Engagement Model and 2 man-years of analytical support |

**List applicable resources from SECNAVINST 5000.2B and your requirements.**

**Provide number of days ship assets are required and the level of support (dedicated, concurrent, NIB).**

**Where practical, request threat systems and/or targets in-kind (e.g., BADGER, EXOCET, etc.), rather than the surrogate threat or target.**

**Include all necessary resources required for joint interoperability testing.**

**Include prefaulted modules necessary for maintainability demonstrations.**

**A rationale is not required for comments providing our resource requirements.**

**Sample 5-7**
**Part IV**

New Weapon System

Part IV

OT&E Outline

A. OT&E Overview

1. IOT&E of the New Weapon System (NWS) will be conducted in three phases: An EOA to support a Milestone II decision; OT-IIA to support an LRIP decision; and OT-IIB OPEVAL to support a Milestone III decision. FOT&E (OT-III and OT-IV as required) will be conducted to verify correction of deficiencies, to complete deferred or incomplete IOT&E, and to verify the operational effectiveness and operational suitability of a production NWS.

2. An EOA was conducted at the contractor's test facility using a prototype laboratory model of the NWS, operated and maintained by contractor personnel. Due to known limitations associated with an EOA, the only critical operational issues examined were detection, classification, and localization. No critical operational issues were resolved.

**For completed phases (par. 2 above) show only where testing was conducted, type of platform installation, the conclusion, and the major recommendation (fleet introduction, limited fleet introduction).**

3. OT-IIA and OT-IIB will be conducted in a CG XX class ship during antisubmarine and antisurface warfare operations, under various environmental conditions. The system will be operated and maintained by fleet personnel. Scenarios will be developed based on the threat as stated in the System Threat Assessment Report (STAR) (number and title) of (date). Threat representative targets, as specified in the T&E Resource Summary, will be used in various operational scenarios to provide realistic tests to support resolution of the critical operational issues.

B. Modeling and Simulation (M&S) ***(This paragraph was added on 11-2-98. Use it for all programs where M&S if a factor for test phases (renumber subsequent major paragraph numbers). If M&S is not used, delete this paragraph.)***

1. M&S will be used to support and supplement OT&E of the _____system. COMOPTEVFOR intends to use M&S to assist in the design of cost efficient OT scenarios, and

to evaluate and probe system performance throughout the engagement envelope.
Models are expected to continue to be refined by the application of live test results. Specific models and simulation to be used for all phases will be chosen based on the intended test appli- cations and fidelity requirements as test objectives and model capabilities become clear. M&S may be used to:

- Supplement ***(identify specific test types)*** tests.

- Assess ***(identify specific E- or S- tests)*** tests.

- Evaluate ***(system)*** interoperability.

- Facilitate risk reduction through ***(identify model types)*** modeling in planning and preparation for at-sea test.

- Evaluate system performance in a realistic threat environment using realistic scenarios not easily replicated in a T&E environment. This scenario testing shall augment live testing at sea. It shall not be a replacement for live testing.

2. Other models may be used to (not all-inclusive):

- Evaluate ***(identify interfacing systems)*** performance.

- Perform Planning/Resource Allocation.

- Evaluate Force-on-Force scenarios.

3. For all combined DT/OT and OPEVAL, PM_____ and COMOPTEVFOR will agree to models used, and the models will undergo formal verification and validation. Verification, validation, and accreditation (VV&A) will be conducted per COMOPTEVFOR Instruction 5000.1, Use of Modeling and Simulation in Operational Testing, and Department of Defense Instruction 5000.59 series, Modeling and Simulation Plan. Separate VV&A plans and reports for each model will be prepared and submitted for approval by the organization which documents the validation oeffort. These reports will emphasize specific model applications and will highlight their limitations in relation to use in OT&E. If validation results are satisfactory, COMOPTEVFOR will accredit the models and/or simulations witha goal of not less than 90 days before their use supporting OT.

C. Critical Operational Issues. The following are critical operational issues for examination during OT&E phases as indicated:

**If COIs apply to all test phases, indicate the phase here rather than following each COI (e.g., resolution during OT-IIA and OT-IIB). Even though a phase of testing has been completed, the phase in which each COI is/was intended for examination will continue to be listed in the TEMP updates and part IV revisions.**

1. Effectiveness Issues

a. Detection. (OT-I) (OT-IIA) (OT-IIB)

(1) Will the NWS support detection of threat targets at standoff ranges?

(2) Will the NWS perform contact correlation functions?

(3) Will the NWS conduct initial detection maneuvers?

b. Classification. Will the NWS support correct classification of detected targets, allowing employment of defensive weapons at standoff ranges? (OT-I) (OT-IIA) (OT-IIB)

c. Localization. Will the NWS localization capability support accurate employment of standoff weapons? (OT-I) (OT-IIB)

d. Joint Interoperability. Will the NWS effectively interface and operate with corresponding systems or units of other U.S. forces in the execution of its intended operational mission? (OT-I) (OT-IIA) (OT-IIB)

**A conscious decision as to the prudence of including the Joint Interoperability COI in TEMPs for systems already past Milestone II will be made on a case-by-case basis. The intent is to include it as an effectiveness COI in all new or revised TEMPs if the tested system/platform can be projected to be required to operate in a joint environment.**

**Where it is appropriate to evaluate the joint interoperability of a new or updated system with combined (allied or coalition) forces, the standard Joint Interoperability COI should be modified as required.**

**In cases where inclusion of this COI represents a capability that is clearly beyond the scope of the approved requirements document, an attempt will be made to resolve the COI but report the evaluation as an operational consideration rather than as a factor in determining overall operational effectiveness.**

e. Tactics. Will the tactics developed for the NWS support effective employment in the intended operating environment? (OT-IIA) (OT-IIB)

**One of the example COIs will be used to address tactics: For those programs where the system in question is a new system and no tactics exist and tactics development must commence very early in the program (i.e., the demonstration and validation phase), the above COI will be used to address tactics.**

**or**

e. Tactics. Will the tactics developed for the existing weapons system support effective employment of the NWS? (OT-IIA) (OT-IIB)

**For those programs where verification of tactics for an existing system is required because of system improvements or where existing tactics will be used and expanded to support a new system, this COI will be used.**

**One of the following COIs, based on Chapter 6, may be used for survivability:**

**For a covered system**

f. Survivability. Will the susceptibility and vulnerability characteristics of the NWS enhance the successful accomplishment of its mission? (OT-IIB)

**or**

**For major munitions or missile systems**

f. Lethality. Will the lethality of the NWS cause degradation in threat systems or a loss of the threat system's capability to complete its mission? (OT-IIB)

**Lethality is a function conducted by DT personnel and observed by the OTD**

**or**

**For components of subsystems**

f. Survivability. Will the operational performance or inherent characteristics of the NWS decrease the susceptibility or vulnerability of the (aircraft, ship, submarine, or vehicle) in which it is installed? (OT-IIB)

2. Suitability Issues

a. Reliability. Will the reliability of the NWS support completion of its mission? (OT-IIA) (OT-IIB)

b. Maintainability. Will the NWS be maintainable by fleet personnel? (OT-IIA) (OT-IIB)

c. Availability. Will the availability of the NWS support completion of its mission? (OT-IIA) (OT-IIB)

d. Logistic Supportability. Will the NWS be logistically supportable? (OT-IIA) (OT-IIB)

e. Compatibility. Will the NWS be compatible with its operating environment? (OT-IIA) (OT-IIB)

f. Interoperability. Will the NWS be interoperable with systems with which it must interface? (OT-IIB)

g. Training. Will NWS training support system operation and maintenance by fleet personnel? (OT-IIA) (OT-IIB)

h. Human Factors. Will the human factors aspects of the NWS support completion of its mission? (OT-IIA) (OT-IIB)

i. Safety. Will the NWS be safe to operate and maintain? (OT-IIA) (OT-IIB)

j. Documentation. Will the technical documentation support operation and maintenance of the NWS? (OT-IIA) (OT-IIB)

**PIN 98-03 of 12-8-98, Y2K Compliance COI, has been rescinded as of 4-21-00**

D. OT&E to Date

1. OT-I (EOA) (1-15 August 1989)

a. Configuration Description. A prototype laboratory model NWS.

b. OT&E Events and Results. An EOA was conducted at the contractor's test facility. The system was operated and maintained by contractor personnel. COMOPTEVFOR concluded the NWS was projected to be potentially operationally effective; no projection could be made with respect to operational suitability. Continued engineering and manufacturing development was recommended. Due to limitations inherent in an EOA, no critical operational issues were resolved.

2. OT-IIA (10-15 November 1990)

a. Configuration Description. An engineering development model of the NWS.

b. OT&E Events and Results. OT-IIA was conducted in USS WILLIAM V. PRATT (DDG 44) while participating in battle group exercises during FLEETEX 3-90. The system was operated by ship's personnel; however, maintenance support was provided by contractor personnel in accordance with the Integrated Logistic Support Plan. COMOPTEVFOR concluded the NWS was potentially operationally effective and potentially operationally suitable. Limited fleet introduction was recommended to support additional OT&E on other platforms. Critical operational issues were resolved as follows:

| Critical Operational Issue | Resolution |
|---|---|
| Detection | Partially Resolved |
| Classification | Partially Resolved |
| Joint Interoperability | Partially Resolved |
| Localization | Unresolved |
| Tactics | Resolved (SAT) |
| Survivability | Unresolved |
| Reliability | Partially Resolved |
| Maintainability | Partially Resolved |
| Availability | Partially Resolved |
| Logistic Supportability | Unresolved |
| Compatibility | Resolved (SAT) |
| Interoperability | Unresolved |
| Training | Partially Resolved |
| Human Factors | Resolved (SAT) |
| Safety | Resolved (SAT) |
| Documentation | Partially Resolved |

E. Future OT&E

**For each phase of future OT&E, separately address the following:**

**Configuration Description. Identify the system to be tested during each phase, and describe any differences between the tested system and the system that will be fielded including, where applicable, software maturity performance and criticality to mission performance, and the extent of integration with other systems with which it must be interoperable or compatible. Characterize the system (e.g., prototype, engineering development model, production representative, or production configuration).**

**OT&E Objective. State the purpose of the phase of testing, the COIs to be addressed by each phase of OT&E, and the milestone decision review(s) supported. OT&E that supports the beyond LRIP decision should have COIs that examine all areas of operational effectiveness and suitability.**

**<u>OT&E Events, Scope of Testing, and Scenarios</u>. Summarize the scenarios and identify the events to be conducted, type of resources to be used, the threat simulators and the simulation(s) to be employed, the type of representative personnel who will operate and maintain the system, the status of the logistic support, the operational and maintenance documentation that will be used, the environment under which the system is to be employed and supported during testing, the plans for interoperability and compatibility testing with other United States/Allied weapon and support systems as applicable, etc. Identify planned sources of information (e.g., development testing, testing of related systems, modeling, simulation, etc.) that may be used by the operational test agency to supplement this phase of OT&E. Whenever models and simulations are to be used, explain the rationale for their credible use. If OT&E cannot be conducted or completed in this phase of testing and the outcome will be an operational assessment instead of an evaluation, this should clearly be stated and the reason(s) explained.**

**<u>Limitations</u>. There are three categories of limitations: minor (minimal impact on resolution of COIs, no impact on reaching conclusions); major (can only partially resolve impacted COIs, will not impact conclusions; and severe (normally leaves impacted COIs unresolved, will adversely impact ability to reach conclusions). Discuss any test limitations, including threat realism, resource availability, limited operational (military, climatic, nuclear, etc.) environments, limited support environment, maturity of tested system, safety, etc., that may impact the resolution of affected COIs. Indicate the impact of the limitations on the ability to resolve COIs and the ability to formulate conclusions regarding operational effectiveness and operational suitability. Indicate the COIs affected in parenthesis after each limitation. See page 8-37 for addressing your limitations after the test is over.**

**The following limitation examples are from P&I Note 98-01**

**and are used for threat systems for TEMP inputs, early in the TEMP process for long range asset planning . It is not the intent to include these in programs approaching OPEVAL, or beyond. The examples are for aircraft programs, but tailor your limitations for your particular program.**

a. Limitations. The following limitations are major in nature and may/will affect the resolution of COIs, but will not affect the ability to draw a conclusion regarding operational effectiveness and/or operational suitability of the _____:

(1) Lack of threat systems or suitable simulators may preclude testing against all threats identified in ONI TA _____ unless a combination of target simulator comparability can be coordinated/developed to COMOPTEVFOR's satisfaction. (COI(s))

(2) The types of testing that can be used to assess/determine operational effectiveness and/or operational suitability include live end-to-end testing, laboratory testing, captive carry testing (missiles OT), HITL testing, and digital model simulations. Each of these tests has strengths and weaknesses that will affect the ability to assess/determine effectiveness/suitability, as listed below. (List COI(s) affected)

(a) Live end-to-end missile firing testing is the most operationally realistic method for verifying expendable effectiveness, but a statistically significant number of shots to draw data from will not be available. In addition, drones do not accurately represent the signature of the intended operational platform. Thus, live missile testing against drones will supply a limited amount of data, and that data alone will not resolve the effectiveness COIs.

(b) IRSTV and captive carry testing is the most common method of evaluating IR decoy effectiveness. This method is used to determine the ability of the IR decoy to cause the missile seeker to break lock but cannot be used to determine missile miss distance. Additionally, the age and condition of missile seekers used for testing can have a direct impact on the validity of the results.

(c) HITL testing is limited by the types of backgrounds available and the simulated missile fly out models used to evaluate miss distance.

(d) Digital model simulations use simulated aircraft signatures, simulated IR decoy signatures, simulated backgrounds, and missile fly out models. COMOPTEVFOR accreditation and subsequent use of digital model simulations is dependent upon successful completion of a

V&V process. Although the accuracy and fidelity of digital models vary, they remain the only method available to evaluate the miss distance threshold established in the ORD for _____ dated _____.

**The following are sample Part IV paragraphs for future OT&E:**

**If a DT assist is discussed in Future OT&E, insert the following note in the appropriate paragraph for clarity:**

**"NOTE: DT assist is not a formal phase of OT, but rather a period of DT in which OT testers are actively involved, providing operational perspective and gaining valuable hands-on familiarity with the system. Data and findings from DT assist may be used to supplement formal OT data, provided certain criteria are met. DT assist does not resolve COIs, does not reach conclusions regarding effectiveness or suitability, and does not make a recommendation regarding fleet release. No OT test plan or final report will be generated."**

1. OT-1 Early Operational Assessment (EOA) (16 May - 30 July 1991)

a. Configuration Description. A prototype laboratory model of the NWS operated and maintained by the development contractor at his facility. All interfaces will be emulated using the contractor-developed XYZ computer system. Software will be preliminary in nature to demonstrate the technology advances and will not be representative of the final production software. A computer model of the NWS developed by Navy Lab and accredited for operational assessment purposes by CNA will be used in assessing the potential capabilities of the NWS.

b. OT&E Objective. The purpose of the EOA is to provide an early projection of the potential operational effectiveness and operational suitability of the NWS. Successful accomplishment of the EOA will support a recommendation regarding proceeding to Phase II (engineering and manufacturing development). EOA results will be provided to support the Milestone II decision. Critical operational issues to be reviewed are:

**Include the COIs that apply. In those cases where system maturity is such that COIs do not apply, state that no COIs will be examined.**

| Operational Effectiveness | Operational Suitability |
|---|---|
| Detection | None |

Classification
Joint Interoperability

**Or**

**When the EOA is being conducted to assess the operational concept of a system and no actual system testing will be conducted (e.g., review of program documentation, the operational requirement document and system threat, assessment report, etc.) the "OT&E Objective" paragraph will be as follows:**

b. OT&E Objective. The purpose of the EOA is to assess the operational concept of the NWS. EOA results will be provided to support the Milestone II decision. No critical operational issues will be examined during the EOA.

c. OT&E Events/Scope of Testing/Scenarios. The EOA will consist of observations of a technology demonstration provided to COMNAVXXXSYSCOM. All components of the NWS will be operated and maintained by contractor personnel. All interfaces and threat inputs will be simulated using computer programs and simulators developed by the contractor. Additionally, the EOA will consist of 2,000 simulated engagements conducted on the Navy Lab XYZ computer model. The EOA will also review all available program documentation to assess if the NWS has the potential capability to satisfy the ORD against the threat as defined in the STAR.

d. Limitations. Since this EOA is being conducted at the contractor's facility with contractor personnel operating and maintaining the NWS under conditions not representative of the intended operating environment, there are significant limitations to the assessment. No actual operational testing will be conducted, and the demonstration will be conducted under controlled conditions. As a result of these inherent limitations, no critical operational issues will be resolved, and, at best, only a projection of potential operational effectiveness and suitability will be concluded.

**See page 5-40 for long range limitations affecting threat assets.**

2. OT-IIA (7 March - 7 April 1992)

a. Configuration Description. Engineering development model NWS installed in a CG 27 class ship.

b. OT&E Objective. The purpose of OT-IIA is to assess the potential operational effectiveness and operational suitability of the NWS, and initiate tactics development to support promulgation of an OPTEVFOR Tactics Guide (OTG). Successful accomplishment of OT-IIA will support a recommendation regarding limited fleet introduction *(or - - continued program development)*. OT-IIA critical operational issues are:

| Operational Effectiveness | Operational Suitability |
|---|---|
| Detection | Reliability |
| Classification | Maintainability |
| Joint Interoperability | Availability |
| Tactics | Compatibility |
| | Logistic Supportability |
| | Training |
| | Human Factors |
| | Safety |
| | Documentation |

**Note that Localization, Survivability, and Interoperability are not identified as COIs for examination in OT-IIA.**

c. OT&E Events/Scope of Testing/Scenarios

(1) Events. OT-IIA will include employment of the NWS against threat-representative antisubmarine warfare (ASW) and antisurface warfare (ASUW) targets. Approximately 30 runs, some having controlled geometries, will be conducted.

(2) Scope of Testing. OT-IIA will be conducted for a 30-day period in a CG 27 class ship participating in a major predeployment fleet exercise.

(3) Scenarios. Operational scenarios will be developed to allow testing to be conducted under various environmental conditions and to exercise the NWS against the ASW and ASUW threat, as derived from the STAR (number and title) of (date). Emphasis will be on NWS performance in all range bands and against countermeasures.

**Limitations. (See pages 5-40 and 5-41) Identify those factors that will preclude a full and completely realistic operational test. Some specific items that must be in-**

**cluded are, (1) the impact of the test limitation on the resolution of COIs, (2) the affect of the test limitation on the ability to draw conclusions, (3) any resources that are not available or have been deleted by CNO direction, (4) how or in what way a target or simulator does not fully represent the threat, and (5) the requirement for simulation and modeling support when it is known or projected that the test requirements cannot be met. The following are examples of how test limitations should be addressed: (Note that each limitation indicates the COI affected in parentheses, except those that have minor impact.)**

**Minor (minimal impact on COI resolution, no impact on conclusions)**

d. Limitations. The NWS will not incorporate two antiair warfare engineering change proposals planned for fleet delivery with software release 1.4. These changes are minor in nature and will not affect the resolution of critical operational issues or the ability to draw a conclusion regarding the operational effectiveness of the NWS.

**or**

**Major (partially resolved COI, does not impact ability to draw conclusions)**

d. Limitations. The targets available for OT-XX will not be threat-representative throughout critical portions of the engagement envelope. It is expected this will result in only partial resolution of critical operational issues and will only support a conclusion that the NWS is potentially operationally effective. (Detection, Classification)

**or**

**Severe (partially resolved/ unresolved COI, adversely impacts conclusions)**

d. Limitations. Lack of a cold weather test range will preclude determination of NWS performance, reliability, operational availability, and compatibility in extreme cold weather. This

limitation will result in only partial resolution of the indicated critical operational issues and will adversely affect the ability to draw a conclusion regarding the operational suitability of the NWS. (Detection, Reliability, Availability, Compatibility)

**or**

d. Limitations. As directed in CNO ltr 3900 Ser XXX of 11 September 1988, no survivability testing of the NWS will be conducted during this phase of testing. Accordingly, neither the degree of survivability improvement of the NWS over that of the Old Weapons System nor an estimate of DDG 999 class ship survivability can be operationally determined. This limitation will preclude resolution of the Survivability critical operational issue and adversely affect the ability to draw a conclusion regarding the operational effectiveness of the NWS. (Survivability)

**All limitations citing lack of statistically valid sample sizes (i.e., flight or operating hours/missile shots) will be shown as minor limitations in all phases of OT&E.**

**These are examples and may not apply to all situations. What is important is that in preparing the TEMP part IV, the OTD include all known limitations for each test phase and their projected impact on the resolution of COIs and our ability to form conclusions regarding operational effectiveness and operational suitability. This will enable DOT&E, CNO, and other agencies to be more aware of known limitations and their possible impact on planned testing and inputs to decisionmaking bodies. When targets or simulators are used which are not fully representative of the threat, a matrix comparing threat to simulator characteristics and capabilities should be included as an annex to the TEMP.**

3. OT-IIB OPEVAL (January - April 1993)

a. Configuration Description. A fully integrated production representative NWS with production software version 2.0 installed in a CG 27 class ship.

b. OT&E Objective. The purpose of OT-IIB is to determine the operational effectiveness and operational suitability of the NWS. Successful accomplishment of OT-IIB will support

a recommendation regarding fleet introduction. OPEVAL results will be provided to support the Milestone III decision. OT-IIB critical operational issues are:

| Operational Effectiveness | Operational Suitability |
|---|---|
| Detection | Reliability |
| Classification | Maintainability |
| Localization | Availability |
| Joint Interoperability | Logistic Supportability |
| Survivability | Compatibility |
| Tactics | Interoperability |
| | Training |
| | Human Factors |
| | Safety |
| | Documentation |

c. OT&E Events/Scope of Testing/Scenarios

(1) Events. The NWS will be employed aboard a CG 27 class ship during battle group operations. The NWS will be used in ASW and ASUW operations against threat-representative targets. If sufficient maintainability data are not obtained during testing, a maintainability demonstration will be conducted.

(2) Scope of Testing. OPEVAL will be conducted over a 4-month period. All aspects of operational effectiveness and operational suitability will be examined.

(3) Scenarios. The scenarios will emphasize operational realism and will allow for testing to be conducted under various environmental conditions. Scenarios will be developed to examine the system's capabilities against the threat, as derived from the STAR (number and title) of (date). The scenarios will provide an element of surprise or uncertainty for the test ship. The test platform commander will be able to respond to the tactical situation as he perceives it in employing the NWS.

**When applicable, modify the above paragraph to address systems designed to operate in a hostile environment but not designed to meet or counter a specific threat. The threat assessment for the mission area involved will be used for scenario development.**

d. Limitations

**As required. See pages 5-40 and 5-41.**

4. OT-III FOT&E (Dates TBD)

a. Configuration Description. A fully integrated, production configured NWS with production software version 2.0.

b. OT&E Objective

(1) Verify the operational effectiveness and operational suitability of a production NWS.

(2) Verify correction of deficiencies identified in OT-IIB.

(3) Complete deferred or incomplete OT&E.

(4) Continue tactics development.

c. OT&E Events/Scope of Testing/Scenarios. (TBD).

d. Limitations. (TBD).

5. OT-IV (FOT&E) (Dates TBD)

**If paragraph B indicates there are specific critical operational issues which are to be addressed in OT-III or OT-IV, the FOT&E paragraph must show a full phase of testing (e.g., same format as an OT-II paragraph).**

F. LFT&E (This paragraph is supplied by the developing agency. Guidelines are in Chapter 4. If LFT&E doesn't apply to your program, delete this paragraph.)

**Sample 5-8**
**Part V T&E Resource Summary Input**

Part V

T&E Resource Summary Input

**Two important resources must not be overlooked here: all new or additional resources required for joint interoperability testing; and prefaulted modules necessary to conduct maintainability demonstrations.**

| Resource | Required |
|---|---|
| Test Articles | 4 Production missiles for firing, 4 for backup |
| Test Sites and Instrumentation | NAVAIRWARCENWPNDIV Point Mugu, CA<br>10 Dedicated firing periods<br>Target buildup<br>Advisory flight control for missile<br>NWAC - 3 man-months for TM analysis |
| Test Support Equipment | 2 missile test sets |
| Threat Systems/Simulators | 4 DDT-1<br>2 DLQ-3C<br>1 DBM-11 |
| Test Targets and Expendables | 3 QF-4<br>6 trucks<br>3 jeeps |
| Operational Force Test Support | 1 SPRUANCE class DD, 10 days, dedicated |
| Simulations, Models, and Testbeds | None |
| Special Requirements | 1 rem. controlled SDTS with installed AN/SWY-1 SDSMS |
| Test and Evaluation Funding Requirements | (put your best guess here. State if RDT&E funds ( includes OT-III phases) or O&MN funds (for OT-IV)) |
| Manpower/Personnel Training | Familiarization training for:<br>1 AO1<br>3 AO2s<br>1 AO3 |

**See SECNAVINST 5000.2B for instructions to the above resources.**

**Sample 5-9**
**Project Assignment Letter**

3980
Ser XX/

From: Commander, Operational Test and Evaluation Force
To: Commanding Officer, Air Test and Evaluation Squadron...

Subj: ASSIGNMENT OF CNO PROJECT NO. XXX FOR THE NEW WEAPON SYSTEM (NWS) PROGRAM

Ref: (a) COMOPTEVFORINST 3960.1H

Encl: (1) CNO ltr 3980 Ser 913/5U354825 of 6 Oct 95

1. Enclosure (1) is forwarded as background information concerning the assignment of CNO Project No. XXX for the NWS. This project is hereby assigned to Commanding Officer, Air Test and Evaluation Squadron....

2. Direct liaison is authorized with appropriate commands and agencies in connection with the prosecution of this project, keeping COMOPTEVFOR informed.

3. Per reference (a), Test and Evaluation Master Plan (TEMP) inputs must be forwarded to the cognizant developing agency no later than _____. Accordingly, completed TEMP inputs must reach COMOPTEVFOR by _____.

4. Copy to addressees are requested to include AIRTEVRON ... as an addressee on any further correspondence pertaining to this project.

SIGNATURE BLOCK
Assistant Chief of Staff for
XXXX Warfare Division

Copy to: (w/o encl)

**N912 and the program manager should be in the Copy to list.**

**Sample 5-10**
**Standard Memorandum of Agreement**

3980
Ser XX/

CLASSIFICATION -- (if required)

From: Commander, Operational Test and Evaluation Force
To: Commander, Naval Air Systems Command

Subj: MEMORANDUM OF AGREEMENT FOR COMBINED DEVELOPMENTAL AND OPERATIONAL TESTING OF (AIRCRAFT TYPE) USING VERSION X.X OPERATIONAL FLIGHT PROGRAM (OFP) (CNO PROJECT NO. XXX)

Encl: (1) Memorandum of Agreement

1. Request enclosure (1) be reviewed and returned either signed or with COMNAVAIR-SYSCOM's desired modifications indicated.

2. My point of contact is LCDR ... (Code...), USN, at DSN 564-5546 ext ... or commercial 757-444-5546.

SIGNATURE BLOCK
(00 signs)

Copy to:
CNO (N091)
COMNAVAIRSYSCOM (AIR-1.6, appropriate PMA)

Distribution limited to U.S. Government agencies only; test and evaluation document dated _____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR.

**The above distribution statement is for unclassified and classified documents. Although this sample format addresses combined testing of an aircraft OFP, is applicable to any project where combined DT and OT will occur.**

**Place the subject line at the top of each succeeding page of the MOA**

DEPARTMENT OF THE NAVY
SENIOR COMMAND'S TITLE (zip code)
CITY AND STATE
JUNIOR COMMAND'S TITLE (zip code)
CITY AND STATE
(if city and state are the same, use only the zip code of each)

(SENIOR COMMAND'S SHORT TITLE)
3980
Ser XXX/
(date will be stamped here)

(JUNIOR COMMAND'S SHORT TITLE)
3980
Ser XXX/
(date will be stamped here)

MEMORANDUM OF AGREEMENT
BETWEEN
SENIOR COMMAND'S TITLE
AND
JUNIOR COMMAND'S TITLE

Subj: MEMORANDUM OF AGREEMENT FOR COMBINED DEVELOPMENTAL AND OPERATIONAL TESTING OF THE (TYPE AIRCRAFT) USING VERSION X.X OFP

Ref: (a) Test and Evaluation Master Plan No. XXX
(b) SECNAVINST 5000.2B

**1.** This Memorandum of Agreement establishes procedures for the conduct of combined DT and OT of the (type aircraft) Version X.X OFP. The purpose of the combined testing is to expeditiously provide the fleet with greater tactical capability. Commander, Naval Air Systems Command (COMNAVAIRSYSCOM) and Commander, Operational Test and Evaluation Force (COMOPTEVFOR) agree to the following DT and OT procedures:

**a. DT and OT Readiness**

**(1)** COMNAVAIRSYSCOM will certify readiness to commence DT and OT using appropriate sections of references (a) and (b).

**(2)** COMNAVAIRSYSCOM and COMOPTEVFOR will identify and ensure the collection of data for their individual tests.

Encl (1)

**b. Preoperations Planning**

**(1) Purpose of Testing**

**(a) DT.** To provide a technical assessment of the capabilities and performance of the (type aircraft) OFP.

**(b) OT**. To determine the operational effectiveness and operational suitability of the (type aircraft) using Version X.X OFP in support of a CNO fleet release decision.

**(c) Coordination**. COMNAVAIRSYSCOM and COMOPTEVFOR will review requirements, and coordinate planning and test assets and resources to ensure test operations are structured to conduct as comprehensive a test as possible with as much operational realism as is possible under the circumstances.

**(2) Test Plan**. There will be no combined DT and OT test plan. COMNAVAIRSYSCOM and COMOPTEVFOR, respectively, will issue separate DT and OT test plans. Test events will be coordinated and monitored by on-scene representatives of the signatories to ensure that both DT and OT test requirements, data collection, and data analysis requirements are met.

**c. Test Execution**

**(1) Combined Test Phase**. The DT and OT phase covered by this MOA shall commence when COMNAVAIRSYSCOM begins its DT validation of the final planned software configuration. After commencement of validation, and when initial testing has shown the software to be safe for flight, COMNAVAIRSYSCOM will release the software to COMOPTEVFOR for the purpose of monitoring developmental testing. Test data and results will be exchanged between COMOPTEVFOR and COMNAVAIRSYSCOM during this phase and may be used in final report results, as either deems necessary.

**(2) Completion of DT**. At the completion of validation testing, the DA will declare the OFP technically suitable for fleet release and will plan for no further software changes. Additionally, the DA will certify by message to CNO (N091), the sponsor, and COMOPTEVFOR that the OFP is certified for independent operational testing.

Subj: MEMORANDUM OF AGREEMENT FOR COMBINED DEVELOPMENTAL AND OPERATIONAL TESTING OF THE (TYPE AIRCRAFT) USING VERSION X.X OFP

**(3) Independent Operational Testing Phase**. Upon receipt of certification, and as directed by CNO (N091), COMOPTEVFOR will commence independent OT.

**d. Schedule Changes**. If a change to the DT schedule is required, COMNAVAIRSYSCOM will provide a revised schedule as soon as possible so that COMOPTEVFOR can coordinate changes with fleet units and participants involved.

**e. Software Freeze Date**. The software freeze date will be no later than the commencement of independent OT. The combined DT/OT software configuration will be agreed upon so that all applicable data can supplement data collected during independent OT. If, however, during DT/OT there is a system failure that prevents productive continuation of DT/OT, immediate analysis will be performed to ascertain the technical details of any proposed corrective action. At that time, decisions regarding initiation of corrective action, the impact of the correction on the fidelity of previous data, and continuation of DT/OT will be made.

**f. Visitor Control**. Visitors are not desired during test operations. COMNAVAIRSYSCOM and COMOPTEVFOR will ensure that only personnel essential to the conduct of mission operations are permitted in support or control locations during testing. During the coordinated phase of testing, visit authorization will be controlled by COMNAVAIRSYSCOM and granted only for valid requirements or for technical assistance. During the independent operational test phase, COMOPTEVFOR will control visit authorization.

**g. Reports**

**(1)** COMNAVAIRSYSCOM will publish DT results.

**(2)** COMOPTEVFOR will publish a final report of OT&E results no later than 90 days after completion of testing.

**h. Analysis**. COMNAVAIRSYSCOM shall be responsible for analysis and resolution of failures identified during testing. These results and the raw failure data will be provided to COMOPTEVFOR. Additionally, COMNAVAIRSYSCOM shall provide funding to COMOPTEVFOR for contractor support (at COMOPTEVFOR's discretion) to conduct data collection, data extraction/data reduction, and analysis of other data required for an independent evaluation.

Subj: MEMORANDUM OF AGREEMENT FOR COMBINED DEVELOPMENTAL AND OPERATIONAL TESTING OF THE (TYPE AIRCRAFT) USING VERSION X.X OFP

**i. Termination of Testing**. The OT portion of DT and OT may be terminated by COMOPTEVFOR should circumstances warrant such action. COMOPTEVFOR may then recommend to CNO that OT be deferred until deficiencies are resolved. Should this situation occur, COMNAVAIRSYSCOM may elect to continue DT to resolve deficiencies.

| | |
|---|---|
| SIGNATURE BLOCK OF<br>JUNIOR COMMAND | SIGNATURE BLOCK OF<br>SENIOR COMMAND |

**Sample 5-11**
**DT Assist Memorandum of Agreement**

**Tailor the standard MOA cover letter (page 5-51) for this MOA.**

DEPARTMENT OF THE NAVY
PROGRAM EXECUTIVE OFFICE
XXXXXX WARFARE
WASHINGTON, DC (20362-5169)
COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE
NORFOLK, VA (23505-1498)

PEO/PM
3980
Ser XXX/XXXX

COMOPTEVFOR
3980
Ser XXX/XXX

MEMORANDUM OF AGREEMENT
BETWEEN
PROGRAM EXECUTIVE OFFICE
AND
COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE

Subj: MEMORANDUM OF AGREEMENT FOR DEVELOPMENTAL TESTING (DT) ASSIST FOR THE XXXXXX (XXXX) PROGRAM

Ref: (a) SECNAVINST 5000.2B

**CAVEAT: DT assist is not a formal phase of OT, but rather a period of DT in which OT testers are actively involved, providing operational perspective and gaining valuable hands-on familiarity with the system. Data and findings from DT assist may be used to supplement formal OT data, provided certain criteria are met. DT assist does not resolve COIs, does not reach conclusions regarding operational effectiveness or suitability, and does not make a recommendation regarding fleet release. No OT test plan or final report will be generated. Following the DT assist, COMOPTEVFOR will provide a "Letter of Observation" reporting operational concerns and observations.**

Distribution limited to U.S. Government agencies only; test and evaluation document dated _____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR.

Subj: MEMORANDUM OF AGREEMENT FOR DEVELOPMENTAL TESTING (DT) ASSIST FOR THE XXXXXX (XXXX) PROGRAM

**1**. This memorandum of agreement (MOA) establishes procedures for the conduct of a DT assist during the period of ..... at ....., ..... The purpose of the DT assist is to provide informal operational observations to the program executive officer/program manager (PEO/PM) for an operational evaluation (OPEVAL) **( or other formal phase of OT)** scheduled for ..... No COI resolution or conclusions concerning operational effectiveness or operational suitability will be reached. PEO/PM and COMOPTEVFOR agree to the following procedures:

**a. Preoperations Planning**

**(1) Purpose of Testing**

**(a) DT.** To provide a technical evaluation of the capabilities and performance of the XXXXXX.

**(b) DT Assist**. To provide an informal observation of the operational performance of the XXXXXX in preparation for OPEVAL **(or other formal phase of OT)**. In addition, DT assist data may be combined with the subsequent OPEVAL **(or other formal phase of OT)** data to support resolution of effectiveness and suitability issues and a milestone decision.

**(c) Coordination**. PEO/PM will review requirements and coordinate test planning, test assets, and resources. COMOPTEVFOR will aid in coordinating data collection for the DT assist.

**(2) Test Plan.** A DT test plan will be issued by PEO/PM. DT test events will be monitored by COMOPTEVFOR operational test directors and designated trusted agents as a DT assist.

**b. Test Execution**. The test phase covered by this MOA shall commence when PEO/PM begins formal DT. Test data and results will be freely exchanged between COMOPTEVFOR and PEO/PM.

**c. Schedule Changes.** PEO/PM will provide a revised schedule to COMOPTEVFOR as soon as possible should the DT/DT assist schedule change.

Subj: MEMORANDUM OF AGREEMENT FOR DEVELOPMENTAL TESTING (DT) ASSIST FOR THE XXXXXX (XXXX) PROGRAM

**d. Reports**

**(1)** PEO/PM will publish DT results and convene an operational test readiness review, per reference (a), prior to commencement of the next formal phase of OT.

**(2)** Following the DT assist, COMOPTEVFOR will provide a "Letter of Observation" reporting operational concerns and observations within 90 days.

| | |
|---|---|
| Assistant Chief of Staff | Program Executive Officer/Program Manager |

**Sample 5-12**
**TEMP Change Letter**

**This is a letter for COMOPTEVFOR to initiate changes to TEMPs. All change pages in enclosure (1) must be marked with change bars in the left margin on even-numbered pages, and in the right margin on odd-numbered pages denoting the portions that changed. The pages must also have "TEMP XXX CH 1" (2, 3, etc.) in the upper left corner on even-numbered pages, and in the upper right corner on odd numbered pages (use headers).**

3961
Ser XX/

TEST AND EVALUATION MASTER PLAN NO. **999** CHANGE **1** TRANSMITTAL PROPOSAL

From: Commander, Operational Test and Evaluation Force
To: Commander, Naval **Air** Systems Command (**AIR-1.6**)

Subj: CHANGE 1 TRANSMITTAL PROPOSAL FOR TEST AND EVALUATION MASTER PLAN (TEMP) NO. **999** FOR THE (**SYSTEM)** PROGRAM

Ref: (a) TEMP **999** of **17 Sep 95**
(b) **CNO ltr 3960 Ser ... of 5 Dec 95**

Encl: (1) Revised applicable portions of the Part IV OT&E Outline
(2) TEMP No. **999** CH **1** Signature Page

**1. PURPOSE**. To propose Change **1**, which **revises test dates, scenarios, and limitations previously outlined in reference (a)**.

**2. BACKGROUND**. **Reference (b) cites delays in developmental testing and provides waivers for OT-IIB. This requires new test dates for OT-IIB, OT-IIC, and OT-III, and adds two major test limitations and revised test scenarios for OT-IIB.** Therefore, to expedite the process of updating reference (a), COMOPTEVFOR is providing the proposed TEMP

Distribution limited to U.S. Government agencies only; test and evaluation document dated_____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR.

Subj: CHANGE 1 TRANSMITTAL PROPOSAL FOR TEST AND EVALUATION MASTER PLAN (TEMP) NO. **999** FOR THE (**SYSTEM)** PROGRAM

change, enclosure (1). COMOPTEVFOR has signed the TEMP signature page, enclosure (2), contingent upon incorporation of the revised portions of the Part IV OT&E Outline.

**3. ACTION**

**a**. Request **AIR-1.6** coordinate routing of TEMP **CH 1** signature page.

**b**. Upon receipt of signed and approved TEMP **CH 1**, remove and replace the following pages from reference (a):

| **Remove** | **Replace With** |
|---|---|
| **Existing IV-3 through IV-5** | **New IV-3 through IV-5** |
| **Existing IV-8 through IV-11** | **New IV-8 through IV-12** |

SIGNATURE BLOCK
(00 Signs)

**Use the same "Copy to" here as on the original comment and/or forwarding letter for the TEMP. If change transmittal text carries over to a second page, ensure the subject line is repeated at the top of the page.**

Copy to:
CNO ( )
COMNAV**AIR**SYSCOM ( )

# CHAPTER 6

# TEST PLANNING

**601. INTRODUCTION.** This chapter contains discussion of test planning and writing and the format to use when writing a test plan.

**a.** OT consists of the following elements:

**(1)** Exercising a system or equipment under conditions that are as close as possible to the expected natural, operational, and combat environment using operational scenarios in which both forces (ours and theirs) employ realistic tactics and against targets that fight back.

**(2) The test article itself**:

**(a)** Is representative (insofar as possible, considering the stage of development) of the intended production equipment.

**(b)** Is installed (insofar as possible) as it is expected to be installed in the fleet.

**(c)** Is operated and (usually) maintained by fleet personnel. Operation by fleet personnel is always required for OT once a more mature system is available. System operation by contractors voids OT in all but the earliest phases, usually OT-I/OT-IIA (EOAs/OAs), when they there is only a prototype or brassboard, or while depending on simulation. The same is not true of maintenance. During early IOT&E, maintenance by fleet personnel is usually not possible, making maintainability data unusable for COI evaluation. (Note that even when there is no OT, an operational evaluation of technical data is always possible.) On occasion, the Navy's maintenance plan states a continuing role for contractor personnel in organizational level maintenance. When testing a system with an approved plan of this kind, contractor personnel participation is permitted exactly as specified in the approved plan, and their performance is subject to review and analysis just as if they were sailors.

**(d)** OT seeks to provide data on system performance (where performance includes all the elements of operational effectiveness and operational suitability) in the operational environment. This environment includes many things. Among these are the people (operators, maintainers, etc.); the other systems that will also be consuming power, radiating, etc., in the same ship or aircraft; ships or aircraft in the vicinity, employing their own systems; established constraints or rules of engagement; natural environmental factors (visibility, sea state, oceanographic, etc.); the simulated enemy and the tactics, countermeasures, etc., he employs; and so on. This large number of variables, and the fact that their effects may change as a function of their combination with other variables, dictates that each operation or run include as many elements of the whole as possible.

Technically oriented tests with highly restricted objectives (e.g., point-to-point navigation runs that include nothing else) are wasting OT resources (particularly, they are wasting scarce fleet services). The way to avoid this waste is to structure the tests around mission-oriented scenarios -- and do the whole thing in an exercise. Investigate point-to-point navigation as part of the ASW aircraft's mission to locate and destroy submarines. If the system will be employed in the fleet in a variety of scenarios -- investigate all of them before repeating any. This will ensure the most complete data coverage if unforeseen circumstances cut testing short. Always strive to maximize test variables while acquiring data in areas not yet explored. Not all variables are identifiable before testing; therefore, be alert for the unexpected and be ready to record its results.

**(e)** A key aspect of OT is the T&E of software-intensive systems. With the increased development of software-intensive systems, software testing has become increasingly important to the Navy acquisition process. COMOPTEVFORINST 5235.1 provides guidelines for OT of systems with significant software components; you should carefully review it.

**(3)** Recording sufficient data accurately during the exercise to document all operationally significant system or equipment characteristics.

**602. LONG-RANGE PLANNING**. ("Long-range planning does not deal with future decisions, but with the future of present decisions." (Peter Drucker))

**a.** A test planning working group (TPWG) will be used by the SYSCOM/program manager as early as Milestone I for ACAT I/II programs. The TPWG will provide discussion of, coordination on, and resolution of, test planning goals and issues; opportunities for the open dialogue necessary for properly designed and adequately tested systems in preparation for OT; and the forum necessary for review of required management-level program documentation (MNS, ORD, and TEMP).

**b.** The TPWG will be chaired by the program manager or designated representative (military O-6/O-5 or civilian equivalent). The membership should include the Requirements Officer, N912 T&E Coordinator, COMOPTEVFOR representative (the OTD, including VX/HMX OTDs), program office DT representative, ASN(RDA) staff, and contractors, as applicable. Depending on the program, representation could include joint service representatives and OSD personnel.

**c.** The frequency of TPWG meetings will be determined by the program manager. Minutes of each meeting should be distributed to all members. See SECNAVINST 5000.2B, enclosure (7), appendix III, page III-6, par. 1.2.1 for more information on TPWGs.

## 603. TEST PLAN PREPARATION

**a.** Test plans are required for each identified phase of OT&E (e.g., OT-I, OT-II, OT-III, etc.) The preparation for OT&E must concentrate on a number of fundamental issues important to the overall OT&E process. These include: the purpose of the test; capabilities/functions of the COIs to be examined; how the test will be conducted -- whether operation-oriented or scenario-oriented testing will be used; evaluation criteria against which test results will be measured; resources required to support OT&E; data collection methods and requirements; and data analysis methods to be employed. Once these issues have been resolved, test plan writing can begin.

**b. Non-ACAT Programs**. The early nature of this level of effort lends itself to a modified operational assessment vice a modified operational test or evaluation. The standard OPTEVFOR test plan in its entirety may not be appropriate; formal OT&E is not required for these programs. As a minimum, the test plan should contain the following elements:

(1) A cover letter signed by the appropriate ACOS/VX commanding officer.

(2) An abbreviated test plan document in paragraph form, consisting of background, description of the areas to be assessed or questions to be answered (focusing on the previously identified COIs), procedures or methods to be used to conduct the assessment, any limitations that may exist, and a description of the report to be provided upon completion.

**c. ACTDs.** Depending on the previously agreed to level of COMOPTEVFOR involvement with the particular ACTD, we will generally follow the Demonstration and Evaluation Master Plan written by the ACTD Program Technical Manager and CINC Demonstration Manager, providing inputs as requested for potential COIs and MOP/MOEs. However, we may simply participate in the demonstration test plan if it provides sufficient detail to measure MOPs and MOEs, and to analyze each COI. COIs will not be evaluated using our EOA/OA color codes. We will not attempt to resolve ACTD COIs as SAT or UNSAT. That task must wait until after transition to formal acquisition, if that occurs.

**604. OPTEVFOR TEST PLANS**. The basic format for COMOPTEVFOR test plans begins on page 6-45.

**a.** E-tests are keyed to the COIs and are given the title of the COIs they are intended to address. A rare exception to this rule would be when the E-test titles are keyed to mission areas to better address COIs that span multiple missions.

**b.** Ten S-tests are standardized in COMOPTEVFOR test plans. They are:

**(1)** Test S-1, Reliability.

**(2)** Test S-2, Maintainability.

**(3)** Test S-3, Availability.

**(4)** Test S-4, Logistic Supportability.

**(5)** Test S-5, Compatibility.

**(6)** Test S-6, Interoperability.

**(7)** Test S-7, Training.

**(8)** Test S-8, Human Factors.

**(9)** Test S-9, Safety.

**(10)** Test S-10, Documentation.

**c.** All of the 10 standard suitability tests will usually be applicable to OPEVAL. Some may not be appropriate to very early IOT&E (e.g., Test S-1), or to late FOT&E (e.g., Test S-7), or some may be addressed as part of another test (e.g., Tests S-7 and S-10 may not be required because training and documentation are not critical issues but are being examined as a subset of logistic supportability). In these cases, omit the inappropriate test(s), but do not change the test numbers of those that are used (e.g., Maintainability is always Test S-2). The standard S-tests (S-1 through S-10) by no means exhaust the possibilities of proper suitability tests. Additional tests (S-11, etc.) may be used as required (e.g., Transportability).

## 605. SUPERVISING THE TEST

**a.** Make sure all hands know what they're supposed to do and when. Manning up and rehearsing are usually necessary for success.

**b.** Make sure data are collected and turned in.

**c.** Be prepared to alter operations if unusual circumstances warrant. Think in advance about what alterations can be tolerated.

**d.** Keep COMOPTEVFOR advised.

**e.** Prevent unauthorized tampering with equipment (this might invalidate test data).

## 606. COIs AND EVALUATION CRITERIA

**a.** Each phase of OT&E is basically an investigation of operational effectiveness and operational suitability (actual or potential) of the system up to that point in time. In early phases up to OPEVAL we assess; in OPEVAL phases we determine.

**b.** The essential elements of operational effectiveness — the things the system must do (and must not do) in order for mission accomplishment — vary from one system to the next. Some typical examples of measures of operational effectiveness are provided in Table 6-1. (See the Glossary for the definitions of operational effectiveness and operational suitability.)

**Table 6-1. Typical Elements of Operational Effectiveness**

| Test Item | Must Do | Must Not Do |
|---|---|---|
| Sub-launched Bathythermograph | (1) Be capable of launch in realistic operational conditions.<br>(2) Provide required data. | (1) Restrict submarine maneuverability.<br>(2) Increase submarine detectability. |
| Surface Ship Sonar | (1) Detect<br>(2) Classify<br>(3) Localize<br>(4) Track | (1) Generate false alarms.<br>(2) Be easily defeated by acoustic counter measures. |
| Breathing Apparatus for Damage Control | (1) Provide life support | (1) Require excessive time to don and actuate.<br>(2) Degrade wearer's ability to do useful work. |
| Airborne Deception Device | (1) Degrade surface-to-air tracking | (1) Increase detectability by search radars.<br>(2) Require restrictive maneuvers, flight attitudes, etc. |
| Command and Control System | (1) Provide indications and warnings to battle group commanders.<br>(2) Improve coordination of over-the-horizon-targeting operations. | (1) Be easily detected and defeated by enemy countermeasures.<br>(2) Require extensive delays in delivering time sensitive information. |

**c.** For a given system, the essential measures of operational effectiveness and operational suitability form the framework for the capabilities and functions of the COIs as outlined in part IV of the TEMP (paragraph B). That is, the COIs define operational effectiveness and operational suitability for a given program. For example, the COI's capabilities and functions for testing a surface ship sonar, derived from table 6-1 would be:

**(1)** Will the sonar detect, classify, and track expected threat submarines in the natural acoustic environment?

**(2)** Will the sonar detect, classify, and track..... in the presence of acoustic countermeasures?

**(3)** Will the sonar localize targets?

**(4)** Will the sonar demonstrate an adequate false alarm rate?

**(5)** Will the operational performance or inherent characteristics of the sonar decrease the susceptibility or vulnerability of the submarine in which it is installed?

**(6)** Will the reliability of the sonar support completion of the submarine's mission?

**(7)** etc.

**d.** In an OPEVAL, all COI capabilities and functions would be examined. During earlier OT&E when the equipment does not closely approximate the planned production configuration (e.g., in OT-IIA with an advanced development model), not all COI capabilities and functions (or not all COIs) would be examined. For example, we might not examine interoperability as a COI in OT-IIA if the system interfaces have not been implemented.

**e.** The capabilities and functions of COIs for a phase of OT&E are documented in the TEMP in paragraph B of part IV. For example, consider the OT-IIB OPEVAL phase in the sample Part IV OT&E Overview paragraph in chapter 5. In the OT&E Objective paragraph, under the Operational Effectiveness and Operational Suitability columns:

**(1)** Each COI (e.g., Detection) relates directly to an E- or S-test (e.g., Test E-1, Detection). Each capability and/or function then becomes the "object(s)" of the E- and S-tests in sections 4 and 5 of the test plan.

**(2)** Additional "objects" (that are not associated with COIs) appear as additional E- or S-tests. Remember -- even though these "objects" are not considered critical issues, they are just as important to the test plan, and considering them will produce more complete and meaningful OT&E.

**f.** The quantitative evaluation criteria of a phase of OT&E are also documented in part I of the TEMP. There should be no qualitative evaluation criteria in part I; qualitative requirements are in part IV as COIs.

**607. SCENARIO-ORIENTED OR OPERATION-ORIENTED TESTING**. After you have determined that there is a valid reason for a phase of OT&E, and you have defined and quantified the elements of operational effectiveness and operational suitability that are essential to the phase – in terms of COIs and evaluation criteria – you are then ready to decide how the capabilities and functions of your COIs will be met; i.e., how the equipment will be tested. The two methods most common in OT&E are scenario-oriented testing and operation-oriented testing.

**a.** Scenario-oriented testing is commonly used for systems whose modes of operation or functions change in response to a changing operational situation. For example, a radar suite. Scenarios are developed, based upon the threat as derived from the applicable threat documents, to stress the system under test in a realistic, threat-representative manner. Scenario-oriented testing typically allows the fleet user the greatest flexibility in operating the system as the tactical situation changes, thus affording the OTD greater opportunity to make informed decisions on the merits of the system and its capability to meet CNO-assigned thresholds.

**(1)** When developing the scenarios, you must be complete and state what you expect as results from each scenario. Describe the tactical situation at the start of the exercise; for example, single-ship littoral operations with a high probability of air attack. Then describe the situation that develops (e.g., electronic support measures (ESM) detection of enemy aircraft) and what you expect to happen (e.g., detection, acquisition, and engagement of the enemy aircraft). Supplement this narrative with diagrams or tables specifying the movements of exercise participants (friendly and enemy) and their expected actions at specific times. Develop a sufficient number of scenarios to test the system, and be prepared for the unexpected. Commanding officer's tactical decisions, loss of assets or services, or fouling of the firing ranges can all lead to unexpected results or non-completion of scenarios.

**(2)** Multipurpose systems may require several scenarios to exercise their various capabilities.

**(3)** The data recorded during the scenarios are used for reconstruction and analysis of the various E-tests and S-tests. Often, scenario-oriented testing is dedicated testing (in terms of fleet RDT&E support) -- although it can be accomplished on a not-to-interfere basis during fleet exercises.

**b.** Operation-oriented testing is commonly used for equipment whose mode of operation or function does not change with the tactical situation; for example, torpedo tubes or waste disposal systems. These systems are either "in use" or "not in use" and can be tested by just operating them in the anticipated environment. If operation-oriented testing is used, the events and conditions necessary during system operation must be specified; e.g., the targets and operating environments. Test events and conditions must provide an operationally realistic test of the system.

**c.** Whether the choice is scenario- or operation-oriented testing, the following must be kept in mind:

**(1)** Testing should include simulation of all possible enemy actions, including countermeasures to our tactics. The test must be set up to adequately replicate all reasonably expected actions that the target systems can be expected to encounter in a manner that is representative of enemy capabilities. Do not conduct every scenario in the worst possible electronic countermeasures (ECM) environment against the worst possible threat, but, rather, cover the range of environments and threats possible.

**(2)** The test environment, natural and electronic, should approximate the anticipated operating environment. Depending upon the system being tested, the following should be provided:

**(a)** The anticipated "background noise" caused by other ships, aircraft, etc., to determine the effects of electromagnetic interference (EMI).

**(b)** The anticipated natural environmental conditions, such as sea state, temperature, cloud cover, etc., to enable a determination of their effect on system performance.

**(c)** Operation of other equipment that may be used in conjunction with the tested equipment to allow evaluation of changes in electrical power loads, effects of gunfire-induced shock and vibration, EMI, etc.

**(3)** The number of resources required for testing should reflect what the weapon system would realistically be expected to encounter in actual operations. For example, if damage control equipment under test could realistically be employed continuously for 96 hours, then planned OT should include such a scenario or operation.

## 608. USE OF PHOTOGRAPHY DURING OT&E

**a.** Whenever possible, use photography, including videotaping, during OT&E to:

**(1)** Provide illustrations to clarify the text of evaluation reports.

**(2)** Furnish the Command with a supply of OT&E-oriented (as opposed to development- or sales-oriented) illustrations for use in briefings and presentations.

**b.** This photographic coverage may vary from amateur, candid-type photography by the OTD to professional coverage by the Fleet Audio Visual Command. Examples of types of photographic coverage that may be useful in evaluation reports or in briefings on OT&E are:

**(1)** Photographs of test personnel using hand-held equipment (e.g., metal detectors, ordnance examining and neutralization devices, on-board testers). These may reduce the amount of text in "Equipment Description," and may provide useful illustrative viewgraphs.

**(2)** Photographs of equipment displays that illustrate points to be made in an evaluation report or briefing (e.g., "before" and "after" shots of scopes that illustrate effects of electronic countermeasures, shots of confusing or ambiguous symbology).

**(3)** Photographs of damage incurred during normal operations that illustrate inherent weaknesses of the equipment under test (e.g., missile fins bent during normal assembly, handling, or loading evolutions; cracks or excessive wear incurred during routine use).

**(4)** Photographs of the test system underway during OT&E (e.g., SEAFOX making a swimmer recovery, the F/A-18 flying an OT&E mission). These may be used as general illustrations in reports or briefings, or may illustrate specific points (e.g., heavy spray obscuring a gunner's vision).

**(5)** Photographs of the test system as installed in the ship, aircraft, etc., for general information; or to illustrate an important aspect of the installation (e.g., inaccessibility for maintenance, antenna blockage by superstructure).

**(6)** Motion picture photography (or video tapes) of the equipment in operation, for general information, for posttest analysis, or to illustrate an important aspect of the system (e.g., CIWS engaging a target, a console before and during a computer hang-up).

**c.** When OTDs have obtained photographs of OT&E, they should be retained in the appropriate warfare division for use as required.

**d. Sources of Assistance to the OTD**

**(1)** The COMOPTEVFOR Comptroller (Code 30) and Force Supply Officer (Code 31) advises the OTD on matters associated with funding requirements for photographic coverage, including film and processing costs.

**(2)** The COMOPTEVFOR finance branch (Code 32) and supply officer (Code 31):

- Assist the OTD in completing forms, etc., associated with obtaining photographic services.
- Make arrangements for OTDs to obtain temporary subcustody of cameras.

## 609. LAND BASED TEST SITES (LBTS)

**a.** An LBTS is a facility that duplicates, simulates, or stimulates the employment of a system's planned operational installation and use for the purpose of conducting DT. LBTS installations are often used during early stages of system development to test the integration of equipments, subsystems, and computer software programs. LBTS use must be justified based on cost-effectiveness and needed capability.

**b.** Intent to use an LBTS in lieu of the actual host platform must be approved by CNO (N091) (per SECNAVINST 5000.2B). COMOPTEVFOR should advise CNO on the adequacy of the LBTS for conduct of OT&E. Except where approved by CNO (N091), OT&E intended to support production decisions will be performed in the operational environment in preference to an LBTS. LBTS test data should normally be used to support a limited production decision and not the more stringent full production decision. The following are not considered to be LBTSs:

- test facilities used to develop individual equipments, subsystems, or software
- ships and aircraft used as test beds
- general purpose engineering or test facilities

## 610. SPECIFYING THE E-TESTS AND S-TESTS

**a.** Each E- and S-test is based on a COI and addresses a capability or function of the OT&E phase, an aspect of a capability or function, or an aspect of several capabilities or functions. E- and S-tests are designed to help us determine the things we need to know about the system -- quantitative things included in the various MOEs and MOSs and qualitative things like the adequacy of logistic support, technical manuals, and training. (Although MOPs are discussed in SECNAVINST 5000.2B, and use of these would normally be a judgment call for the analyst and OTD, it is COMOPTEVFOR's policy to use MOEs vice MOPs.)

**b.** In the design of operational tests, it is COMOPTEVFOR policy to ask for sufficient numbers of test assets or test time so that the risk of incorrectly resolving a quantitative MOE is acceptably low. As a part of that design, the OTD and assigned project analyst make an assumption of the expected distribution of the data to be collected. They then determine the sample size required for an 80% confidence level that the true value of the parameter exceeds the threshold -- assuming that exactly one operational mission failure is observed during testing. (Also see paragraph 612 on how many or how long.)

**c.** To determine what E-tests are necessary, the OTD must examine each operational effectiveness COI and decide what needs to be known to demonstrate each capability or function of the COI. For example, consider the first capability of paragraph 606c -- "will the sonar detect,

classify, and track... in the natural acoustic environment." What does the evaluator need to know to demonstrate this capability? The following come to mind:

**(1)** How often does detection occur against targets that should be detected? (The conditions that define "should be detected" should have been specified in the evaluation criteria.)

**(2)** At what ranges does detection occur? (Operationally useful ranges must be defined in the evaluation criteria.)

**(3)** Under what oceanographic conditions did the detection occur?

**(4)** Given detection, how often does classification occur?

**(5)** Of the classifications, how many are correct?

**(6)** Of the incorrect classifications, how many are critical (e.g., threat classified as nonthreat)?

**(7)** How long after detection does classification occur?

**(8)** At what ranges do classifications occur?

**(9)** Given detection, how often can a track be established on targets that should be tracked? ("Should be tracked" conditions should be specified in the evaluation criteria.)

**(10)** How long after detection are tracks established?

**(11)** At what ranges are tracks established?

**(12)** Given established tracks, how well are tracks held that should be held? ("Should be held" conditions should be specified in the evaluation criteria.)

**d.** These 12 questions suggest the following E-tests and associated MOEs:

**(1) Test E-1, Detection**

- MOE 1 -- Probability of detection.
- MOE 2 -- Detection range.

**(2) Test E-2, Classification**

- MOE 3 -- Probability of correct classification, given detection.
- MOE 4 -- Probability of classifying a threat as a nonthreat.
- MOE 5 -- Time between detection and classification.
- MOE 6 -- Classification range.

**(3) Test E-3, Tracking**

- MOE 7 -- Probability of establishing a track, given detection.
- MOE 8 -- Time between detection and track establishment.
- MOE 9 -- Range at track establishment.
- MOE 10 -- Percent of time tracks are held.

**In this example, you need to know quantitative things in order to demonstrate the capability -- things that can be expressed as MOEs. These MOEs need not be limited to only the applicable quantitative parameters delineated in the TEMP. Any MOE providing meaningful information which could aid in resolving the COIs should be included in data analysis sections of the appropriate E-test or S-test.**

**In addition to these MOEs, there will often be qualitative things you must know. The data analysis sections of the test plan should describe these quantitative and qualitative criteria in sufficient detail so that an "outside" reader knows exactly what analysis will be conducted and how the results will be evaluated. Instead of saying only that logistic supportability will be "qualitatively assessed," delineate exactly what "yardsticks" will be used to make such an assessment. For example, actual on-board sparing of parts could be compared to the requirements specified for such sparing in the ILSP to determine if there are significant shortages of key parts which could significantly degrade weapon system performance.**

Having defined the E-tests and MOEs for the first capability of the Detection COI, the OTD examines the second -- "will the sonar detect, classify, and track...in the presence of acoustic countermeasures?" The OTD notes that it is the same as the first capability -- except that acoustic countermeasures have been added -- and elects to treat the acoustic environment as a variable in tests E-1 through E-3. That is, the OTD decides to calculate MOEs 1 through 10 twice -- with and

without acoustic countermeasures. Had the OTD desired to do so, he or she might have specified (for example) a Test E-1, Detection (Natural Environment), a Test E-2, Detection (Countermeasures), and so on. After taking care of the second capability, the OTD proceeds to the remaining effectiveness COIs.

**e.** The process of selecting S-tests consists first of choosing the applicable tests from the list of standardized suitability tests, and then adding others as necessary. The tests selected will vary according to the system under test and the phase of OT&E. The following general guidelines apply:

**(1) Reliability**. A test of reliability is appropriate when the test system's design, construction, and installation are representative of those of the proposed production system -- e.g., in OPEVAL and FOT&E. In these phases of OT&E, it is possible to estimate the reliability of the operational system based on performance of the test system. In earlier phases of OT&E, when the test system is functionally equivalent to the production system, but is much different physically (for example, a breadboard), extrapolation of MTBOMFs, etc., to the production configuration is not possible. In some systems, it is possible, even early in the design phase, to identify potential reliability problem areas — based, for example, on the system's use of components known to have high failure rates in similar equipment. On the other hand, it may be appropriate to include a reliability test to validate the reliability of a production system. In examining reliability, failures are categorized as operational mission failures and minor failures, and are defined in the Glossary. Guidance for calculating reliability is provided in paragraph 613a.

**(2) Maintainability**. The conditions under which a maintainability test is appropriate are very similar to those for a reliability test. However, keep in mind that maintainability parameters such as mean time to fault-locate and mean corrective maintenance time have little meaning from an operational viewpoint unless maintenance is accomplished by fleet personnel — whereas this is not necessarily the case for reliability parameters. In addition, there are occasions when maintainability is not an issue. For example, a target drone that is maintained under a maintenance agreement (contract) has reliability and availability thresholds, but may not have maintainability thresholds. Typical maintainability parameters to be examined are provided in paragraph 613b.

**(3) Availability**. A test of availability is appropriate when a measure of the system's readiness is required. The design of the availability test is dependent on the type of system, its mission(s), and how it must perform in the intended operating environment. $A_o$ is the primary measure of material readiness for systems/subsystems being operationally tested, except for aircraft. The measures of readiness for aircraft are full mission capability (FMC) and mission capability by primary mission area ($MC_{ma}$). When designing a test, you should refer to the Glossary and paragraph 613c for the definition of availability terms and the parameters to be examined and the method of computing availability.

**(4) Logistic Supportability**. This test is usually required in OPEVAL and FOT&E. Some systems that are production-prototyped early can be examined from a logistic supportability viewpoint earlier in IOT&E (e.g., systems used in explosive ordnance disposal). Systems that have unusual servicing requirements (e.g., pressurizing with an uncommon gas) or that use short-lived or extremely delicate parts should also be examined early to identify potential support problems in the fleet. For software-intensive systems, this test must also evaluate the capabilities of the designated software support activity (SSA) to adequately support future changes to the system software. Guidelines for assessing logistic supportability and resolving the COI are contained in paragraph 314. Also, see COMOPTEVFOR, Code 651 for assistance.

**(a)** The purpose of configuration management is to provide a systematic means for documenting and controlling the configuration of new equipment or systems so total life cycle costs, contract requirements, schedules, operational performance and readiness, and integrated logistic support can be better regulated. Configuration management provides procedures for a disciplined approach to:

**1.** Identifying and documenting the functional and physical characteristics of the material item.

**2.** Controlling changes to material items, their functional and physical characteristics, and configuration identification.

**3.** Reporting and recording configuration information, including the status of all proposed, approved and disapproved configuration changes, and maintenance of configuration records.

**(b)** When appropriate and within the constraints of the test program and test period, the OTD will assess the adequacy of configuration management during OT&E of equipment and weapon systems. This assessment will focus on noting changes to physical and functional characteristics in the equipment or system under test that have not been adequately documented. The assessment of configuration management will be conducted as part of Test S-4, Logistic Supportability.

**(5) Compatibility**. This test is usually required in OPEVAL and FOT&E. Furthermore, even though the test system is an advanced development model in a temporary installation, compatibility tests during early IOT&E may reveal problems not anticipated by the designer -- need for an air conditioned space, susceptible to degradation from input power variations, an unanticipated EMI source, etc. Early identification of potential compatibility problems may allow simple changes (e.g., installation in a different location) that will prevent the system from failing in OPEVAL.

**(6) Interoperability**. This test examines the interfaces between the test system and any associated systems (intra/inter service) (the system's capability to transfer information and/or services to or from other systems) during all phases of OT&E. A matrix delineating the possible interface combinations should be developed when writing the TEMP, to be included in the test plan. Where appropriate, Navy occupational health, safety, and environmental considerations should be observed during testing.

**(7) Training**. This test is conducted as soon as a proposed training plan has been defined, and is repeated as necessary through OPEVAL. This test may be conducted as a subset of logistic supportability in early program development, but is conducted as a separate test as the program matures and training becomes a critical issue. Guidelines for assessing training are contained in chapter 3, paragraph 315**.** Also see COMOPTEVFOR Code 651 for assistance.

**(8) Human Factors**. Observation of the man and machine interface (operability) usually begins in the first phase of IOT&E and must be examined in all phases of OT&E. This element addresses the interface among system hardware and software elements and the human elements. Testing evaluates the system itself, what the system requires of the people who operate and maintain it, and how the system fits into the relationship with the people who are going to operate and maintain it. One method of assessing human factors is through development of a human factors checklist. The Naval Personnel Research and Development Center (NPRDC) has prepared a Human Factors Checklist for Evaluation of system Design and Support Effectiveness (NPRDC 87-2), portions of which may be helpful in developing a checklist to support OT&E. The NPRDC checklist is available in the Technical Library. Occupational health and safety should be considered in the human factors test.

**(9) Safety**

**(a)** Procedures for checking safety aspects of a system are at times included as part of maintainability and interoperability tests. When safety is a primary reason for developing a system -- e.g., a life support system -- safety issues are usually addressed in the system's operational effectiveness COIs (e.g., the capability of the system to support life). The same is true of systems developed to perform hazardous tasks (e.g., explosive ordnance disposal equipment -- to determine the system's capability to contain the effects of bomb detonation, for example). Systems not developed for safety reasons that involve potentially hazardous operations usually require a safety test. For example, OPEVAL of a swimmer-delivered remotely controlled limpet mine should include a safety test that addresses the possibility of premature or inadvertent actuation. When developing a test for safety, contact the Naval Safety Center for information on systems similar to the one being tested. They may be able to provide historical data on problems, which may help you design your test. COMOPTEVFOR is not required to certify a system safe in accordance with Navy occupational safety and health standards and requirements; however, apparent health and environmental hazards should be noted and reported during OT.

**(b)** OTDs and OTCs must review system and ship/installation documents to assess whether safety and emergency procedures (e.g., loading, handling, operating, maintaining, hazardous material, etc.) relevant to system/equipment undergoing OT&E have been properly prepared and disseminated. (See page 6-97, Section 8 of the test plan, for more information on safety.)

**(10) Documentation**. This test should start as early as possible, even with a review of preliminary manuals. This test may be conducted as a subset of logistic supportability but is conducted as a separate test when technical documentation is a critical issue. Where software is involved, documentation is always a critical issue.

**PIN 98-03 of 12-8-98, Y2K Compliance COI, was rescinded as of 4-21-00.**

**(11) Transportability**. This test is conducted if appropriate to the system under test and when the configuration of the test item allows a meaningful test. Items designed to be man-portable are frequently in near-production configurations early in their development, and transportability testing can begin correspondingly early. This test may be conducted as a subset of logistic supportability if it is not a critical issue.

**(12) Wartime Usage Rates**. Systems that contain elements that will be expended (e.g., gun systems (ammunition), missile systems (missiles), countermeasures systems (chaff, expendable decoys)) need to be examined for assurance that storage, resupply, etc., facilities will be adequate in wartime. This element of operational suitability is frequently addressed in logistic supportability.

**(13) Manning**. This test may be conducted as a subset of the training test or as a separate test. It is conducted as a separate test when manning is a COI.

**f.** The process of selecting MOSs is the same as the process of selecting MOEs -- determining what the evaluator needs to know to adequately test and evaluate the suitability COIs. Using the thought process described for effectiveness tests, but recognizing that qualitative things usually have to be known to examine suitability issues, the OTD will generate something like the following:

**(1) Test S-1, Reliability**

- MOS 1 -- Mean time between operational mission failures.
- MOS 2 -- Factors that appear to affect reliability.

**(2) Test S-2, Maintainability**

- MOS 3 -- Mean time to fault-locate.
- MOS 4 -- Mean corrective maintenance time between operational mission failures.
- MOS 5 -- Maximum corrective maintenance time.
- MOS 6 -- Mean time to restore software.

**(a)** Aspects of maintenance that are excessively difficult, time-consuming, or unsafe.

**(b)** The adequacy of technical documentation used in maintenance.

**(c)** The adequacy of the proposed preventive maintenance schedule.

**g.** Having specified the test and the things to be determined in each, the OTD can construct something like Table 6-2 (next page). A table like this becomes especially useful in complicated OT&E -- for example, a whole-ship OPEVAL -- where there may be many capabilities and subcapabilities that need to be examined.

**Effectiveness and suitability analysts are experts at designing tests and in selecting MOEs, MOSs, etc. -- be sure to get them involved in your planning early. For complex systems employing advanced technologies and concepts, assistance in developing MOE/S is available at the Naval Ship Weapon Systems Engineering Station, Port Hueneme, CA.**

**Table 6-2. Capabilities versus Tests**

| Capability | Applicable Tests | Major Elements |
|---|---|---|
| 1* | E-1 through E-3 | MOEs 1-10 |
| 2 | E-1 through E-3 | MOEs 1-10 |
| 3 | E-4 | MOEs 11 & 12 |
| 4 | E-5 | MOE 13 |
| 5 | E-6 | MOE 14 |
| 6 | S-1 through S-3 | MOS 1-4 MOEs 1-4<br>Factors affecting reliability.<br>Difficult, time-consuming, unsafe aspects of maintenance.<br>Technical documentation.<br>Preventive maintenance schedule.<br>_____ |
| 7 | S-4, S-5 | _____ |

**Table 6-2. Capabilities versus Tests**

| Capability | Applicable Tests | Major Elements |
|---|---|---|
| 8<br>9 | S-6, S-7<br>S-8 through S-10 | _____ |
| * Numbers refer to the capabilities of paragraph 606c | | |

**h.** In the preceding discussion, it was implied that the testing would consist either of scenario run-throughs or operation of the equipment under simulated operational conditions. While these exercises will usually satisfy most of the requirements of the evaluation, additional test procedures to be performed in addition to the exercises are often required. For example:

**(1)** Survivability frequently requires an assessment of many issues -- to determine if a system is vulnerable to a "cheap kill." An example of the special procedures involved is contained in paragraph 616. Chapter 3 contains a list of Navy survivability facilities to assist in test planning.

**(2)** Reliability of new systems often exceeds the amount of available test time, making it difficult to quantify. Planning to review prior testing of the system and the reliability of similar systems already in the fleet will aid in the assessment of reliability.

**(3)** Maintainability frequently requires a maintainability demonstration -- inserting prefaulted components in the equipment and observing fault location and repair. In evaluations where MCMTOMF is an issue, always make provisions for a maintainability demonstration -- so that the maintainability of a highly reliable system can be assessed. Ensure the requirement for prefaulted modules is identified early in the TEMP and brought to the attention of the DA.

**(4)** Compatibility requires that equipment not associated with the test system be energized and deenergized and that power variations be induced — when the scenarios and equipment operation do not provide a complete set of compatibility data, special turn-on and turn-off tests and the like must be planned.

## 611. DATA REQUIREMENTS

**a.** MOEs, MOSs, and qualitative things you need to know to examine the COIs are evaluated during posttest analysis -- after scenarios have been run and the equipment under test has been secured. This posttest analysis uses data recorded during or shortly after equipment operation -- in your planning, you must decide what data you need and how the data will be acquired. These decisions should involve thoughtful consideration of data sources and what data are actually required (including measurements, with their inherent degrees of accuracy). These decisions may

affect earlier elements of your evolving test plan -- e.g., the way the scenarios were to be run. (Planning usually involves interaction between various elements of the plan.) To illustrate this, suppose you had tentatively decided on open-ocean freeplay between a surface ship and a submarine. Later it's determined that the relative positions of the two vessels must be reconstructed with precision in order to determine a set of MOEs. This forces you to use a range, and "open-ocean freeplay" is modified accordingly.

**b.** The major sources of data available to you include:

**(1) The System Under Test**. Data are best obtained from the system under test by observing system display (scopes, meters, indicator lamps, etc.) while it is in operation and recording display data manually or by instruments (e.g., cameras) not connected to the system. This requires no alteration to the test system -- a definite plus. Data sources that require alterations (hanging scopes and meters on the back of the console, etc.) should be used only with caution. If they were successfully used in earlier DT&E (e.g., during TECHEVAL prior to OPEVAL), any installation problems (impedance mismatches, ground loops, etc.) that may have affected overall system performance have probably been discovered and corrected. If they were not used before, use them in OT&E only as a last resort and allow sufficient prescenario or preoperation time for debugging. External data sources connected to the equipment under test, whether used in earlier DT&E or not, should be examined critically from the viewpoint of their effect on operational realism. Data sources should provide the operator with useful information not available in the proposed production configuration.

**(2) Equipment Already in Service Use**. Navigation systems, radars, sonars, communications systems, etc., available in the fleet are potential data sources that may, in fact, determine the class or type of ships or aircraft to be used in OT&E. For example, absolute position requirements for reconstruction may dictate that the test ship have an inertial navigation system on board; relative position requirements may dictate that a participating ship have a certain type of search radar. Use of equipment already installed in fleet units can help reduce the costs of OT&E by reducing the need for special instrumentation for test purposes.

**(3) Test Support Activity and Range Equipment**. Track plots, bomb impact data, electronic warfare simulator logs, etc., that are normally produced by ranges and other test support activities require no unusual tasking to obtain them, and their production (per se) does not detract from operational realism.

**(4) Special Purpose Instrumentation**. Under this heading fall the instruments not available in the fleet or through test support activities that are used to monitor elements of the scenario external to the system under test. Examples include on-board cameras aimed at incoming targets to record the effects of gunfire, or portable voice recorders used by observers of a simulated combat engagement.

**(5) Personnel Operating or Maintaining the Equipment**. In addition to recording data in operation logs and maintenance records as required by the test plan, these personnel are sources of qualitative data through questionnaires and interviews. The adequacy of technical manuals is usually determined in this way.

**(6) The OTD Journal**. The OTD Journal, discussed in paragraph 709**,** can be an excellent source of qualitative data.

**(7) DT&E and Fleet Data**

**(a)** OPTEVFOR's evaluation of any system should be based on a review of all pertinent data, regardless of the source. If data were acquired during non-OT&E, there must be every reason to assume that the same data would have resulted from OT&E. In determining whether or not data are pertinent for operational evaluation, ask the following questions regarding the conditions under which the data were collected:

**1.** Who operated the system? If contractors did, most results are useless for OT&E.

**2.** Who maintained the system? If fleet sailors operated it, but contractors maintained it, there may be some useful effectiveness and interoperability data; reliability data should be used with caution.

**3.** What was the test environment? Aboard ship at sea? Sea state? Atmospheric ducting? ECM? In other words, how closely did the test environment simulate the operational realism associated with OT&E? Having established this, you may decide to use some data and disregard others. For systems permanently maintained by contractor personnel, per the ILSP, maintainability performance is subject to review and analysis just as if maintained by sailors.

**4.** Was the system altered or modified in any way during the testing? If hardware of software changes were made, be very selective in your use of prechange data. Make sure the change did not nullify earlier data.

**(b)** The two major potential data sources outside OPTEVFOR are:

**1.** DT&E results for IOT&E (including OPEVAL). DT data can never be a substitute for OT data. However, DT data can be analyzed/assessed as part of the planning for OT. In addition, there are occasions when DT data can augment the OT results. Examples include: Maintainability demonstrations, land based testing, tests that meet OT requirements (final configuration, no contractors, fleet operators, etc.) and others that must be evaluated on a case-by-case basis.

**2.** Fleet data for FOT&E. During FOT&E, it sometimes happens that OPTEVFOR is evaluating systems that have already been deployed in significant numbers. In these cases, the test plan should make provisions for obtaining data on systems deployed in non-project ships. Actual fleet experience can provide essential information to an evaluation of operational effectiveness, and 3-M data can be very useful in expanding the overall operational suitability data base.

**(c)** Regarding the form in which data are obtained, you should note that not only do data sources vary, but the form in which data can be obtained varies also. Thus in FOT&E, operating times, system status, and maintenance information can be obtained from special OT&E forms completed by operator and maintenance personnel. At the same time, it may be possible to obtain the same data from standard Navy operational forms that are already being completed on the system such as equipment logs and maintenance forms. When you can obtain OT&E data from logs, charts, forms, etc., being completed routinely, do so because:

**1.** The record already exists, and no special tasking is required other than making sure OPTEVFOR gets a copy.

**2.** Recording the data will not affect operational realism, because recording is part of the operational routine.

**c.** Deciding what data are actually required is similar to deciding what needs to be known to examine each capability. Consider each MOE, MOS, and qualitative element within the framework of potential data sources, and double-check for impact on earlier phases of planning (scenarios, etc.). Some examples:

**(1) MOE 1, Probability of Detection**. The thing we are after here is the ratio of the number of detections to the number of targets that should have been detected. Assume the scenario is being run on AUTEC and that AUTEC is tracking both the surface ship and the submarine. Assume also that the OTD is observing the sonar operator and has radio communication with AUTEC's plotting center. The OTD relays "DETECTION" to AUTEC when the sonar operator calls it -- and records the operator's initial estimate of range and bearing, together with the time of the call. The required pieces of data are:

- A time-annotated plot of the two tracks, with ship and submarine positions marked at "DETECTION." (Provided by AUTEC.)
- Sonar operator's range and bearing estimates at detection -- to confirm that the detection was not a false detection. (OTD Journal.)
- Acoustic conditions on the range, to establish the conditions under which a submarine "should be detected." (Provided by AUTEC.)

**In the process described above, you considered the data needed and how it would be obtained -- to the extent of considering actions and responsibilities during the exercise on AUTEC. Test planning requires that you consider both past events (e.g., selection of a scenario) and future events (e.g., assigning responsibilities during project operations) when addressing a particular phase of planning.**

**(2) MOS 1, Mean Time Between Operation Mission Failures**. Here, we're after total sonar operating time divided by the number of operational mission failures. The required pieces of data are:

- A chronological record of system status providing operating time, failure times, and the operator's assessment of the type of failures. (From Sonar Operator's Log Data Sheet S-1.)
- Confirmation of the type of failures. (From Maintenance Log, Data Sheet S-2.)

**d.** Having determined the data requirements for the various MOEs, etc., you can construct something like Table 6-3, which for illustrative purposes, is based on Table 6-2. Notice that the title of Table 6-3 is "Primary Data Sources." Backup data sources are very important too; they can make the difference between demonstrating or not demonstrating a particular capability. In the surface ship and submarine exercise on AUTEC, loss of communications to AUTEC (for the "DETECTION" transmission) or loss of AUTEC's plotting capability could be offset by correlating navigation information from both vessels and the OTD Journal. Notes expanded and transcribed into the OTD Journal could be a backup for a portable voice recorder with a bad battery.

**Table 6-3. Primary Data Sources**

| Element | Data Requirement | Recorded |
|---|---|---|
| MOE 1 | 1. Time-annotated plot of positions.<br>2. Range and bearing estimates at detection.<br>3. Acoustic conditions. | AUTEC<br>OTD Journal<br>AUTEC |
| MOE 2 | 1. ---------- | ----- |
| * | * | * |
| * | * | * |
| * | * | * |
| * | * | * |
| * | * | * |

**Table 6-3. Primary Data Sources**

| Element | Data Requirement | Recorded |
|---|---|---|
| * | * | * |
| MOS 1 | 1. System status record.<br>2. Failures (number and type). | Form S-1<br>Forms S-1 and S-2 |
| Reliability Factors | 1. ---------- | ----- |
| * | * | * |
| * | * | * |
| * | * | * |
| * | * | * |
| * | * | * |
| * | * | * |

**e.** One final consideration in this phase of planning: to identify any data items that, if not obtainable during an exercise in which they were supposed to be obtained, would cause testing to be suspended. For example, if AUTEC were the only source of time-position information, and if shortly after COMEX AUTEC's plotter became inoperative, the prepared OTD would suspend the operation because the exercise would not contribute any useful data to most MOEs.

## 612. HOW MANY OR HOW LONG?

**a.** If you haven't gotten your analysts involved yet, you'd better do so now.

**b.** Determining how many times to run a scenario, or how long to operate the equipment, is a matter of judgment that involves interrelated and sometimes conflicting considerations. When expenditure of equipment is involved (missiles, for example), the number of events has a sharp impact on the cost of conducting OT&E. Be prepared to defend your thinking, because the DA will want to minimize OT&E costs. Consider the following:

**(1)** The variables that are involved. If, for example, we are interested in a craft's capability to deploy and retrieve underwater demolition team personnel, we need runs at various combinations of environmental conditions (day and night, sea state, etc.) in order to arrive at an evaluation.

**(2)** The degree of risk we are willing to take in accepting a system that is bad or rejecting a system that is good (i.e., our confidence level).

**(3)** The cost of testing. It costs money to expend weapons and targets, to operate ships and aircraft, to operate a range, and so on. This money has to be budgeted and is usually in short supply. Ask yourself, does the benefit gained by the level of testing desired justify the added expenditure?

**(4)** The availability of fleet services and range support. These usually boil down to matters of priority among competing requirements.

**(5)** The time available. Although COMOPTEVFOR's input is important in milestone decisions, it is not the only input. Furthermore, budgetary considerations often require that decisions be made, if at all possible, by certain dates. For these reasons, it is often desirable that testing be conducted so as to provide only those data absolutely essential to an OPTEVFOR evaluation.

**c.** There are, then, no hard and fast rules or guidelines for determining how many or how long. It is a combination of itemizing all the considerations described above to ensure an efficient operational test.

**d.** A properly prepared TEMP will contain an estimate of how many or how long.

## 613. SUITABILITY CALCULATIONS

**a. Reliability**. The parameters for addressing reliability are mission reliability (R) and MTBOMF. For aircraft, system operating time may be expressed in flight hours, resulting in the parameter mean flight hours between operational mission failures (MFHBOMF) rather than MTBOMF.

**(1)** R is the probability that the system will complete a mission without an operational mission failure (hardware failure or software fault). R is recommended for systems which are operated only during a relatively short-duration mission (as opposed to operating more or less continuously).

$$R = \frac{\text{Number of Missions Without an Operational Mission Hardware Failure or Software Fault}}{\text{Total Number of Missions}}$$

**(2)** MTBOMF is used for more or less continuously operating systems. MTBOMF is addressed using the following parameters.

**(a) MTBOMF-Hardware ($MTBOMF_{HW}$)**. $MTBOMF_{HW}$ is the mean time between operational mission hardware failures occurring during system operation and is calculated as:

$$\text{MTBOMF}_{\text{HW}} = \frac{\text{Total System Operating Time}}{\text{Number of Operational Mission Hardware Failures}}$$

where an operational mission hardware failure is one which prevents the system from performing one or more mission essential functions. System operating time includes only the time the system is operating and being stressed under operational loads. It does not include standby time. For aircraft, system operating time is from the attempt to start the aircraft with the intent to perform a mission until engine shutdown.

**(b) MTBOMF-Software ($\text{MTBOMF}_{\text{SW}}$)**. $\text{MTBOMF}_{\text{SW}}$ is the mean time between operational mission software faults. A software fault is any interruption of system operation not directly attributable to hardware, and is calculated as:

$$\text{MTBOMF}_{\text{SW}} = \frac{\text{Total System Operating Time}}{\text{Nunber of Operational Mission Software Faults}}$$

**(c) MTBOMF-System ($\text{MTBOMF}_{\text{SYS}}$)**. $\text{MTBOMF}_{\text{SYS}}$ is the mean time between operational mission hardware failures and operational mission software faults which occur during system operation and is calculated as:

$$\text{MTBOMF}_{\text{SYS}} = \frac{\text{Total System Operating Time}}{\text{Total Number of Operational Mission Hardware Failures / Software Faults}}$$

As a general rule, $\text{MTBOMF}_{\text{SYS}}$ should not be used as a test measure when $\text{MTBOMF}_{\text{HW}}$ and/or $\text{MTBOMF}_{\text{SW}}$ can be used instead.

**(d) Mission Completion Rate (MCR)**. MCR is for multimission systems with short mission duration (whole aircraft), and is calculated as:

$$\text{MCR} = \frac{\text{Number of Missions Successfully Completed}}{\text{Number of Missions Attempted}}$$

A mission is not successfully completed when it is aborted due to the occurrence of a system failure that precludes the system from performing the assigned mission. The number of missions attempted includes only those missions in which factors beyond the design control of the system, such as range delays or asset nonavailability, do not impede the successful completion of the mission.

**MCR may be used in addition to other reliability measures. MCR may be used alone if necessary, but should not be used to replace other reliability measures.**

**(e) MTBUM/MFHBUM.** These are measures of the time (flight hours) between unscheduled maintenance actions (may or may not be hardware failure related) compared to total operating time.

$$\text{MTBUM / MFHBUM} = \frac{\text{Total System Operating Hours (Flight Hours)}}{\text{Number of Unscheduled Maintenance Actions}}$$

MTBUM/MFHBUM will be thresholded and reported on a case-by-case basis.

**b. Maintainability**. The parameters for addressing maintainability are mean corrective maintenance time for operational mission failures (MCMTOMF), maximum corrective maintenance time for operational mission failures (MaxCMTOMF), mean corrective maintenance time for operational mission faults-software ($\text{MCMTOMF}_{SW}$), mean reboot time (MRT), and built-in test (BIT), and maintenance ratio (MR).

**(1)** MCMTOMF is the average elapsed corrective maintenance time needed to repair all operational mission hardware failures. It includes time for maintenance preparation, fault location and isolation, on-board parts procurement, fault correction, adjustment and calibration, as well as follow-up checkout time. It does not include off-board logistic delay time.

$$\text{MCMTOMF} = \frac{\text{Total Elapsed Time to Correct Operational Mission Failures}}{\text{Total Number of Operational Mission Failures}}$$

**On-board logistic delay is the logistic delay associated with obtaining the spare part at the unit or organizational level. For aircraft systems, the unit level will be considered to be the squadron. Therefore, MCMTOMF will be calculated as the mean of the elapsed maintenance time (block A45 of the maintenance action form).**

**(2)** MaxCMTOMF is that time below which a specified percentage of corrective maintenance tasks must be completed to restore the system to operation after an operational mission failure (OMF); e.g., 90% of all corrective maintenance times for operational mission hardware repairs will be less than MaxCMTOMF. This parameter is recommended when the time required to repair and restore the system due to operational urgency is considered an important aspect of the system under test.

**(3)** $MCMTOMF_{SW}$ is the average elapsed time needed to restore a software-intensive system following an operational mission software fault. The system is considered to be restored when a tactical picture which is useful to the tactical action officer/operator is first established. This may include the time to restore all processes, functions, files, and data bases to a tactically useful state as well as the time required to physically reboot the system following an operational mission software fault.

**It does not include the time to obtain spare parts or utilize the expertise of personnel outside the unit or organizational level. For aircraft systems, the unit level will be the squadron.**

$$\text{MCMTOMFsw} = \frac{\text{Total Elapsed Time to Restore Software - Intensive Systems After an Operational Mission Software Fault}}{\text{Total Number of Operational Mission Software Faults}}$$

**(4)** MRT is the average elapsed time required to reboot a software-intensive system. MRT is addressed as cold start MRT ($MRT_C$) and warm start MRT ($MRT_W$). Both $MRT_C$ and $MRT_W$ include only the time necessary to physically reboot the system, not the time required for restoration of the tactical picture as in $MCMTOMF_{SW}$.

$$\text{MRT} = \frac{\text{Total Elapsed Time to Reboot a Software - Intensive System}}{\text{Total Number of Software Reboots}}$$

**(5)** BIT is addressed using these parameters: probability of correct detection (Pcd); probability of correct fault isolation (Pcfi); and probability of a false alarm (FA). It is recommended that all three equations be used together to ensure a complete picture of BIT performance.

**(a)** Pcd is a measure of BIT's capability to correctly detect failures/faults and is calculated as:

$$\text{Pcd} = \frac{\text{Number of Failures / Faults Correctly Detected by BIT}}{\text{Number of Actual System Failures / Faults}}$$

**(b)** Pcfi is a measure of BIT's capability to correctly isolate the failure to a specified replaceable assembly and is calculated as:

$$\text{Pcfi} = \frac{\text{Number of Failures Correctly Isolated}}{\text{Total Number of Failures Correctly Detected by BIT}}$$

**(c)** FA is the measure of BIT indicating a failure when none has occurred and is calculated as:

$$FA = \frac{\text{Number of Incorrect BIT Failure Indications}}{\text{Total Number of BIT Failure Indications}}$$

**For aircraft, you may also calculate the number of false BIT indications per system operating hour (FAh). This parameter will not be thresholded.**

$$FAh = \frac{\text{Number of Incorrect BIT Failure Indications}}{\text{Total Number of Operating Hours}}$$

**(6) MR**. MR is a measure of the ratio of total maintenance man-hours required to perform required preventive maintenance and repair all hardware failures to operating/flight hours and is calculated as:

$$MR = \frac{\text{Total Maintenance Man - Hours to Accomplish Required Preventive Maintenance and Repair all Failures}}{\text{Total System Operating / Flight Hours}}$$

**c. Availability**. The parameter for addressing availability is $A_O$.

**(1)** For continuously operating systems, $A_O$ is calculated as:

$$A_O = \frac{\text{Uptime}}{\text{Uptime} + \text{Downtime}}$$

where uptime is that time when the system is considered to be ready for use and is either operating, in standby, or off. Downtime is the time the system is down for repair of operational mission hardware failures and/or for restoration from operational mission software faults, including off-board logistic delays. It also includes planned maintenance time with a periodicity less than or equal to the test duration time that prevents the system from performing its assigned mission. Planned maintenance time that is of periodicity greater than the test duration time is considered neutral time and is not included in the availability calculation.

**(2)** For on-demand systems, $A_O$ is calculated as:

$$A_O = \frac{\text{Number of Times System was Available}}{\text{Number of Times System was Required}}$$

where the number of times the system was required shall include the number of times it was operationally required but not used because the system was known to be inoperable.

**(3)** For multimission systems (i.e., whole aircraft, ships, or submarines) the measures of availability are full mission capable (FMC), partial mission capable ( PMC), and mission capability by mission area ($MC_{MA}$ )

**(a)** FMC is defined as the material condition of a system in which it can perform all of its missions. FMC is calculated as:

$$FMC = \frac{\text{Uptime}}{\text{Uptime} + \text{Downtime}}$$

where uptime is the time the test system is capable of performing all its missions as defined by the $MC_{MA}$ mission areas.

**(b)** PMC is defined as the material condition of a system in which it can perform at least one of its missions. PMC is calculated as:

$$PMC = \frac{\text{Uptime}}{\text{Uptime} + \text{Downtime}}$$

where uptime is the time the system is capable of performing at least one of its missions as defined by the $MC_{MA}$ mission areas.

**(c)** $MC_{MA}$ is a measure of the system's capability to perform a specified mission and is calculated as:

$$MC_{MA} = \frac{\text{Uptime}}{\text{Uptime} + \text{Downtime}}$$

where uptime is the time the test system is capable of performing a specified mission. For aircraft, mission areas will be determined from the aircraft type Mission Essential Subsystem Matrices (MESM) in accordance with OPNAVINST 5442.4 series, as supplemented by operational experience.

**No Mission Capability (NMC) would be a measure of the proportion of time during which a system can perform none of its missions. Since NMC is the complement of PMC (i.e., NMC=1-PMC), there is no need to use NMC. When calculating FMC and PMC it may be useful to refer to 'not mission capable time,' which would be equivalent to PMC downtime. But, take care not to confuse terms for the measures with terms for system states or time accounting.**

**614. ADDRESSING THE THREAT IN TEST PLANNING**. The OTD must consider the current threat assessment in planning and preparing the operational test plan, in which the following require consideration:

**a.** If the system will not be tested against some portion of the threat as described in the applicable ONI TA/STAR, a test limitation will be included to indicate the threat is not being completely addressed. The limitation must cite the specific current or projected threat, as described in the current threat assessment, and reference the current threat assessment. If the limitation is due to simulators or targets not being threat representative, cite the shortfalls as they relate to the specific current or projected threat system or capability.

**b.** The current and projected threat must be considered when developing the scenarios and test procedures of the test plan. The scenarios and test procedures will reference the current ONI TA/STAR, if applicable. When developing scenarios and test procedures, exclude all portions of the threat that will not be tested.

**615. LOI REQUIREMENTS IN THE TEST PLAN**. Project operations involving multiunit coordination will normally require issuing an LOI. The test plan will include a short discussion (in paragraph 303 of the test plan) on the LOI when one is to be issued. Information regarding the need for an LOI and the format is contained in chapter 7.

**616. SURVIVABILITY'S QUANTITATIVE ESTIMATE**

**a.** A quantitative estimate of survivability, or a subset of survivability, may be possible if the system can be tested against a realistic threat. It should be noted that most projects will not be capable of generating "numbers"; however, this paragraph serves to show survivability relationships. One method of achieving a quantitative result is to define the following probabilities, and then to approximate probability by percentages:

**(1) Probability of Survival ($P_s$)**. The probability that the system will survive the hostile environment. $P_s$ is a direct measure of the system's survivability.

**(2) Probability of Hit ($P_h$)**. The probability that the system will be hit by a damage-causing mechanism, and is referred to as the susceptibility of the system.

**(3) Probability of Kill Given a Hit ($P_k$)**. The conditional probability that a system is killed given a hit, and is referred to as the vulnerability of a system.

**(4)** The probabilities are related as follows:

$$P_s = 1 - P_k$$

**(5)** Finally, the survivability equation becomes:

$$\underset{\text{survivability}}{P_s} = 1 - (\underset{\text{susceptibility}}{P_h} \times \underset{\text{vulnerability}}{P_k})$$

## 617. OTHER SURVIVABILITY CONSIDERATIONS

**a. Air**. Aircraft survivability testing usually must include destructive testing, ballistic penetrator analysis, etc., to study system operation after impact. This is often part of LFT&E and not a COMOPTEVFOR function, and, as such, should be a requirement placed upon the DA in program documentation and throughout the program. From an operational standpoint, you have the prerogative to make a qualitative assessment of vulnerability features when the system is utilized in the intended operating environment. This qualitative assessment should be reported in the evaluation report and tactics guide as applicable.

**b. Surface**. When evaluating a surface combatant, susceptibility may approach unity; thus, survivability approximately equals one minus vulnerability. Usually survivability has the most meaning when talking about the entire weapon system (e.g., surface combatant). You must use judgment when using survivability as an effectiveness measurement for smaller systems such as a missile launcher, gun system or a main feed pump.

**c. Subsurface**. For combat control systems, weapon systems, systems requiring exposure above the surface, or systems making active emissions, susceptibility is the submarine's susceptibility to being detected and/or localized. Vulnerability answers the question that if attacked, how successful is that attack. Since vulnerability often involves a question of lethality, destructive tests may be the only means of obtaining absolute answers. Therefore, the results of technical destructive or explosive tests should not be overlooked as a vulnerability data base.

**d. Laser Designators**. When addressing susceptibility in the test plan, consideration should be given to the effect a hostile laser designator may have on the system or operator.

**e. Electronic Warfare (EW)**. Electromagnetic systems' vulnerabilities are assessed using signal susceptibility and vulnerability assessments (SSVA). Major programs can receive life cycle support through the data link vulnerability assessment (DVAL) program. Only a few programs are so designated.

**(1) Naval Security Group Support**. The Naval Security Group (NSG) is responsible for signal security (SIGSEC) susceptibility T&E and vulnerability assessments of Naval electronic systems. NSG, funded by the program being assessed, provides signal vulnerability assessment support during preparation of T&E planning documents and during OT&E. Electronic counter-countermeasures testing support for ESM and ECM issues can be provided during OPEVAL, including signals collection and analysis. Specific vulnerability areas that can be addressed during an assessment are:

- detection
- classification and identification
- target and geolocation
- jamming
- deception
- antiradiation missile
- unintentional radiation and TEMPEST
- teleprocessing cryptography

Vulnerability assessment support is initiated by letter to NSG (see example on page 7-25). The point of contact is the Naval Security Group Headquarters Vulnerability Assessment Division (GX33), DSN 292-0353, commercial (202) 282-0353.

**(2) SSVA Program**. Screen the project for SSVA applicability. Eighteen months prior to OPEVAL, contact NSG Headquarters Vulnerability Assessment Division (GX33), and discuss your project and the need for an SSVA. Eighteen months is considered the optimum period required for NSG prior to OPEVAL. This, however, should not preclude contacting NSG if an urgent SSVA is necessary. If an SSVA is required, ensure the program manager is aware of the requirement so that funding is available and then draft the formal tasking letter to NSG.

**(3) DVAL Program**. See paragraph 619.

## 618. THE SURVIVABILITY E-TEST

**a.** The E-tests will address the survivability COI as enumerated in part IV of the TEMP. Testing for survivability should be approached in two ways: that which can be done during active project operations; and that which cannot.

**b.** The scenario-related E-tests must be designed to demonstrate the system's capability -- or lack of capability -- to accomplish its mission in the intended operating environment. You should employ the best tactics (ours and theirs) and the best countermeasures (ours and theirs) available.

**c.** The E-test, in the test plan, should focus on the "cheap kill" aspect of system survivability. Here is where a majority of the DA's test results can be useful; they will be available only if you have ensured beforehand that the DA will provide COMOPTEVFOR with the results of tests he has conducted. Equipped with the threat statement, minimum acceptable operational performance requirements, knowledge of test results to be expected from the DA, and the considerations of paragraph 612, you should be able to prepare an E-test to fit your needs. If technical questions arise, consult the chapter 3, Resources.

## 619. DVAL

**a.** DVAL was implemented for Navy use by CNO memorandum Ser 094/4U33932 of 30 April 1984.

**b.** N6 has the responsibility for oversight and is the Navy focal point. All new acquisition programs are screened for DVAL applicability incident to program initiation and to ensure DVAL-type concerns are adequately addressed throughout the life of the program. The point of contact is N64E, DSN 225-0951, COM 703-695-0951.

**c.** COMNAVSECGRU is assigned Navy Executive Agent responsibilities for the data link vulnerability analysis program and is tasked to incorporate DVAL methodology into existing Navy vulnerability assessments. The point of contact is the Naval Security Group Headquarters, Vulnerability Assessment Division (G50), COM 202-282-0348/0878.

**d.** The vulnerability assessment program is done using two methods, DVAL and SSVA. DVAL differs in several ways from SSVA.

**(1)** DVAL is centrally funded by OPNAV rather than being dependent on the DA for funding.

**(2)** As stated previously, all new programs are screened by N6 and N8 for DVAL applicability incident to program initiation. SSVAs are requested from NSG by the OPTEVFOR OTD as early as possible.

**(3)** DVAL is life-cycle oriented from program inception to termination, with a mechanism for periodic reviews, whereas SSVA is oriented to providing data for OT&E.

**(4)** DVAL and SSVA findings are used as tools in the preparation of OT test plans. OPTEVFOR, through OT&E, will verify correction of those deficiencies detected as a result of system and equipment examinations.

## 620. DVAL T&E METHODOLOGY OVERVIEW

**a.** EW vulnerability is a term that describes the characteristics of a system which cause it to suffer a definite degradation or incapability to perform a designated function when subjected to a threshold level of interference in a hostile electromagnetic environment. EW vulnerability of radio frequency (RF) data links to jamming occurs when a combination of the technical susceptibility of the data link, the capability of an enemy to exploit that susceptibility, and the physical coupling of the jammer (or ESM receiver) with the data link exist simultaneously. The determination of EW vulnerability is a complex process and is easier to understand and accomplish if it is separated into its major components. Those major components are: (1) susceptibility of the receiver to intentional interference; (2) interceptibility of the transmitted signal to detection, localization, identification and signal analysis; (3) accessibility of a jammer to couple with the data link receiver, or of a hostile receiver to couple with the data link transmitter for interceptibility; and (4) feasibility of system degradation being accomplished in an operational environment, based upon the enemy's technical capability to degrade and his intent to employ that capability.

**b.** The DVAL T&E methodology incorporates the component parts of vulnerability into a four-module approach for the T&E of antijam features of command, control and communications; reconnaissance and intelligence; and weapons RF data links. The methodology facilitates the determination and quantification of the four components so that a vulnerability assessment that is based on fact and data -- instead of assumptions and theory -- can be accomplished.

**c.** The four modules of the DVAL T&E methodology correspond to the four components of EW vulnerability.

**(1)** The first is the susceptibility module, the objective of which is to evaluate a data link receiver's performance when subjected to intentional electromagnetic interference. Six susceptibility issues are identified for resolution. Resolution of the issues involves analysis, test, and evaluation. The emphasis of the first module is on the determination of the receiver's susceptibility to specific types of intentional interference. This module requires the consideration of specific

classes of intentional interference waveforms and is not constrained by specific threat estimates to the system. Application of the methodology requires both friendly and potentially hostile susceptibility data to aid in the selection of specific waveforms and to ensure that the receiver's susceptibility is comprehensively examined and measured. All data link EW vulnerability is rooted in some specific receiver susceptibility; thus, the results from this first module directly influence the other three modules.

**(2)** The second module, interceptibility, assesses the interceptibility of the data link. Interceptibility is the probability that RF radiations from the transmitter could be detected by a hostile force, that the source of radiation (and its associated receiver) could be identified, that the radiated signal could be located, and that the characteristics of the radiated signal could be exploited sufficiently to support an effective ECM attack against the data link. Two classes of interceptibility, based upon the enemy's intercept purpose and available resources, are examined. The first, Class I, is a short-term, tactical intercept much like that which would occur in a fast, fluid, hostile environment where the emphasis is on detection, location and identification for the purpose of supporting an ECM attack. The second, Class II, is a more precise and deliberate technical intercept which is normally conducted with more sophisticated equipment. Class II intercept is conducted to identify all possible weaknesses of the emitter and to establish a threat emitter library to support future jammer efforts. Three EW issues are identified for resolution to evaluate the interceptibility of the transmitter. Resolution of these issues, just as for those in the susceptibility module, involves analysis, test, and evaluation.

**(3)** The third module, accessibility, determines the accessibility of the data link. The technical limitations of RF data links can lead to actual vulnerability only if the data link system is physically exposed to a potential threat and the system is used in such a way that degradation of its performance could jeopardize the mission. Accessibility is the determination of the likelihood that an enemy electronic jamming system could couple with an RF data link in such a way that it could seriously degrade data link performance and reduce operational effectiveness. Accessibility T&E identifies those points of intervals in a data link's functional profile where the performance of the data link could be degraded by a jammer which has RF access. Three issues are identified for resolution, and these issues are examined through simulation and field testing.

**(4)** The fourth module, feasibility, assesses the feasibility of the data link being exploited and targeted by hostile EW elements if it is used in a specific operational context for a specific military purpose. The emphasis is on determining the likelihood that the data link will suffer performance degradation in a specific operational environment. Two EW issues are identified for resolution. Application of the feasibility module involves testing the data link in a limited operational environment complete with realistic, free-play EW.

## 621. OPERATIONS SECURITY (OPSEC) REQUIREMENTS OF TESTING

### a. Background

**(1)** OPSEC, as it relates to COMOPTEVFOR testing, may be defined as the identification and protection of a broad spectrum of classified and open-source information that collectively reveals current and future U.S. military capabilities, plans, and operational procedures. In this respect it encompasses and relates to other security programs such as SIGSEC, physical security, automated data processing, and operational deception.

**(2)** Basic guidance on OPSEC is contained in OPNAVINST 3432.1 series and COMOPTEVFORINST 3070.1 series.

### b. Requirements for OPSEC in Test Planning

**(1)** COMOPTEVFOR testing is largely devoted to verifying the capabilities of new weapon systems and developing tactics for their use. For this reason, application of OPSEC thinking to COMOPTEVFOR test scenarios is extremely important to avoid unnecessary disclosure of weapon systems' capabilities and limitations.

**(2)** The application of OPSEC thinking to COMOPTEVFOR test scenarios is a two-step process:

- identifying those elements of information that require protection (e.g., communications, noncommunications, electromagnetic emissions, and tactics).
- ensuring a means of protecting these elements during OPTEVFOR testing and the subsequent analysis process.

This will be accomplished through use of the system's plan for protection of weapon system test and performance data (protection plan). OPNAVINST 5510.143 series, which establishes policy on SIGSEC, and OPNAVINST S3490.3 series, which provides guidance on cover and deception planning, are also useful for this purpose.

**(3)** It is the responsibility of the program sponsor, in coordination with the development coordinator, systems command commander, and COMOPTEVFOR, to develop the protection plan. The format and directions for developing the plan are contained in CNO ltr 5500 Ser 983C3/6U355112 of 29 May 1986. Development of the plan will commence with promulgation of the ORD. Should development of the plan progress too slowly, you must coordinate with the program sponsor to ensure it is available to support timely development of the operational test plan. Your participation in protection plan development is required to ensure that operational

testing is properly addressed. If satisfactory progress is not made in a timely manner, ensure the commander is informed through the chain of command.

**(4)** You should develop test plans that will analyze your test programs and ensure protection plan requirements have been included. (If the plan has been prepared correctly, questions involving SIGSEC and the possible need for OPSEC planning will be addressed as well.)

**(5)** Test scenarios, the interchange of information during project operations, and the dissemination of test data will be designed to minimize availability of useful information to unauthorized sources. Necessary instructions will be included in detailed test procedures.

**(6)** Prior to commencing tests, test participants will be briefed by your or your representative on security requirements of the test. You must be prepared to recommend "go" or "no go" on operational testing based on the threat to OPSEC.

**c.** Assistance in developing an OPSEC Plan and applying OPSEC requirements to individual test plans may be obtained from OT&E Support (Code 131) or the division OPSEC representative.

**622. RELEASE OF INFORMATION TO THE PRESS OR OTHER AGENCIES**. You will occasionally receive requests from the media and other agencies for information on planned or ongoing OT&E, including requests to observe and film aspects of test operations. Such requests will not be approved by COMOPTEVFOR. Specific instructions regarding release of information to the media are contained on page 6-65 in the sample test plan.

**623. PRIVACY ACT REQUIREMENTS**

**a.** SECNAVINST 5211.5 series implements the Privacy Act of 1974 within the Navy. Among other things, it defines "personal information" and specifies how this information may be obtained and maintained.

**b.** COMOPTEVFOR test plans routinely ask operators and maintenance personnel to provide the following kinds of information on forms or questionnaires:

- name of person completing the form
- military experience and experience with the equipment under test (e.g., rank or rate, time in service, formal schooling on the equipment)
- opinions regarding aspects of the equipment (e.g., were troubleshooting procedures adequate?)

**c.** Per SECNAVINST 5211.5, operators and maintenance personnel are not providing "personal information" when they fill in their names, information about their experience, and

opinions about the equipment under test. This information may be requested on OT&E forms and questionnaires without the necessity for special procedures or "Privacy Act" statements.

**d.** Social security numbers are considered "personal information" and should not normally be requested on OT&E forms and questionnaires. If special circumstances make them necessary, contact the COMOPTEVFOR Administrative Officer for specific guidance on SECNAVINST 5211.5 procedures.

## 624. PREPARATION, ROUTING, AND RELEASE OF TEST PLANS

**a. Preparation**. Test plans for DOT&E oversight projects require approval by DOT&E no later than 60 days prior to start of project operations. The test plans for nonoversight projects are completed so that COMOPTEVFOR issues them no later than 30 days prior to the start of project operations.

**(1)** For all oversight test plans, the program manager will be provided a test plan brief after the Commander has signed the test plan, but before it is briefed to DOT&E.

**(2)** For all nonoversight test plans, the program manager will be provided a test plan brief after the Chief of Staff has signed the test plan.

**(3)** You will brief the operational test concept to the program manager prior to DT or TECHEVAL phases. Details as to the timing of this brief, and exceptions to this requirement, will be coordinated via the TPWG. The key point is communications. The program office needs to know the OT outline in order to prepare adequately for OT.

**b. DOT&E Oversight Test Plans**. Table 6-4 summarizes the timelines:

**Table 6-4. DOT&E Oversight Test Plan Timelines**

| Days Prior to Ops | HQ Action | VX/HMX Action |
|---|---|---|
| 120 | OTD/OTC prepare and present Concept of Operations brief to DOT&E | OTD prepare and present Concept of Operations brief to DOT&E (HMX with HQ liaison (Code 50) coordination) |
| 80 | Originator starts rough draft route to: editors, intel,.scheduler, resources,* mod/sim,* logistics,* and METOC.* | VX - Originator starts rough draft route at squadron to: editors, analyst, intel; scheduler, resources, mod/sim, logistics, METOC (at HQ) if appropriate.**<br><br>HMX - Send rough draft to HQ liaison (Code 50) for |

**Table 6-4. DOT&E Oversight Test Plan Timelines**

| Days Prior to Ops | HQ Action | VX/HMX Action |
|---|---|---|
| | | HQ review process.** |
| 70 | Originator incorporate changes and route smooth rough to 00T, 01B, 01 for initial review.<br><br>Code 50 send HMX draft to originator for correction of major issues.** | Originator incorporate changes and resolve any issues,*** get COs approval. |
| 65 | Originator make corrections and route smooth document to 01E, 01B, 01; 00 for brief and signature.<br><br>HQ Code 50 route smooth VX/HMX documents to 01E, 01B, 01; 00 for brief and signature. | Originator prepare smooth document and send to HQ liaison (Code 50)**<br><br>Originator brief 00 |
| 60 | Originator submit COTF approved test plan to DOT&E via CNO (N091). | N/A |
| 30 | Mailroom print document copies and distribute. | N/A |

*HQ B codes may waive reviews if deemed not applicable.
**Use dial-up E-mail or modem for applicable sections for HQ comments and for smooth document.
***Unresolved VX/HMX issues are briefed based on the squadron position and pointed out to the Commander.

**The Commander approves all concept of operations briefs being given to DOT&E and all test plans being forwarded for DOT&E review.**

**c. Non-DOT&E Oversight Test Plans**. For nonoversight programs, if the Commander has not indicated a desire to review the test plan prior to approval, and if it is a standard program test plan, the Chief of Staff signs and releases the document. Table 6-5 summarizes non-DOT&E oversight test plan timelines:

**Table 6-5. Non-DOT&E Oversight Test Plan Timelines**

| Days Prior to ops | HQ Action | VX/HMX Action |
|---|---|---|
| 50 | Originator starts rough draft route to: editors, intel., scheduler, resources,* mod/sim,* logistics,* and METOC.* | VX - Originator starts rough draft route at squadron to: editors, analyst, intel; (at HQ) scheduler, resources, mod/sim, logistics, METOC if appropriate.**<br><br>HMX - Send rough draft to HQ liaison (Code 50) for HQ review process.** |
| 40 | Originator incorporate changes and route smooth rough to 00T, 01B, 01 for initial review.<br><br>Code 50 send HMX draft to originator for correction of major issues.** | Originator incorporate changes and resolve any issues,*** get COs approval. |
| 35 | Originator make corrections and route smooth document to 01E, 01B; 01 for brief and signature.<br><br>HQ Code 50 route smooth VX/HMX documents to 01E, 01B; 01 for brief and signature. | Originator prepare smooth document and send to HQ liaison (Code 50)**<br><br>Originator brief 01 |
| 30 | Mailroom print document copies and distribute. | N/A |

*HQ B codes may waive reviews if deemed not applicable.
**Use dial-up E-mail or modem for applicable sections for HQ comments and for smooth document.
***Unresolved issues are brought to the attention of 01, and the squadron position is presented by the OTD. If the issue remains unresolved with the squadron CO, the test plan is referred to the Commander for brief.

## 625. BRIEFING TEST PLANS

### a. General Test Plan Briefing Instructions

**The Commander is prebriefed on all concept of operations briefs given to DOT&E and approves all test plans forwarded for DOT&E review.**

**(1)** The Commander is briefed on all ACAT I and DOT&E oversight test plans (including operational assessments) as part of the test plan approval process. Briefings should be sched-

uled so that time is available to incorporate the Commander's guidance, while still allowing at least 30 days (60 days if a DOT&E oversight program) between test plan distribution and commencement of project operations.

**(2)** It is not necessary to brief the standard sections of the test plan - sections 2, 6, and 7 - unless there are deviations from our standard format. Detailed scenarios must be briefed prior to E- and S-tests so the Commander has an appreciation of the setting in which the test is to be conducted.

**b. The Test Plan Brief**

**(1)** The test plan is unique in the manner in which it is briefed, mainly due to its bulk and the fact that most of the issues have been defined previously in the appropriate TEMP. For the foregoing reasons and economic considerations (both time and money), test plan briefs are different from TEMP comment letter briefs.

**(2)** The sequence, format, and content of your test plan brief slides are provided below. If you deviate from this sequence, a separate outline slide is required prior to system description.

**(a) Introduction slide**

Subject: Mk 48 Torpedo Advanced Capability (ADCAP)

CNO Project No.: 371

ACAT: II

Briefer: LCDR Mark Martin

**(b) Outline of brief:**

System Description
Background
Evaluation Criteria
Critical Operational Issues
Conduct of the Tests
- Test Scenarios
- E- and S-Tests
- Test Objects

Limitations
Resource Requirements
Reports

**(c) System Description (bulletized)**. Describe the equipment to be tested and its relation to previously tested versions and the planned production version. Use pictures, diagrams, schematics, as appropriate.

**(d) Background (bulletized)**. Addresses previous testing and results; what requirement this phase of testing fulfills; the milestone decision this testing supports, etc.

**(e) Evaluation Criteria (bulletized or tabular)**. Derived from the TEMP.

**(f) The Critical Operational Issues to be Resolved**. Derived from the TEMP part IV.

**(g) Conduct of the Test**. Typically several viewgraphs, including but not limited to:

- where and when
- operators and maintainers
- test scenarios
- test object(s) of each COI
- number of iterations or attempts
- natural and man-made environments
- E- and S-tests

**(h) Limitations**. Derived from the TEMP part IV, plus any new ones.

**(i) Resource Requirements (chapter 5)**. From TEMP part V.

**(j) Report Required**. Formal or quick-look; date due.

**Note that the system description, background, COIs, and the evaluation criteria are directly derived from the TEMP. You can probably use the appropriate viewgraphs generated for the TEMP brief. Ensure that these slides also meet the format requirements described above and are consistent.**

**There may very well come a time when you need to make official changes to an existing test plan. This occurs, mostly, when test phases are delayed and assets change. Regardless of your reason, see the sample Test Plan Change Letter that begins below. The format for the letter is on the command's LAN at y:\OT&E Reference Library\OT&E Formats\Msword\TestPlanChangeLtr.doc**

**Sample 6-1**
**Test Plan Change Letter**

3980 (**999-OT-IIB**) CH-**1**
Ser .../...

From: Commander, Operational Test and Evaluation Force
Subj: CHANGE TRANSMITTAL 1 TO TEST PLAN FOR THE **(SYSTEM)** PROGRAM

Ref: (a) COMOPTEVFOR ltr 3980 (**999-OT-IIB**) Ser .../... of ...
(b) CNO ltr 3960 Ser... of ...

Encl: (1) Revised applicable portions of the Test Plan for the **(System)** Program

**1. PURPOSE.** To transmit Change **1**, which **deletes essential assets previously outlined in reference (a).**

**2. BACKGROUND. Reference (b) deleted critical surface units necessary for accomplishment of effectiveness testing, requiring the addition of two major test limitations and revision of test scenarios.**

**a. Section 3 adds two major test limitations, negating the possibility of fully resolving effectiveness critical operational issues.**

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Subj: CHANGE TRANSMITTAL 1 TO TEST PLAN FOR THE **(SYSTEM)** PROGRAM

**b. Section 4 includes revised scenarios and procedures for accomplishment of tests E-1 through E-4.**

**c. Appendix A revises OT-IIB resource requirements.**

**3. ACTION**

**a**. Remove and replace the following pages:

| **Remove** | **Replace With** |
|---|---|
| **Existing Contents Pages (i-vi)** | **New Contents Pages (i-iv)** |
| **Existing Reference Page (vii)** | **New Reference Page (vii)** |
| **Existing 3-7 and 3-8** | **New 3-7 and 3-8** |
| **Existing 4-1 through 4-6** | **New 4-1 through 4-6** |
| **Existing Appendix A (A-1 and A-2)** | **New Appendix A (A-1 and A-2)** |

**b.** Annotate the upper right hand corner of the cover page to the test plan with the following: "CH **1** of **(COTF sig. date)** entered on **(date CH entered)** by **(command/code entering CH)**."

SIGNATURE BLOCK

**(00's signature for all oversight projects, 01's signature for all others.)**

Distribution:

**(Use the same distribution here as on the original test plan.)**

**Sample 6-2**

**TEST PLAN FORMAT AND PREPARATION GUIDELINES**

CLASSIFICATION

DEPARTMENT OF THE NAVY
COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE
7970 DIVEN STREET
NORFOLK, VIRGINIA 23505-1498

3980 (999-OT-IIB)
Ser XX/

CLASSIFICATION--Unclassified upon removal of enclosure (1)*

From: Commander, Operational Test and Evaluation Force

Subj: TEST PLAN FOR CNO PROJECT NO. 999, INITIAL OPERATIONAL TEST AND EVALUATION (OT-IIB) OF THE ..... PROGRAM

**The sample title is applicable to all pre-OPEVAL phases of IOT&E. For OPEVALs, use "CNO Project 999, Operational Evaluation (OT-IIB) of the ..." For OT-III and -IV, use "CNO Project 999, Follow-on Operational Test and Evaluation (OT-III) or (OT-IV) of the ..."**

Encl: (1) COMOPTEVFOR Test Plan for Project No. 999-OT-IIB (*)

*** If applicable. Do not use on UNCLASSIFIED test plans. For the enclosure lines, the classification marking will be indicated (e.g., (U)) if the enclosure line is the title of a classified enclosure. Overall and page classification marking is accomplished by placing the overall classification at the top and bottom center of this page and each subsequent page. See OPNAVINST 5510.1 series for detailed instructions on document marking, including figures, tables, etc.**

1. Enclosure (1) is provided for test operations.

**or**

**In those cases where TEMP approval is pending and a test plan must be published to meet a near-term test phase or DOT&E requirements, paragraph 1 should read as follows:**

1. Enclosure (1) is provided for planning purposes only. It becomes effective for test operations upon approval of Test and Evaluation Master Plan No. 999.

**or**

**In those cases where we require DOT&E approval prior to testing, paragraph 1 of the test plan cover letter will read:**

1. Enclosure (1) is provided for planning purposes only. It becomes effective for test operations upon approval of the test plan by the Director, Operational Test and Evaluation.

**or**

**In those cases where we are awaiting approval of the TEMP and DOT&E approval of the test plan, this paragraph will read:**

1. Enclosure (1) is provided for planning purposes only. It becomes effective for test operations upon approval of Test and Evaluation Master Plan No. XXX and approval of the test plan by the Director, Operational Test and Evaluation.

2. Request COMSUB_____concurrence in submarine safety aspects of this test plan.

**This paragraph is required for any test plan involving a U.S. submarine in any capacity (project ship, acoustic target, etc.). Specify either or both COMSUBLANT and COMSUB-PAC, depending on the submarine(s) involved. Consider test plan items such as this to be transmitted either in a letter or message to afford COMSUBs the time and opportunity to meet the requirement.**

3. Aspects of Project 999-OT-IIB are classified and subject to hostile exploitation. Consult enclosure (1), Section 7, **Security**, before discussing this project or participating in project operations.

**Omit the above for entirely unclassified projects.**

SIGNATURE BLOCK

Distribution: ***(the below command names must be the actual SNDL short titles)***
OSD (DOT&E, S&TS/DT&E) (for oversight programs only)
CNO (N091, N912, N0__, (Program Sponsor))
COMNAVXXXSYSCOM (DA)
Type Commander
Operational Commander
Range
Target Units
Other Required Agencies

**The number of copies reproduced for retention internally will be limited to five (two for the warfare division and three for command files).**

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**The above distribution statement is for unclassified and classified test plans.**

**The distribution of test plans will be limited to those commands or activities who <u>must</u> receive the test plan. Distribution will be limited to one copy per command or code listed. Additional copies may be provided to the test platform as required prior to the start of testing. Ensure that proper handling procedures and safeguards are implemented for these additional copies.**
**Should you desire review and comment on your test plan by an outside activity, justification will be briefed to the**

**Commander, and the decision to include this request in the test plan cover letter will be made on a case-by-case basis. Test plans are solely the responsibility of COMOPTEVFOR, and comment and review by outside activities is not necessary.**
**A checklist to assist in reviewing the test plan is provided at the end of this chapter.**

COMOPTEVFOR TEST PLAN

FOR

PROJECT NO. 999-OT-IIB (*)

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**Resource requirements will always be appendix A.**
**Appendix A is required in all test plans.**

## Acronyms and Abbreviations

| | |
|---|---|
| AAC | approach angle control |
| $A_o$ | operational availability |
| MFS | multifunction switch |
| MTBOMF | mean time between operational mission failures |
| R | reliability |
| ROE | rules of engagement |

**List only acronyms or abbreviations used in the test plan except:**

**(1) Acronyms for naval activities included in the Standard Navy Distribution List (which includes almost every activity).**

**(2) Standard metric symbols or U.S. customary unit abbreviations, unless required for clarity.**

**Acronyms must be defined (spelled out) on their first occurrence in the text, and must also be listed here.**

**Keep acronyms and abbreviations to a bare minimum.**

**Never use an acronym if it will appear only once; consider not using acronyms if they will appear only a few times, particularly if their appearance will be widely separated in the text.**

**Separate acronyms and abbreviations into alphabetical groups.**

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## References

(a) Test and Evaluation Master Plan 999 of 8 Mar 94

(b) CONNAVAIRWARCENWPNDIV China Lake CA 272301Z Dec 94

(c) COMOPTEVFOR ltr 3980 Ser 711/ C47 of 3 Apr 94

(d) ONI STAR/System Threat Assessment

(e) Operational Requirements Document 0123 of 10 Jan 94

**Any references listed in the letter of promulgation should be listed here (e.g., reference (a) of the letter is also reference (a) here (and so forth), even though it is used only in the letter). No punctuation is used in references. Always reference the current threat assessment document for the project.**

**Insert the classification marking (e.g., (U)) only if the reference includes the title of a classified document.**

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## Section 1

## Introduction to the Project

**101. PURPOSE**. The purpose of CNO Project No. 999 (OT-IIB) is to assess the potential operational effectiveness and potential operational suitability of the .... and its readiness for limited fleet introduction.

**This paragraph contains a brief statement of the reason for this phase of OT&E, and is derived from the TEMP part IV "OT&E Objective" paragraph for the specified phase of testing.**

**For VCDs, the purpose is "to verify correction of deficiencies from OT-IIA" (for example). (The VCD phase must be the same phase number as that for verification, with a "1" at the end; i.e., "OT-IIA1(VCD)".)**

**This paragraph is the basis for paragraph 1 of the evaluation report.**

**102. EQUIPMENT (OR SYSTEM) DESCRIPTION.** The ... is a one-way acoustic signaling system for recall of underwater demolition team and sea-air-land swimmers in train-ing operations. It consists of an underwater transmitter carried in the recovery boat, and individual receivers carried by the swimmers. The version to be tested is an advanced development model (ADM) functionally identical to the proposed design, but not representative of that design in size, weight, reliability, or maintainability characteristics.

**Paragraph 102 provides a brief statement of the functional characteristic of the end item, including applicable interoperability requirements. For EOA projects, this should be followed by comments on any significant difference between the test item and the end item. For OT-II, -III, and -IV projects, there should be no <u>significant</u> differences between the test item and end item. If there are, list them briefly as limitations (Section 3).**

**The information presented is not intended to substitute for or duplicate information provided to operators or mainte-**

**nance personnel in technical documentation (switchology, etc.). Write the tests first, then include only the details necessary to provide an understanding of the tests.**

**This paragraph is the basis for paragraph 101, Equipment Description, of enclosure (1) to the evaluation report.**

**When appropriate, include subheadings such as "Maintenance and Support Concepts" and "Personnel and Training." List the technical manuals to be evaluated.**

## 103. BACKGROUND

**a.** The ... was developed to satisfy Operational Requirements Document 38-01 (reference (e)) for a safe, reliable, recall system for use in training operations. Existing recall systems use explosive devices. Because explosive devices are a hazard to swimmers in the water, development of the ... concentrated on electronically generated acoustic signals.

**This paragraph will include reference to the document that established the need for the system and, when applicable, reference to the threat and the threat document.**

**b.** IOT&E (OT-IIA) of the ... was conducted from ... to .... The purpose of OT-IIA was to assess the potential operational effectiveness and operational suitability of the new weapon system. As a result of OT-IIA, COMOPTEVFOR concluded the system was potentially operationally effective and potentially operationally suitable, and recommended certain changes to its functional design. These, and other changes, have been incorporated into the design to be tested in OT-IIB. OT-IIA was conducted in an operational threat environment derived from threat data contained in reference (d).

**This paragraph concisely summarizes the major events (emphasizing previous OT&E) that led to this testing. List the major deficiencies from previous OT&E that will be addressed in this test phase (e.g., deficiencies that require correction and testing prior to full-scale development, fleet introduction, etc.). The TEMP is the major source of the information summarized herein.**

**This paragraph is the basis for paragraph 2 of the evaluation report and for Section 2 of enclosure (1) to that report.**

c. The following major deficiencies from OT-… will be examined:

(1)

(2)

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## Section 2

## Administrative Information

**201. GENERAL**. General responsibilities of activities involved in this testing are provided in this section, as well as appropriate points of contact. Continuing close liaison is essential to timely and successful prosecution of this project.

**202. RESPONSIBILITIES**

**a. COMOPTEVFOR**

**(1)** Provide changes to this test plan.

**(2)** Coordinate arrangements for fleet services and other test requirements, including photographic services when needed.

**(3)** Conduct briefings for all participating units, including operations security (OPSEC) requirements and procedures.

**(4)** Issue letters of instruction (LOI) and memorandums of agreement (MOA).

**(5)** Supervise data collection, analyze test results, and publish appropriate reports.

**Others as necessary.**

**or**

**If the project is reassigned for prosecution, provide separate subparagraphs as follows, outlining the responsibilities of the Headquarters staff and the VX/HMX squadron. Re-letter subsequent paragraphs.**

**a. COMOPTEVFOR**

**(1)** Assign an OTC to coordinate with the VX/HMX OTD and the developing agency (DA) during testing.

**(2)** Provide changes to this test plan.

**(3)** Review and publish the evaluation report.

**Others as necessary.**

**b**. **AIRTEVRON ...** (VX/HMX, as appropriate) (if VXs/HMX apply here)

**(1)** Assign an operational test director (OTD), who will supervise testing as described in this test plan.

**(2)** Prepare changes to this test plan as required.

**(3)** Coordinate arrangements for fleet services and other test requirements, including photographic services as necessary.

**(4)** Conduct briefings for all participating units, including operations security (OPSEC) requirements and procedures.

**(5)** Provide, when necessary, draft anomaly messages to the OTC for release by COTF. (if applicable)

**(6)** Issue letters of instruction (LOI). (if applicable)

**(7)** Ensure applicable memorandums of agreement (MOA) are in place. (if applicable)

**(8)** Provide failure data associated with anomaly messages to COMOPTEVFOR as soon as practicable for release to the DA as appropriate.

**(9)** Supervise data collection, analyze test results, and submit proposed evaluation reports to COMOPTEVFOR.

**(10)** Submit proposed anomaly/deficiency reports.

**Others as required.**

**c.** **Developing Agency** (e.g., COMNAVSEASYSCOM)

**(1)** Furnish required material and technical support.

**(2)** Provide required plans and funding for installation and removal of project equipment.

**(3)** Provide type commander and unit commanders with data on the impact of the test installation on operational capabilities of the unit providing services.

**(4)** Provide for required training of fleet and OPTEVFOR personnel in operation and maintenance of the equipment.

**(5)** Provide funding for ....

**Identify any other support required, e.g., data reduction, reconstruction, simulation, etc.**

**(6)** Provide for appropriate safety certifications.

**(7)** Certify equipment ready for OT-IIB in accordance with SECNAVINST 5000.2B.

**Others as necessary.**

**d.** Request (Type Commander) direct USS NEVERSAIL (CVN 99) to:

**(1)** Make personnel available for required training.

**(2)** Operate in accordance with this test plan and COMOPTEVFOR LOIs/MOAs.

**(3)** Maintain installed equipment and ensure availability of trained personnel to operate and maintain the equipment.

**(4)** Support the data recording requirements of this test plan.

**(5)** Keep COMOPTEVFOR (and VX/HMX, if applicable) informed of any condition that may affect prosecution of this project.

**(6)** Prepare and submit reports in accordance with section 6.

**Others as necessary.**

**e. Other supporting commands or agencies**

**203. POINTS OF CONTACT.** Points of contact are provided in table 2-1.

**Table 2-1. Points of Contact**

| Rank/Name | Title (Code) | Address | DSN/ Commercial |
|---|---|---|---|
| LT G. Green | Operational Test Director (Code) | Commander, Operational Test and Evaluation Force 7970 Diven Street Norfolk, VA 23505-1498 | 564-5546 ext. 3118/ (757) 444-5546 ext. 3118 |
| LCDR J. Black | Operational Test Coordinator (Code) | Same as above. | 564-5546 ext 3120/ (757) 444-5546 ext 3120 |
| LCDR C. Carmon | (Program) Requirements Officer (Code) | Chief of Naval Operations 2000 Navy Pentagon Washington, DC 20350-2000 | 227-6865/ (202) 697-6865 |
| LCDR M. Smith | T&E Coordinator (N912) | Same as above. | 227-1047/ (202) 697-1047 |
| CAPT H. Felds | Program Director (PD) | Commander, Space and Naval Warfare Systems Command 2451 Crystal Dr. Arlington, VA 22245-5200 | 332-8965/ (703) 602-8965 |
| CAPT F. Finds | Program Manager (PMW) | Same as above. | 332-3637/ (703) 602-3637 |
| CDR S. Loper | Program Manager (PMW) | Same as above. | 332-0889/ (703) 602-0889 |

**204. VISITOR CONTROL**. CNO's policy regarding visitor observance of operational testing is strict. This is to preclude any perception of a lack of objectivity in the test and evaluation process or any perception of outside influence on the operational test unit and/or operational test director (OTD). Therefore, observers will not normally be permitted in the test area during operational testing. This includes personnel from the operational chain of command not normally assigned to the unit as part of their duties. Requests for personnel ordinarily embarked to support routine ship or unit operations (e.g., sea-air-land teams, explosive ordnance disposal, and aircraft detachments, etc.) may be approved by the ship or unit commanding officer. Requests for visitors or riders to observe operational testing during project operations will be addressed to COMOPTEVFOR, info **(VX/HMX, if applicable)** and **(unit commanding officer)**. COMOPTEVFOR will coordinate all such requests with **(unit administrative commander)** and **(unit commanding officer)**. Affirmative response by COMOPTEVFOR must be received before visits are authorized, other than those for personnel ordinarily required to support routine ship or unit operations.

**205. DISCLOSURE POLICY**

**a. Test Data**. Factual operational test data will, as expeditiously as possible, be released/shared with the program office. The logistics of release/sharing of data will not interfere

with the conduct or evaluation of any OT. Factual data does not include information based on consensus or opinion, such as operator or maintainer surveys. Such information is subjective and part of the evaluative process and will not be made available prior to the release of the final report. Procedures for anomaly and deficiency reports delineated in paragraph 604c and d remain in effect. **For DOT&E oversight test plans, add the following sentence:** DOT&E access to test data will be per applicable sections of Title 10.

**b. Proprietary Information**. Requests for access to proprietary information will be referred to the proprietor agency for disposition. Proprietary information will not be disclosed by COMOPTEVFOR. Information collected by the OTD in the form of survey sheets (user and test team feedback, comments, opinions, and conjecture of system performance) during OT constitutes proprietary information of COMOPTEVFOR. This includes information gathered from questionnaires and interviews. Such information will be labeled: "FOR OFFICIAL USE ONLY - NOT RELEASABLE OUTSIDE OF COMOPTEVFOR."

**206. DEVIATIONS FROM THE TEST PLAN**. The OTD is authorized to deviate from this test plan as the operational situation and good judgment dictate, keeping COMOPTEVFOR (and VX/HMX, if applicable) advised.

**or**

**When the prosecuting activity is a VX squadron or HMX-1, paragraph 206 may be changed to:**

**206. DEVIATIONS FROM THE TEST PLAN.** The Commanding Officer, (squadron), is authorized to deviate from this test plan as the operational situation and good judgment dictate, keeping COMOPTEVFOR advised.

**Use of the above paragraph should not preclude you from making such a decision in situations where an immediate, on-site decision must be made and timely contact with the commanding officer cannot be accomplished.**

**207. RELEASE OF INFORMATION TO THE PRESS OR OTHER AGENCIES**

**a.** Prior to formal issue of the final report, no test data will be released. Once the report is issued by COMOPTEVFOR, the CNO will release data in accordance with existing policy.

**b.** Media requests to observe operational testing will be referred to Chief of Information (CHINFO) in Washington, DC.

**c**. Requests for other than OT&E information will be referred to CHINFO for coordination with CNO (N091) and COMNAVXXXSYSCOM.

## Section 3

## Scope of the Evaluation

**301. CRITICAL OPERATIONAL ISSUES (COI)**. The COIs for Project 999-OT-IIB are:

| **Critical Operational Issues** | **Tests** |
|---|---|
| Recall | E-1 |
| Survivability | E-3 |
| Reliability | S-1 |

**The COIs listed here are lifted from the "OT&E Objective" paragraph for the appropriate phase of testing as contained in part IV of the TEMP.**

**The "Tests" column will include the specific E-and S-tests that will address the effectiveness and suitability COIs listed.**

**COIs that address operational effectiveness are listed first, followed by COIs that address operational suitability.**

**The COIs of this paragraph are the basis for paragraph 301 of enclosure (1) to the evaluation report.**

**302. EVALUATION CRITERIA**. CNO provided the following measures of effectiveness and suitability in reference (a):

**List the thresholds and objectives established for this phase of OT&E in part I of the TEMP, including the notes, using the same format.**

**This paragraph is the basis for paragraph 302 of enclosure (1) to the evaluation report.**

**303. TESTING**. Test operations will exercise the ... in realistic scenarios, in representative operational and natural environments. These operations will provide the data for evaluation in individual tests of operational effectiveness (E-tests) and operational suitability (S-tests) discussed in sections 4 and 5. The resources required to accomplish this testing are identified in appendix A.

**This section summarizes the testing that will generate data for evaluation, and general procedures to be used. When the DA is in charge of the testing, including factory tests or demonstrations, reference to his test plan with a brief description of the testing is appropriate. Define the data to be collected by the DA and furnished to OPTEVFOR. When COMOPTEVFOR is in charge of testing, the following paragraphs provide general guidance to test participants.**

**For EOA or OA test plans (since we don't resolve COIs in these phases), subparagraph a (below) will show the COI color code treatment that will be used in the report. Renumber the subsequent subparagraphs. If your test plan is not an EOA or OA, use the standard subparagraphs only, beginning with Range Procedures.**

**a. COI Rating System.** For reporting purposes, the following color rating system will be used to provide OPTEVFOR's assessment of risk associated with each COI:

Green -- Little or no risk identified
Yellow -- A moderate level of risk is identified
Red -- There are areas of significant risk
White -- Not evaluated or assessed

**a. Range Procedures**

**This paragraph discusses special procedures, instrumentation, communications, etc., that may be required when operations are conducted (in whole or in part) on a range. Make reference to appropriate range manuals or instructions, as well as to any briefings required before range operations.**

**b. LOIs and Exercise Messages** (Title as applicable)

**You may be required to prepare an LOI before project operations (see sample LOI on page 7-11). Any special instructions that will be contained in the LOI should be discussed in this paragraph. Also, you may be required to prepare exercise messages for each day's operations at sea. Participating units should be advised here of any special instructions these messages will provide (how runs will be identified, OPSEC instructions, etc.).**

**c. Data Collection**

**(1) Data Sheets**. Special data sheets for use in this testing are contained in appendix B. Copies will be distributed to test participants by the OTD. Standard Navy forms, logs, etc., that will supplement these data sheets are identified in sections 4 and 5.

**List automatic data recording needs here (e.g., AN/SRN-19, etc.).**

**304. LIMITATIONS**. The capability of the NWS to classify (cite the specific threat) as described in reference (d) will not be fully tested because target characteristics are not fully threat-representative. The targets are not threat-representative in that they (cite the shortfalls as they relate to the specific current or projected threat system or capability). This may result in only partial resolution of the classification COI and may result in a conclusion that the NWS is only potentially operationally effective. (Classification)

**List the significant factors that will (or probably will) prevent complete examination of a COI for this phase of testing or preclude addressing CNO-specified criterion. Ensure the test limitations for this phase of testing that are listed in the TEMP part IV are included here as applicable, and they address the impact of the limitation on the resolution of the affected critical operational issue and the ability to draw conclusions regarding operational effectiveness and operational suitability. Typical factors are target characteristics not fully representative of the threat, test area characteristics not representative of the expected operational environment, or departures from operational realism caused by test conditions. Include in the**

**limitations statement any work-around procedures being planned to reduce the effects of the limiting factors. If the system will not be tested against some portion of the threat, as described in the applicable ONI TA/STAR, the limitation will cite the specific current or projected threat not representative targets which create the limitation. The applicable ONI TA/STAR will be referenced in the limitations section. An example limitation for OPEVAL is shown.**

**As shown in this example, the COI affected by the limitation will be indicated in parentheses. It is not necessary to include COIs in parentheses after each limitation that does not affect resolution of COIs or our ability to form conclusions.**

**This paragraph, modified as a result of actual conditions that existed during testing, provides the basis for paragraph 1f of the evaluation report and for paragraph 304 of enclosure (1) to that report.**

**All limitations citing lack of statistically valid sample sizes (i.e., flight or operating hours/missile shots, etc.) will be shown as minor limitations in all phases of OT&E. During OPEVAL, every effort must be made to supplement your data with data from other sources (i.e., previous OT; DT (where applicable); fleet (when possible)). This contingency must be planned for in the data collection requirements in test plans (Procedure paragraph).**

## Section 4

## Operational Effectiveness

**401. SCENARIOS**. The scenarios to be employed for effectiveness testing of the ... have been developed from reference (d), and are described below. Plans and geometries to generate specific scenario runs are described in appendix C.

**(Alternatively: Plans and geometries for specific runs to simulate these scenarios are described below and in the procedures for individual tests.)**

**A discussion of scenario-oriented versus operation-oriented testing is provided in par. 607, which may help you in preparing this section.**

**a. Scenario A, Barrier Patrol ...**

**b. Scenario B, Amphibious Assault ...**

**This paragraph describes the operational scenarios in which the equipment will be exercised to determine its mission effectiveness or to define tactics. One scenario may suffice for single mission equipment; several will be required for multimission equipment. In each scenario description, state the operational mission being simulated, and describe the actions of simulated friendly and threat participants, but not the actions of units merely monitoring or providing instrumentation. Support unit instructions are provided in run plans.**

**402. TEST E-1, RECALL ENVELOPE**

**a. Object**

**(1)** Will the ... transmit signals to ranges and depths at which swimmers can ....?

**(2)** etc.

**The object of an E-test is to examine some aspect of a project COI or, on occasion, more than one aspect of a COI. For most projects, the E-test object and each aspect of the COI will be identical (from par. B of part IV of the TEMP for the appropriate phase of testing).**

**b. Procedure**. Recall signals will be transmitted to swimmers at range, depth, and sea state combinations shown in ... Data will be recorded on Data Sheet E-1, Swimmer's Log, by the diving supervisor.

**There are two basic types of test procedures: those that describe how the system under test will be employed to generate the data necessary to address the object of the test, and those that describe how the data will be recorded.**

**Concerning the system employment procedures, be sure to identify the scenario runs that provide data for this test, the test variables involved, and, when appropriate, the necessary sample size. This information should complement, not repeat, information contained in run plans.**

**The data collection procedures should always identify the data forms to be completed by form title and data sheet number; when the data form should be completed and who will complete it; and the supporting documentation required (e.g., NTP, ILSP, etc.). When complex instrumented data collection is involved, it may be appropriate to include the data collection description in a separate appendix.**

**When computer simulations are used to extend the data base, describe the computer model and the means by which it was validated to adequately reproduce the operational situation.**

**In cases where you have a minor limitation because of a small sample size (during OPEVAL), include here your plans to supplement your data with data from other sources (i.e., previous OT, DT (where applicable); fleet (when possible)). This applies to both E- and S-tests.**

**c. Data Analysis**

**When data analysis is straightforward and involves the use of simple formulas or a qualitative analysis, address the methodology in this paragraph. Describe how data will be analyzed and how the results will be presented (e.g., chart, plot, or specific numbers). Analysis should also include an evaluation of the impact of any E- or S-test deficiencies on overall mission accomplishment. Applicable quantitative measures from the minimum acceptable operational performance requirements in the TEMP should be included in the data analysis section. Additional quantitative MOEs may also be included to supplement the analysis needed to resolve the COI. When appropriate, define categories such as incomplete tests, failures, and successes.**

**If the analysis is qualitative, detail the "yardsticks" that will be used as the basis for the analysis. An example of such a "yardstick" for the Recall Envelope COI is: "The impact of different background noise environments on the effectiveness of the recall system will be examined by comparing differences in detection ranges and depths in shallow water, open ocean, and restricted waterways/harbors." Notice that the above analysis write-up delineates specifically what your thought process will be in your qualitative analysis; i.e., what will be examined and how the information will be used.**

**When data analysis is more complicated and involves numerous calculations to arrive at the result, prepare a separate data analysis plan appendix. This appendix should describe analytical methods peculiar to the test, define categories such as incomplete tests, failures, and successes, and include analytical details as appropriate. The appendix should expand on the data analysis paragraph, and should be referenced in the appropriate E-tests.**

**403. TEST E-2, ...**

**a. Object**. Will the ...?

**b. Procedure**

**c. Data Analysis**

## 404. TEST E-3, SURVIVABILITY

**See paragraph 616 for a discussion of survivability.**

**a. Object**. Will the susceptibility and vulnerability of the ... system lead to a major or total degradation in mission performance because of enemy weaponry? (or: Will the effects of the ... system on the susceptibility and vulnerability of the (aircraft, ship, submarine, or vehicle in which it is installed) lead to a major or total degradation in mission performance because of enemy weaponry?

**b. Procedure**

**You should apply the concepts of survivability, to fit the particular characteristics of the system. Some general guidelines are provided below.**

**(1)** The susceptibility of the ...(or: The effects of the ... on the susceptibility of the (aircraft, ship, submarine, or vehicle in which it is installed)) will be assessed by observing its performance in its intended operating environment during the following types of missions:

**List all missions that will be observed during testing; attempt to include all primary and secondary missions that are defined in the ORD. An attempt should be made to employ as many threat representative systems as possible in the susceptibility assessment.**

**(2)** The vulnerability of the ... (or: The effects of the ... on the vulnerability of the (aircraft, ship, submarine, or vehicle in which it is installed)) will be assessed by:

**(a)** Reviewing all reports relating to vulnerability testing conducted by the developing agency or contractor.

**(b)** Comparing the system's survivability design features to the anticipated operational threat.

**(3)** All observations relating to potential or actual survivability deficiencies will be recorded in the OTD Journal.

**c. Data Analysis**

**(1)** The susceptibility assessment will be a qualitative analysis based on observations during all phases of testing. Analysis will include, but not be limited to, considerations of the use and effectiveness of the following susceptibility reduction methods: (a) threat warning devices; (b) noise jammers and deceivers; (c) signature reduction techniques; (d) use of expendables; (e) threat suppression; and (f) tactics.

**(2)** The vulnerability assessment will be a qualitative analysis based on the examination of system design features. Analysis will include consideration of the use and effectiveness of the following standard vulnerability reduction methods: (a) component redundancy; (b) component location; (c) passive damage suppression; (d) active damage suppression; (e) component shielding; and (f) component elimination.

**For most systems, the primary focus of the survivability E-test is the impact of system performance on platform survivability, not system survivability. Note that in these cases, not all of the susceptibility and vulnerability reduction methods listed above are applicable to all programs. For example, a towed acoustic array is designed to decrease a ship's susceptibility to potential ASW threats, but it may have little impact on platform vulnerability once the ship has been hit by a torpedo. On the other hand, damage control systems will not affect whether the ship is initially hit, but they do decrease the platform's vulnerability to a kill after the ship has been hit. You must examine your particular program to determine whether both of these issues are applicable, omitting those which may not be appropriate.**

**You should also refer to paragraph 617 for quantitative measures, which may accurately describe the system's contribution to platform survivability.**

## 405. TEST E-4, TACTICS

**a. Object**. Will the tactics developed for the ... support effective employment in the intended operating environment.

**b. Procedure**

**(1)** The ... system will be operated in Scenarios A, .... Data will be recorded in the OTD Journal.

**(2)** The following existing fleet tactics from reference ( ) will be employed.... Data will be recorded in the OTD Journal.

**(3)** New tactics developed by ... (or found in ...) will be employed.... Data will be recorded in the OTD Journal.

**(4)** The capability to accommodate new and emerging tactics will be examined. Data will be recorded in the OTD Journal.

**c. Data Analysis**

**Clearly state here how the tactics will be examined in order to evaluate their impact on mission accomplishment. For example:**

"The principal focus of the qualitative analysis for tactics will center on an assessment of: The opportunity to employ the established tactics during scheduled test events; whether or not such tactics were actually employed during these test opportunities; and the results of the actual tactics with regard to mission accomplishment. The failure of an established tactic to allow mission accomplishment will be examined further and, if possible, a correction recommended. If a tactic outside those already established is employed at the commanding officer's discretion and is successful, it will be evaluated as a possible recommendation for incorporation as a change to reference ( )."

## Section 5

## Operational Suitability

**501. GENERAL.** The suitability testing will, in most instances, use data generated by continuous operation of the equipment throughout test operations, including the E-test runs described in section 4 and appendix D. If sufficient maintainability data are not available at the completion of testing, a maintainability demonstration will be conducted. Tests specifically designed to generate suitability data are described in the following S-tests:

**502. TEST S-1, RELIABILITY**

**a. Object**. Will the ... be reliable in the intended operating environment?

**b. Procedure**

**(1)** Maintenance action forms will be completed for:

**(a)** Each failure or deficiency noted during operations.

**(b)** Each preventive maintenance action that finds a failed part.

**(2)** User personnel will record system performance data using data collection logs contained in appendix B.

**(3)** Maintenance personnel will be interviewed and will complete suitability questionnaires.

**In Section 4, two types of test procedures were described: system employment and data collection. For most of the S-tests, the only system employment procedure will be continuous operation of the equipment, which has already been addressed in paragraph 501 above. Therefore, most of the S-test procedure will consist solely of data collection procedures.**

**Reliability is generally addressed in terms of a probability of completing a relatively short duration mission or, if no mission time is specified, reliability is addressed in terms of MTBOMF, which is the figure used in determining mission**

**reliability. The definition of an operational mission failure, as contained in the Glossary, must be included in this paragraph. When assessing (or determining) reliability, it must be clear that a failure is classified by its impact on the system's capability to perform its intended mission, regardless of the actual environment at the time of occurrence. MTBOMF will be computed using the guidelines in paragraph 613. Preparation of this paragraph and the corresponding paragraphs under Test S-2, Maintainablilty, and Test S-3, Availability, must involve your analyst. An example paragraph for a software-intensive system is:**

**c. Data Analysis**

**(1)** Log-collected data will be used to calculate:

**(a) $MTBOMF_{HW}$.** Where an operational mission hardware failure is one which prevents the system from performing one or more mission essential functions.

$$MTBOMF_{HW} = \frac{\text{Total System Operating Time}}{\text{Number of Operational Mission Hardware Failures}}$$

**(b) $MTBOMF_{SW}$.** Where a software fault is any interruption of system operation not directly attributed to hardware.

$$MTBOMF_{SW} = \frac{\text{Total System Operating Time}}{\text{Number of Operational Mission Software Faults}}$$

**(2)** Data sheets, questionnaires, and OTD Journal entries will be analyzed to identify deficiencies that may not be evident from quantitative analysis.

**The general rule of thumb for determining how much test time is required to statistically demonstrate a TEMP reliability threshold is three times MTBOMF (assuming only a single failure occurring during actual testing). For many systems with high MTBOMF thresholds, the time available to conduct OT&E is not sufficient to meet this criteria. There are additional sources of information that may be available to augment test results which would allow resolution of the reli-**

**ability COI under these circumstances, especially in OPEVAL: fleet data on the system under test; data from previous phases of DT/OT; and data on systems which are similar (e.g., common hardware components) to the one under test.**

**The primary issue to be considered in using any of the alternative data sources is whether or not there has been a significant change in the system which might reflect RM&A results. If there is no change affecting reliability, the data analysis section of test S-1 should consider using the applicable alternate data sources to augment test results. If there has been a change, the alternate data should not be used. Additional testing may be required to resolve the reliability COI in this case.**

## 503. TEST S-2, MAINTAINABILITY

**a. Object**. Will the ... be maintainable in the intended operating environment?

**b. Procedure**. Trouble and/or maintenance action reports will be completed and reviewed as appropriate.....

**To preclude not being able to address maintainability (e.g., mean time to fault locate (MTTFL), MCMTOMF, etc.) because no (or few) failures actually occurred during test operations, make provisions for a maintenance demonstration after test operations, using prefaulted modules. Include the procedure here. An indicator that such a situation may occur is a high system reliability threshold; i.e., an MTBOMF TEMP threshold that significantly exceeds availability test time. Alternate sources of data that may also be used to augment limited results include fleet data or applicable data from previous phases of OT&E.**

**c. Data Analysis**

**MCMTOMF and $MCMTOMF_{SW}$ will normally be calculated as the arithmetic average of individual events occurring during the conduct of testing. The following may be used in this paragraph:**

**(1) Calculation of MCMTOMF**:

$$MCMTOMF = \frac{\text{Total Elapsed Time to Correct Operational Mission Failures}}{\text{Total Number of Operational Mission Failures}}$$

**(2) Calculation of $MCMTOMF_{SW}$**:

$$MCMTOMF_{SW} = \frac{\text{Total Elapsed Time to Restore Software-Intensive Systems After an Operational Mission Software Fault}}{\text{Total Number of Operational Mission Software Faults}}$$

**(3)** Unusually large values of repair or restoral times will be qualitatively assessed, examining factors such as system design, interoperability, documentation, training of maintenance personnel, etc.

**See page 6-26 for guidance on addressing other parameters of maintainability.**

## 504. TEST S-3, AVAILABILITY

**a. Object**. Will the ... be operationally available in the intended operating environment?

**b. Procedure**. All operator logs, maintenance action forms, and time meter recordings from Tests S-1 and S-2 will be reviewed ....

**Special instructions on the handling of data forms or records should be included, as well as any special definitions of terms applicable to this test. See page 6-28 for additional guidance on calculating $A_o$.**

**c. Data Analysis**. Operational availability is computed using the formula:

$$A_O = \frac{\text{Uptime}}{\text{Uptime} + \text{Downtime}}$$

**Include any special considerations that should invalidate some data or should be given less weight and thus weaken test results.**

## 505. TEST S-4, LOGISTIC SUPPORTABILITY

**See chapter 3 for assessing logistic supportability.**

**a. Object**. Will the ... be logistically supportable? This test examines the configuration, integration, and efficiency of the following elements of logistic support:

**(1)** Maintenance planning.

**(2)** Manpower and personnel.

**(3)** Supply support.

**(4)** Support equipment, including the adequacy of ... special tools and equipment.

**(5)** Training and training support.

**(6)** Packaging, handling, storage, and transportation, including the adequacy of ... facilities.

**(7)** Technical data.

**(8)** Computer resources support/software configuration management and plans to provide updated system software to the fleet.

**(9)** Facilities.

**If any of the above are addressed in a specific S-test (e.g., "training and training support" in S-7), they should be omitted from here.**

**b. Procedure**. This test will be conducted throughout OT-IIB. The following procedures will be applied as applicable to all components of the ... system.

**See Code 651 for sample Test S-4, Logistic Supportability Questionnaire.**

**(1)** The configuration, integration, and efficiency of the logistic support resources provided to support the ... system will be observed throughout the evaluation.

**(2)** ... maintenance personnel will be observed performing their duties and interviewed as appropriate.

**(3)** The adequacy of the integrated logistic support plan (ILSP) will be assessed.

**(4)** Planned maintenance system (PMS), addressed in Test S-10, Documentation, will be reviewed in connection with adequacy of maintenance planning, support equipment, and test equipment.

**(5)** Provisions for software configuration management, software block upgrades, and the maintenance and replacement of system software in the fleet will be reviewed.

**(6)** The effect of maintenance requirements on manning will be assessed.

**(7)** Trouble and/or maintenance action reports will be completed as appropriate.

**(8)** Suitability questionnaires will be completed by maintenance and supply personnel.

**(9)** OTD observations, interview responses, and documentation reviews will be recorded in the OTD Journal.

**(10)** The adequacy of all technical manuals and PMS documentation (in preliminary or final form), including maintenance requirement cards, will be assessed.

**(11)** The availability and adequacy of allowance parts lists (APL) and allowance equipage lists will be assessed.

**(12)** The availability and adequacy of all related test equipment and special tools will be assessed.

**(13)** Completed NAVSUP Form 1250/1250-1 for manual or SNAP II-equipped ships (or DD Form 1348/computer listing for SNAP I-equipped ships), with part number or national stock number (NSN) and APL number (or nomenclature of parent equipment) for each spare part used during testing, will be reviewed to assess the requirements for and availability of spare parts. Part numbers should be verified with NSNs in the coordinated shipboard allowance list (COSAL) to ensure accuracy between the COSAL and technical manuals.

**(14)** The adequacy of manning (quality and quantity), training, training equipment, and facilities will be assessed.

**Include if not covered in a specific S-test.**

**The following contains examples of possible "yardsticks" that could be used to qualitatively evaluate logistic supportability. They should be modified to fit the specific logistic support documentation and procedures of the particular system under test.**

**c. Data Analysis**. Data from the ILSP, Navy training plan (NTP), and various other supply support records and documents will be used to assess the degree of logistic support for the ... system. The primary focus will be a comparison between the planned logistic support, as outlined in the ILSP, and the degree of logistic support actually implemented and observed during OT&E. Analysis will include, but not be limited to, the following:

**(1)** A comparison of the number and type of spare parts required by the COSAL to those actually on board.

**(2)** A comparison between high failure rate parts and those parts carried on board to assess level of COSAL support.

**(3)** A comparison of support equipment identified in the ILSP to that carried on board. Additionally, a comparison will be made between the usage requirements for support equipment and its availability.

**(4)** A comparison of the technical manuals identified in the ILSP to those carried on board.

**(5)** A comparison of the number of trained technicians with the appropriate Navy enlisted classification (NEC) and ratings to the personnel required by the established Watch Station Requirements to evaluate the adequate of ship's manning in meeting mission requirements.

**Data collected for the above examples will be supplemented by responses to data sheets, interviews conducted by the OTD, and by observations recorded in the OTD Journal. Data will be qualitatively analyzed based on the operational experience and judgment of the OTD. Deficiencies in any element**

**of logistic support for the system will be evaluated on the basis of its impact on overall mission accomplishment.**

## 506. TEST S-5, COMPATIBILITY

**If desired, this test may be subdivided as follows:**

**Test S-5A, Physical Compatibility**

**Test S-5B, Functional Compatibility**

**Test S-5C, Electronic and Electrical Compatibility**

**Test S-5D, Environmental Compatibility**

**Normal operations may not expose interference or incompatibility problems, and you may have to conduct special tests, operating various equipments in various modes, to detect any potential interference.**

**a. Object**. Will the ... be compatible with its operating environment?

**b. Procedure**. This test will be conducted continuously throughout the period of the test and consist of investigating the compatibility of the NWS with the physical, functional, environmental, electronic, and electrical conditions existing on the (host platform) as outlined below:

**(1) Physical Conditions**. (i.e., vibration, maneuvers, etc.)

**(2) Functional Conditions**. (i.e., effect of positioning new equipment on capability to operate existing equipment, etc.)

**(3) Environmental Conditions**. (i.e., extremes of temperature or changes in pressure, etc.)

**(4) Electronic and Electrical Conditions**. (any electronic or electrical abnormalities that may affect....)

**c. Data Analysis**

**Data analysis will include an examination of the impact of any compatibility deficiencies identified during testing on overall mission accomplishment.**

**507. TEST S-6, INTEROPERABILITY**

**a. Object**. Will the ... provide adequate interfaces between ... and ...?

**b. Procedure**. This test will be conducted throughout OT-IIB. The test will examine interoperability between ... and interfacing systems.

**You should apply procedures that best represent the system being evaluated. The use of a matrix delineating the possible interface combinations should be developed when writing the TEMP and included in the test plan. General example paragraphs are provided below.**

**(1)** ... interaction with other systems will be observed. Suspected interoperability limitations and deficiencies will be documented in the OTD Journal.

**(2)** The interoperability questionnaire in appendix B will be completed by system operators.

**(3)** E-Test analysis results will be reexamined for evidence of interoperability limitations and deficiencies between systems.

**(4)** Suspected interoperability deficiencies will be reexamined using tests devised by the OTD.

**You should provide instructions that represent the best data analysis approach for the system being evaluated. A general example paragraph is provided below.**

**c. Data Analysis**. Data sheets, supporting effectiveness data, and OTD Journal entries will be used to qualitatively evaluate ... interoperability. The impact of any interoperability deficiencies identified during testing on overall mission accomplishment will be evaluated.

## 508. TEST S-7, TRAINING

**See paragraph 315**

**a. Object**. Will the ... training be adequate for operator and maintenance personnel?

**b. Procedure**

**c. Data Analysis**

**The following contains some specific examples of possible "yardsticks" that could be used to qualitatively evaluate training. They should be modified to fit the specific training documentation and procedures of the particular system under test.**

**The results observed in the testing of some systems may be significantly influenced by the higher performance caliber or greater experience level of the operators selected for OT&E; i.e., "Golden Crew" manning. These systems include precommissioning crews on the first flight ship of a new class, or VX personnel testing a new aircraft. For such systems, the data analysis section should also include an evaluation of what the impact using a "Golden Crew" for testing may have on observed test results. An example of an appropriate statement to include in the data analysis section of training for systems which may involve "Golden Crew" issues follows:**

**c. Data Analysis**. Data will be qualitatively analyzed based on the operational experience and judgment of the OTD. Data will consist of responses to Data Sheet ..., interviews conducted by the OTD, and by observations recorded in the OTD Journal. The primary focus will be a comparison between the planned training requirements, as outlined in the NTP, and actual training accomplished prior to and during OT&E. Analysis will include, but not be limited to, the following:

**(1)** A review of operator and maintenance technician training records to assess the rate of completion of personnel qualification standards.

**(2)** A comparison between formal operation and maintenance course objectives, and the skills covered during on-the-job training provided to those personnel who did not attend the formal course of instruction.

**(3)** A comparison of the manning required by the NTP to the number of formally trained technicians actually on board.

**(4)** Any training deficiencies observed during testing will be evaluated on the basis of its impact on overall mission accomplishment.

**(5)** The individual experience level of some crew members may be different than what the ship's manning document requires. Evaluation of test results will specifically assess whether the experience level of key personnel influenced the results of operational testing.

## 509. TEST S-8, HUMAN FACTORS

**a. Object**. Will the ... human factors features be adequate?

**On systems where operability is a consideration, a test object should be:**

**"Will the man and machine interface of the ... be adequate?"**

**b. Procedure**

**You should apply procedures that best represent the system being tested. Elements such as equipment, work environment, task, and personnel should be examined. General example paragraphs are provided.**

**(1)** Human factors testing will be conducted concurrently with effectiveness testing. The test will measure the effects that equipment and system design have on the user in the work environment, and the efficiency with which people can use systems to accomplish the operational mission.

**(2)** Test commentary will be documented in the OTD Journal.

**(3)** Randomly selected users and operators will complete the human factors questionnaire in appendix B.

**You should provide instructions that represent the best data analysis approach for the system being evaluated. A general example paragraph is provided below.**

**c. Data Analysis**. The OTD Journal, data sheets, questionnaire responses, and supporting effectiveness and suitability test data will be qualitatively evaluated to assess human factors. The impact of any human factors deficiencies identified during testing on overall mission accomplishment will be evaluated.

## 510. TEST S-9, SAFETY

**a. Object**. Will the ... safety features be adequate for operation and maintenance?

**b. Procedure**. ... safety testing will be conducted concurrently with effectiveness testing.

**If appropriate, the test procedure will include a requirement to observe the adequacy of Navy occupational health and safety standards.**

**You must review system and ship/installation documents to assess whether safety and emergency procedures (e.g., loading, handling, operating, maintaining, hazardous material, etc.) relevant to system/equipment undergoing OT&E have been properly prepared and disseminated.**

**(1)** ... hardware and the access to each system component will be examined for potential safety hazards. Once identified, potential safety hazards will undergo further examination to determine if injury to user, operator, or maintenance personnel could occur.

**(2)** Test commentary will be documented in the OTD Journal.

**(3)** Randomly selected user, operator, and maintenance personnel will complete the safety questionnaire in appendix B.

**You should provide instructions that represent the best data analysis approach for the system being evaluated. A general example paragraph is provided below.**

**c. Data Analysis**. Responses to questionnaires and interviews as well as comments from the OTD Journal will be reviewed for safety related issues. The primary focus of the evaluation will be on the safety of maintenance and operating procedures along with an examination of equipment and associated tools for personnel hazards. The impact of any safety deficiencies identified during testing on overall mission accomplishment will be evaluated.

## 511. TEST S-10, DOCUMENTATION

**a. Object**. Will the ... documentation be adequate and accurate?

**b. Procedure**

**You should apply procedures that best represent the documents being evaluated. General example paragraphs are provided below.**

**(1)** Operator and maintenance documentation will be assessed for adequate information, structure and accuracy, and user comprehension.

**(2)** Maintenance personnel will complete the technical manual questionnaire in appendix B.

**(3)** User personnel will complete the operator manual questionnaire in appendix B.

**(4)** Test commentary will be documented in the OTD Journal.

**The OTD should provide instructions that represent the best data analysis approach for the documentation being evaluated. A general example paragraph is provided below.**

**c. Data Analysis**. OTD Journal observations, responses to questionnaires, and interview responses will be collected and evaluated to identify and assess the adequacy of system documentation. The primary focus will be on the availability, utility, completeness, legibility, accuracy, and content of all applicable documents. The impact on overall mission accomplishment of any documentation deficiencies identified during testing will be evaluated.

**PIN 98-03 of 12-8-98, Y2K Compliance COI, was rescinded as of 4-21-00**

## Section 6

## Reports

**601. GENERAL**. Reports required in connection with this project are described in the following paragraphs. Distribution should be limited where indicated.

**602. READINESS REPORTS**

**a. DA Certification**. The DA shall certify the _____ System readiness for OT-IIB in accordance with SECNAVINST 5000.2B.

> **The DA shall certify readiness for all IOT&E, including OPEVAL, in accordance with SECNAVINST 5000.2B.**
>
> **For systems undergoing OPEVAL which have been placed in a deficiency status, the DA must recertify the system ready for OPEVAL in accordance with SECNAVINST 5000.2B prior to commencement of testing.**
>
> **For FOT&E, the DA will certify the project as ready to commence FOT&E in accordance with SECNAVINST 5000.2B when the objective of FOT&E is to conduct testing deferred from OPEVAL or to demonstrate correction of deficiencies observed during OPEVAL.**

**b. Unit Readiness**. Prior to commencement of testing, commanding officer(s) (test ships or units) will submit a message report to COMOPTEVFOR, information to the operational commander (and VX/HMX, if applicable), if the unit is not ready to commence operations. This report will include the reason project operations cannot commence and any exceptions or reservations on the part of the commanding officer.

**603. OPERATIONAL TEST COMMENCEMENT REPORT**. Upon commencement of OT-IIB, Commanding Officer, USS NEVERSAIL, will transmit a message to COMOPTEVFOR (information to the VX/HMX, if applicable) indicating actual start time (DTG ZULU) of testing. Comments, particularly unanticipated limitations, may be included in this message.

> **Upon receipt of the commencement message, the cognizant ACOS will transmit a message from COMOPTEVFOR to CNO stating that "CNO Project XXX (OT-IIB) (OPEVAL) on the**

**(equipment name) commenced (DTG (ZULU))." Comments, particularly unanticipated limitations, may be included in this message. The OTD, or in his absence the operational test coordinator, will draft this message for the ACOS. See page 7-23 for a sample commencement of test operations message.**

## 604. STATUS REPORTS

**a. Casualty Report (CASREP)**. Commanding Officer, USS NEVERSAIL, is requested to include COMOPTEVFOR (and VX/HMX, if applicable) as an information addressee on all initial, update, correction, and cancellation CASREP messages; to readdress all such CASREPs which are outstanding at the time of testing; and to forward amplifying remarks concerning the effects of the casualty on project operations. Also, units designated to support testing should include COMOPTEVFOR as an addressee on CASREP messages that may indicate a reduction in their capability to complete their mission as required by this test plan.

**or**

**When fleet operational aviation units are involved, paragraph 604 should be made to address aviation units separate from surface/subsurface units. The above CASREP paragraph will be subparagraphed as "a. Surface (and/or Subsurface) Units" and "b. Aviation Units," and the aviation paragraph written as follows:**

**b. Aviation Units**. The Commanding Officer, VA-75, is requested to include COMOPTEVFOR (and VX squadron, if applicable) as an information addressee on a report of any condition of readiness that adversely effects the unit's capability to conduct the assigned OT&E as required by this test plan.

**When aviation units are the only participants in the OT&E, the example paragraph will be the CASREP paragraph and will be titled "a. Aircraft Status Report."**

**Additional information on casualty reporting is available in NWP-7, Annex B. You may want to refer to NWP-7 for detailed information on reporting procedures and report formats.**

**b. Situation Report (SITREP)**

**If operations will extend over a long time, you must arrange for periodic SITREPs from the test unit. The frequency, format, and desired content of these reports, and their distribution, should be specified in this test plan. Use "OTD Sends" when appropriate. Distribution will be limited to COMOPTEVFOR and the subordinate prosecuting activity, if applicable.**

**c. Deficiency Reports**. A deficiency recommendation will be submitted by message to COMOPTEVFOR by Commanding Officer, USS NEVERSAIL, when the project is delayed because the equipment cannot be operated properly, the required support is lacking, or there has been a delay in equipment delivery. When embarked, the OTD will draft the message and will end it with "OTD Sends." The deficiency recommendation will contain a summary of the deficiency, action taken, and recommended corrective action.

**or**

**If the project is being handled by a VX or HMX squadron, this paragraph will read as follows:**

**c. Deficiency Reports**. A deficiency recommendation will be submitted by message to (VX squadron) by Commanding Officer, USS NEVERSAIL, when the project is delayed because the equipment cannot be operated properly, the required support is lacking, or there has been a delay in equipment delivery. When embarked, the OTD will draft the message and will end it with "OTD Sends." The deficiency recommendation will contain a summary of the deficiency, action taken, and recommended corrective action. Should (commanding officer/officer-in-charge of VX/HMX) determine the deficiency jeopardizes completion of testing, a proposed deficiency report will be submitted to COMOPTEVFOR for review and dissemination.

**Upon receipt of a deficiency recommendation, COMOPTEVFOR may transmit a deficiency report to the CNO, with an information copy to the cognizant systems command, the prosecuting agency, and ASSTSECNAV RDA. Deficiency reports will contain a summary of the deficiency, action taken, and recommended corrective action. Distribution of a deficiency recommendation will be limited to COMOPTEVFOR and the VX/HMX prosecuting activity, if applicable.**

**d. Anomaly Reports**. An initial anomaly report will be submitted by message to COMOPTEVFOR (or the appropriate prosecuting activity) by Commanding Officer, (test ship name) when failures or anomalies occur that impact operational testing and require correction, but are not so severe that a deficiency report is required. When embarked, the OTD will draft the message and will end it with "OTD Sends." The anomaly report will identify the failure or anomaly, its impact on operational testing and system performance, and recommended corrective action.

**Upon receipt of the initial anomaly report, the cognizant ACOS or CO/OIC will review the report and make a recommendation to COMOPTEVFOR on whether an anomaly report should be provided to the CNO and developing agency. Anomaly reports sent to CNO and the developing agency will be signed by COMOPTEVFOR and will identify the failure or anomaly, its impact on operational testing and system performance, and recommended corrective action. (Samples are provided pages 7-28 and 7-29.) Distribution of the initial anomaly report will be limited to COMOPTEVFOR and the appropriate VX/HMX.**

**605. COMPLETION OF TEST OPERATIONS REPORT**. Upon completion of OT-IIB, Commanding Officer, USS NEVERSAIL, will transmit a message to COMOPTEVFOR (information to the VX/HMX, if applicable) indicating the completion time of OT-IIB.

**When embarked, you will draft the message and will end it with "OTD Sends." The completion report should include information concerning when you and the test data will return to the parent command. Upon receipt of the completion message, the cognizant ACOS will transmit a message from OPTEVFOR to CNO stating that "OT-IIB of the New Weapon System (CNO Proj. 9876) completed at DTG." Comments on unanticipated test limitations or failure to demonstrate a test object should be included. A sample completion message is on page 7-24.**

**606. EVALUATION REPORTS**

**a. Unit Commander's Report**. Commanding Officer, USS NEVERSAIL, is requested to submit a letter report to COMOPTEVFOR (copy to VX/HMX, if applicable), no information addees, commenting on the operational effectiveness and operational suitability of the (equipment

or system name), recommended tactics, and areas requiring further investigation. COMOPTEVFOR will provide a copy of USS NEVERSAIL's report to COMNAVSURFPAC after promulgation of the COMOPTEVFOR final evaluation report informing the CNO of his conclusions and recommendations as a result of this testing.

**Upon forwarding of the evaluation report to CNO, you must ensure a copy of the unit commander's report is forwarded to the unit's ISIC. A sample forwarding letter is on page 7-30.**

**b. COMOPTEVFOR Report**. COMOPTEVFOR will submit a final evaluation report to CNO within 90 days of completion of project operations.

**120 days if a quick-look was issued.**

or

**If tests were prosecuted by HMX-1, change the paragraph to read as follows:**

**b.** A proposed evaluation report will be submitted by HMX-1 to COMOPTEVFOR. COMOPTEVFOR will submit the final evaluation report to CNO within 90 days of completion of project operations.

**120 days if a quick-look was issued.**

**Specify the requirement for a quick-look and/or partial report in this paragraph.**

## 607. OPTEVFOR TACTICS GUIDE (IF REQUIRED)

**Specify the requirement for an OPTEVFOR Tactics Guide in the same manner as for an evaluation report.**

## Section 7

## Security

### 701. ASSIGNED CLASSIFICATION

**a. Secret**

**(1)** Effects of countermeasures.

**(2)** ...

**b. Confidential**

**(1)** ...

**(2)** ...

**c. Unclassified**

**(1)** ...

**(2)** ...

**702. OPSEC**. OPSEC requirements have been considered in developing this test plan.

**a.** When Force test and evaluation activities are subject to monitoring by known or suspected intelligence-collection platforms, the following types of information which could be used by a potential enemy should not be passed by uncovered communications or otherwise made subject to compromise:

**(1)** ...

**(2)** ...

**or**

**If a plan for protection of weapon system test and performance data has been approved and provided by the program sponsor, insert the following paragraph in place of the above:**

"**a.** Test operations shall be conducted using the OPSEC guidance provided by the program plan for protection of weapon system test and performance data, which has been provided to test participants. Prior to the start of testing, test participants will be briefed by the OTD, or his representative, on the security requirements for this phase of testing. The OTD will recommend a 'go' or 'no go' decision regarding operational testing to COMOPTEVFOR based on the threat to OPSEC. Should communications with COMOPTEVFOR not be available, or time constraints preclude such notification, the OTD should be prepared to make a 'go' or 'no-go' decision."

**b.** Necessary changes to run schedules and plans caused by intruders will be provided by the OTD as follows:

**(1)** ...

**(2)** ...

## Section 8

## Safety

**801. GENERAL**. In the conduct of all operations associated with this project, SAFETY IS PARAMOUNT. All commands assigned responsibility under this plan are enjoined to consider the safety aspects when planning and executing any operations directed by this test plan, and to ensure that all persons involved understand that testing is not to be conducted until safe conditions exist. **NO OPERATIONS WILL BE CONDUCTED THAT, IN THE OPINION OF THE TEST SHIP OR UNIT COMMANDING OFFICER OR THE OTD, WILL ENDANGER PERSONNEL OR EQUIPMENT**. If an unsafe situation should develop, appropriate corrective action will be taken immediately. COMOPTEVFOR **(and the VX/HMX, when applicable)** will be notified as soon as possible of the circumstances, including rectifying procedures initiated and recommended further action.

**During test plan briefing, a summary of safety considerations will be presented to the Commander. (See page 6-15, par. 610e(9), Safety, for more information.)**

**802. RESPONSIBILITIES**

**a. COMOPTEVFOR (OTD)**

**(1)** Review all documentation for safety considerations, including past deficiencies and their corrections.

**(2)** Brief all participating units on safety considerations and procedures.

**(3)** If new information becomes available during testing conduct an immediate review for safety aspects, and take appropriate action, to include suspending testing until all issues are resolved.

**(4)** If unsafe conditions are encountered, stop the test, correct the problem (this may require an anomaly or deficiency report), then resume testing after a safety review.

**b. Developing Agency**. Provide appropriate safety certifications.

**c. Participating Units/Individuals**. Each member of the test team has the authority to stop testing should an unsafe condition arise.

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## Appendix A

### OT-IIB Resource Requirements

**This appendix is required for all test plans and will always be appendix A. It will include the OT&E resources contained in part V of the TEMP for the phase of testing being conducted.**

**A1.** The resources required to conduct OT-IIB of the NWS are:

**The following format is recommended, which lists the type of resources (per SECNAVINST 5000.2B) and the actual resource required. Examples are provided below.**

| Type of Resource | Required |
|---|---|
| Test Articles | 1 NWS |
| Test Sites/Instrumentation | 1 CVN, 1 FFG, AFWTF, 3 days (dedicated) |
| Test Support Equipment | 2 REPEAT data collection systems |
| Threat Systems/Simulators | (As appropriate) |
| Test Targets/Expendables | (As appropriate) |
| Operational Force Test Support | (As appropriate) |
| Simulations/Models/Testbeds | (As appropriate) |
| Special Requirements | (As appropriate) |
| T&E Funding Requirements | (As appropriate) |
| Manpower/Personnel Training | (As appropriate) |

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# Appendix B

## Forms and Data Sheets

**Provide a copy of each nonstandard form, data sheet, questionnaire, etc., to be used in the evaluation. Include instructions on how, when, and by whom these are to be filled out.**

**Table B-1 is an example of a table to be included in this appendix to provide a quick reference for determining data collection requirements.**

**A Sample "Personnel Background Questionnaire" is included here to obtain pertinent personal history information from test participants.**

**Table B-1. Data Collection Requirements**

| Data Sheet | Completed By | When Completed | Applicable Tests |
|---|---|---|---|
| SMQ-11 Personnel Background Questionnaire | All SMQ-11 personnel | Prior to start of tests | All tests |
| E-1, SMQ-11 Satellite Pass Reception | SMQ-11 operators | At completion of each satellite pass | E-1A |
| E-2, SMQ-11 Enhance/ Print Prerecorded Data | SMQ-11 operators | At completion of enhancing/printing prerecorded data | E-1B |
| E-3, SMQ-11 Tactical User Comment Sheet | Tactical users | As required | E-1A, E-1B |
| S-1, System Status Log and Maintenance Action Sheet | SMQ-11 operator and maintenance personnel | Daily | S-1, S-2, S-3, S-4, S-6 |
| S-2, Compatibility and Interoperability Questionnaire | SMQ-11 supervisory, operator, and maintenance personnel | End of test | S-5, S-6 |
| S-3, Logistic Support Questionnaire | USS KITTY HAWK SMQ-11 maintenance personnel | End of testing | S-4 |

**Table B-1. Data Collection Requirements**

| Data Sheet | Completed By | When Completed | Applicable Tests |
|---|---|---|---|
| S-4, Training Question- naire | SMQ-11 supervisory, operator, and maintenance personnel | End of testing | S-7 |
| S-5, Operation and Maintenance Documentation Questionnaire | SMQ-11 supervisory, operator, and maintenance personnel | End of testing | S-2, S-4, S-10 |
| S-6, Technical Manual Comment Sheet | SMQ-11 maintenance personnel | As required | S-10 |

## PERSONNEL BACKGROUND QUESTIONNAIRE

## PERSONAL HISTORY (PLEASE PRINT)

To be completed once by all ... (equipment/system name) personnel prior to start of testing.

NAME RANK/RATE

_____

NOBC/PNEC SNEC YEARS/MONTHS IN SERVICE

_____

POSITION/TITLE _____

MONTHS EXPERIENCE WITH _____

Did you receive formal ... training? Yes ____ No ____. If YES, list schools or training. Include any related ... training.

| SCHOOLS/TRAINING | START DATE | LENGTH |
|---|---|---|
| | | |
| | | |

Did you receive on-the-job ... training? Yes ____ No ____.

If YES, number of days _____.

Are you a ... supervisor? Yes ___ No ___.

## GENERAL INSTRUCTIONS FOR DATA SHEETS AND QUESTIONNAIRES

... supervisory, operator, and maintenance personnel will complete data sheets and/or questionnaires S-2, S-4, S-5, S-6, and S-7 at the end of testing. Data sheets E-1 and E-2 will be completed after ... and at the completion of .... When completing the data sheets and questionnaires, answer each question based on your experience -- not on what you have been told. Answer only those questions on which you consider yourself to be knowledgeable. Comment on deficiencies in the space provided following each question. Use additional sheets if necessary. When making comments, do not worry about grammar or spelling; just communicate. Remember, we are interested in your inputs. If a question is not applicable, mark "N/A" by the question.

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CLASSIFICATION

(This page is UNCLASSIFIED)

Data Sheet E-1
Page __ of __

Title

**This is an example of the format we will use for unclassified data sheets used with classified test plans. There is no need to include "(U)s" for any paragraph or for the title.**

**You must ensure that the data sheet will not become classified when it is filled in.**

**Typing information**

**Fonts**: The overall classification of the entire document must be used on data sheets. There is no specification for size of headers/footers used for classification markings. Markings only have to be larger than the type used in the text. Just use the same size throughout the entire document.

**Margins**: 1" top, bottom, left, and right.

All data sheets in all test plans will show the appropriate data sheet number and pages as shown at upper right.

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CLASSIFICATION
(When filled in)

Data Sheet E-1
Page___ of ___

Title (U)

**This is an example of the format we will use for data sheets that are unclassified while in a classified test plan, but will become classified when they are filled in. Include a "(U)" by the title. Do not include paragraph markings unless the questions asked are classified.**

**Typing information**

**Fonts:** The overall classification of the entire document must be used on data sheets. There is no specification for size of headers/footers used for classification markings. Markings only have to be larger than the type used in the test. Just use the same size throughout the entire document.

**Margins**: 1" top, bottom, left, and right.

All data sheets in all test plans will show the appropriate data sheet number and pages as shown at the upper right.

The header and footer "CLASSIFICATION" is included in this document as an example. Change it to what you need.

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# Appendix C

## Run Plans and Geometries

### C1. GENERAL

**An appendix may be used to provide detailed guidance for executing the test plan, such as run geometries.**

**A run is an exercise involving simulated friendly and threat units, and associated monitoring and instrumentation units, conducted to acquire data pertinent to a scenario. Run plans translate scenarios into specific events and geometries, and provide the necessary direction to all test participants. They provide the required start events (e.g., COMEX), the movements of all participants (course, speed, depth (or altitude) changes, and any restrictions to them), and stop events (FINEX). They address controlled variables, as shown in Table C-1.**

**Table C-1. Illustration of a Test-Variable Matrix**

CLASSIFICATION (*)

| Scenario | | Run Number (Speed: Slow, Altitude: Low) | Run Number (Speed: Slow, Altitude: High) | Run Number (Speed: Fast, Altitude: Low) | Run Number (Speed: Fast, Altitude: High) |
|---|---|---|---|---|---|
| Day | A | 1 | 8 | 6 | 3 |
| | B | 5 | 2 | 4 | - |
| Night | A | 9 | 12 | 10 | 13 |
| | B | 15 | 11 | 14 | 7 |

Additional details and run geometries may be included.

Run plans are used for at-sea tests and for tests at landbased test sites. They are also used for computer simulations used to extend the data base. When computer simulations are employed, run plans for validation of the simulation should be included.

# Appendix D

## Data Analysis Plan

### D1. GENERAL

**This appendix is required when data analysis involves numerous calculations to arrive at the results. The data analysis plan expands on the "Procedure" and "Data Analysis" paragraphs of the E- and S-tests in the test plan, and provides specific information on data collection, reduction, and analysis. Also to be included in the plan are the definitions of "incomplete tests," "test failures," and "test successes." The data analysis plan must ensure that all fully understand the assumptions used by the test planner when developing the plan, and the criteria used to judge the test results. Further, the plan must be written in terms that ensure the analysis is not driven by the collected data. An evaluation that is based on inappropriate data, incomplete data, or an inadequate data sampling is symbolic of the analysis that was driven by the collected data.**

**This appendix need not be lengthy. It must be sufficiently complete, however, to ensure that we know what data we intend to collect, and how the evaluation will be completed using the data.**

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## TEST PLANNING CHECKLIST

1. Have you considered the need for any special handling and marking? _____

2. Have you obtained all required clearances and certifications prior to the conduct of test operations (e.g., Explosive Safety Board Clearance, weapon certification by the SYSCOM, certification for weapon carriage and launch from aircraft, etc.)? _____

3. Have you requested COMSUBPAC and/or COMSUBLANT approval of submarine safety aspects in the cover letter when submarines are involved in any way (project ships, sonar targets, etc.)? _____

4. Ensure the Purpose paragraph contains a brief statement of the reason for this testing. This statement will be the basis for paragraph 1 of the evaluation report. _____

5. Provide a brief Equipment Description which delineates the functional characteristics. The paragraph should not be a substitute for the information contained in the technical documentation. _____

6. The Background paragraph should be a concise summary of major events that led to testing - consult the TEMP. _____

7. Be specific in section 2 regarding responsibilities. Points of contact should be current - not those listed in an outdated TEMP. _____

8. Ensure the COIs in section 3 are derived directly from part IV of the TEMP for the specified phase of OT&E. _____

9. For Evaluation Criteria, identify the source of the criteria (e.g., CNO via the TEMP) and ensure that they quantify -- not just repeat -- the COIs. _____

10. Ensure the Limitations are real limitations to the evaluation and that there is no way to eliminate them. State the impact these limitations will have on your ability to resolve COIs and draw conclusions about operational effectiveness and suitability. _____

11. Are your E- and S-tests based on the COIs intended for resolution in the specified phase of testing? _____

12. The Object of the E-tests is to demonstrate some aspect (capability/function) of the project COI(s) described in part IV of the TEMP. Do not introduce new capabilities/functions. _____

13. Procedure should describe how the system will be employed and should specify the data sheets or forms required and who should prepare them. Reference to scenarios described in paragraph 401 should be used. _____

14. Data Analysis - Ensure procedures for data analysis are specific. _____

15. Review sections 6 and 7 carefully for compliance with the examples provided in this OTD Guide. _____

16. Appendix A - OT-X Resource Requirements -Required in all test plans. The information avail-able in part V of the TEMP is what should be used and should still be current. _____

## TEST PLANNING CHECKLIST

| | |
|---|---|
| 17. Appendix B - Forms and Data Sheets - Provides a tabular summary of the data sheets, forms, and questionnaires needed, who fills them out, how often they are used, and to which test(s) they apply. Ensure your data sheets, forms, etc., are tailored to your project. | _____ |
| 18. Appendix C - Run Plans and Geometries - Optional - provides detailed guidance for executing the test plan, such as run plans and geometries. | _____ |
| 19. Appendix D - Data Analysis Plan - Optional - assists in tracing the path from data collection through reduction to arrive at numerical results, and will provide an understanding of the assumptions used by the tester and the criteria for judging test results. | _____ |

# CHAPTER 7

# TEST OPERATIONS

## 701. OTD RESPONSIBILITIES BEFORE TEST OPERATIONS BEGIN

**a.** Complete a draft personal letter from COMOPTEVFOR (beginning on page 7-17) to the commanding officer of each unit scheduled to provide key services during the OT&E. Draft preparation of these letters is the responsibility of the project OTD (and appropriate ACOS or AIRTEVRON/ HMX-1 CO) and must be submitted in a timely manner for the Commander's signature. The letter is designed to be received by the participating unit CO (or flag commander) prior to the receipt of the test plan and certainly prior to commencement of the OT&E. A good target is to obtain the Commander's signature not later than 30 days prior to commencement of OT&E. For late changes in OT&E units, consider the use of a "personal for" message in lieu of a letter. An added note -- make sure you have the CO's name correct and tailor the letter accordingly, especially if a change of command is scheduled subsequent to receipt of the letter and commencement of OT&E. Letters to COs of several units in the same battle group (i.e., all participating in the same OT&E) should each be "personalized" for that particular unit. Check with the COMOPTEVFOR Flag Writer (Code 003) to make sure other divisions have not sent the same letter to the same ship on a previous OT&E. Additionally, ACOSs receive "feedback copies" from the flag writer to retain for future reference -- these are particularly helpful for flag-to-flag letters.

**(1)** To a CO who has not previously provided key services for OT&E (and is therefore receiving his first personal letter from COMOPTEVFOR), complete the **Sample 7-3** draft letter provided on page 7-17 based on the phase of testing. Tailor the letter to suit the testing, and if you're sending a letter to more than one CO, vary the wording between them so they don't look like "form letters."

**(2)** To a CO who has previously provided key services for OT&E (and has therefore already received a long personal letter from COMOPTEVFOR), complete the **Sample 7-4** letter provided on page 7-19. Pay particular attention to the personalization of this letter -- ensure that it accurately acknowledges the CO's earlier support.

**b.** As the date to begin test operations approaches (the time to commence this process will vary among systems), check to make sure that:

**(1)** Appropriately trained personnel will be available to operate and maintain the equipment.

**(2)** The equipment to be evaluated (including special support equipment) will be installed and checked out.

**(3)** Operator and maintenance manuals, the ILSP/ALSP, NTP, and other necessary documentation will be available from the DA.

**(4)** Instrumentation (including range instrumentation) will be available and in working order.

**(5)** Targets, simulators, electronic warfare services, etc., will be available.

**(6)** Participants have received and understand test plans and LOIs.

**(7)** COMSUBLANT or COMSUBPAC concurred with the safety aspects of the test plans that involve use of submarines.

**(8)** RDT&E support services are on track.

**(9)** Contingency plans are available for the unexpected.

**(10)** Arrangements have been made for pretest briefings (including arrangements for additional briefers, if necessary).

**(11)** Special data forms and questionnaires are available in sufficient quantity.

**(12)** Proper safeguards are provided for all classified materials to be used during test operations. This includes obtaining proper authorization for removal from the command, transportation, and storage of classified materials to be hand carried by the OTD or members of the COMOPTEVFOR test team.

**(13)** If appropriate, rehearsals of test operations are scheduled. (Rehearsals are good if they increase the likelihood of obtaining meaningful data. Do rehearse data collection. Rehearsals are bad if they destroy operational realism. Do not eliminate the possibility of having operators that have not been alerted, etc.).

**(14)** Prefaulted modules will be available for a maintenance demonstration, if necessary.

**(15)** DA certification has been received.

**c.** Immediately prior to the start of test operations, make sure that:

**(1)** All hands know what they are supposed to do.

**(2)** The equipment to be evaluated is in working order.

**(3)** Equipment necessary to the test scenario, and instrumentation equipment, are in working order.

**(4)** Personnel to activate and deactivate data recorders, and backup data takers, are in place.

**(5)** As necessary, time synchronization and communications have been established.

**(6)** Data forms have been distributed, as necessary.

**(7)** Contingency plans have been discussed with appropriate personnel (e.g., with the commanding officer of the test ship or unit).

**702. LETTER OF INSTRUCTION (LOI).** CINCLANTFLT OPORD 2000 and CINCPACFLT OPORD 201 authorize COMOPTEVFOR operational control of assigned forces as provided for by the fleet quarterly employment schedule, which constitutes an operation order. It is this authority, delegated by the fleet commander(s)-in-chief, which permits COMOPTEVFOR to issue LOIs or any coordinating instructions affecting operation of fleet units. The issuance of such LOIs or instructions cannot be assumed by, or delegated to, any agency outside the operational chain of command. The operations of fleet units assigned by the Fleet Quarterly Employment Schedule to support a CNO project (OT and DT) remain an operational command responsibility. Developing agencies are not authorized to issue operation orders to fleet units, even during real-time, on-scene project operations. Project operations involving multiunit coordination will normally require the issuing of an LOI. Test operations will be directed by the officer in tactical command, the senior commanding officer of the assigned ship(s) or air squadron(s), in coordination with the on-scene technical and/or operational test director and range facility director, as appropriate. COMOPTEVFOR will normally be the officer conducting the exercise (OCE) for project operations as defined by FXP5 series. Fleet units will usually remain under the operational control (OPCON) of the numbered fleet commander or TYCOM. OTDs will coordinate with the developing agency as necessary and originate LOIs for project operations required for combined DT/OT. LOIs will be in the format shown in **Sample 7-1** beginning on page 7-11. The LOI will be typed, assigned a serial number, and released by the appropriate division ACOS or VX/HMX CO. The scheduler, Code 01B5, will conduct an independent verification to ensure the LOI is executable prior to release.

**703. DA CERTIFICATION MESSAGE.** When the DA determines a system is ready for OT&E, or the next phase of OT&E, he will notify CNO (N091), the program sponsor, and COMOPTEVFOR by message of the system's readiness. After completion of TECHEVAL and when the DA judges the system ready for OPEVAL, he will certify the system's readiness to CNO (N091) and COMOPTEVFOR. The DA is also required to certify system readiness on systems undergoing OT&E that have been placed in a deficiency status, and for FOT&E when the purpose of FOT&E is to conduct testing deferred from IOT&E or to demonstrate correction of IOT&E deficiencies. The certification message may request waivers for items not ready or not available for testing. OTDs should take the following action when waivers are requested or granted:

**a.** When the DA forwards a certification message containing a request for waiver(s) with which we do not agree, it may be appropriate to send a message to CNO at that time presenting our rationale for recommending against granting the waiver.

**b.** When CNO has granted a waiver requested by the DA in the certification message, you may wish to discuss the situation with the DA, asking him to advise:

**(1)** When will the items for which a waiver was granted be available for OT&E? It should be noted that a waiver granted by the CNO is not a waiver of the system's requirement to perform or meet the established thresholds, nor is it a waiver of the need for the particular aspect to be operationally tested. A waiver will in most cases lead to a test limitation, but the waivered item should be fully tested in a later phase of OT&E.

**(2)** What changes will occur in the system to be tested when the waivered item is finally approved?

**c.** Add limitations to the test plan, as necessary, to reflect the waiver(s).

**704. OT&E COMMENCEMENT.** We do not commence OT&E without an approved COMOPTEVFOR test plan. In general, we also do not commence testing without an approved TEMP. However, any departure from TEMP approval policy will be on a case-by-case basis, approved by the Commander. For ACAT I, II, and III TEMPs, approval occurs when the TEMP is signed by ASN (RD&A), the milestone decision authority (MDA), N091, and DOT&E, as appropriate.

**705. EARLY TERMINATION AND DEFICIENCY REPORTS**

**a.** If at any time during operational testing it becomes apparent that the system being tested will not demonstrate planned program capabilities for operational effectiveness and/or operational suitability, is unsafe to operate, or is wasting fleet services, COMOPTEVFOR will transmit a deficiency report to CNO, information to the cognizant systems command/PEO, the prosecuting agency, and ASSTSECNAV (RD&A), suspending operational testing. As an OTD, you should know in advance of testing under what conditions a recommendation for early termination should be made to COMOPTEVFOR. Your analysts can help you determine these conditions. COMOPTEVFOR will then provide the appropriate deficiency test data to the DA for corrective action. Additional detail on deficiency reports is provided in section 6 of the sample test plan in chapter 6.

**The OTD in the field transmits a message deficiency report to COMOPTEVFOR only. COMOPTEVFOR then decides on whether or not to send an official report.**

**b.** When a system undergoing OT&E is placed in a deficiency status, recertification by the DA, per SECNAVINST 5000.2B, will be required prior to resumption of operational testing.

**706. ANOMALY REPORTS.** During operational testing, failures or anomalies may occur that impact operational testing and require correction, but are not so severe that a deficiency report is required. OTDs must keep their respective ACOS, or VX/HMX CO, informed of such events so that he in turn can keep the Commander informed. Should COMOPTEVFOR direct that the CNO and the DA be made immediately aware of the problem, an anomaly report will be prepared for COMOPTEVFOR's signature. The anomaly report will identify the failure or anomaly and its impact on operational testing and system performance. The anomaly report will be addressed to the CNO and the DA, and will allow the DA to begin immediate work on resolution of the problem. The **Sample 7-11** anomaly report, in message format, is provided on page 7-28.

**The OTD in the field transmits a message anomaly report to COMOPTEVFOR only. COMOPTEVFOR then forwards the report to the DA and other necessary personnel.**

**707. OTD RESPONSIBILITIES DURING TEST OPERATIONS.** Ensure that:

**a.** Tests are conducted in accordance with the test plan and LOI; any deviations are noted, their impact assessed, and necessary corrective action taken; contingency plans are implemented, as necessary.

**b.** Data recorders are refilled as necessary; recorded data are stored in a safe place.

**c.** Unusual events during testing that may have some effect on test results should be noted by the OTD.

**d.** Data forms, questionnaires, and/or survey sheets are completed as specified in the test plan.

**e.** Reports are generated as specified in the test plan.

**708. OTD RESPONSIBILITIES AFTER TEST OPERATIONS.** Ensure that:

**a.** Questionnaires are distributed, filled in, and returned to the OTD (or as specified in the test plan).

**b.** When necessary, a maintenance demonstration is conducted.

**c.** Necessary debriefs are conducted, as are posttest interviews.

**d.** All other data are delivered to the OTD (or as specified in the test plan).

**e.** Proper safeguards are provided for all classified materials being returned to the command by the OTD or members of the test team. This includes accounting to the security manager for all classified materials that were hand carried prior to testing.

**f.** Analysis proceeds as necessary to allow the evaluation report deadline to be met.

**g.** The unit commander's report is provided to the test platform's ISIC after promulgation of the evaluation report. The **Sample 7-6** ISIC forwarding letter is provided on page 7-22.

**709. OTD JOURNAL.** *Keep in mind that the OTD Journal* ***cannot and will not*** *serve as a substitute for data or survey sheets in your test plan.* ***Ensure*** *that you have adequate, and accurate, well thought-out data and survey sheets for collection of your quantitative and qualitative information.* However, each OTD should maintain a chronological record of his project. It can serve many purposes. For instance, it provides a history for your replacement in the event you are transferred; it may enable you to answer new questions about an old test; it can serve as substantiating data if events, agreements, etc., are later questioned. (It may be the sole record of something that later becomes important.) This record may exist in several forms: loose-leaf notebooks; steno pads; memos for the record; cassette recordings; etc. Collectively they are called an OTD Journal. If an individual OTD Journal consists of a combination of steno pads, recordings, etc., one document (the master) should maintain the overall chronology, and should reference individual steno pads, recordings, etc., for details, where appropriate.

**a. Content**. The OTD Journal records, for possible later use, things the OTD hadn't considered when developing the data or survey sheets, and may be of significance in his program. While each OTD must use his own judgment when deciding what is significant, it is better to record too much than too little. And it is better to record it as soon as an event occurs, rather than to wait until later and risk forgetting. Among the things that may have significance are e-mail, electronic draft and/or final documents, or paper copies of any of the following:

**(1)** Funding requirements and transactions for OT&E.

**(2)** Discussions conducted at meetings or over the phone regarding future testing.

**(3)** Summaries of program meetings and conferences, including attendees, areas of discussion, and stands taken by the various players.

**(4)** Mention of working drafts, etc., exchanged between the OTD and other program individuals or offices, with notations indicating where copies may be found in the OTD's files.

**(5)** Notations summarizing oral business contacts with individuals associated with the program (CNO, SYSCOM, labs, other OT agencies, DOT&E, contractors, etc.), together with their codes, symbols, phone numbers, etc.

**(6)** Mention of receipt of incoming program messages, letters, data packages, etc., together with their storage locations.

**(7)** An on-scene record of testing (see paragraph b below).

**(8)** A record of drafts (messages, reports, etc.) prepared for higher level review and approval (draft completion dates, cut-board dates, significant events in the review process, approval dates, etc.).

**(9)** Identification (by date/time group or serial number and date) of outgoing program documentation, with primary addressee and storage location.

**(10)** Significant program information (funding changes, schedule slippages, etc.), together with the source of the information.

**(11)** The line of reasoning that led you to take a particular stand on an issue, or that caused you to select certain parameters, etc. This may be of critical importance to your replacement who is trying to figure out why you set things up the way you did.

**b. On-scene Record of Testing.** While thorough, well thought-out data and survey sheets in your test plan are necessary, a running account of testing may also play a part in an OTD Journal. In many cases, this account is best made on a cassette recorder as the operation progresses. (Don't forget extra cassettes and batteries -- and get somebody assigned to transcribe for you.) In any event, its purpose is to describe the way the testing actually occurred: what happened, when, and who (what) was involved. It identifies the operation (by run number, etc.) and provides a running, time-correlated commentary to the end of the exercise. Particular attention is on recording unusual events (breakdowns in communications, intruders in the area, etc.). Differences between actual and planned scenarios are noted and explained. The OTD's impressions, qualitative assessments of performance, and any other information which later might help him reconstruct the testing, are recorded. Keep in mind that an OTD Journal is your document, to help you (and your successor). It is like a computer -- you only get out what you put in.

**710. RETENTION OF TEST-RELATED INFORMATION**. See paragraph 316.

**711. RELEASE OF TEST DATA**

**a.** CNO has tasked COMOPTEVFOR to provide all operational test data on failures and anomalies promptly to the DA and others (e.g., INSURV) as appropriate. This is accomplished by preparing an anomaly report, as provided for in paragraph 706, keeping in mind that COMOPTEVFOR alone will decide whether the CNO and DA (or others) should be informed and test data released.

**b.** During OT&E, all missile firing reports directed by higher authority will be forwarded directly to COMOPTEVFOR with no information addees; the cognizant warfare division will readdress the report as required. The purpose of this is to protect OT&E data until after evaluation.

**c.** When observers from outside the Force are present during operational testing (e.g., Navy labs, firing ranges, etc.), the OTD will ensure that:

**(1)** Observers are briefed on their specific responsibilities regarding the confidentiality and proprietary nature of data obtained during operational testing.

**(2)** Observers are briefed on their responsibility not to reveal any test data or results to anyone other than their supervisors.

**(3)** The observer's parent command or activity is directed not to issue a separate report nor release any test data prior to publication of the final evaluation report.

**(4)** The observer is afforded the opportunity to provide inputs to the evaluation process.

**d.** Observers and personnel from outside the Force required to assist in the conduct of OT&E will be designated trusted agents of COMOPTEVFOR. As such, they will be required to execute the **Sample 7-2** COMOPTEVFOR Trusted Agent Form provided on page 7-15.

**e.** After promulgation of the evaluation report, test data may be released to other agencies upon request to and approval from COMOPTEVFOR. In the case of data retained by Navy labs, etc., once the evaluation report has been published, the data may be released upon approval of CNO (N091). Upon publication of the evaluation report, letters regarding release of test data will be sent to activities retaining the data. The **Sample 7-10** letter regarding release of data is provided on page 7-26.

**f.** The relationship of the OTC and OTD with the fleet is an important one, particularly in the development of tactics. OTC and OTDs must be careful to avoid discussing results, evaluation, conclusions, and recommendations pertaining to a system in OT&E, in order to preclude preemption of the Commander's report to the CNO. Authority for evaluation of the test results, conclusions, and recommendations thereto, resides with the Commander.

**712. DIRECTOR, OPERATIONAL TEST AND EVALUATION (DOT&E) RESPONSIBILITIES WHEN OBSERVING OPERATIONAL TESTING.** Members of the DOT&E staff and their support contractors will routinely observe OT&E for programs for which they exercise oversight. The following procedures have been agreed upon for DOT&E observation of OT&E:

**a.** Each observer will be briefed by the COMOPTEVFOR representative as to the observer's specific responsibilities regarding the confidentiality of data obtained during OT&E.

**b.** DOT&E observers will not in any way attempt to alter or direct the conduct of test operations. Conduct of the test will remain entirely under the control of the COMOPTEVFOR OTD.

**c.** In order to protect the integrity and security of Navy operational testing, DOT&E observers will not reveal any test data or results to anyone other than their DOT&E supervisors.

**d.** DOT&E will not issue a separate report, nor release any data prior to promulgation of the final evaluation report without advising the Department of the Navy in advance.

**e.** COMOPTEVFOR will ensure that DOT&E observers are afforded the opportunity to provide inputs to the evaluation process.

**713. BOARD OF INSPECTION AND SURVEY (INSURV) RESPONSIBILITIES.** INSURV is tasked with certain responsibilities relating to RDT&E and the acquisition process. When tasked by CNO, PRESINSURV will submit an individual technical assessment of readiness for OT&E to CNO and COMOPTEVFOR for all ships, craft, or ship installations at the ACAT I and II level.

## Sample Formats

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**Sample 7-1**
**Letter of Instruction**
..\OT&EFormats\MESSAGES\LOI_Format.txt

**This sample does not contain the level of detail necessary for all submarine operations. Request previous LOIs from 40 division as samples for what you may need to include in yours.**

RTUZYUW RUCBTEV001 1231234-UUUU-RMHCSUU
ZNR UUUU
R 011234Z MMM YY
FM COMOPTEVFOR NORFOLK VA//**(DRAFTER & RELEASER CODES)**//
TO USS NEVERSAIL//
INFO CINCXXXFLT//XXX//)
COMNAVXXXLANT(PAC)//XXX// (The "INFO"
list must not exceed 55 characters across the page.
When wrapping text to the next line, indent five
spaces.)
BT (no lines from this point through the remainder of the message
can exceed 69 characters across the page.)
CLASSIFICATION //N03120//
OPER/CNO PROJ NO. ….)/SYSTEM NAME//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/CNO PROJ NO. ….., (PHASE (e.g., OT-IIB)) LETTER OF INSTRUCTION (LOI) (U)//
REF/A/DOC/ (TEMP)/-//
REF/B/DOC/ (EMPSKED) /-//
REF/C/DOC/ (TEST PLAN/-//
NARR/REF A IS TEST AND EVALULATION MASTER PLAN NO. XXX. REF B IS…..REF C IS COMOPTEVFOR TEST PLAN... FOR XXX//
RMKS/1. (*) OBJECTIVE. PER REF___, COMOPTEVFOR **(OR DA OR LAB)** WILL CONDUCT **(OPERATIONAL OR DEVELOPMENTAL)** TEST AND EVALUATION OF THE **(SYSTEM)** CNO PROJECT NO. **(NO & PHASE, I.E., CNO PROJECT NO. 999 (OT-II)), (ON RANGE OR AT SEA)** _____DURING PERIOD _____ .

**INSERT THE FOLLOWING STATEMENT FOR DT LOIs: "THIS LOI ISSUED BY COMOPTEVFOR FOR (DA OR LAB) IN ORDER TO FULFILL PROJECT DEVELOPMENTAL TEST AND EVALUATION (DT&E REQUIREMENTS."**

2. (*) PARTICIPATING UNITS. PER REF ____, **(SHIP _____ OR UNIT)** IS ASSIGNED AS _____ TEST PLATFORM. **(SHIP _____ OR UNIT)** IS ASSIGNED TO PROVIDE **(SUPPORT OR SERVICES). (LIST ADDITIONAL UNITS)**
A. (*) _____ UNDERWAY PER REF _____ ENR **(POSIT)** TO ARRIVE **(ABT) (DTG)** _____. VICINITY POSIT _____ PROCEED AS PREVIOUSLY DIRECTED.

B. (*) _____ UNDERWAY AS DIRECTED BY **(REF _____ SUBOPAUTH, ETC)** ENR POSIT_____ TO ARRIVE _____. UPON ARRIVE RDV AND CONDUCT TEST PER REF **(TEST PLAN).** PROCEED AS PREVIOUSLY DIRECTED.

3. (*) COMMAND RELATIONSHIP. COMOPTEVFOR IS OCE **(IF OT&E EVENT) (DA OR LAB MAY HAVE TECHNICAL DIRECTOR TO COORDINATE THE CONDUCT OF DT&E EVENTS).** ON-SITE REPRESENTATIVE IS OPERATIONAL TEST DIRECTOR (OTD) OR TECHNICAL TEST DIRECTOR (TTD). OFFICER IN TACTICAL COMMAND (OTC) IS _____.

**SUBOPAUTH IS REQUESTED TO DIRECT (SUBMARINE) TO OPERATE PER REF (TEST PLAN) AND THIS LOI. (NOTE: FOR PACFLT OPS, ADD: ON SCENE OPS WILL BE COORDINATED BY THE COMOPTEVFOR OTD. FLEET SERVICES AND SIGNIFICANT SKED REVISIONS, IF REQUIRED, WILL BE COORDINATED BY THE COMOPTEVFOR OTD.)**

4. COORDINATING INSTRUCTIONS (*)

A. (*) THIS LOI IS EFFECTIVE FOR PLANNING ON RECEIPT AND FOR OPERATIONS UPON **(ARRIVAL OR COMEX DTG).**

B. (*) SAFETY AND OPERATIONS SECURITY ARE PARAMOUNT. OTC IS AUTHORIZED TO MODIFY OPS AS NECESSARY TO ENSURE SAFETY AND OPERATIONS SECURITY.
**(SUBMARINE SAFETY PER REFS (FXP 1 AND COMSUBLANT/COMSUBPAC JOINT OPORDER 2000/201)).**

C. (*) IF HEAVY WEATHER OF DAMAGING POTENTIAL APPEARS HEADED FOR OPAREA, OTC IS AUTHORIZED TO CEASE OPS AND COMMENCE STORM EVASION.

D. (*) MODIFICATIONS TO SKED OF EVENTS WILL BE MADE BY OTC, IF APPROPRIATE, AS COORDINATED BY COMOPTEVFOR OTD OR TECHNICAL TEST DIRECTOR.

. E. (*) _____ MAKE OWN MOVREPS **(SUBNOTE REQUESTS)** AND REQUESTS FOR TRANSIT AND/OR AREA CLEARANCES.

F. (*) NOTICE OF INTENT PER REF (SUBOPAUTH MSG OR SEE CLFINST C3124.4G) **(NOT REQUIRED FOR SSBN FLEXOPS.)**

G. (*) VISITOR CONTROL. CNO'S POLICY REGARDING VISITOR OBSERVANCE OF OPERATIONAL TESTING IS STRICT. THIS IS TO PRECLUDE ANY PERCEPTION OF A LACK OF OBJECTIVITY IN THE TEST AND EVALUATION PROCESS OR ANY PERCEPTION OF OUTSIDE INFLUENCE ON THE OPERATIONAL TEST UNIT AND/OR OPERATIONAL TEST DIRECTOR (OTD). THEREFORE, OBSERVERS WILL NOT NORMALLY BE PERMITTED IN THE TEST AREA DURING OPERATIONAL TESTING. THIS INCLUDES PERSONNEL FROM THE OPERATIONAL CHAIN OF COMMAND NOT NORMALLY ASSIGNED TO THE UNIT AS PART OF THEIR DUTIES. REQUESTS FOR PERSONNEL ORDINARILY EMBARKED TO SUPPORT ROUTINE SHIP OR UNIT OPERATIONS (E.G., SEA-AIR-LAND TEAMS, EXPLOSIVE ORDNANCE DISPOSAL, AND AIRCRAFT DETACHMENTS, ETC.) MAY BE APPROVED BY THE SHIP OR UNIT COMMANDING OFFICER. REQUESTS FOR VISITORS OR RIDERS TO OBSERVE OPERATIONAL TESTING DURING PROJECT OPERATIONS WILL BE ADDRESSED TO

COMOPTEVFOR, INFO **(VX/HMX, IF APPLICABLE)** AND **(UNIT COMMANDING OFFICER)**. COMOPTEVFOR WILL COORDINATE ALL SUCH REQUESTS WITH **(UNIT ADMINISTRATIVE COMMANDER)** AND **(UNIT COMMANDING OFFICER)**. AFFIRMATIVE RESPONSE BY COMOPTEVFOR MUST BE RECEIVED BEFORE VISITS ARE AUTHORIZED, OTHER THAN THOSE FOR PERSONNEL ORDINARILY REQUIRED TO SUPPORT ROUTINE SHIP OR UNIT OPERATIONS.

5. (*) TEST RESULTS ARE PRIVILEGED INFORMATION AND SHOULD NOT BE RELEASED OUTSIDE THE COMMAND WITHOUT COMOPTEVFOR PERMISSION.
6. (*) ADMIN AND LOGISTICS AS NORMAL.
7. COMMUNICATIONS (*)
   A. (*) FREQUENCY PLAN

| CKT | EMISSION DESIGNATOR |
|---|---|
| 1 | |
| 2 | |
| 3 | |

   B. (*) VOICE CALLS PER AKAI 16.
   C. (*) SIGNALS SECURITY (SIGSEC)

(1) (*) SIGSEC IS A GENERIC TERM, WHICH INCLUDES BOTH COMMUNICATIONS SECURITY AND ELECTRONICS SECURITY.

(2) (*) TO MEET VARYING ENVIRONMENTS AND SITUATIONS ENCOUNTERED DURING TESTING AND AID IN PROTECTING PROJECT SENSITIVE INFORMATION, PORTIONS OF SIGSEC GUIDANCE CONTAINED REF **(APPENDIX 18 TO ANNEX K TO CLF OPORD 2000)** FOLLOW:

(A) (*) IF POSSIBLE, INFORMATION WILL BE PASSED VIA SECURE MEANS.

(B) (*) ALL REPORTING REQUIREMENTS WILL BE ANALYZED TO REDUCE TO ABSOLUTE MINIMUM USE OF NONSECURE COMMUNICATIONS. NO INFORMATION WILL BE PASSED VIA NONSECURE MEANS, WHICH IF OVERHEARD WOULD DISCLOSE SUCCESS OR FAILURE OF TEST RUNS, SUCCESS OR FAILURE OF TEST EVENTS OR SERIES OF EVENTS, OR SUCCESS OR LACK OF SUCCESS, OR EFFECTIVENESS OF COUNTERMEASURE.

(C) (*) ALL USERS OF NONSECURE VOICE COMMUNICATIONS MUST BE BRIEFED THAT MF AND HF VOICE COMMUNICATIONS ARE PARTICULARLY VULNERABLE TO MONITORING, RECORDING, AND ANALYSIS.

8. SPECIAL INSTRUCTIONS (*)

**(TO CONTAIN SKED OF EVENTS INFO AS APPLICABLE)**

   A. (*) SCHEDULE OF EVENTS.
   B. (*) REPORTS PER REF (TEST PLAN).
   C. (*)

DECL/_____// (AS APPROPRIATE)

**(*) ENTER APPROPRIATE PARAGRAPH CLASSIFICATION MARKINGS.**

**VX SQUADRONS WILL PUBLISH THEIR OWN LOIs AS REQUIRED TO COORDINATE SUPPORT.**

**WHEN SSBN (FLEXOP) SUPPORT IS INVOLVED, CLASSIFICATIONS OF LOIs WILL BE SECRET; CTE DESIGNATION (VICE SHIP NAME) WILL NORMALLY BE USED FOR ALL RECORD COMMUNICATIONS. IF CTE DESIGNATION IS NOT AVAIL FROM SUBOPAUTH, USE OF SSBN SHIP NAME ASSOCIATED WITH PARTICULAR PROJECT REQUIRES SPECIAL "SECRET LIMDIS RAGTIME" CLASSIFICATION MARKINGS.**

**Sample 7-2**
**Trusted Agent Form**
..\OT&EFormats\MSWORD\TrustedAgentForm.doc

**COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE**
**NONDISCLOSURE OF INFORMATION/**
**TRUSTED AGENT AGREEMENT**

Commander, Operational Test and Evaluation Force (COMOPTEVFOR), an Echelon II command, is the U.S. Navy's sole independent operational test agency reporting directly to the CNO. Therefore, any and all data and information obtained from operational testing must remain within the COMOPTEVFOR organization until evaluated and reported to CNO.

I understand that I am subject to 10 U.S.C. 2399 (Operational Test and Evaluation of Defense Acquisition Programs), 10 U.S.C. 130 (Authority to Withhold From Public Disclosure Certain Technical Data), and 5 U.S.C. 552(b)(5) (Public information; agency rules, opinions, orders, records, and proceedings) in executing this agreement.

I understand I am prohibited from disclosing test data or information, by any means (e.g., message, correspondence, briefing, or statement of conjecture, opinion, conclusions, or recommendations) regarding this testing, outside of COMOPTEVFOR without prior COMOPTEVFOR approval. **Messages involving immediate safety are excluded from this restriction.**

I understand that "For Official Use Only" (FOUO) information will not be disclosed by COMOPTEVFOR. Requests for access to such information will be referred to the appropriate agency for disposition.

I understand that I have been nominated as a Trusted Agent of COMOPTEVFOR to assist in the conduct of operational test and evaluation of the_____ _____ during the period _____ to _____. By my signature on this document, I signify that I have read, understand, and will comply with this nondisclosure policy. If at any time I feel that I can no longer comply with this policy, I will notify the COMOPTEVFOR officer responsible for the operational test, and I will be removed from my position as a COMOPTEVFOR Trusted Agent. If so removed, my signature below indicates agreement to comply with COMOPTEVFOR's policy for nondisclosure of operational test data and information obtained during the period I served as a Trusted Agent.

I have read, understand, and will comply with the COMOPTEVFOR nondisclosure policy.

_____ _____

FULL NAME (PRINTED) SIGNATURE/DATE

_____

COMMAND

The above signatory is hereby appointed a Trusted Agent for operational test and evaluation, during the period specified.

_____

ACOS/CO NAME, TITLE, SIGNATURE

**Sample 7-3**
**OT&E Support Letter, First Time**
..\OT&EFormats\MSWORD\Ot&eSupportLetter_FirstTime.doc

(Date)

Dear _____,

(COMMAND/SHIP/ SQUADRON/ STAFF) will be the test (platform, ship, squadron, etc.) for Initial Operational Test and Evaluation (IOT&E) [or Operational Evaluation (OPEVAL)] of the (Project/System/etc.) scheduled for _(Date)_. Operational testing, the evaluation and its results play a key role in our Navy's acquisition process for production and fleet introduction of new systems. Because the performance of your crew is critical to the success of the (IOT&E, OPEVAL), I ask for your personal support and help.

The purpose of (IOT&E, OPEVAL) is to [assess (for IOT&E), determine (for OPEVAL)] (Project/ System/etc.) potential (delete "potential" for OPEVAL) operational effectiveness and suitability in its intended operational environment. We need to know whether the system will do what it is supposed to do in a real-world environment when operated and maintained by fleet personnel. The details of the (IOT&E, OPEVAL), including plans for tests to be conducted in all areas of operational effectiveness and suitability, are contained in the test plan that you and ___(ISIC'S COMMAND NAME)_ will receive in the near future. I ask that you and your key people carefully review the test plan prior to commencement of testing. Don't hesitate to contact (Name) at COMOPTEVFOR (Code XXX), DSN 564-5546, extension XXXX or commercial (757) 444-5546, if there are any questions.

There are several points I would like to make:

- Enthusiasm for a new system can be high, especially if it is replacing one that has had problems in the past. Our purpose is to determine whether the CNO's requirements for performance are satisfied. What we are after is objectivity.

- (IOT&E, OPEVAL) results are privileged information. You may not discuss or reveal test data to persons outside your command without my express permission (this includes your chain of command). The reason for this is to preclude premature release of partial, and hence incomplete, test results in advance of my evaluation of the data and report to the CNO. Specific guidance regarding restrictions in the release of data is in paragraph 205a of the test plan that you and (ISIC'S COMMAND NAME) will receive prior to the commencement of testing.

- CNO's policy regarding visitor observance of operational testing is strict. This is to preclude any perception of a lack of objectivity in the test and evaluation process or any perception of outside influence on the operational test unit and/or Operational Test Director. Therefore, observers will not normally be permitted in the test area during operational testing. This includes personnel from the operational chain of command not normally assigned to the unit as part of their duties. Any request to embark visitors to observe testing shall be coordinated with my staff prior to commencement of test operations.

- Your personal assessment, in addition to the data prescribed by the test plan, can provide valuable insight into the utility of the (Project/ System/etc.) . Please send this assessment, including your thoughts on operational employment, effectiveness, and suitability in the fleet environment, by personal letter or "personal for" message directly to me, with no other addressees. Following completion of data analysis and promulgation of my report to CNO, I will forward a copy to (ISIC).

- Finally, a situation may arise, such as safety, where you are required to report to seniors in your chain of command via OPREP or similar report. You may divulge only as much of the test results as are necessary to explain the nature of the safety situation or problem. If it appears that this policy may cause you difficulty, contact my Chief of Staff or me immediately. None of the tests are unsafe, but unusual situations can arise since new systems often operate differently than previous systems. Please ensure pre-event briefings are adjusted appropriately and don't start until you are satisfied it is safe.

Before closing, I recognize that this tasking may present some challenges for your command, given other demands for your attention and that of your (CREW/PERSONNEL/STAFF). Because of this, I ask that you let them know that realistic and carefully performed testing is important to the Navy. Your best efforts can help ensure that the Navy spends its money wisely, and that the fleet gets what it really needs--a solid, effective, reliable, and fleet-maintainable (Project/System/etc.)--and nothing less.

Sincerely,

SIGNATURE BLOCK
Rear Admiral, U.S. Navy

_____, USN
Commanding Officer
USS _____ (HULL #)
AE _____ 00000-0000

**Sample 7-4**
**OT&E Support Letter, Previous Support Provided**
..\OT&EFormats\MSWORD\Ot&eSupportLetter_PrevSupport.doc

(Date)

Dear _____,

Your fine (COMMAND/SHIP/SQUADRON/STAFF) has been scheduled once again for Operational Test and Evaluation (OT&E) services. Our present plans are to conduct OPEVAL (FOT&E) on the (Project/System/etc.) from (Date) to (Date).

As you may recall from previous correspondence regarding operational testing of the (Project/System/etc.), you and your (CREW/PERSONNEL/ STAFF) play a vital role in the OT&E process. We stand ready to assist you in preparation for and execution of the testing. My Operational Test Director for this project is (Name), COMOPTEVFOR (Code XXX), who can be reached at DSN 546-5546, extension XXXX, or commercial (757) 444-5546, should you have any questions regarding the test plan. None of the tests are unsafe, but unusual situations can arise since you are testing equipment of new design or which may operate differently than other equipment with which your (CREW/PERSONNEL/STAFF) (IS/ARE) experienced. Please ensure your pre-event briefings are adjusted appropriately and don't start until you are satisfied it is safe.

I look forward to receiving your personal assessment of the (Project/ System/etc.) upon conclusion of this OPEVAL (FOT&E).

Sincerely,

SIGNATURE BLOCK
Rear Admiral, U. S. Navy

_____, USN
Commanding Officer
USS _____ (HULL #)
AE _____ 00000-0000

**Sample 7-5**
**FOT&E Support, First Time**
..\OT&EFormats\MSWORD\Fot&eSupportLetter_FirstTime.doc

(Date)

Dear _____,

(COMMAND/SHIP/ SQUADRON/ STAFF) will be the test (platform, ship, squadron, etc.) for Follow-on Operational Test and Evaluation (FOT&E) of the (Project/System/etc.) scheduled for (Date) . Operational testing, the evaluation and its results play a key role in our Navy's acquisition process for production and fleet introduction of new systems. Because the performance of your crew is critical to the success of the FOT&E, I ask for your personal support and help.

This phase in the system acquisition process follows many stages of technical tests by the Developing Agency as well as an operational evaluation by COMOPTEVFOR. The purpose of this test is to verify the fixes to be incorporated into production systems and verification of performance previously demonstrated. We need to know whether the system will do what it is supposed to do in a real-world environment when operated and maintained by fleet personnel. The details of the evaluation, including plans for tests to be conducted in all areas of operational effectiveness and suitability, are contained in the test plan that you will receive in the near future. I ask that you and your key people carefully review the test plan prior to commencement of testing. Don't hesitate to contact (Name) at COMOPTEVFOR (Code XXX), DSN 564-5546, extension XXXX, or commercial (757) 444-5546, if there are any questions.

There are several points I would like to make:

- Enthusiasm for a new system can be high, especially if it is replacing one that has had problems in the past. Don't let your people become blinded by this enthusiasm. Our purpose is to determine whether the CNO's requirements for performance are satisfied. What we are after is objectivity.

- Results of operational testing are privileged information. You may not discuss or reveal FOT&E test data to persons outside your command without my express permission (this includes your chain of command). The reason for this is to preclude premature release of partial, and hence incomplete, FOT&E results in advance of my evaluation of the data and report to the CNO. Specific guidance regarding restrictions in the release of data are in paragraph 205a of the test plan that you and (ISIC's COMMAND NAME) will receive prior to commencement of testing.

- CNO's policy regarding visitor observance of operational testing is strict. This is to preclude any perception of a lack of objectivity in the test and evaluation process or any perception of outside influence on the operational test unit and/or Operational Test Director. Therefore, observers will not normally be permitted in the test area during operational testing. This includes personnel from the operational chain of command not normally assigned to the unit as part of their duties. Any request to embark visitors to observe testing shall be coordinated with my staff prior to commencement of test operations.

- Your personal assessment, in addition to the data prescribed by the test plan, can provide valuable insight into the utility of the (Project/ System/etc.). Please send this assessment, including your thoughts on operational employment, effectiveness, and suitability in the fleet environment, by personal letter or "personal for" message directly to me, with no other addressees. Following completion of data analysis and promulgation of my report to CNO, I will forward a copy to (ISIC's COMMAND NAME).

- Finally, a situation may arise, such as safety, where you are required to report to seniors in your chain of command via OPREP or similar report. You may divulge only as much of the test results as are necessary to explain the nature of the safety situation or problem. If it appears that this policy may cause you difficulty, contact my Chief of Staff or me immediately. None of the tests are unsafe, but unusual situations can arise since new systems often operate differently than previous systems. Please ensure your pre-event briefings are adjusted appropriately and don't start until you are satisfied it is safe.

Before closing, I recognize that this FOT&E tasking may present some challenges for your command, given the other demands for your attention and that of your (CREW/PERSONNEL/STAFF). Because of this, I ask that you let them know that realistic and carefully performed testing is extremely important to the Navy. Your best efforts can help ensure that the Navy spends its money wisely, and that the fleet gets what it really needs--a solid, effective, reliable, and fleet-maintainable (project/system/etc.)--and nothing less.

Sincerely,

SIGNATURE BLOCK
Rear Admiral, U.S. Navy

_____, USN
Commanding Officer
USS _____ (HULL #)
FPO AE _____ 00000-0000

**Sample 7-6**
**Letter Forwarding Unit Commander's**
**Report to His ISIC**
..\OT&EFormats\MSWORD\COsFwdingLetter.doc

3960
Ser/XX

From: Commander, Operational Test and Evaluation Force
To: Commander, (Insert Unit Commander's ISIC)

Subj: CNO PROJECT XXX NEW WEAPON SYSTEM

Ref: (a) COMOPTEVFOR ltr (SSIC) Ser XXX/XXX of 10 Sep 95

***This reference is the Test Plan***

Encl: (1) USS _____ ltr (SSIC) Ser XXX/XXX of 16 Jan 95

***This is the Unit Commander's Report***

1. In reference (a), the Test Plan for CNO Project XXX (OT-XX), Commanding Officer, USS _____ was requested to submit his personal comments direct to COMOPTEVFOR on the operational effectiveness and operational suitability of the New Weapon System, recommended tactics, and areas requiring further investigation.

2. This information was proprietary to COMOPTEVFOR until CNO was informed of the conclusions and recommendations resulting from the operational test. A copy of the letter containing these comments is forwarded for your information as enclosure (1).

SIGNATURE BLOCK
Deputy

Copy to:
USS Test Platform

**This letter will normally be signed by the Chief of Staff unless the ISIC is a flag officer.**

**Sample 7-7**
**Commencement of OT Message**
..\OT&EFormats\MESSAGES\OT Commencement.txt

RTTUZYUW RUCBTEV 0001 1231234-UUUU--RHMCSUU.
ZNR UUUUU
R 012030Z JAN 95
FM COMOPTEVFOR NORFOLK VA/(**DRAFTER & RELEASER CODE**)//
TO CNO WASHINGTON DC//N091/N912/(**SPONSOR**)//
INFO COMNAVXXXSYSCOM//(**PROGRAM OFFICE/T&E OFFICE**)//
**(OTHER INFO ADDEES AS APPROPRIATE) (**The "INFO"
list must not exceed 55 characters across the page.
When wrapping text to the next line, indent five
spaces.
BT (no lines from this point through the remainder of the message
can exceed 69 characters across the page.)
UNCLAS//N03980//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/OT&E COMMENCEMENT REPORT, PROJ 9876
REF/A/DOC/−/10NOV95//
REF/B/DOC/COMOPTEVFOR/3JUN94//
NARR/REF A IS TEST AND EVALUATION MASTER PLAN NO. 9876 REV 1. REF B IS TEST PLAN CNO PROJECT NO. 9876-OT-IIA//
RMKS/1. PER REFS A AND B, OT-IIA OF THE NEW WEAPON SYSTEM (CNO PROJ. NO. 9876) COMMENCED 291400Z OCT 95.
2. **ADDRESS ANY LIMITATIONS THAT WERE NOT PREVIOUSLY IDENTIFIED OR ANY ITEM OF SPECIAL INTEREST TO CNO.**//
BT

**This message will normally be released by the cognizant ACOS.**

**Sample 7-8**
**Completion of OT Message**
..\OT&EFormats\MESSAGES\OT Completion.txt

RTTUZYUW RUCBTEV0001 1231234-UUUU--RHMCSUU
ZNR UUUUU
R 121234Z MMM YY
FM COMOPTEVFOR NORFOLK VA//(**DRAFTER & RELEASER CODE)**//
TO CNO WASHINGTON DC//N091/N912/(**SPONSOR)/OTHERS AS NECESSARY**//
INFO COMNAVXXXSYSCOM//(**PROGRAM OFFICE/T&E OFFICE**)//
AIRTEVRON (**ONE, NINE**) **AS APPROPRIATE** (**OTHER INFO ADDEES AS APPRO-PRIATE**)
BT (no lines from this point through the remainder of the message can exceed 69 characters across the page.)
UNCLAS//N03980//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/OT&E COMPLETION REPORT, PROJ NO. 9876
REF/A/DOC/-/10NOV94//
REF/B/DOC/COMOPTEVFOR/3JUN95//
NARR/REF A IS TEST AND EVALUATION MASTER PLAN NO. 9876 REV 1. REF B IS TEST PLAN CNO PROJECT NO. 9876-OT-IIA //
RMKS/1. PER REFS A AND B, OT-IIA OF THE NEW WEAPON SYSTEM (CNO PROJ. NO. 9876) COMPLETED AS SCHEDULED AT 2222457Z NOV 95.

**The completion DTG may not necessarily be the time that test operations actually ceased but may accommodate delays caused by ship or detachment transit times and shipping of data back to home bases. The decision on what time constitutes completion of the OT will be made by the ACOS or CO with cognizance over the test.**

2. **DISCUSS ANY SHORTCOMINGS OF THE TEST OR TEST OBJECTIVES THAT WERE NOT ACCOMMODATED.//**

**This message will normally be released by the cognizant ACOS.**

**Sample 7-9**
**Tasking Letter to COMNAVSECGRU**
**Requesting an SSVA on a Navy Electronic System**

3960
Ser xx/

From: Commander, Operational Test and Evaluation Force
To: Commander, Naval Security Group Command (GX33)

Subj: SIGNAL SUSCEPTIBILITY AND VULNERABILITY ASSESSMENT (SSVA) OF THE (SYSTEM) PROGRAM , CNO PROJECT NO. (XXXXX)

Ref: (a) SECNAVINST 3430.2 (series)

1. Per reference (a), request an SSVA of the subject system be conducted for inclusion in COMOPTEVFOR's operational evaluation (OPEVAL).

2. OPEVAL is presently scheduled for (dates) in (platform) which is located at (location).

**Indicate here any additional pertinent information such as previous assessments, etc.**

The program management office for this system is (Program Management Office); point of contact is (individual), Phone (DSN and commercial).

3. Please provide a plan of action and milestones for this assessment to COMOPTEVFOR by (date).

**Also, this paragraph should be used to indicate any additional information required by the OTD, or any specific aspects of the assessment which might require more intensive investigation.**

4. Resources and cost estimates necessary to conduct this SSVA should be submitted to the program management office as soon as practical.

5. Point of contact for coordination is (OTD), OPTEVFOR Code _, phone (DSN and commercial numbers).

SIGNATURE BLOCK
Rear Admiral, U.S. Navy

Copy to:
CNO (Appropriate offices)
COMNAVXXXSYSCOM
NSGA Charleston SC

**Sample 7-10**
**Letter Addressing Release of Test Data**
..\OT&EFormats\MSWORD\DataReleaseLetter.doc

3980
Ser XXX/

From: Commander, Operational Test and Evaluation Force
To: Commander, (Command/Activity/Lab holding the test data)

Subj: RELEASE OF DATA FROM OPERATIONAL TESTING OF THE NEW WEAPON SYSTEM PROGRAM (CNO PROJECT NO. XXX (OT-XX))

Ref: (a) COMOPTEVFOR ltr 3980 Ser XXX/XXX of 8 Jul 95

1. Reference (a) was COMOPTEVFOR's final report of the operational evaluation of the New Weapon System, performed under CNO Project No. XXX.

2. The data collected during this test is now releasable. Requests for the data should be forwarded to CNO (N091) for approval.

SIGNATURE BLOCK
Rear Admiral, U.S. Navy

Copy to:
CNO (N091 and other appropriate codes)
COMNAVXXXSYSCOM (as required)

**Sample 7-11**
**Anomaly Report Message**
../OT&EFormats/MESSAGES/AnomalyReport.txt

RTUZYUW RUCBTEV001 1231234-UUUU-RMHCSUU
ZNR UUUU
R 011234Z MMM YY
FM COMOPTEVFOR NORFOLK VA
TO CNO WASHINGTON DC//N091/N03//(other applicable office code)
COMNAVXXXSYSCOM WASHINGTON DC//XXX//
INFO (AS APPROPRIATE) ) (The "INFO"
list must not exceed 55 characters across the page.
When wrapping text to the next line, indent five
spaces.)
BT (no lines from this point through the remainder of the message
can exceed 69 characters across the page.)
CLASSIFICATION //N03980//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/CNO PROJECT NO. XXX (OT-XX) NEW WEAPONS SYSTEM PROGRAM ANOMALY REPORT NUMBER X//
OR - if more than one anomaly is being reported on one message, each anomaly will have a number. Your subject line will read:
SUBJ/CNO PROJECT NO. XXX (OT-XX) NEW WEAPONS SYSTEM PROGRAM ANOMALY REPORT NUMBERS X-X//
REF/A/DOC/ /(DATE)//
NARR/REF A IS SECNAV 5000.2B //
RMKS/1. AN INORDINATE NUMBER OF FAILURES IN THE PRIMARY AND BACKUP AN/AYK-XX COMPUTER ARE PROJECTED TO RESULT IN A MEAN TIME BETWEEN OPERATIONAL MISSION FAILURES FOR THE SYSTEM THAT IS SIGNIFICANTLY LESS THAN THE ESTABLISHED THRESHOLD. ALTHOUGH COMPUTER REDUNDANCY ALLOWS OPERATIONAL TESTING TO CONTINUE, ACTION SHOULD BE INITIATED TO RESOLVE THE AN/UYK-XX RELIABILITY PROBLEMS.
OR - if more than one anomaly is being reported on one message, use a separate paragraph for each. For Example:
RMKS/1. ANOMALY NUMBER X: AN INORDINATE NUMBER OF FAILURES IN THE PRIMARY……
2. ANOMALY NUMBER X: XXXXXX
3. PER REF A, ANOMALY DATA IS BEING RELEASED TO PMA-XXX (or, for example, PMS-XXX) TO FACILITATE ANALYSIS AND CORRECTION. OT-XX OF THE AN/AYK-XX COMPUTER WILL CONTINUE UNTIL COMOPTEVFOR RECEIVES INVESTIGATION RESULTS AND RECOMMENDED CORRECTIVE ACTIONS. //
4. COMOPTEVFOR POC IS LT K. C. JONES, DSN 564-5546 EXT... COMM (757) 444-5546.//
BT
#0000
NNNN

**Sample 7-12**
**Test Unit's ISIC Letter**
..\OT&EFormats\MSWORD\TestUnit'sISICLetter.doc

COMMANDER, OPERATIONAL TEST AND EVALUATION FORCE

Dear _____,

(USS...., VF-...etc.) will be the test (platform, ship, squadron) for Initial Operational Test and Evaluation (IOT&E) [or Operational Evaluation (OPEVAL)] of the (Project/System/etc.) scheduled for (Date). I have forwarded a letter to (Commander Rightaway) stressing the importance of operational testing and requesting his personal support and help, because the performance of his/her crew is vital to the successful accomplishment of this (IOT&E, OPEVAL).

The purpose of this testing is to assess (Project's/ System's/etc.) potential operational effectiveness and suitability in its intended operational environment. We need to know whether the system will do what it is supposed to do in a real-world environment when operated and maintained by fleet personnel. The details of all testing procedures are contained in the test plan that you and (USS...,VF-... etc.) will receive in the near future.

The following are a few of the points I stressed to (Commander Rightaway):

- Results of testing are privileged information. I requested he not discuss or reveal test data to persons outside his command without first consulting me. The reason for this is to preclude premature release of partial, and hence incomplete, test results in advance of my evaluation of the data and report to the CNO. Specific guidance regarding restrictions in the release of data is in paragraph 205a of the test plan.

- CNO's policy regarding visitor observance of operational testing is strict. This is to preclude any perception of a lack of objectivity in the test and evaluation process or any perception of outside influence on the operational test unit and/or Operational Test Director. Therefore, observers will not normally be permitted in the test area during operational testing. This includes personnel from operational chain of command not normally assigned to the unit as part of their duties. I have asked (Captain Rightaway) to coordinate any requests for visitors to observe testing with my staff prior to commencement of test operations.

- I have requested (Commander Rightaway's) personal assessment of (Project/System/etc.), including his thoughts on operational employment, effectiveness, and suitability of the fleet environment. This will be sent directly to me by personal letter or "personal for" message, as appropriate. I will provide a copy to you following final analysis and publication of my report to CNO.

- Finally, if a safety situation arises, (Commander Rightaway) will be required to report to you and other seniors via OPREP or similar report. I have requested he divulge only as much of the test results as are necessary to explain the nature of the situation. If this policy appears to present problems, he is encouraged to contact my Chief of Staff or me immediately.

In closing, let me take this opportunity to thank you for your full support during this phase of testing. (Commander Rightaway's) and his/her crew's best efforts can help ensure that the Navy spends its money wisely, and that the fleet gets a solid, effective, reliable, and fleet-maintainable (Project/System/etc.).

Sincerely,

SIGNATURE BLOCK
Rear Admiral, U.S. Navy

_____, USN
Commander, (SUBGRU, etc.)
FPO AE _____ 00000-0000

**Sample 7-13**
**Test Unit's CO Letter for OT&E**
..\OT&EFormats\MSWORD\TestUnitCOLetter.doc

(Date)

Dear _____,

(USS CVN/FFG/DDG, etc.) will be the test ship for Initial Operational Test and Evaluation (IOT&E) [or Operational Evaluation (OPEVAL)] of the (Project/System/etc.) scheduled for (Date) . Operational testing, the evaluation and its results play a key role in our Navy's acquisition process for production and fleet introduction of new systems. Because the performance of your crew is critical to the success of the (IOT&E, OPEVAL), I ask for your personal support and help.

The purpose of (IOT&E, OPEVAL) is to [assess (for IOT&E), determine (for OPEVAL)] (Project/ System/etc.) potential (delete "potential" for OPEVAL) operational effectiveness and suitability in its intended operational environment. We need to know whether the system will do what it is supposed to do in a real-world environment when operated and maintained by fleet personnel. The details of the (IOT&E, OPEVAL), including plans for tests to be conducted in all areas of operational effectiveness and suit-ability, are contained in the test plan that you will receive in the near future. I ask that you and your key people carefully review the test plan prior to commencement of testing. Don't hesitate to contact (Name) at COMOPTEVFOR (Code XXX) DSN 546-5546, extension XXXX, or commercial (757) 444-5546, if there are any questions.

There are several points I would like to make:

- Enthusiasm for a new system can be high, especially if it is replacing one that has had problems in the past. Our purpose is to determine whether the CNO's requirements for performance are satisfied. What we are after is objectivity.

- (IOT&E, OPEVAL) results are privileged information. You may not discuss or reveal test data to persons outside your command without my express permission (this includes your chain of command). The reason for this is to preclude premature release of partial, and hence incomplete, test results in advance of my evaluation of the data and report to the CNO. Specific guidance regarding restrictions in the release of data is in paragraph 205a of the test plan that you and (ISIC) will receive prior to the commencement of testing.

- CNO's policy regarding visitor observance of operational testing is strict. This is to preclude any perception of a lack of objectivity in the test and evaluation process or any perception of outside influence on the operational test unit and/or Operational Test Director. Therefore, observers will not normally be permitted in the test area during operational testing. This includes personnel from the operational chain of command not normally assigned to the unit as part of their duties. Any request to embark visitors to observe testing shall be coordinated with my staff prior to commencement of test operations.

- Your personal assessment, in addition to the data prescribed by the test plan, can provide valuable insight into the utility of the (Project/ System/etc.) . Please send any comments, including

your thoughts on operational employment, effectiveness, and suitability in the fleet environment, by personal letter or "personal for" message directly to me, with no other addressees. Following completion of data analysis and promulgation of my report to CNO, I will forward a copy to (ISIC).

- Finally, a situation may arise, such as safety, where you are required to report to seniors in your chain of command via OPREP or similar report. I ask that you only divulge any test results if necessary to explain the nature of the safety situation or problem. If it appears that this policy may cause you difficulty, feel free to contact my Chief of Staff or me immediately. None of the tests are unsafe, but unusual situations can arise since new systems often operate differently than previous systems. Please ensure pre-event briefings are adjusted appropriately and start only when you are satisfied it is safe.

Before closing, I recognize that this tasking may present some challenges for your command, given other demands for your attention and that of your crew. Because of this, I ask that you let them know that realistic and carefully performed testing is important to the Navy. Your best efforts can help ensure that the Navy spends its money wisely, and that the fleet gets what it really needs--a solid, effective, reliable, and fleet-maintainable (Project/System/etc.)--and nothing less.

Sincerely,

SIGNATURE BLOCK
Rear Admiral, U.S. Navy

_____, USN
Commanding Officer
USS _____ (HULL #)
AE _____ 00000-0000

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**The major change in this chapter is the new evaluation report format and instructions for its use. Blue text denotes minor changes. The letter report and summary report message are no longer in use and have been deleted.**



# CHAPTER 8

# THE EVALUATION REPORT

**801. INTRODUCTION**. This chapter contains discussion of the basics of evaluation reports and the formats used for reporting test results.

**a**. The evaluation report provides the CNO with COMOPTEVFOR's conclusions regarding a system's operational effectiveness and operational suitability, and his recommendations regarding the system's fleet introduction, further development, additional OT&E, etc. The evaluation report provides the information (test results, evaluation criteria, etc.) to substantiate COMOPTEVFOR's conclusions and recommendations.

**b.** Evaluation reports are prepared at the end of each OT&E phase and are required by DOD Regulation 5000.2R for Milestone I, II, III, and IV (new A, B, C, D, and E) decisions. In high-interest programs, COMOPTEVFOR may be requested to provide his conclusions and recommendations to the CNO before formal full evaluation reports are issued. This does not alter the requirement for a report. Reports may also:

**(1)** Be requested by agencies outside OPTEVFOR not on normal distribution. Such requests must be approved by CNO (N091) before COMOPTEVFOR responds.

**(2)** Be directed by COMOPTEVFOR.

**c.** Publication deadlines for evaluation and quick-look reports are specified in paragraph 812.

**802. TYPES OF EVALUATION REPORTS**. Table 8-1 contains types of evaluation reports and instructions to determine which report format is appropriate for a particular test.

**Table 8-1. Report Format Guidance**

| Report Type | Purpose | Format |
|---|---|---|
| EOA/OA<br>OPEVAL<br>FOT&E | To report a full, complete phase of testing. Consists of a cover page, executive letter signed by the Commander, and accompanying enclosure(s). The enclosure contains full details of testing and analysis. | Full Report |
| Software Qualification Test (SQT) | To report on software upgrades, based on a statement of functionality. Follow above guidelines. | |
| Quick Reaction Assessment (QRA) | To report findings for operational considerations/system capabilities when it's necessary to achieve a rapid capability in the fleet. | Message |
| Quick-Look Report (Sent within 30 days of testing, final report due 90 days after Q/L). | Quick-Look: Informal report. A temporary substitute for a formal report when requested by CNO, when time constraints dictate the need. | |
| VCD | To report results for verifying correction of specific deficiencies (specific COIs only) from previous testing (no end-to-end testing). | |

| Table 8-1. Report Format Guidance | | |
|---|---|---|
| **Report Type** | **Purpose** | **Format** |
| DT Assist (not a formal phase of testing) | To report our observations/findings to the PEO/PM. | Letter of Observation (see page 8-85) Signed by HQ Divisional ACOS |

**803. OPERATIONAL CONSIDERATIONS**. This is an optional paragraph, but is one of the more difficult to understand. The paragraph is used in two ways: Evaluation considerations which apply operational reasoning to test results to substantiate conclusions or recommendations (or both) that are not directly derivable from the results; and tactical considerations which inform operational commanders of significant aspects (pro and con) of system employment, or make clear what special measures would be required to make the system more efficient in battle.

**OPCONS must be tied to your results or discussion of major/minor deficiencies/issues in the appropriate E- or S-test paragraph(s) of Section 3, Tests and Results, of the enclosure.**

**a.** In some OT&E, once the results have been presented, the complete logic for conclusions and recommendations has been established. In other cases, however, operational reasoning suggests conclusions and/or recommendations that are not derived directly from results. Some examples:

**b. In testing, the following results were obtained:**

- MTBOMF: 140 hours (criterion: $\geq$150 hours)
- MCMTOMF: 12 minutes (criterion: $\leq$60 minutes)
- $A_o$: 0.99 (criterion: $\geq$0.98)

A direct conclusion from these results may be that the system was not operationally suitable because it did not meet the reliability criterion. However, COMOPTEVFOR felt that:

- The system was "up" most of the time, as evidenced by the fact that $A_o$ was high.
- The high $A_o$ was attributable to short repair times, evidenced in low MCMTOMF.
- With the low MCMTOMF, an MTBOMF of 140 hours was acceptable from an operational viewpoint.

COMOPTEVFOR's views were developed in Operational Considerations; it provided the rationale for a conclusion that the system was operationally suitable, even though it did not meet the reliability criterion.

**c.** During OPEVAL of System X, repeated failures of in-service System Y were observed. System Y was being used as a backup data collection device, and its failures had no adverse effect on the evaluation of System X. Therefore, System Y's failures would not be dis-

cussed under Limitations. Nor would they be discussed under Results; determining System Y's reliability was not an object of the System X OPEVAL. But, COMOPTEVFOR desired to bring a potential System Y reliability problem to the CNO's attention. An operational consideration was used to report the observed failures, and substantiate a recommendation to investigate System Y's reliability in the fleet.

**d.** During OPEVAL of an acoustic signal processor, the system met all the evaluation criteria. During project operations, operators in the project ship pointed out an apparently simple change in processor logic that could provide a significant increase in capability -- allowing target localization in addition to the designed capability of providing target bearing. COMOPTEVFOR discussed this possibility in Operational Considerations, and then concluded (based on test results) that the processor was operationally effective and operationally suitable. COMOPTEVFOR's first recommendation was for fleet introduction, the usual OPEVAL recommendation on an operationally effective and operationally suitable system. The second recommendation was for providing the target localization capability prior to FOT&E.

**e.** Tactical employment is a by-product of OPEVAL. It is the Commander's policy that whenever feasible, the final phase of OPEVAL is used to determine the tactics to be recommended for employment based on COMOPTEVFOR's evaluation. As a subset of this policy, the operational considerations paragraph is structured, when appropriate, to tell the operational commander what he needs to know to employ the system effectively (and the pitfalls to avoid). When used this way, operational considerations serve as the starting point for the OPTEVFOR Tactics Guide (for air warfare projects), and tactics inputs for Surface Warfare Development Group (surface programs) and Submarine Development Squadron 12 (for undersea programs).

**804. SIDE-BY-SIDE COMPARISONS**. In our reports, it is sometimes beneficial to show a side-by-side comparison of the targets we use versus the real threat. The matrix you develop should include, as appropriate, speed, radar cross section, altitude, capability, IR signature, etc. This type of comparison is equally applicable to underwater systems. When the information provided in the matrix is of higher classification than the basic report, consider making the matrix a separate appendix.

**805. DECIDING THE DEFICIENCY LEVELS** (See the Baseline Deficiency Decision Tree at the end of this chapter.)

**a. Severe.** This prevents the accomplishment of a requirement designated as critical to achievement of a key performance parameter (KPP).

**If a deficiency is determined to be severe, the affected COI must be resolved UNSAT for OPEVAL and FOT&E, and color-coded RED for IOT&E**

**b. Major.** This adversely affects the accomplishment of an operational or mission-essential capability, and no work-around solution is known.

**If a deficiency is determined to be major, the affected COI must be**

**resolved UNSAT for OPEVAL and FOT&E, and color-coded RED for IOT&E.**
**The COI may be "split" to adequately clarify the specific issue that is deficient.**

**Conclusions for EOAs/OAs will be "potentially not …." Conclusions for OPEVAL and FOT&E will be tailored to clarify the specific situation/item affected by the major deficiency (e.g., system is determined to be effective in non-ECM environment and not effective in an ECM environment; system is suitable aboard a DD 963 class ship, undetermined suitability for other ship classes, etc.).**

**The fleet introduction recommendation would have a caveat for additional test or certification by PM to CNO via COTF prior to fleet introduction beyond current fleet usage.**

**c. Minor.** This adversely affects the accomplishment of an operational or mission-essential capability, but a work-around solution is known. If a work-around solution is deemed unacceptable, see *major deficiency*, above.

**If a deficiency is determined to be minor, the affected COI may be resolved SAT for OPEVAL and FOT&E or color-coded other than red for EOAs/OAs.**

**The effectiveness or suitability conclusion can be "determined effective and/or suitable," or "not" for either. If the overall effect of "many" minor deficiencies is considered in the aggregate to be approximately equivalent to a major, then the OTD should consider a negative conclusion, with a caveat in the fleet introduction recommendation.**

**d. Other.** This results in user/operator inconvenience or annoyance, but does not affect a required operational or mission-essential capability.

## 806. RESOLUTION of COIs

**a.** OPTEVFOR addresses the resolution of COIs by satisfying the questions posed by the COIs. There is an audit trail from the COI questions through the E- and S-tests. This provides a flow so that the disposition of COIs is directly related to the evaluation of each designed test. Thus, when a test parameter is quantitative, the COI resolution is based on actual results relative to the operational threshold. For nonquantifiable parameters, the COI resolution must be based on two factors: (1) observed results, and, (2) operational experience.

**b.** To resolve a COI, all of its capabilities/functions must be demonstrated and no additional hardware or software changes anticipated prior to the milestone decision. COIs are resolved as follows:

**(1) Resolved**. The COI was tested and resolved either satisfactorily (SAT) or unsatisfactorily (UNSAT).

**(2) Color Codes.** Used in early phases of IOT&E (e.g., OT-1, OT-IIA) when the system is immature.

**(3) Partially Resolved**. Used when a COI requires further testing for final resolution due to a major limitation.

**(4) Unresolved**. Used only when the COI was not tested during the particular phase of testing in which it was an issue for resolution. This normally is due to a major (CNO waiver) or severe limitation against the COI.

**c.** When a COI has been resolved UNSAT, the severe or major deficiencies that caused the UNSAT resolution must be reported in the letter as well as the enclosure. A severe or major deficiency can impact other COIs, and the deficiency can be used to resolve additional COIs UNSAT. The analysis and evaluation will determine the most appropriate primary COI. Once the primary COI has been determined, those same deficiencies may be reported against other COIs as collateral deficiencies.

**d.** All COIs should be resolved by the completion of OPEVAL. Difficulties achieving this must be brought to the attention of the Commander.

**807. CONCLUSIONS AND RECOMMENDATIONS IN EVALUATION REPORTING**. At the completion of each phase of OT, COMOPTEVFOR provides his conclusions and recommendations regarding the system tested to CNO in an evaluation report. The guidelines for determining the key elements of the conclusions and recommendations, based on the results of testing, are:

**a. IOT&E Prior to OPEVAL**

**(1) Conclusions**

**(a) Effectiveness**. Conclusions normally address overall system effectiveness. However, in those cases where the system tested had effectiveness issues in several warfare areas (e.g., air, submarine, surface, etc.), the system should be evaluated in each warfare area and conclusions provided that address effectiveness in each warfare area. Additionally, where systems are tested against several levels of threat systems, the system should be evaluated in each situation (e.g., subsonic or supersonic, ECM environment) and conclusions provided that address effectiveness against varying categories of threats or threat environments.

**1. Potentially Effective**. All effectiveness COIs may not have been scheduled for testing during this period of IOT&E, or the system was not production-representative (i.e., EDM). The issues considered for T&E have been satisfactorily addressed within the scope

of this phase of testing or the system design and/or the nature of any problems observed are such that there is a high probability that those critical issues can be satisfactorily resolved prior to OPEVAL and fleet introduction, (normally followed by a recommendation to verify deficiency corrections during a subsequent phase of IOT&E). In the event all COIs were scheduled for testing and resolved satisfactorily and the testing was performed on a production-representative test article, in the operational environment using typical operators and maintainers, it could be concluded that the system was operationally effective. This could result in a recommendation that the phase of IOT&E is designated as OPEVAL and the scheduled OPEVAL phase is deleted.

**2. Potentially Not Effective**. Most of the effectiveness COIs scheduled for testing during this phase of IOT&E were not satisfactorily addressed, as a result of system deficiencies, and the system cannot be concluded to be potentially effective. System design and/or the nature of problems are such that there is a low probability that issues can be resolved without redesign and verification by further OT&E; or, however well the system performed against TEMP effectiveness issues, the mission has insufficient utility. The conditions to be satisfied in order to become potentially effective should be stated.

**(b) Suitability**

**1. Potentially Suitable**. All suitability COIs may not have been scheduled for testing during this phase of IOT&E, or the system was not production-representative (i.e., EDM). The issues considered for T&E have been satisfactorily addressed within the scope of this phase of testing; or the system design and/or nature of any problems observed are such that there is a high probability that those critical issues can be satisfactorily resolved by the completion of OPEVAL to satisfy a recommendation of fleet introduction. In the event all COIs were scheduled for testing and in fact resolved satisfactorily and the testing was performed on a production-representative test article, in the operational environment using typical operators and maintainers, it could be concluded that the system was suitable. This could result in a recommendation that the phase of IOT&E is designated as OPEVAL and the scheduled OPEVAL is deleted.

**2. Potentially Not Suitable**. Most of the suitability COIs scheduled for testing during this phase of IOT&E were either not satisfactorily addressed as a result of system deficiencies, or they do not have a high probability of being satisfactorily resolved by OPEVAL and fleet introduction, and the system cannot be concluded to be potentially suitable. System design and/or the nature of problems are such that there is a low probability that issues can be resolved without redesign and verification by further OT&E. The conditions to be satisfied in order to become potentially suitable should be stated.

**(c) Production**. There are a number of factors that must be considered before a decision is made to enter into production of a system; OT&E is but one of these many factors. Since COMOPTEVFOR is normally not aware of the status of many of the other issues affecting a production decision, it is inappropriate to comment on production issues based on OT&E alone. Accordingly, no conclusion or recommendation pertaining to production should appear in the evaluation report.

**(2) Recommendations**. This paragraph addresses COMOPTEVFOR's recommendations regarding continuing program development through fleet introduction, and makes specific recommendations for correction of deficiencies. The recommendations for correction of deficiencies mentioned here should be based on requirements that are either documented in the ORD or are "inherent requirements" for the particular system. For example, a display screen must be legible even if not specifically mentioned in the ORD.

**(a)** A recommendation regarding limited fleet introduction, if appropriate and necessary to continue OT, is provided to assist CNO in determining to whom and in what quantities systems should be introduced to the fleet.

**1. No Limited Fleet Introduction**. A recommendation against limited fleet introduction will be made if there are severe deficiencies, or the aggregate of major deficiencies are so significant as to preclude installing the system on any platform. When fleet introduction is not a consideration in an early phase of IOT&E, no recommendation will be made.

**2. Limited Fleet Introduction**. Limited fleet introduction will normally be recommended if IOT&E (other than OPEVAL) results are generally satisfactory but there are major deficiencies that result in a conclusion that the IOT&E results do not support fleet introduction and/or further testing on other platforms is warranted. This recommendation may be made contingent upon completion of corrective actions, and may be made contingent upon demonstrating those corrective actions in a subsequent phase of IOT&E. Whenever possible, a recommendation for limited fleet introduction should specify to what level or units the introduction should be made (e.g., units required for next phase of OT&E, air squadrons operating in specific scenarios, ships with no other self-defense system, etc.).

**3. Other Types of Recommendations**. A recommendation may be made to continue the acquisition program (i.e., continue development) as defined in the TEMP when IOT&E results are satisfactory insofar as they are available and there is no reason to recommend termination of the CNO-approved program shown in the TEMP. Recommendations may be made for corrective action on deficiencies noted in IOT&E, but not of such significance that their correction has been specified as a prerequisite to limited fleet introduction. No recommendation should be made on any deficiency unless it caused a problem that degraded potential effectiveness or suitability and has been discussed in the report.

**b. Operational Evaluation (OPEVAL)**

**(1) Conclusions**. Conclusions in OPEVAL *must* be definitive; i.e., effective or not effective, suitable or not suitable. Sufficient data should be collected and an evaluation conducted to preclude a potentially effective or potentially suitable conclusion at OPEVAL.

**(a) Effectiveness**. Conclusions normally address overall system effectiveness. However, in those cases where the system tested had effectiveness issues in several warfare (air, submarine, surface, etc.), mission, or environmental (e.g., jamming) areas, or in several threat

regions, the system should be evaluated in each area or threat region and conclusions provided that address effectiveness in each area. Characterize the system's performance, regarding where or under what conditions the system was or was not effective (e.g., effective in a non-EA environment; effective against specific threat class; or undetermined against other threat class, etc.)

**1. Effective**. All effectiveness COIs were completely and satisfactorily resolved and there were no severe or major deficiencies. If, as a result of waivers or limitations to test, there are COIs or portions of COIs that remain incomplete, characterize the system effectiveness and recommend additional IOT&E or fleet data to resolve.

**2. Not Effective**. If all of the effectiveness COIs were not satisfactorily resolved due to severe or major deficiencies, then the system cannot be concluded to be effective. System design and/or the nature of problems is such that there is low probability that issues can be resolved satisfactorily without redesign and verification by further OT&E; or, however well the system performed against TEMP effectiveness issues, the mission has insufficient utility.

**(b) Suitability**

**1. Suitable**. All suitability COIs were completely and satisfactorily resolved, and there were no severe or major deficiencies. If, as a result of waivers or limitations to test, there are COIs or portions of COIs that remain incomplete, characterize suitability and recommend additional IOT&E or fleet data to resolve.

**2. Not Suitable**

**a**. If all suitability COIs are not satisfactorily resolved, the system cannot be concluded to be suitable. System design and/or the nature of problems is such that there is low probability that issues can be resolved satisfactorily without redesign and verification by further OT&E.

**b**. Not suitable conclusions are normally derived from severe or major deficiencies within COIs, which caused the COIs to be resolved UNSAT. There are times, though, when a COI will have an abundance of minor deficiencies. These cumulative minor deficiencies may add up to a major deficiency, and will cause a COI to be resolved UNSAT.

**(2) Recommendations**. A recommendation regarding fleet introduction is obligatory if the system(s) is intended for fleet use, or to support Milestone III, or if the TEMP requires it. COMOPTEVFOR addresses fleet introduction as follows:

**(a) Fleet Introduction**. If the system is concluded as operationally effective and suitable, fleet introduction will normally be recommended. This recommendation may be made contingent upon completing specified actions to correct major deficiencies observed in OT&E including, if appropriate, verification in FOT&E.

**(b) Limited Fleet Introduction**. Limited fleet introduction can sometimes be recommended if OT&E results are not generally satisfactory and it has been concluded that the system is not operationally effective and/or suitable, but there is some benefit to the fleet by introducing the system in limited quantities to specified units. This recommendation will almost always be made contingent upon completion of corrective actions, and may be made contingent upon demonstrating those corrective actions in a subsequent phase of IOT&E or FOT&E. When recommending limited fleet introduction, the conditions that must be satisfied before fleet introduction should be specified and will ordinarily include FOT&E whenever system design changes are necessary. The effectiveness and suitability features to be demonstrated in FOT&E must be specified. Whenever possible, a recommendation for limited fleet introduction should specify to what level of units the introduction should be made (e.g., units required for next phase of OT&E, air squadrons operating in specific scenarios, etc.).

**(c) No Fleet Introduction**. A recommendation against fleet introduction will be made if it has been concluded that the system is not operationally effective and/or suitable.

**(3) Other Types of Recommendations**

**(a)** A recommendation should be made addressing the purpose of the review or milestone at which the OT&E results are to be considered if other than Milestone III; e.g., proceed into full scale engineering development.

**(b)** Recommendations may be made for corrective action on deficiencies noted in OT&E, but not of such significance that their correction has been specified as a prerequisite to limited fleet introduction or fleet introduction. No recommendation should be made on any deficiency unless it caused a problem that degraded effectiveness or suitability.

**c. Follow-on Operational Test and Evaluation**

**(1) Conclusions**. The conclusions drawn in FOT&E will address the system's operational effectiveness and operational suitability, and fleet introduction if fleet introduction was not recommended at OPEVAL or no IOT&E was conducted. When the FOT&E is being conducted to examine the integration of a system into other platforms or aircraft, the conclusion will address the system's operational effectiveness and operational suitability in the platform or aircraft tested, and, if applicable, fleet introduction of the system in the platform or aircraft. In those cases where the FOT&E is conducted to examine an upgrade to a system already in production or release of an improved software revision, the conclusion will address the operational effectiveness and operational suitability of the system with the upgrade or new software, and fleet introduction of the upgraded system or fleet release of the new software version.

**(2) Recommendations**

**(a)** A recommendation regarding fleet introduction is obligatory if a recommendation for fleet introduction has not been made in previous OT&E.

**(b)** In those cases where the FOT&E is to examine the integration of a system into other platforms or aircraft, or to examine an upgrade to a system already in production, a recommendation regarding fleet introduction is obligatory.

**(c)** The guidelines for determining the level of fleet introduction of systems in FOT&E are the same as for OPEVAL.

**808. OTHER CONSIDERATIONS**. Other data are examined to determine if the system will operate the way it's supposed to -- i.e., reliability, maintainability, and the other elements of operational suitability. Again, the OTD's operational knowledge and experience provide a filter for the data. Reminders:

- Don't lose sight of the COI's.
- Think systems and operational missions.
- Present results in meaningful operational terms -- shun the purely technical.
- Concentrate on what it will do as it is -- it's the DA's responsibility to figure out why it did not meet the mission requirements and how to fix it.

**809. ADDRESSING THE THREAT IN EVALUATION REPORTS**. You must prepare the report as it relates to the current ONI TA/STAR; the one used to develop the test plan for the phase of testing being reported on. If, between completion of the test phase and the preparation of the report, there is considerable change to the threat, the evaluation report should recommend further testing against the new, updated threat as described in the updated ONI TA/STAR. The OTD must address the threat in the test limitations (if applicable), results, conclusions, and recommendations. The OTD must specifically evaluate the impact the differences in performance between the actual threat and the surrogate used in testing have on reported results. For example, if a subsonic surrogate is used to simulate a near supersonic threat in a shipboard missile system test, the impact such a speed differential has on reaction times and engagements observed in testing must be evaluated.

**810. NON-ACAT PROGRAM REPORTING**. The final assessment report for non-ACAT programs should be provided in letter or message format, signed by 00. See paragraph 405c(1) for guidelines on conclusions and recommendations on operational assessments. Red, yellow, green, and white color codes will generally be used to identify perceived risk areas. As with all early test reports, the term "deficiency" will generally be avoided. Recommendations may address the potential for continued development, design changes needed, future testing required, and tactical utility. The distribution list should be tailored to only those organizations specified in the MOA.

**811. ACTD REPORTING.** Upon conclusion of an ACTD's demonstration, a letter of observation signed by the cognizant ACOS will be produced and forwarded to the sponsoring CINC. The CINC may then use our letter to assist in preparing the CINC's assessment of military util-

ity. Our observations will state the planned and observed outcomes of the demonstration, but will make no assessment of COIs/MOPs/MOEs or determination of effectiveness/suitability. Our letter is not an operational assessment. However, it can incorporate requirements set forth in an approved ORD. Of special importance is the summary paragraph, which details the conditions and limitations under which the data were taken.

## 812. PREPARATION, ROUTING, AND RELEASE OF EVALUATION REPORTS: QUICK-LOOK AND FINAL

**a. Timelines**. Timelines for all Headquarters and VX reports are identical. Any difficulties meeting them should be brought to the attention of the Deputy Commander and Chief of Staff.

**b. Quick-Look Reports**. Quick-look reports are to be published no later than 30 days after completion of project operations. Timelines are summarized in table 8-2:

**Table 8-2. Quick-Look Report Timelines**

| Day | HQ Action | VX/HMX ACTION |
|---|---|---|
| 20 (from end of OT) | Originator prepares rough document for technical review and routes to tech. editor and analyst; intel, scheduler, test resources, mod/sim (Code 80B), logistics (Code 01E1), METOC, as appropriate. | VX - tech editor, intel, analyst (in squadron); scheduler, resources, mod/sim, logistics, METOC (at HQ)*<br><br>HMX - Send rough draft to HQ via Code 50 OTC for full HQ review* |
| 23 | Originator incorporate changes and prepare "clean" draft document and route to O1B and 01.<br><br>Code 50 send draft back to HMX-1 for major corrections. | VX and HMX- Incorporate changes and obtain CO's approval. Send smooth to HQ via Code 50 OTC.* |
| 27 | Originator prepare and route smooth document to 01E, 01B, 01PD, 01; 00 for brief and signature**<br><br>Code 50 route smooth VX/HMX documents to above codes. | N/A |
| 30 | Message approved and sent. | N/A |

*Use E-mail for applicable sections for HQ review/comments.
**Unresolved issues are pointed out to the Commander by the briefer. The briefing (if required) to obtain the Commander's signature occurs no later than 30 days after completion of project operations.

**c. Evaluation Reports**. The report will be published no later than 90 days after completion of project operations. Timelines are summarized in table 8-3:

| Table 8-3. Evaluation Report Timelines | | |
|---|---|---|
| **Day (NLT)** | **HQ Action** | **VX/HMX ACTION** |
| 45 (from end of test) | Originator completes rough draft report for technical review and routes to tech. editor and analyst; intel, scheduler, test resources, mod/sim (Code 80B), logistics (Code 01E1), METOC, as appropriate. | VX - tech editor, intel, analyst, mod/sim (in squadron); scheduler, resources, analyst, mod/sim, logistics, METOC (at HQ).*<br><br>HMX - Send rough draft to HQ via Code 50 for rough review up to Code 01B.* |
| 60 | Originator incorporate changes and prepare "clean" draft report and route to O1B and 01. | HMX- Incorporate changes and obtain CO's approval. Send smooth to HQ via Code 50 OTC*<br><br>VX - Send smooth to HQ via Code 50 OTC* |
| 70 | Division prepare smooth document and route to 01E, 01B, 01PD, 01; 00 for signature and brief.** Code 50 route VX/HMX document to 01E, 01B, 01PD, 01; 00 for signature and brief.** | N/A |
| 90 | Division print copies; Mail Room distribute. | N/A |

* Use E-mail for applicable sections for HQ review/comment.
** Unresolved issues are pointed out to the Commander by the briefer. The briefing (if required) to obtain the Commander's signature occurs no later than 90 days after completion of project operations.

**813. BRIEFING QUICK-LOOK AND FINAL EVALUATION REPORTS**. See Paragraph 311, Preparing, Routing, and Briefing OT&E Documents, for procedures on Washington ARBs, NPDMs, etc.

# Formats for Evaluation Report Preparation

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**The SQT message format was deleted on 7-16-02. SQTs are a phase of OT&E and will be reported via the standard three-part evaluation report template.**

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**Sample 8-1**
**Full Evaluation Report**

***WARNING*** **- - THIS REPORT EXAMPLE DOES NOT CONTAIN THE FORMATTED STYLES THAT THE REPORT TEMPLATE CONTAINS. *DO NOT* COPY AND PASTE THIS REPORT EXAMPLE INTO A DOCUMENT TO BEGIN A NEW REPORT. YOU MUST USE THE 3-PART FORMAT TEMPLATE AVAILABLE ON THE LAN IN "Y:/OT&E REFERENCE LIBRARY/OT&E FORMATS/NEW REPORT FORMAT" FOLDER. HOWEVER, YOU MUST USE THE *INSTRUCTIONS* FOR EACH PARAGRAPH IN THIS EXAMPLE IN CONJUCTION WITH THE TEMPLATE.**

**OPTEVFOR uses a full (three-part) evaluation report as the standard. It consists of a cover page, an executive letter (max two pages) signed by the Commander, and a detailed enclosure. See Table 8-1 for message report formats for other situations.**

**A downgrading statement for classified reports is required on the cover page and the first page of the enclosure .**

**(*) Throughout the document, where applicable, insert appropriate classification. Do not use on UNCLASSIFIED reports. Include the classification of the system name on the cover page if the letter is classified.**

**Overall and page classification marking is accomplished by placing the overall classification at the top and bottom center of each page. See SECNAVINST 5510.36, Department of the Navy (DON) Information Security Program (ISP) Regulation for detailed instructions on document marking, including figures, etc.**

**Each of the three parts (cover, executive letter, and enclosure) is a template, made**

**(i.e., program title, phase, dates, etc.). Double-click on the fields and insert information particular to your program. They also contain styles for consistent paragraph formatting and to generate an automatic table of contents**

**A graphic of your system/equipment on the cover page is required. Program offices will have such a graphic. It cannot be any larger than the space permitted on the cover page. The Graphics shop can help in resizing if necessary.**

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**CLASSIFICATION - - Unclassified upon removal of enclosure (1)**
***(If needed)***

**Use this only if the Commander's letter is unclassified and the enclosure is classified. Delete it if the entire document is classified**

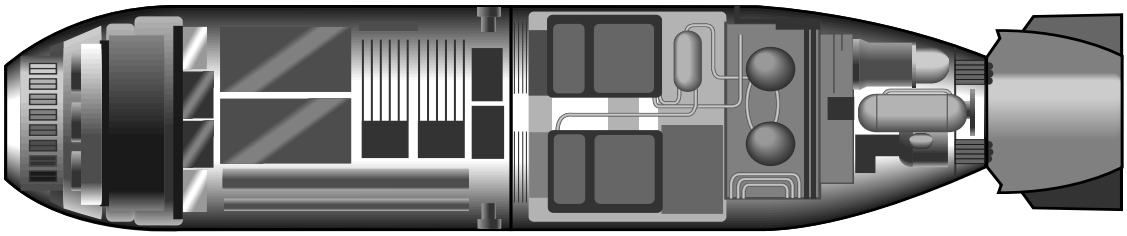
# HYPOTHETICAL LIGHTWEIGHT TORPEDO (HLT) SYSTEM (*) OPERATIONAL EVALUATION

**For a pre-OPEVAL report, use "Initial Operational Test and Evaluation." For OT-III/OT-IV, use "Follow-on Operational Test and Evaluation."**

## OT-IIB (OR NEW OT-C1) REPORT TO THE CHIEF OF NAVAL OPERATIONS

**COMOPTEVFOR 3980 (4000-01)**
**Ser 40/xxx**

**1 September 2001**



Distribution limited to U.S. Government agencies only; test and evaluation document. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR via DTIC using DTIC form 55.

**For SECRET/NOFORN documents the first line of the above distribution statement will be: "Distribution limited to DoD components only;…."**

Derived from: (if classified) (Note: *Do not* state "Multiple Sources." State the name/number of the classification guide(s).)
Declassify on: (if classified)

**Delete this info if the Commander's letter is unclassified.**

**Commander, Operational Test and Evaluation Force**
**Norfolk, Virginia**

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If this letter is unclassified, put UNCLASSIFIED in the header and footer. No heading or paragraph markings are required.

# THE COMMANDER'S REPORT (U)

**This example report does not contain the header, footer, or border of the actual report format.**

**The executive letter is limited to two pages. It is a broad overview, for the decisionmakers, of the phase of testing. It contains these areas of importance: the purpose of testing; identifies OTD and OTC; brief description of project operations; COI assessment/resolution; synopsis of test results; overall test results; conclusions; and major recommendation (fleet introduction, limited fleet introduction, etc.)**

(*) This is my OPEVAL report (OT-IIB) (or new OT-C1) of the Hypothetical Lightweight Torpedo, CNO Project No. 4000-01. The purpose of this test was to determine the torpedo's operational effectiveness and operational suitability and its readiness for fleet introduction. Testing was accomplished by my operational test director, LCDR xxxxx, in conjunction with my operational test coordinator, CDR xxxx.

**The above is the <u>form</u> of the main paragraph. The author must adjust it as necessary for accuracy. Some alterations are:**

- **For a pre-OPEVAL report, "OPEVAL" becomes "EOA" or "OA," and "to determine the…." becomes "to assess the potential…."; "fleet introduction" becomes (for example) "full-scale development."**

**For FOT&E, the first sentence may say "FOT&E," and the second sentence may be something like, "The purpose of the evaluation was to verify the operational effectiveness and operational suitability of the production configuration of the NWS." To change the type and phase of testing to what applies to your report, you must double-click in each form field and make the appropriate selection.**

(*) The HLT System accumulated 936 operating hours over a 39-day period (1 June – 9 July 2001) in aircraft, ship, and submarine platforms at the Barking Sands Tactical Underwater Range and the Bering Sea.

## *OVERALL TEST RESULTS (*)*

**This paragraph simply states whether or not the thresholds and /or required qualitative capabilities were met (or exceeded), and, if not, which ones weren't. Provide a short statement of the deficiencies, and refer the reader to the quantitative/qualitative results in the appropriate place in the enclosure.**

(*) The system met or exceeded all threshold values/qualitative capabilities, except Shallow Water Target (10 failures of "type 4" threat countermeasures; see encl (1), page 7) and Reliability (four operational mission failures/faults in 936 hours of system operating time; see encl (1), page 8) (encl (1). See table 1 for critical operational issue (COI) resolution; enclosure (1), table 3, page 5 for full quantitative test results, and enclosure (1), page 13 for qualitative results.

**To track the status of COIs, report dates, and conclusions, show the past two IOT&E phases and the assessment/resolution of the COIs. For FOT&E, delete phases prior to OPEVAL. Always identify COIs containing a key performance parameter(s) (KPP) with a double asterisk (**) (if any). (Failure of a KPP is automatic failure of the applicable COI.) (Limitations to test are identified by a single *.) For the phase being reported on (the right-hand column), the date can't be included. The effective date will be when the Commander signs your report. This table is limited to the current and past two phases. For the phase being reported, COIs that fail testing will be in bold red type. All other previous phases will be in Section 1 of the enclosure**

**Table 1. (*) COI Resolution**
**CLASSIFICATION (if any)**

| Critical Operational Issues | OT-I (or new OT-A1) (EOA) 16 Aug 97 POE/POS | OT-IIA (or new OT-B1) (OA) 17 Feb 99 POE/POS | OT-IIB (OPEVAL) |
|---|---|---|---|
| ASW Weapon Sensor System | Green | Green | Resolved (SAT) |
| Torpedo Effectiveness | White | Yellow | Resolved (SAT) |
| Terminal Homing | Green | Yellow | Resolved (SAT) |
| Deep Water Target | White | Green | Resolved (SAT) |
| **Shallow Water Target**** | White | Yellow | **Resolved (UNSAT)** |
| Arctic Target | White | Green | Resolved (SAT) |
| Tactics | White | Green | Resolved (SAT) |
| Joint Interoperability | White | Yellow | Resolved (SAT) |
| **Reliability** | White | Yellow | **Resolved (UNSAT)** |
| Maintainability | White | Green | Resolved (SAT) |
| Availability | White | Green | Resolved (SAT) |
| Logistic Supportability | White | Green | Resolved (SAT) |
| Compatibility | White | Green | Resolved (SAT) |
| Interoperability | White | Green | Resolved (SAT) |
| Training | White | Green | Resolved (SAT) |
| Human Factors | Green | Green | Resolved (SAT) |
| Safety | Green | Green | Resolved (SAT) |
| Documentation | White | Green | Resolved (SAT) |

EOA/OA color codes:

Red – High level of risk identified. Yellow -- A moderate level of risk is identified.

Green -- Little or no risk identified. White -- Not evaluated or assessed.

POE -- potentially operationally effective POS -- potentially operationally suitable

** KPP

**The above table has size 10 font as table and column headings, and size 9 for all other table text. All headings are already selected as "Headings" and will automatically appear on each page as a table breaks. All tables throughout the report will follow this same format.**

**The goal is to have all COIs resolved by OPEVAL. This often means that limited test data must be augmented somehow, either through additional fleet data or applicable data from previous testing. If a COI must remain partially resolved or unresolved (in any phase of testing) because of a limitation, indicate this by use of an asterisk beside the COI assessment/ resolution and a note at the bottom of the table.**

**For EOAs, OAs, and other pre-OPEVAL phases (case-by-case basis), the following color rating system will be used to provide OPTEVFOR's assessment of risk associated with each COI:**

Green -- Little or no risk identified.
Yellow -- A moderate level of risk is identified.
Red -- There are areas of significant risk.
White -- Not evaluated or assessed.

## OPERATIONAL IMPACT ASSESSMENT (*)

**Guidelines - - Limit to two paragraphs**

**The information in this section is meant to provide additional insight into Navy/joint military operations and mission accomplishment and as feedback for future system upgrades. Discuss specific impacts (good or bad) on theater/fleet/unit operations, hands-on operation/maintenance, and any necessary workarounds. Discussion here could also include areas beyond effectiveness and suitability of the specific system; e.g., relation of impacts, system limitations, and capabilities to deployment, employment, and sustainment issues. Limit discussion of all areas to the most relevant issues. *Discussion of meeting/not meeting thresholds is not intended for OIAs.***

(*) For submarine use, the HLT is highly susceptible to incorrect umbilical cable attachment at the time of torpedo load. It is absolutely imperative that connectors parts A and B be pressed together until an audible click is heard. The amount of silicone grease used in this procedure is also critical. While well explained in the technical manual and ordnance directive, failure to apply adequate silicone grease will allow flooding of the connector and will render the weapon unusable. The weapon is not a dud, but cannot be launched until backhauled, cleaned, and reloaded for launch.

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

**In formulating conclusions, some may require a caveat regarding the level of operational effectiveness (e.g., a missile may be operationally effective to a certain altitude and potentially operationally effective at higher altitudes; or an equipment or system may be operationally effective against a specific threat and potentially operationally effective or not operationally effective against other portions of the threat).**

**Consider using a matrix in the enclosure to display your conclusions if there are multiple threat categories of regions with different conclusions on operational effectiveness. Also, it may be necessary to state that a system is potentially operationally effective or operationally suitable and cannot be judged operationally effective or operationally suitable until areas of risk/shortfalls or specific deficiencies have been corrected by the developer and resolved in an additional phase of OT&E. When such occasions arise, don't hesitate to caveat the conclusions to provide the decisionmaker with our very best input to support the pending decision. In addition, refer to the appropriate portion of Section 4 of the enclosure containing the logic that supports the caveat to the conclusion. Use the appropriate form illustrated in the following paragraphs to present conclusions. Guidelines for determining conclusions are provided in paragraph 807.**

***The following conclusion examples are not necessarily representative of the HLT System used as a report sample in this chapter. They are simply examples of various situations that could happen during any phase of testing for any program. "HLT System" is used where it would apply to the conclusions and recommendations of this sample as compared to its results.***

**Supportive of a recommendation for fleet introduction:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS is operationally effective.

(*) The NWS is operationally suitable.

**The recommendation that would derive from these conclusions is: "Recommend the NWS for fleet introduction."**

**or**

**Supportive of a recommendation for limited fleet introduction. Conclusions addressing "potential" will be used for pre-OPEVAL and FOT&E phases only. At OPEVAL, the system will either be operationally effective/not operationally effective, or operationally suitable/not operationally suitable:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS has the potential to be operationally effective.

(*) The NWS has the potential to be operationally suitable.

**The recommendation that would derive from these conclusions is: "Recommend the NWS for limited fleet introduction."**

**or**

**Supportive of either limited fleet introduction or fleet introduction:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS is operationally effective against threat targets out to 25,000 yards, and has the potential to be operationally effective against threat targets between 25,000 yards and its outer range of 30,000 yards (see encl (1), page xx, par. 3.x).

(*) The NWS is operationally suitable.

> **The results paragraph that supports the effectiveness conclusion is referred to in the conclusion paragraph as indicated above. The recommendation that would derive from these conclusions could either be for limited fleet introduction or fleet introduction, based on operational factors such as threat population, intended host platforms etc.**

**or**

**Not supportive of fleet introduction:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS is not operationally effective.

(*) The NWS is not operationally suitable.

> **The recommendation that would derive from these conclusions is: "Do not recommend the NWS for fleet introduction."**

**or**

**Results do not support a conclusion on operational effectiveness or suitability:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) Because of the test limitations, I cannot provide a conclusion regarding operational effectiveness or operational suitability of the NWS.

> **No recommendation regarding fleet introduction would be derived from these conclusions.**

**or**

**Conclusions affected by significant limitations:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS has the potential to be operationally effective. Because performance of the system in a jamming environment and against targets having a tracking capability is critical to the system's mission, the system cannot be judged operationally effective until the antijam and self-protection modes have been operationally tested.

The NWS is operationally suitable.

**The recommendation that could derive from these conclusions is: "Recommend the NWS for limited fleet introduction." A recommendation for further OT&E, prior to fleet introduction, to complete operational effectiveness testing that will resolve the issues addressed in the conclusions must be included.**

**or**

**Conclusions addressing effective operational employment:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS is operationally effective.

(*) The NWS is not operationally suitable. The severity of the suitability deficiencies precludes effective operational employment of the system (see encl (1), page xx, par. 3.x).

**This Conclusion paragraph applies when the system was operationally effective within the context of SECNAVINST 5000.2B, but due to severity of operational suitability deficiencies, could not be operated effectively by user personnel (e.g., although the system met all operational effectiveness criteria, the skill level necessary for operators and maintainers to overcome certain suitability deficiencies was such that effective operation of the system was not possible).**

**The recommendation that would derive from these conclusions is: "Do not recommend the NWS for fleet introduction until the following have been corrected and correction is verified in the next (or.. "in an additional") phase of OT&E." These conclusions would not support a recommendation for limited fleet introduction, thus it need not be addressed.**

**or**

**Conclusions addressing the threat:**

## 5. EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The NWS is operationally effective against the (cite the specific threat characteristics, capabilities, and parameters) as stated in reference (b).

(*) The NWS has the potential to be operationally effective against the (cite the specific threat characteristics, capabilities, and parameters) as stated in reference (b). The NWS cannot be judged operationally effective until the capability to classify these threat systems has been incorporated and operationally tested (see encl (1), page xx, par. 3.x).

(*) I cannot provided a conclusion regarding the NWS operational effectiveness against the (cite the specific threat characteristics, capabilities, and parameters), as stated in reference (b),. The number, types, or sophistication of threat representative targets were not available to support operational testing (see encl (1), page xx, par. 3.x).

(*) The NWS is operationally suitable.

**The conclusions will address the threat tested per the STAR, TA, and TEMP. if the results of testing indicate a system is not effective or potentially effective against a specific threat of threat level tested, or that a seemingly operationally effective system (compared to the TEMP criteria) is potentially effective or not effective against a specific threat or threat category, it may be necessary to caveat our conclusions as indicated above. The STAR used in preparing the test plan and referenced in the reference block of the report will be the threat assessment referenced in conclusions addressing the threat (see par. 809).**

**Our recommendation regarding fleet introduction is dependent on the impact the operational effectiveness shortcomings, as they relate to the threat, have on the system's capability to perform its mission. The best recommendation that would be derived from the above conclusions would be: "Recommend the NWS for limited fleet introduction."**

**or**

**Caveating the conclusions. When an evaluation report (including a quick-look) contains limitations that are particularly significant in terms of the overall evaluation, caveat the conclusions as follows:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) Within the constraints imposed by the test limitations . . . .

**Deciding whether to use the above caveat is a matter of judgment. Example: an aircraft had several flight envelop and weapons carriage restrictions during OPEVAL.**

**The conclusions for the HLT System based on the sample deficiencies are:**

## EFFECTIVENESS AND SUITABILITY FINDINGS (*)

(*) The HLT System is operationally effective against threat targets in the deep water and arctic environments.

(*) The HLT System is not operationally effective in the shallow water environments.

(*) The HLT System is not operationally suitable.

## RECOMMENDATIONS (*)

**Recommendations from OPTEVFOR evaluation reports are presented to the decisionmaker. Recommendations here will be limited to fleet introduction/limited fleet introduction/no fleet introduction/continued program development, and will cite the failed COIs. All other recommendations will be listed in section 4 of the enclosure.**

**At OPEVAL, recommendations *against* fleet/limited fleet introduction must include the requirement that the deficiency/deficiencies be retested in the next planned phase of testing; or, if there is no further testing planned, an additional phase be added to support the retest.**

**Any recommendations in the executive letter to correct deficiencies *must be used in the context shown, and must be limited to those that preclude fleet introduction*.**

**The recommendation for the HLT System based on the sample deficiencies is:**

**No fleet introduction**

(*) I do not recommend fleet introduction for the HLT System until the Shallow Water Effectiveness and Reliability issues (enclosure (1), pages xx, paragraphs 3.xx) have been corrected, followed by verification in an additional phase of operational test and evaluation (OPEVAL Phase 2).

**or**

**For a fleet introduction recommendation (based on partially resolved COIs):**

***(The below recommendations are not representative of the HLT System. They are shown simply as examples.)***

(*) I recommend fleet introduction for the NWS. Correct the ….. and the …. (enclosure (1), pages xx, paragraphs 3.xx) prior to the next planned (or - - "in an additional") phase of operational testing.

**or**

**For a limited fleet introduction recommendation:**

(*) I recommend limited fleet introduction for the NWS to ships that have no other ASM self-defense capability.

(*) I will consider a fleet introduction recommendation after the EMI-induced noise and the…. (enclosure (1), pages xx, paragraphs 3.xx) have been corrected, and correction has been verified in the next planned (or - - "in an additional") phase of operational testing.

**Whenever possible, state the exact limits of a limited fleet introduction recommendation (e.g., limited fleet introduction in a specific aircraft type or ship class, or limited fleet introduction on ships or aircraft preparing for deployment to a specific area to carry out a specific mission, and use of the system would enhance the capability to successfully carry out the mission). The intent is not to get involved with numbers, but to make the decisionmaker aware of any operational limits that should be placed on the system or equipment's introduction to the fleet.**

**or**

**Based on our conclusions, it may be necessary to recommend something less than what the DA or sponsor will recommend at the next decision point. It may be necessary to recommend limited fleet introduction, with a recommendation for fleet introduction delayed until the system demonstrates the capability to counter a specific threat or threat category. See the example below. Include reference to the current STAR in recommendations addressing the threat.**

**Recommendations addressing the threat:**

(*) I recommend limited fleet introduction for the NWS to units that have no other self-defense capability.

(*) I will consider a fleet introduction recommendation after the capability for the NWS to classify the (cite the specific threat systems or capabilities) as stated in reference (b) has been corrected (enclosure (1), page xx, paragraph 3.x), and correction has been verified in the next planned (or - - "in an additional") phase of operational testing.

**or**

**Recommendation addressing milestones other than Milestone III (new A, B, C):**

(*) I recommend proceeding with engineering and manufacturing development of the NWS.

**This recommendation would be made to support a Milestone II decision.**

**or**

**No conclusion:**

(*) I recommend continuing the acquisition program as defined in the TEMP.

**This recommendation is made if OT&E results are satisfactory insofar as they are available, and there is no reason to recommend termination of the CNO-approved program.**

(CLASSIFICATION*)

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**The enclosure cover page is a copy of the overall report cover page title. To change the type and phase of testing to what applies to your report, you must double-click in each form field and make the appropriate selection.**

# HYPOTHETICAL LIGHTWEIGHT TORPEDO (HLT) SYSTEM (*)

# OPERATIONAL EVALUATION

# OT-IIB (NEW OT-C1) FINAL REPORT

For SECRET/NORORN documents, the beginning of the below distribution statement will read "Distribution limited to DOD components only;……"

Distribution limited to U.S. Government agencies only; test and evaluation document dated_____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR via DTIC using DTIC form 55.

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Encl (1)

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**The format template contents pages are automatically generated. They are set up to record the first two levels of headings throughout the enclosure, and take on the type, size, and color of those headings.**

**When using the report enclosure format template, do not delete the contents pages. When your report is completed, right-click the mouse anywhere inside of the table of contents; click on "Update Field." When the dialog box opens, click on "Update entire table," then "OK" for your own headings and page numbers to appear. If updating page numbers later on, repeat the procedure, but click on "Update page numbers only," then click on "OK." The Tables and Figures contents each have their own fields. Follow the above procedure for updating those.**

**The page numbers at the right of the contents pages are links to that particular paragraph. Click on the page number, and you go there. When you click, the Web Tool Bar will open. To go back to the contents page, click on the "Back" arrow on the tool bar.**

**All tables in the actual report format enclosure also have built-in headings. This is so the contents will list all tables. Follow the above procedures to update table headings and page numbers. Figures that you insert yourself must have the Figure Heading 1 style inserted from the style formatting bar. Figure headings go *below* the figures.**

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## *SECTION 1 - - TEST OPERATIONS (*)*

# 1. CHRONOLOGY (*)

**1.1**

(*) Project operations were conducted per references (a) and (b) (see appendix D) from 1 June until 9 July 2001 at Barking Sands Tactical Underwater Range and in the Bering Sea.

**This paragraph is an expansion of the 2nd paragraph of the Commander's letter. Details such as periods during which testing was suspended (including full particulars regarding any deficiency reports that were issued), dates of sorties or firings, etc., should be included.**

**Test chronology is especially important for projects that involved extensive testing over long periods of time, particularly when several ranges were used or deficiencies caused long delays.**

# 2. SYSTEM DESCRIPTION (*)

**2.1**

(*) The Mk 007 HLT is a new-generation ASW torpedo, which can be launched by surface, air (multiservice), and submarine platforms. The HLT System consists of the Mk 007 torpedo and the torpedo interface console (TIC), which provides the torpedo with a continuous targeting interface with the host platform. Torpedo propulsion is provided by a revolutionary fuel cell system that uses liquid alcohol and gaseous oxygen, providing run distances up to 25,000 yards. The overall torpedo weight, with fuel and warhead, is 1,600 pounds. The HLT System will be forward deployed with an aircraft squadron or ship for long periods where maintenance facilities are limited. Additional details are in reference (a).

**This paragraph may be titled Equipment Description if more appropriate to the test item.**

**This paragraph provides a BRIEF, functionally oriented statement of the actual test configuration of the equipment or system and what it is supposed to do. DO NOT GO INTO EXTENSIVE DETAIL of all subsystems, etc. Refer the reader to the TEMP.**

# 3. SYSTEM OPERATION (*)

**3.1**

(*) The system was operated by fleet personnel in the intended operating environment. Personnel in assigned ships, submarines, and aircraft squadrons operated and tested the HLT System as COMOPTEVFOR trusted agents. Personnel skills required for the HLT System operation consisted of familiarity with torpedoes and personal computers using Windows-based operating systems, and completion of the HLT System training courses.

**Records the level of skill and general procedures used for equipment operation during testing. Specifies any difference between operating procedures used during testing and those planned for deployed systems.**

## 4. METHODOLOGY (*)

**This paragraph is a synopsis ('big picture') of methods used to run the test; support equipment, ranges, data recording and analytical methods used, test team composition. Add some information about your scenarios…who did what and when. Provide a table of missions/sorties by aircraft or ship type, etc., if necessary, to better illustrate your overall test.**

**4.1**
(*) Three aircraft types (P-3, SH-60, and C-130), three submarines (SSN 763, SSN 668, and AGSS 555) and one destroyer (DD 967) were assigned to the two forces (blue and orange) and were dedicated to the conduct of operational test. All but the AGSS 555 were equipped with the HLT system. AGSS 555 was used strictly as a target. The aircraft were flown by six fleet pilots.

**4.2**
(*) A total of 40 missions in 936 operating hours, using the scenarios shown in section 3, were accumulated for dedicated operational test. The HLT System underwent flight evaluations using pilot profiles outlined by the HLT syllabus and the ORD. Missions were flown in the ASW search, contact, and destroy categories. The majority of the aircraft missions were flown out of Roosevelt Roads, PR, Naval Air Station. Table 2 provides a summary of the 40 missions.

***Caution!***
***Notes in classified tables must carry a classification marking!***

**Table 2. (*) OT-IIB Mission Summary**
**CLASSIFICATION (if rqd.)**

| Shooter | Mission Type | Day | Night | Target | Shallow/Deep | Cumulative | |
|---|---|---|---|---|---|---|---|
| | | | | | | Sorties/Missions | Hours |
| P-3 | | | | | | | |
| SH-60 | | | | | | | |
| C-130 | | | | | | | |
| DD 967 | | | | | | | |
| SSN 763 | | | | | | | |
| **Total** | | | | | | | |

## 4.3
(*) ASW pilots completed electronic questionnaires during the postmission debrief for each test sortie. The questionnaires logged pilots' observations, ratings of maneuvers flown, and any human factors issues noted during the mission. Data were also collected from cockpit voice recordings and flight data recorder (FDR) downloads. Submarine and surface ship officers, fire controlmen, and torpedomen each completed electronic questionnaires.

**4.4**
(*) Test team maintenance personnel (submarine, shipboard, and air) conducted evaluations during test missions to assess operational suitability. Maintenance actions for the aviation units were conducted per published maintenance manuals and logged into the Naval Aviation Logistics Command Management Information System (NALCOMIS). Shipboard and submarine units used the 3-M System documentation. Personnel also completed hard copy questionnaires following maintenance events. Maintenance demonstrations supplemented the limited scheduled and daily maintenance to provide a more complete evaluation.

**4.5**
(*) Submarine operations employed …

**4.6**
(*) Surface unit operations employed…

## 5. LIMITATIONS (*)

**List here the severe, major, minor, and inherent (EOA/OA only) limitations to the evaluation that affected the results, conclusions, and recommendations. These are the limitations predicted in the Part IV of the TEMP and in the test plan, and those that were unpredicted and encountered during testing.**

**Severe: Those that precluded resolution of COIs and formulation of conclusions regarding operational effectiveness and operational suitability.**

**Major: Those that precluded resolution of COIs and possibly affected formulation of conclusions regarding operational effectiveness and operational suitability.**

**Minor: Those that affected testing but were not severe enough to impact resolution of COIs and did not preclude formulation of conclusions regarding operational effectiveness and operational suitability.**

**Inherent: This limitation is almost a 'standard' for EOAs/OAs due to the immaturity of the system/equipment at the time of testing. COIs are evaluated as risk assessments (color-coded white, green, yellow, red), not intended for resolution. Conclusions are always "potentially" effective and suitable.**

**When addressing the limitations, address only the category or categories that apply, and remember to include the COIs affected after each major and/or severe limitation that affects the resolution of COIs or our ability to form conclusions.**

**Limitations must be expressed so that their import and impact on system performance are readily understood. Keep in mind, these limitations represent limitations to the evaluation after it's *all over*. They have nothing to do with how hard it was to get services, or how long it took.**

***(The limitations below don't reflect those that may be found in the HLT System. They are here simply as examples of how limitations are presented. )***

## 5. LIMITATIONS (*)

**5.1**
(*) The following major limitations did not preclude formulation of conclusions but do require additional testing to resolve critical operational issues (COI) and complete evaluation of operational effectiveness and operational suitability:

**or**

**5.1**
(*) The following major limitations resulted in only partial resolution of COIs and only supported a conclusion that the HLT System is potentially operationally effective:

**5.1.1**
(*) The NWS was not tested in the antijam mode because of security restrictions placed on jamming operations and nonavailability of a suitable simulator. (EW Capability)

**5.1.2**
(*) The NWS was not tested in maneuvering flight against targets having a tracking capability because the targets were not available. This prevented testing of the system self-protection mode. (Survivability)

**or**

**A limitation will be included when it is necessary to inform the decisionmaker that some portion of the threat described in the current threat assessment could not be adequately tested during operational testing. The category (severe and/or major) assigned to the limitation will be dependent upon its impact on the system's capability to complete its mission and the requirement for additional operational testing. The limitation will include reference to the current STAR/ONI TA. An example of a limitation that may be required is:**

**5.1.1**
(*) The NWS was not tested in a countermeasures environment, precluding an evaluation of the system's capability to operate in the expected threat environment as stated in reference (b). (Detection, Tracking)

**5.2**
(*) The following minor limitations did not affect the resolution of COIs or the ability to draw a conclusion regarding the operational effectiveness or operational suitability of the HLT System:

**5.2.1**
(*) Threat targets and countermeasures were simulated by U.S. vessels and countermeasures.

**5.2.2**
(*) The HLT was not tested in all environments in which it is expected to operate.

**or**

**5.2**
(*) The following limitations are inherent to immature systems/equipment and apply to this EOA (or OA). There is no intent to resolve critical operational issues. At best, the system will be judged only as potentially operationally effective and potentially operationally suitable:

5.2.1
(*) The EOA (or OA) is being conducted at the contractor's facility with contractor personnel operating and maintaining the system under conditions not representative of the intended operating environment.

5.2.2
(*) No actual operational testing will be conducted; the demonstration will be under controlled conditions.

5.2.3
(*) All system documentation (operator and maintenance manuals, ALSP, training plans) are in an early draft stage and not are not expected to be representative of a near-finished product.

5.2.4
(*) The VIRGINIA Class Nonpropulsion Electronics System will not be operating in its intended shipboard environment; simulation of the shipboard environment with the OPTEVFOR accredited COATS facility will not be possible.

5.2.5
(*) All targets in the scenario will be simulated either through the OPTEVFOR accredited SIM/STIM system or the OPTEVFOR accredited OBTT subsystem, and, therefore, do not completely simulate the projected threat and its assets.

5.2.6
(*) The crew will not be fully representative of a shipboard fire control party or section-tracking party, in that the amount of time the crew will have been operating together will limit their cohesiveness. Some OTDs may be used as operators as well as program office on-site support personnel.

5.2.7
(*) There is a lack of some subsystems and of suitable simulations for those systems. These limitations will not impact the ability to assess overall potential operational effectiveness and suitability, but may limit the assessment of some COIs.

**or**

## 5. LIMITATIONS (*)

**5.1**
(*) There were no limitations.

## *SECTION 2 - - PROJECT BACKGROUND (*)*

# 1. HISTORY (*)

**1.1**
(*) The HLT was developed to accomplish the ASW task using a lightweight homing torpedo launched from existing surface ships and aircraft. The mission need is highlighted in Decision Coordinating Paper 173, revised 1 November 1998. The Secretary of Defense, at Milestone 1 (or new MS A), made the decision to develop the HLT, and reaffirmed that decision at Milestone II (or new MS B).

**Par. 1 refers to the document that established the need for the system, identifies the applicable STAR/ONI TA, and addresses significant modifications made to the system as a result of DT (e.g., TECHEVAL).**

**DT information will be shown here *only* if the system/equipment underwent a significant change, resulting in a different configuration.**

# 2. PREVIOUS OT&E (*)

**This paragraph emphasizes OT&E that led to the testing being reported. Include COMOPTEVFOR's input at major milestones (e.g., conclusion regarding operational effectiveness and operational suitability, and recommendation regarding fleet introduction). Show here as many previous phases as possible, landscaping the table (on the next page) if necessary. However, do not include more phases than one landscaped table on one page can hold. Do not include the phase being reported on.**

**2.1 OT-1 (*) (or new OT-A1)**

**2.1.1**
(*) OPTEVFOR conducted an early operational assessment (EOA) from 1 April to 16 August 1997, including a system demonstration at the Atlantic Underwater Test and Evaluation Center in the Bahamas. COMOPTEVFOR concluded the HLT System was potentially operationally effective and potentially operationally suitable, and recommended continuation of the HLT program development.

**2.2 OT-IIA (*) (or new OT-B1)**

**2.2.1**
(*) OPTEVFOR conducted an operational assessment (OA) from 26 August 1998 to 17 February 1999 at the Nanoose Underwater Tracking Range, British Columbia, Canada, and the Quinault Underwater Tracking Range, WA. COMOPTEVFOR concluded the HLT System was potentially operationally effective and potentially operationally suitable, and recommended continuation of the HLT program development leading to operational evaluation. See table 3 for COI resolution.

**All tables in the report will have the same appearance (format) as that below. All have size 10 bold font for the titles and column heads, and size 9 regular text inside of the table.**

**This table will contain as many previous phases of testing as possible. However, limit it to one full-page landscaped table (placed on a following page), if necessary.**

***Caution!***
***Notes in classified tables must carry a classification marking!***

**Table 3. (*) Previous OT&E CLASSIFICATION (if rqd.)**

| COI | OT-I (or new OT-A1) (EOA) 16 Aug 97 POE/POS | OT-IIA (or new OT-B1) (OA) 17 Feb 99 POE/POS |
|---|---|---|
| ASW Weapon Sensor System | Green | Green |
| Terminal Homing | Green | Yellow |
| Deep Water Target | White | Green |
| Shallow Water Target | White | Yellow |
| Arctic Target | White | Green |
| Tactics | White | Green |
| Joint Interoperability | White | Yellow |
| Reliability | White | Yellow |
| Maintainability | White | White |
| Availability | White | White |
| Logistic Supportability | White | White |
| Compatibility | White | Green |
| Interoperability | White | Green |
| Training | White | Green |
| Human Factors | Green | Green |
| Safety | Green | Green |
| Documentation | White | Green |

Color codes for EOAs/OAs are:

Red – High level of risk identified. Yellow – Moderate level of risk identified.

Green -- Little or no risk identified. White -- Not evaluated or assessed.

## 2.3 PREVIOUS MAJOR DEFICIENCIES (*)

**2.3.1**
(*) The following major deficiencies from OT-IIA (or new OT-B1) were evaluated during OT-IIB (or new OT-B2) (if any): (or: No major deficiencies (for EOA/OA - - areas of risk/shortfall) from previous testing were evaluated.)

**2.3.1.1**
(*)……(COI) (corrected) or (undetermined)

**2.3.1.2**
(*)……(COI) (uncorrected) or (not tested)

## *SECTION 3 - - TESTS AND RESULTS (*)*

(*) All E- and S-tests were accomplished using the procedures and data analysis described in reference (a).

**The above statement will apply if there were *no* deviations from what your test plan said you were going to do. If your procedures or data analysis had to change, this statement might read, for example:**

(*) All E- and S-tests except test E-1 were accomplished using the procedures and data analysis described in reference (a). For deviations, see Procedures and Data Analysis paragraphs 3.2 and 3.3

**The total results of this section of the enclosure include full written discussion of all sever/major results and severe/major deficiencies, followed by any minor/other results and minor/other deficiencies that are of significance to the developer.**

**Table 2 shows all quantitative COIs/characteristics and their results as compared to their thresholds. Any failures should be in bold red text.**

# 1. QUANTITATIVE TEST RESULTS (*)

### 1.1

(*) Table 4 contains the major quantitative test results from OT-IIB.

***Caution!***
***Notes in classified tables must carry a classification marking!***

**Table 4. (*) Major Quantitative Test Results**
**CLASSIFICATION (if rqd.)**

| Characteristic | Parameter | Result | Threshold |
|---|---|---|---|
| Deep Water Target | $T_{EFF}$ (KPP) Deep Water Target | 0.89 | ≥0.50 |
| **Shallow Water Target** | **$T_{EFF}$ (KPP) Shallow Water Target** | **0.44** | **≥0.50** |
| Arctic Target | $T_{EFF}$ (KPP) Arctic Target | 0.83 | ≥0.50 |
| **Reliability** | $R_{HLT}$ (KPP) | 0.93 | ≥0.90 |
| | **$MTBOMF_{TIC}$** | **234 hr** | **≥300 hr** |
| Maintainability | $MCMTOMF_{TIC}$ | 2.5 hr | ≤4 hr |
| | $MaxCMTOMF_{TIC}$ | 3.5 hr | ≤7 hr |
| | $MRT_{TIC}$ | 4.6 min | ≤5 min |
| Built-in Test | $P_{CD}$ (TIC) | 0.98 | ≥0.95 |
| | $P_{CFI}$ (TIC) | 0.92 | ≥0.90 |
| | FA (TIC) | 0.024 | ≤0.25 |
| Availability | $A_O$ (TIC) | 0.96 | ≥0.93 |

KPP key performance parameter
$T_{EFF}$ torpedo effectiveness
$P_{ACQ}$ probability of acquisition
$P_{HIT}$ probability of hit
$R_{HLT}$ torpedo mission reliability
$MTBOMF_{TIC}$ mean time between operational mission failure/fault for torpedo interface console (TIC)
$MCMTOMF_{TIC}$ mean corrective maintenance time for operational mission failure/fault for TIC

| | |
|---|---|
| $MaxCMTOMF_{TIC}$ | maximum corrective maintenance time for operational mission Failure/fault for TIC |
| $MRT_{TIC}$ | mean reboot time for TIC |
| $P_{CD}$ | probability of correct detection |
| $P_{CFI}$ | probability of correct fault isolation |
| FA | false alarm |
| $A_O$ | operational availability |

## 2. SCENARIOS (*)

**2.1**
(*) The scenarios employed for effectiveness testing of the HLT were developed from the STAR/ONI TA 7-97, Antisubmarine Weapon Systems of May 1997, reference (c), and are described below.

**These are the scenarios from your test plan. If you were not able to run the scenario stated in the test plan, write a full description of what was done.**

### 2.1.1 Scenario A: Gate Keeper Operations (*)

**2.1.1.1**
(*) The blue force (P-3, SH-60, C-130, SSN 763, and DD 967) was provided with a general threat track. Blue forces established a barrier search. Upon detection of an orange submarine, blue forces prosecuted by conducting rotational attacks to allow expenditure of force weapons (HLT). Orange forces (SSN 688/AGSS 555) simulated a transiting threat diesel submarine and were required to reach the goal line by X time. Orange forces could approach and attack blue forces as desired.

### 2.1.2 Scenario B: Surface Ship Barrier Operations (*)

**2.1.2.1**
(*) Blue force (DD 967) conducted a barrier search, but did not deploy SH-60 aircraft. Orange submarines (SSN 688/AGSS 555) were required to approach and attack blue forces. After any attack, each unit was required to disengage, lose contact, and re-prosecute.

### 2.1.3 Scenario C: Arctic Area Search Operations (*)

**2.1.3.1**
(*) Blue submarine (SSN 763) conducted non-vectored area search to detect and attack the orange threat (SSN 688). Orange threat was required to approach and attack blue submarine.

## 3. TEST E-1 — ASW WEAPON SENSOR SYSTEM (*)

**3.1**
(*) Will the installed sensor systems in air, surface ship, and submarine ASW platforms adequately support detection, classification, and localization of threat targets with the accuracy necessary for HLT delivery and target acquisition?

**The above is the object of the test, as stated in your TEMP part IV and your test plan.**

**3.2 Procedure (*)**

**If procedures were used other than what was stated in the test plan, a full description of what was done must be written. This subparagraph must tell how the equipment was operated and how the data were gathered. If you followed your test plan (per the opening paragraph in this section), delete this paragraph.**

**3.3 Data Analysis (*)**

**If data analysis could not be accomplished as stated in the test plan, this subparagraph must describe how the data were analyzed, including significant assumptions and mathematical relationships, and definitions of such significant factors as success, failure, or incomplete test; material failures and failure categories; and up and downtimes. Ensure any and all formulas used for calculations are presented here, if different than in the test plan. If you followed your test plan (per the opening paragraph in this section), delete this paragraph.**

**3.4 Results (SAT) (*)**

**3.4.1**
(*) The HLT System demonstrated the capability to perform all sensor system operations.

**The results are the clear, unambiguous results of testing and analysis. Some aids in preparing them are:**

- **Write them in the past tense, and emphasize numbers rather than adjectives.**
- **Qualitative results must directly answer the question as stated in the object of the test (see the above result).**
- **Use tables and graphs, if necessary, to display detailed results to the maximum extent possible.**
- **Summarize the database rather than presenting a mass of raw data, but don't summarize so much that you leave out numbers completely. For example, consider a test whose object is to determine the range at which detection occurs; the**

**database consists of 120 runs of a target against the detection device. It's usually not necessary to provide a tabulation of the detection range in each of 120 runs. (If it is desirable to publish these run-by-run data, an appendix is a better place to put them.) It's usually sufficient to provide a mean detection range, and maximum and minimum ranges observed, or a set of means as functions of specified variables (e.g., with or without active jamming), and to specify the size of the database. But don't go beyond this summarization and attempt to pass off a conclusion.**

- **Ensure that any deficiencies noted during testing that impact overall mission accomplishment are thoroughly discussed. This applies to both E- and S-test results.**

### 3.4 Deficiencies (*)

**3.4.1**
(*) No deficiencies were noted.

### 3.5 Operational Considerations (*)

**Although this paragraph is shown within each E- and S-test throughout both the report example and the format template, it is optional. If it's not used, delete it. The purpose of operational considerations is to provide the rationale for recommendations (in the next section) that are based on operational thinking and/or on the test results presented in this section. These are all based on sever/major/minor/other deficiencies and their discussion noted in the Results paragraphs of E- and S-tests.**

**See page 2, Paragraph 803, Operational Considerations, of this chapter for further explanation of this paragraph.**

## 4. TEST E-2 — TORPEDO EFFECTIVENESS (*)

**4.1**
(*) Will the HLT be effective against a submarine, maneuvering and nonmaneuvering, with and without countermeasures?

### 4.2 Results (SAT) (*)

**4.2.1**
(*) The overall demonstrated torpedo effectiveness was 0.69 (criterion: $\geq$0.50), based on 29 hits in 42 shots.

### 4.3 Deficiencies (*)

**4.3.1**
(*) No major deficiencies were noted.

**4.3.2 Minor (*)**
(*) ------

**4.4 Operational Considerations (*)**

## 5. TEST E-3 — TERMINAL HOMING (*)

**5.1**
(*) Will the HLT terminal homing be effective against threat targets, maneuvering or nonmaneuvering, with or without countermeasures?

**5.2 Results (SAT) (*)**

**5.2.1**
(*) The HLT System terminal homing demonstrated the capability to be effective against threat targets, maneuvering or nonmaneuvering, with or without countermeasures.

**5.3 Deficiencies (*)**

**5.4 Operational Considerations (*)**

## 6. TEST E-4 — DEEP WATER TARGET (*)

**6.1**
(*) Will the HLT be effective against a target operating in water with a depth greater than 100 fathoms?

**6.2 Results (SAT) (*)**

**6.2.1**
(*) The demonstrated $T_{EFF}$ for deep water targets was 0.89 (KPP criterion: $\geq$0.50), based on $P_{ACQ}$ of 18 target acquisitions out of 18 acquisition attempts; and $P_{HIT}$ of 16 hits out of 18 target acquisitions in water depth greater than 100 fathoms.

**6.3 Deficiencies (*)**

**6.3.1 Minor (*)**
(*) The two misses were attributed to…….

**6.4 Operational Considerations (*)**

## 7. TEST E-5 — SHALLOW WATER TARGET (*)
**7.1**

(*) Will the HLT System be effective against a target operating in water with a depth less than 100 fathoms?

**7.2 Results (UNSAT) (*)**

**7.2.1**
(*) The demonstrated $T_{EFF}$ against a shallow water target was 0.44 (KPP criterion: $\geq$0.50), based on $P_{ACQ}$ of 18 target acquisitions out of 18 acquisition attempts; and $P_{HIT}$ of 8 target hits out of 18 target acquisitions in water depth less than 100 fathoms.

**7.3 Deficiencies (*)**

**7.3.1 Severe (*)**

**7.3.1.1**
(*) The 10 failures were a result of "type 4" threat countermeasures, which caused the torpedoes to miss their targets (poor torpedo $P_{HIT}$).

**7.4 Operational Considerations (*)**

## 8. TEST E-6 — ARCTIC TARGET (*)

**8.1**
(*) Will the HLT be effective against a target operating under ice in the arctic region?

**8.2 Results (SAT) (*)**

**8.2.1**
(*) The demonstrated $T_{EFF}$ against an arctic target was 0.83 (KPP criterion: $\geq$0.50), based on $P_{ACQ}$ of 6 target acquisitions out of 6 acquisition attempts; and $P_{HIT}$ of 5 target hits out of 6 target acquisitions in arctic waters.

**8.3 Deficiencies (*)**

**8.3.1 Minor (*)**

**8.3.1.1**
(*) The one miss was attributed to…

**8.4 Operational Considerations (*)**

## 9. TEST E-7 — TACTICS (*)

**9.1**

(*) Will the tactics developed for the HLT System support its effective employment in its operating environment?

**9.2 Results (SAT) (*)**

**9.2.1**
(*) ……

**9.3 Deficiencies (*)**

**9.3.1**
(*) No deficiencies were noted.

**9.4 Operational Considerations (*)**

## 10. TEST E-8 — JOINT INTEROPERABILITY (*)

**10.1**
(*) Will the HLT effectively interface and operate with corresponding systems or units of other U.S. forces in the execution of its intended operational mission?

**10.2 Results (*)**

**10.3 Deficiencies (*)**

**10.4 Operational Considerations (*)**

## 11. TEST S-1 — RELIABILITY (*)

**11.1**
(*) Will the reliability of the HLT support completion of its mission?

**11.2 Results (UNSAT) (*)**

**11.2.1**
(*) The demonstrated reliability (R) for the HLT was 0.93 (KPP criterion: $\geq$0.90), based on 42 torpedo missions without an OMF, and 45 total missions.

**11.2.2**
(*) The demonstrated MTBOMF for the HLT TIC was 234 hours (criterion: $\geq$300 hr), based on four operational mission failures/faults in 936 hours of system operating time.

**When the database consists of questionnaires filled in by test personnel, remember that the results that are being reported are results of analysis of these questionnaires, and analysis is a COMOPTEVFOR function -- not a function to be per-**

**formed by a reader of the report. For this reason, do not use statements such as "Two of four pilots commented that ...." This statement says we didn't do our job of analysis and follow-up (interviews, etc.) to find out whether the comments are valid or not. COMOPTEVFOR should report that a certain condition *existed*, not that a certain percentage of people *thought* it did.**

### 11.3 Deficiencies (*)

**11.3.1**
(*) Table 5 contains the OMFs observed during test:

**Table 5. (*) OT-IIB (or new OT-C1) OMFs**
**CLASSIFICATION ( if required)**

| Date | Platform | OMF |
|---|---|---|
| 3 June 2001 | Torpedo – USS *(sub name)* | Torpedo fin failure |
| 7 June 2001 | Torpedo – VP-4 | Torpedo wiring failure |
| 16 June 2001 | Torpedo – USS *(ship name)* | Torpedo propulsion failure |
| 9 June 2001 | TIC – HSL-37 | TIC computer lock-up |
| 12 June 2001 | TIC – VP-4 | TIC circuit card #1 |
| 15 June 2001 | TIC – USS *(ship name)* | TIC circuit card #3 |
| 27 June 2001 | TIC – USS *(sub name)* | TIC computer lock-up |

### 11.3.2 Severe (*)

**11.3.2.1**
(*) On 9 June, ….

**11.3.2.2**
(*) On 12 June, …..

**11.3.2.3**
(*) On 15 June,……

**11.3.2.4**
(*) On 27 June, ……

### 11.3.3 Minor (*)

**11.3.3.1**
(*) ……..

**11.3.3.2**
(*) etc.

### 11.4 Operational Considerations (*)

## 12. TEST S-2 — MAINTAINABILITY (*)

**12.1**
(*) Will the HLT be maintainable by fleet personnel?

**12.2 Procedure (*)** (if required)

**12.3 Data Analysis (*)** (if required)

**12.3.1** (if required)
(*) Evaluation of repair time data indicated that repair times followed a log normal distribution. Accordingly, the MCMTOMF was computed as the geometric mean using the following formula:

$$MCMTOMF = (t_1 \times t_2 \times t_3 \ldots t_i)^{1/n})$$

***If* it's necessary to include a Procedure and Data Analysis paragraph here, keep in mind that when reporting maintainability, MCMTOMF will always be the term used. It is OPTEVFOR policy that the arithmetic mean, or average, is the primary way for computing MCMTOMF. However, if you have determined the geometric mean is the more appropriate measure, compute the geometric mean and report it as MCMTOMF. The term $MCMTOMF_g$ will not be used in OT&E documents. Therefore, your data analysis paragraph may read as shown above.**

**See chapter 6, paragraph 613, for other maintainability parameters.**

**12.2 Results (SAT) (*)**

**12.2.1**
(*) The demonstrated MCMTOMF was 2.5 hours (criterion: $\leq$4 hours), based on correction of four OMFs in 10 hours.

**12.2.2**
(*) The demonstrated MaxMCMTOMF was 3.5 hours (criterion: $\leq$7 hours), based on the maximum length of time for correction of the four OMFs.

**12.2.3**
(*) The demonstrated $MRT_{TIC}$ was 4.6 minutes (criterion: $\leq$5 minutes), based on 39 reboots in 180 minutes.

**12.2.4**
(*) The demonstrated $P_{CD}$ (TIC) was 0.98 (criterion: $\geq$0.95), based on 40 correctly detected fault/failure indications out of 41 actual faults/failures.

**12.2.5**

(*) The demonstrated $P_{CFI}$ (TIC) was 0.92 (criterion: $\geq$0.90), based on 37 correctly isolated faults/failures out of the 40 detected faults/failures.

**12.2.6**
(*) The demonstrated FA (TIC) was 0.024 (criterion: $\leq$0.25), based on 1 false alarm in 41 BIT fault/failure indications.

**12.3 Deficiencies (*)**

**12.3.1**
(*) No deficiencies were noted.

**12.4 Operational Considerations (*)**

## 13. TEST S-3 — AVAILABILITY (*)

**13.1**
(*) Will the availability of the HLT support completion of its mission?

**13.2 Results (SAT) (*)**

**13.2.1**
(*) The demonstrated $A_O$ for the TIC was 0.96 (criterion: $\geq$0.93), based on 936 hours of uptime and 35 hours of downtime.

**13.2.2**
(*) A total of 41 hours of neutral time (not counted as up or down time) was incurred for maintenance hours to correct 39 minor deficiencies and an annual preventive maintenance task. Appendix D contains a spreadsheet detailing availability during OT-IIB.

**13.3 Deficiencies (*)**

**13.3.1**
(*) No deficiencies were noted.

**13.4 Operational Considerations (*)**

## 14. TEST S-4 — LOGISTIC SUPPORTABILITY (*)

**14.1**
(*) Will the HLT SYSTEM be logistically supportable?

**14.2 Results (SAT) (*)**

**14.2.1**

(*) The HLT demonstrated the level of logistic support required at this phase of testing.

**14.3 Deficiencies (*)**

**14.3.1**
( ) There were no major deficiencies.

**14.3.2 Minor (*)**

**14.3.2.1**
(*) The HLT TIC software configuration as installed in USS (NAME SUB SHOOTER) and in 146AW C-130 aircraft was not the same as the TIC software configuration installed on the other operational test platforms. The TIC software was required to be reloaded prior to use, as some functionality was not available in the previous software configuration. TIC software configuration control was not demonstrated by the developing agency per the ALSP.

**14.3.2.2**
(*) One failed TIC component (TIC circuit card #3) was not included in the on-board allowance parts list. The subsequent off-board logistic delay time accounted for 68% of the total system downtime during OT-IIB (or new OT-C1). Upon receipt, this circuit card was easily replaced by USS (NAME SHIP SHOOTER) organizational maintenance personnel in less than 30 minutes. The system's return to operation was adversely impacted by the logistic delay of not having the circuit card available on board.

**14.4 Operational Considerations (*)**

## 15. TEST S-5 — COMPATIBILITY (*)

**15.1**
(*) Will the HLT SYSTEM be compatible with its operating environment?

**15.2 Results (SAT) (*)**

**15.2.1**
(*) The HLT System was compatible with its operating environment.

**15.3 Deficiencies (*)**

**15.3.1**
(*) No deficiencies were noted.

**15.4 Operational Considerations (*)**

## 16. TEST S-6 — INTEROPERABILITY (*)

**16.1**
(*) Will the HLT System be interoperable with systems with which it must interface?

**16.2 Results (SAT) (*)**

**16.2.1**
(*) The HLT System was interoperable with all required systems.

**16.3 Deficiencies (*)**

**16.3.1**
(*) No deficiencies were noted.

**16.4 Operational Considerations (*)**

## 17. TEST S-7 — TRAINING (*)

**17.1**
(*) Will HLT SYSTEM training support system operation and maintenance by fleet personnel?

**17.2 Results (SAT) (*)**

**17.2.1**
(*) The HLT System training supported operations and maintenance by fleet personnel.

**17.3 Deficiencies (*)**

**17.3.1**
(*) No deficiencies were noted.

**17.4 (*) Operational Considerations**

## 18. TEST S-8 — HUMAN FACTORS (*)

**18.1**
(*) Will the human factors aspects of the HLT System support completion of its mission?

**18.2 Results (SAT) (*)**

**18.2.1**
(*) The HLT System human factors aspects supported completion of its mission.

**18.3 Deficiencies (*)**

**18.3.1**

(*) No deficiencies were noted.

**18.4 Operational Considerations (*)**

## 19. TEST S-9 — SAFETY (*)

**19.1**
(*) Will the HLT SYSTEM be safe to operate and maintain?

**19.2 Results (SAT) (*)**

**19.2.1**
(*) The HLT System was safe to operate and maintain.

**19.3 Deficiencies (*)**

**19.3.1**
(*) No deficiencies were noted.

**19.4 Operational Considerations (*)**

## 20. TEST S-10 — DOCUMENTATION (*)

**20.1**
(*) Will the technical documentation support operation and maintenance of the HLT SYSTEM?

**20.2 Results (SAT) (*)**

**20.2.1**
(*) The HLT System documentation supported operations and maintenance by fleet personnel.

**20.3 Deficiencies (*)**

**20.3.1**
(*) No deficiencies were noted

**20.4 Operational Considerations (*)**

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## *SECTION 4 - - RECOMMENDATIONS (*)*

***Do not separate recommendations into categories (i.e., major, minor, additional, etc.). You must prioritize all deficiencies and list their recommendations from highest to lowest by system operational impact. List recommendations regarding program improvements last. Do not repeat the major recommendation from the letter regarding fleet introduction, continued program development, etc.)***

**A recommendation to correct each area of risk/shortfall (for EOA/OA) or major/minor deficiency cited in the test results must be provided and must include reference to the page and paragraph that cited the deficiency and must show the affected COI. Recommendations that address areas of risk/shortfalls or deficiencies from previous OT&E and remain uncorrected must be clearly identified as such for the decisionmaker.**

**No recommendation should be made for the correction of an area of risk/shortfall or deficiency unless it caused a problem that was discussed in section 3.**

**The recommendations under paragraph 1, below, reflect required changes needed to bring system capabilities in line with ORD/TEMP-specified capabilities.**

The below recommendation includes the requirement that the deficiency/deficiencies be retested in the next planned phase of testing; or, if there is no further testing planned, an additional phase be added to support the retest.

**1.**

(*) Before fleet introduction, the following deficiencies must be corrected, followed by verification in the next planned (or - - "an additional") phase of operational test and evaluation (OPEVAL Phase 2):

**These would be the recommendations for the deficiencies that made your COI(s) UNSAT or, perhaps, partially resolved. These hold up fleet introduction/limited fleet introduction until they're corrected.**

**1.1**

(*) Investigate and correct shallow water torpedo effectiveness deficiency (see page 8, par. 7.2.1). (Shallow Water Target)

**1.2**

(*) Improve the TIC reliability (see page 9, par. 10.1.2). (Reliability)

**or**

**1.**
(*) Correct the following deficiencies prior to the next (or - - "in an additional") phase of testing:

**1.1**
(*) etc.

**2.**
(*) Improve the TIC software configuration control for system installation (see page 11, par. 13.2.1 ). (Logistic Supportability)

**3.**
(*) Incorporate the TIC circuit card #3 into the on-board allowance parts list (see page 11, par. 13.2.2). (Logistic Supportability)

**4.**
(*) Consider the following system improvements:

**One of the purposes of OT&E is to identify the need for any major modifications based on operational considerations or other discussion in your results which will improve system performance but which lie outside ORD/TEMP-specified capabilities. It's proper, therefore, to make recommendations for hardware or software changes that will increase operational effectiveness and/or operational suitability. However, you *must* avoid redesigning systems or usurping the DA's responsibility. Avoid recommending a specific modification such as "adding a 10-ohm resistor in . . . ." Also, avoid usurping the decisionmaking authority's responsibility to consider cost trade-offs. In the case where a modification could provide a capability not designed into the equipment, do not recommend its incorporation. Rather, recommend "Consider incorporating...."**

***The below examples of recommendations do not necessarily reflect those that might apply the HLT System in this sample report. They are shown simply as examples of those that could apply to any system.***

**4.1**
(*) Provide operating procedures that:

**4.1.1**
(*) Contain pictorial layouts.

**4.12**
(*) Conform to standard Navy format.

**4.2**
(*) Make the following changes:

**4.2.1**
(*) Provide a slide-open cabinet for access.

**4.2.2**
(*) Replace fasteners with easy-to-operate, captive fasteners.

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## *SECTION 5 - - SERVICES PROVIDED (*)*

**This section provides a record for future use in estimating costs of OT&E, and SHOULD MATCH APPENDIX A (RESOURCE REQUIREMENTS) IN THE TEST PLAN. Include here (in tabular form) the services provided during the specified phase of testing. Services include such things as dedicated and not-to-interfere ship support, test aircraft, targets, ranges, and operating personnel. Include the dates these services were provided**

| RESOURCE | PROVIDED |
|---|---|
| **Test Articles (torpedoes)** | |
| Air/Ship/Sub Configurations | June to 9 July 2001 |
| **Test Sites and Instrumentation** | |
| Barking Sands Range (BARSTUR) | 26 days |
| Bering Sea Arctic Site | 10 days |
| **Test Support Equipment** | 1 June to 9 July 2001 |
| **Threat Systems/Simulators** | |
| 688-class sub (anechoic-coated) | 36 days |
| USS DOLPHIN (AGSS 555) | 27 days |
| **Test Targets and Expendables** | 1 June to 9 July 2001 |
| **Operational Force Test Support** | |
| P-3C UIII (5 hr/sortie) | 11 sorties |
| SH-60B (4 hr/sortie) | 6 sorties |
| SH-60F (4 hr/sortie) | 6 sorties |
| C-130 (5 hr/sortie) (w/AN/SKY-2.2) | 7 sorties |
| SSN 688 | 14 days |
| DDG (AN/SQQ-89(V3) Combat System) | 22 days |
| **Simulations, Models, and Test Beds** | |
| Weapons Analysis Facility (WAF) | 1 June to 9 July 2001 |
| **Special Requirements** | None |
| **Manpower/Personnel Training** | |
| Enlisted personnel | 13 |
| Officer personnel | 9 |

**T&E Funding Requirements**

**COMOPTEVFORINST 3960.1H**

| **RESOURCE** | **PROVIDED** |
|---|---|
| Flight Hours | |
| P-3C (Cost/flt hr $1900) | 100 k |
| SH-60B (Cost/flt hr $1200) | 26 k |
| SH-60F (Cost/flt hr $2400) | 50 k |
| C-130 (Cost/flt hr $1900) | 72 k |
| Helo Recovery (SH-60B) | 158 k |
| Range Time ($25,000/day) | 925 k |
| Modeling and Simulation | 150 k |
| Navy Labs Support (3.125 man-years) | 115 k |
| Contractor Support (0.625 man-year) | 25 k |
| Total | $1,621 k |

## *APPENDIX A - - DISTRIBUTION OF REPORT (*)*

***If any test-related appendices are needed, in addition to the standard appendices shown in this report example, inserted them first, as A, B, etc. Renumber this and the following appendices accordingly.***

**The report distribution ("Copy to" list) (beginning below) is a generic list for use as a guide for distribution of evaluation reports. The following applies to the list:**

**1. If the evaluation report has no differentiation between who receives enclosures and who does not, merge the two lists.**

**2. The cognizant ACOS, or VX/HMX CO, may recommend additional commands or activities for this list, keeping in mind that distribution *must* be limited to those commands or activities who *must receive* the report.**

**** Required for all evaluation reports.**

*** Need to know, recommended by ACOS and approved by 00. The number of copies reproduced for retention internally will be limited to five (two for the warfare division and three for command files).**

Copy to:

| | |
|---|---|
| ** OSD (DOT&E (2), S&TS/DT&E) | (Formal evaluation reports only) |
| ** ASSTSECNAV RD&A (DASN(RDT&E)) | |
| OPA | (For all ACAT I, II, and SECNAV Special Interest programs) |
| CNO (N7, N71) | (For ships, A/C, major weapons, and for EW and ASW systems) |
| * (N6) | (For space and $C^3/C^4$ systems) |
| ** (N09) | (VCNO, all reports) |
| ** (N091) | |
| ** (N912) | |
| ** (N7) | |
| (N70) | (Warfare Integration) |
| (N74) | (ASW OPEVAL Reports) |
| (N75) | (Expeditionary Warfare Reports (if applicable)) |
| (N769) | (Surface OPEVAL Reports) |
| (N779) | (Undersea OPEVAL Reports) |
| (N789) | (Aviation OPEVAL Reports) |
| ** (N_) | (Program Sponsor (DCNO)) |
| (N4) | (For programs with significant logistic deficiencies) |
| COMNAV_SYSCOM (_-00) | (Cognizant Commander) |
| ** COMFLTFORCOM | |
| ** COMNAVSEASYSCOM (SEA-63) | (Three copies) |
| ** COMNAVAIRSYSCOM (AIR-1.6) | |
| ** COMSPAWARSYSCOM (SPAWAR-00A-AR-3) | |

Copy to: (Cont)
** COMLANTFLT
** COMPACFLT
** COMUSNAVEUR
** COMSECONDFLT
** COMTHIRDFLT
** COMFIFTHFLT
** COMSIXTHFLT
** COMSEVENTHFLT

| | |
|---|---|
| * COMNAVAIRSYSCOM (AIR-5.0E) | (For ACAT I and II aircraft weapon system reports only) |
| * COM_LANT | (Cognizant Type Commanders) |
| * COM_PAC | |
| * COMNAVNETWARCOM | (For projects related to C4I) |
| CMC | (For Marine Corps related projects) |
| COMSURFWARDEVGRU | (For projects related to surface warfare) |
| COMSUBDEVRON TWELVE | (For projects related to submarine warfare) |
| CNET | |
| ** DSMC (EMD Performance Trends Research Project) | (for OSD oversight OPEVAL reports only) |
| NAVSTKAIRWARCEN | (For projects related to strike warfare) |
| COMINEWARCOM | (For mine warfare and MCM related projects) |
| AIRTEVRON ___ | (For projects prosecuted by VX___) |
| HMX 1 | (For projects prosecuted by HMX-1) |
| Joint Electronic Warfare Center | (Electronic Warfare OPEVAL reports; 2 copies) |
| Joint Technical Coordinating Group/Munitions Effectiveness, Aberdeen Proving Ground Aberdeen, MD 21005 | (For projects addressing non-nuclear weapons) |
| ** PRESINSURV | (For surface and subsurface reports only) |
| NAVAIRWARCENACDIV Patuxent River, MD | (For airborne weapons reports) |
| ** NAVWARCOL | |
| SWOSCOLCOM | (For projects related to surface warfare) |
| ** CNA | |
| COMNAVRESFOR | (For systems deployed in reserves) |
| ** DTIC (2) | |

Copy to: (w/o encl (1))

(Listings shown below are only *examples*. Any other command can go into this category if you so desire (subject to approval from your ACOS/COS/Admiral) or move any of these up to ensure they get all enclosures.)

* COMSC
* COMMARFORLANT
* COMMARFORPAC

* COMCARGRU ONE, TWO, THREE, FOUR, FIVE, SIX, SEVEN, EIGHT
* COMCRUDESGRU ONE, TWO, THREE, FIVE, EIGHT, TWELVE
* COMSUBGRU TWO, SEVEN, EIGHT, NINE, TEN
* COMLOGGRU TWO DET
* TACTRAGRULANT
* TACTRAGRUPAC

(For Battle Group or Force related projects; inter-type projects; cruise missile projects.)

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## *APPENDIX B - - ACRONYMS AND ABBREVIATIONS (*)*

**Acronyms must be defined (spelled out) on the first occurrence in the text, and listed here. Acronyms that are defined in the 2-page executive letter need not be spelled out again in the enclosure, except on this page.**

**The method used to define an acronym will be "combat information center (CIC)."**

**Acronyms for naval activities included in the Standard Navy Distribution List (which includes almost every activity) need not be spelled out or listed on the acronym page. The OTD is not precluded from spelling out and listing such acronyms, however, if readability will be improved (e.g., acronyms for obscure activities).**

**Never use an acronym if it will appear only once; consider not using acronyms if they appear only a few times, particularly if their appearance will be widely separated in the text.**

**Separate this list into alphabetical groups, with an extra space between each group.**

| | |
|---|---|
| ALSP | acquisition logistics support plan |
| $A_o$ | operational availability |
| ASW | antisubmarine warfare |
| CASREP | casualty report |
| COI | critical operational issue |
| EOA | early operational assessment |
| FA | false alarm |
| HLT | Hypothetical Lightweight Torpedo |
| KPP | key performance parameter |
| LOI | letter of instruction |
| $M_{AX}$CMTOMF | maximum corrective maintenance time for operational mission failures/faults |
| MCMTOMF | mean corrective maintenance time for operational mission failures/faults |
| $MRT_{TIC}$ | mean reboot time for torpedo interface console |
| MTBOMF | mean time between operational mission failures/faults |
| MOA | memorandum of agreement |
| OMF | operational mission failure/fault |
| OPSEC | operations security |

| | |
|---|---|
| OTD | operational test director |
| $P_{ACQ}$ | probability of acquisition |
| $P_{CD}$ | probability of correct detection |
| $P_{CFI}$ | probability of correct fault isolation |
| $P_{HIT}$ | probability of hit |
| R | reliability |
| STAR | system threat assessment report |
| TA | threat assessment |
| $T_{EFF}$ | torpedo effectiveness |
| TIC | torpedo interface console |

## *APPENDIX C - - REFERENCES (*)*

(a) Test and Evaluation Master Plan No. 999 of *d mon yr*

(b) COMOPTEVFOR ltr 3980 (999-OT-IIB) Ser 4*XX*/*XXX* of *d mon yr*

(c) System Threat Assessment Report (STAR)/Office of Naval Intelligence (ONI) Threat Assessment (TA) 7-97, Antisubmarine Weapon Systems of May 97

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## Instructions for Appendix Writing

**Appendices present material pertinent to the evaluation, but not appropriate for inclusion in enclosure (1) because of length or detail. Such material would be individual firing summaries, as opposed to the integrated and summarized data presented in section 4. Pertinent reports from other commands, etc., may be included. When applicable (e.g., combined DT and OT), appendices may be used to report significant DT results.**

**Appendices must be referred to in the text of the executive letter or enclosure, and listed on the Contents page.**

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## OPTEVFOR Evaluation Report Checklist

***COVER***

1. ☐ Were the proper selections made for your phase of testing in all drop-down menus?

2. ☐ Did you insert a suitable graphic that represents your equipment/system?

3. ☐ Is the correct distribution statement shown? (Statement is different for SECRET/NOFORN documents.)

4. ☐ Are the derivative classification markings correct? (For "Derived from" *do not* say "multiple sources." List each source. The program offices have such information.)

***EXECUTIVE LETTER (2 pages)***

1. ☐ Have you considered the need for intelligence control (NOFORN) information special handling and marking?

2. ☐ Does the opening paragraph contain the information shown in the sample report in the OTD Guide?

3. ☐ Does the second paragraph information provide insight into the operational realism and amount of testing accomplished?

4. ☐ Does the Critical Operational Issues table reflect:
The current and last two phases (if applicable)?
Any failures for the current phase shown in bold red text?

5. ☐ Does the Overall Test Results paragraph reflect whether or not all thresholds were met, or, which ones were not and refer the reader to the appropriate page and paragraph in the enclosure?

6. ☐ Does the Operational Impact Assessment adequately speak to the fleet commanders/operators/maintainers and realistically reflect the pros and cons of the system/equipment (help or inhibit operation/maintenance in the fleet)?

7. ☐ Do the effectiveness and suitability conclusions address operational effectiveness first, then operational suitability, and (when appropriate) relate the findings to the pending procurement decision?

8. ☐ Have you ensured the conclusions don't introduce new thoughts (e.g., no hardware mentioned for the first time, no deficiencies identified for the first time, etc)?

9. ☐ Are conclusions accurately based on test results, taking into consideration such things as failures, limitations, effectiveness against specific threats, effective operational employment, etc?

10. ☐ Is your recommendation limited to only addressing the procurement decision (i.e., fleet/limited/no fleet introduction, continued program development) based on any major deficiencies?

11. ☐ If there was a quick-look report, did you ensure that any differences between the evaluation report and the quick-look report were identified and explained?

***ENCLOSURE***

**Section 1 – Test Operations**

1. ☐ Does the Chronology paragraph adequately expand on the 2nd paragraph of the executive letter, list dates and quantities of sorties or firings, and, if applicable, remark on suspended testing, deficiency reports, etc?

2. ☐ Is the System Description functionally oriented? Does it briefly, but adequately, describe the actual test configuration, and what it is supposed to do? If necessary, does it refer the reader back to the TEMP for details?

3. ☐ Does your Methodology paragraph provide a 'big picture' of what went into conducting your test? Did you consider methods of data gathering/reduction/analysis, test team composition, maintenance demonstrations, etc?

4. ☐ Do the limitations clearly describe actual severe and/or major and minor limitations to the evaluation and the impact these limitations had on your ability to resolve COIs and draw conclusions about operational effectiveness and suitability?

**Section 2 – Project Background**

1. ☐ Does the History paragraph summarize the original need for the system/equipment?

2. ☐ Does the Previous OT&E paragraph briefly describe each past phase and where and when the test was conducted? Does it provide the Commander's major conclusion and recommendation? Is there a table showing the past phases and their COIs and resolution, dates, and conclusions? (The table is limited to one landscaped page with as many phases as you can show. Do not show the phase you are reporting on.)

3. ☐ Were there major deficiencies from previous OT that required reexamination during the phase you are reporting? Are they listed in paragraph 2.3, and noted if they were corrected/undetermined/uncorrected/not tested?

**Section 3 – Tests and Results**

1. ☐ Were procedures and data analyses performed as stated in the test plan? If there was deviation, is it noted, in the 1st paragraph, which E- S-tests were affected?

2. ☐ Does the Quantitative Test Results table reflect the capabilities/functions/ characteristics/parameters, and do they address all COIs and evaluation criteria (unless exempted by test

limitations)? This should be the same table from section 3 of the test plan, only with the "Result" column added.

3. ☐ Are the scenarios from the test plan shown in paragraph 2? If there were deviations from the any of the original scenarios listed in the test plan, do they now reflect what the actual scenario was?

4. ☐ Throughout the E- and S-tests:
   - Are the Procedure and Data Analysis paragraphs updated, if necessary, to reflect any deviations from the original in the test plan?
   - Are results written in the past tense?
   - Do the results directly answer the question stated in the test object? Is there a result for *each* threshold/capability?
   - Is there adequate discussion of test results that impacted overall mission accomplishment (if necessary)?
   - Are all deficiencies noted and listed by category (severe/major/minor/other)?
   - Do the operational considerations (if included) discuss operational aspects that influence interpretation of results, or provide tactical guidelines on system employment? Are your OPCONS tied to discussion in the Results paragraph of a COI?

**Section 4 - Recommendations**

1. ☐ Are recommendations to correct *all* deficiencies listed by system operational impact (most critical fix first (failed KPP/threshold/capability), followed by the next, etc.)?

2. ☐ If necessary, are recommendations caveated for deficiencies requiring correction and further testing *prior to* fleet introduction/limited fleet introduction, etc. (i.e., "Before fleet introduction, the following deficiencies must……")?

3. ☐ Are recommendations provided for those deficiencies examined from previous testing, and remain uncorrected?

4. ☐ Have you verified that no recommendation exists for an area of risk/shortfall or deficiency unless it caused a problem that was discussed in section 3?

5. ☐ Do all recommendations for program improvements follow those that require correction because of deficiency?

**Section 5 – Services Provided**

1. ☐ This should be the same table from appendix A of your test plan, provided all resources were the same.

2. ☐ If any resources changed from your test plan, did you show the *actual* resource?

3. ☐ Are all dates accurate?

4. ☐ Are all funding figures accurate?

**Appendix A**

If any test-related appendices are needed, in addition to the standard appendices shown in this report example, they will be inserted first, as A, B, etc. Renumber this and the following appendices accordingly. See "Instructions on Appendix Writing" on page 63.

1. ☐ If there are no test-related appendices, do you have the required activities shown in the sample "copy to" list (marked with ** and *)?

2. ☐ Have you considered sending only the cover and executive letter (no enclosure) to activities that don't need the detailed information (i.e., "Copy to: w/o encl (1)")?

**Appendix B – Acronyms and Abbreviations**

1. ☐ Have you defined (spelled out) all acronyms and abbreviations on their first occurrence in the text?

2. ☐ Have you verified that you didn't use an acronym or abbreviation only once?

3. ☐ Did you separate your acronyms and abbreviations into alphabetical groups?

4. ☐ Did you lower case acronyms and abbreviations that were just a "collection of words" (i.e., not a proper noun)?

**Sample 8-2**
**Quick-Look Report Message Format**

**The quick-look report will be submitted in message format to expedite delivery and routing.**

RTUZYUW RUCBTEV001 12312324-UUUU-RMHCSUU
ZNR UUUU
R O11234Z MAY 96
FM COMOPTEVFOR NORFOLK VA//**Releaser code**//
TO CNO WASHINGTON DC//N00/N09/N6/N7/N091/N912/N63//**other applicable office codes//**
INFO OSD WASHINGTON DC//**Office code as applicable** //
SECNAV WASHINGTON DC//**Office code as applicable** //
ASSTSECNAV RDA (DASN(RDT&E)) WASHINGTON DC//**Office code as applicable**//
COMFLTFORCOM NORFOLK VA//00//**office code as applicable**//
COMLANTFLT NORFOLK VA//00//**Office code as applicable**//
COMPACFLT PEARL HARBOR HI//00//**Office code as applicable**//
COMSECONDFLT//00//
COMTHIRDFLT//00//
COMFIFTHFLT//00//
COMSIXTHFLT//00//
COMSEVENTHFLT//00//
COMNAVSEASYSCOM WASHINGTON DC//**office code as applicable**//
COMNAVAIRSYSCOM PATUXENT RIVER MD//**office code as applicable**//
COMSPAWARSYSCOM SAN DIEGO CA//**office code as applicable**//
PRESINSURV NORFOLK VA//00/01//
DTIC
USS JOSEPH HEWES
COMNAVSURFLANT NORFOLK VA//**Office code as applicable**//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//**Office code as applicable**//
(The "INFO" list must not exceed 55 characters across the page. When wrapping text to the next line, indent five spaces.)

**For the above info addressees, select from the "Copy to" list of the standard report format. All required addressees in the standard report will also be required for the quick-look.**

BT (no lines from this point through the remainder of the message can exceed 69 characters across the page.)
UNCLAS//N03980//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/QUICK-LOOK REPORT OF OPEVAL (OT-IIA) (or new OT-B1) OF SHIPBOARD CERBERUS MISSILE SYSTEM PROGRAM CNO PROJECT NO. XXX//
REF/A/… //

REF/B/… //
REF/C/DOC/ / //
NARR/REF A IS .../REF B IS…/REF C IS…//
RMKS/1. SUMMARY. THIS IS A QUICK-LOOK REPORT OF COMOPTEVFOR'S OPERATIONAL EVALUATION (OT-XXX) OF THE NEW WEAPON SYSTEM (NWS), PERFORMED UNDER CNO PROJECT NO. XXX. THE PURPOSE OF THE EVALUATION WAS TO DETERMINE THE OPERATIONAL EFFECTIVENESS AND OPERATIONAL SUITABILITY OF THE NWS AND ITS READINESS FOR FLEET INTRODUCTION. THE TEST WAS CONDUCTED PER REFERENCES (A) AND (B). ***(Refs will include the TEMP and test plan)***

A. THE NWS ACCUMULATED ... FLIGHT HOURS IN... SORTIES OVER A ..-DAY PERIOD ( ….FEBRUARY TO …MARCH 2000) AT.... ALL TEST OBJECTIVES WERE ACCOMPLISHED. **(OR-ALL TEST OBJECTIVES WERE ACCOMPLISHED EX-CEPT....)**

B. SYSTEM ENHANCEMENTS WERE: **(significant improvements over current fleet capabilities go here)**

(1)...
(2)...

C. THERE WERE FOUR MAJOR DEFICIENCIES DURING TESTING: COI TITLE (ONE), COI TITLE (TWO), AND COI TITLE (ONE). SEE PARAGRAPHS 3A, B, AND C. **(If there were major deficiencies, show them as above. If no major deficiencies, state "There were no major deficiencies during testing.")**

D. MAJOR LIMITATIONS WERE:

(1)... (COI
(2)... (COI) END SUMMARY.

2. CRITICAL OPERATIONAL ISSUES WERE ASSESSED/RESOLVED AS FOLLOWS:

| COI | OT-IIA (OA) DATE CONCLUSION | OT-IIB (OA) DATE CONCLUSION | OT-IIC (OPEVAL) |
|---|---|---|---|
| DETECTION (E-1) | RED | YELLOW | RESOLVED (SAT) |
| CLASSIFICATION (E-2) | YELLOW | YELLOW | RESOLVED (SAT) |
| ETC. | | | |
| RELIABILITY (S-1) | GREEN | GREEN | RESOLVED (SAT) |
| MAINTAINABILITY (S-2) | GREEN | GREEN | RESOLVED (SAT) |
| etc. | | | |

3. TEST RESULTS

MAJOR QUANTITATIVE TEST RESULTS

***Because of limited space in this section (69 character limit in messages), use the E/S test number under the COI column.***

| COI | PARAMETER | RESULT | THRESHOLD | SUCCESSES |
|---|---|---|---|---|
| E-1 | PD | 0.96 | 0.90 | 8 OF 9 |
| | PCC | 0.96 | 0.95 | 8 OF 9 |
| | PK (XING TARGETS) | 0.86 | NONE | 4 OF 6 |
| E-2 | PC | 0.96 | 0.92 | 8 OF 9 |

**All text following test results is for discussion of critical programmatic issues important to the DA and FOR MAJOR EFFECTIVENESS AND SUITABILITY DEFICIENCIES ONLY (showstoppers). If there were no major deficiencies, title subparagraphs for other critical discussion as necessary. If there is no discussion, delete the subparagraphs.**

A. COI TITLE. THE NWS FAILED TO.....
B. COI TITLE. THE NWS FAILED TO.....
C. COI TITLE. THE NWS FAILED TO.....

4 OPERATIONAL CONSIDERATIONS **(OPTIONAL; See paragraph 803)**

5. CONCLUSIONS. BASED ON PRELIMINARY ANALYSIS OF TEST DATA:
A.
B.

6. RECOMMENDATIONS **(see the full report example for structure and wording of recommendations)**

7. OTHER RECOMMENDATIONS

8. CAVEAT. CONCLUSIONS AND RECOMMENDATIONS IN THIS QUICK-LOOK MAY BE MODIFIED AS A RESULT OF ADDITIONAL ANALYSIS.//

**A quick-look report checklist (next page), is provided to assist in reviewing the quick-look report.**

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## Quick-Look Report Checklist

1. ☐ Does the summary paragraph actually summarize, including caveats, conclusions, and recommendations?

2. ☐ Does par. 1D provide a short description of project operations and give an idea of how much was done (number of bombs, etc.)?

3. ☐ Are significant system enhancements (par. 1E) included (if any)?

4. ☐ If possible, the TEMP is referenced for the COIs. If not, COIs are listed in the proper order (operational effectiveness first, then operational suitability).

5. ☐ Are all major deficiencies included in par. 1F?

6. ☐ Are the major limitations (par. 1G) included, and are they actually limitations to the evaluation, not how hard it was?

7. ☐ Are the critical operational issues and their assessment/resolution, previous phases, dates, conclusions included?

8. ☐ Do the results address COIs and test objects (and associated criteria) in the same order as they occur in the TEMP and test plan?

9. ☐ Are all COIs and test objects addressed, except as noted in the limitations?

10. ☐ Do the operational considerations (if included) discuss operational aspects that influence interpretation of results, or provide tactical guidelines on system employment?

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**Sample 8-3**
**Quick Reaction Assessment Report Message Format**

**Occasionally, CNO/program sponsors task us to provide a rapid assessment of operational considerations and/or certain capabilities of a system in the fleet. The following format allows us to pass information quickly that is critical to the fleet.** ***A QRA may be used to assess operational effectiveness/suitability, however, this will be limited to "....has the potential to." A QRA will not be used to resolve COIs, or to provide a limited fleet introduction/fleet introduction/fleet release decision***

RTUZYUW RUCBTEV001 12312324-UUUU-RMHCSUU
ZNR UUUU
R O11234Z MAY 96
FM COMOPTEVFOR NORFOLK VA//**Releaser code**//
TO CNO WASHINGTON DC//**N00/N09/N6/N7/N091/N912/N63//other applicable office codes//**
INFO OSD WASHINGTON DC//**office code as applicable//**
SECNAV WASHINGTON DC//**office code as applicable//**
ASSTSECNAV RDA (DASN(RDT&E)) WASHINGTON DC//**office code as applicable**//
COMFLTFORCOM NORFOLK VA//00//**office code as applicable**//
COMLANTFLT NORFOLK VA//00//**office code as applicable**//
COMPACFLT PEARL HARBOR HI//00//**office code as applicable//**
COMSECONDFLT//00//
COMTHIRDFLT//00//
COMFIFTHFLT//00//
COMSIXTHFLT//00//
COMSEVENTHFLT//00//
COMNAVSEASYSCOM WASHINGTON DC//**office code as applicable**//
COMNAVAIRSYSCOM PATUXENT RIVER MD//**office code as applicable**//
COMSPAWARSYSCOM SAN DIEGO CA//**office code as applicable**//
PRESINSURV NORFOLK VA//00/01//
USS JOSEPH HEWES
COMNAVSURFLANT NORFOLK VA//**Office code as applicable**//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//**Office code as applicable**//
(The "INFO" list must not exceed 55 characters across the page. When wrapping text to the next line, indent five spaces.)

**For the above info addressees, select from the "Copy to" list of the standard report format. All required addressees in the standard report will also be required for the QRA.**

BT (no lines from this point through the remainder of the message can exceed 69 characters across the page.)

UNCLAS//N03980//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/QUICK REACTION ASSESSMENT OF SHIPBOARD CERBERUS MISSILE SYSTEM PROGRAM CNO PROJECT NO. XXX//
REF/A/DOC/NAVAIRWARCENWPNDIV/28 SEP 00//
REF/B/LTR/COMOPTEVFOR/21 JUN 01//
REF/C/DOC/ / //
NARR/REF A IS .../REF B IS…/REF C IS…//
RMKS/1. SUMMARY. THIS IS A REPORT OF COMOPTEVFOR'S QUICK REACTION ASSESSMENT OF THE NEW WEAPON SYSTEM (NWS). THE PURPOSE OF THE ASSESSMENT WAS TO .... THE ASSESSMENT WAS CONDUCTED PER REFERENCES (A), (B), AND (C). END SUMMARY.

**The purpose will be from the tasking letter for the QRA**

2. PROJECT TESTING

**Where and how of the assessment, and other information that will help make clear the scope.**

3. LIMITATIONS

**Just list any limitations, no categories. If no limitations, omit this paragraph.**

4. OBSERVATIONS

**Detailed observations of the assessment. If needed, columns showing quantitative and qualitative results/observations (as in SQTs/quick-looks) can be used.**

5. RECOMMENDATIONS

**These are based solely on observations. The first recommendation must address the reason the assessment was conducted.**

6. CAVEAT. THIS QUICK REACTION ASSESSMENT PRESENTS STATEMENTS OF OPINION AND NOT FINDINGS OF FACT. OPERATIONAL TEST AND EVALUATION IS REQUIRED TO SUBSTANTIATE THE RESULTS OF THIS ASSESSMENT.

**This caveat may be modified to fit your particular case.**

**Sample 8-4**
**Verification of Correction of Deficiencies Message Report**

**COMOPTEVFOR can conduct an evaluation of correction of *specific major deficiencies cited in a previous OT&E report* to support an acquisition decision for limited rate (pre-OPEVAL) or full rate (post-OPEVAL) production. This evaluation will apply to only those COIs that have been reported corrected by the DA, and will not require end-to-end testing of the complete system. Problems or deficiencies will be shown as demonstrated corrected/demonstrated not corrected/not demonstrated (pre-OPEVAL, no COI resolution). If a VCD enables us to resolve COIs (beyond OPEVAL), then they should be listed as resolved in the VCD report, thereby reducing or eliminating the need for later phases of OT. *Minor deficiencies from a previous OT&E report are not examined through VCDs.***

RTUZYUW RUCBTEV001 12312324-UUUU-RMHCSUU
ZNR UUUU
R O11234Z MAY 96
FM COMOPTEVFOR NORFOLK VA//**Releaser code**//
TO CNO WASHINGTON DC//N00/N09/ N7/N091/N912**//other office codes as applicable//**
INFO OSD WASHINGTON DC//00//**Office code as applicable**//
SECNAV WASHINGTON DC/00//**Office code as applicable**//
ASSTSECNAV RDA (DASN(RDT&E)) WASHINGTON DC//**Office code as applicable**//
COMFLTFORCOM NORFOLK VA//00//**office code as applicable**//
COMLANTFLT NORFOLK VA//00//**Office code as applicable**//
COMPACFLT PEARL HARBOR HI//00//**Office code as applicable**//
COMSECONDFLT//00//
COMSECONDFLT//00//
COMTHIRDFLT//00//
COMFIFTHFLT//00//
COMSIXTHFLT//00//
COMSEVENTHFLT//00//
COMNAVSEASYSCOM WASHINGTON DC//**office code as applicable**//
COMNAVAIRSYSCOM PATUXENT RIVER MD//**office code as applicable**//
COMSPAWARSYSCOM SAN DIEGO CA//**office code as applicable**//
PRESINSURV NORFOLK VA//00/01//
DTIC
USS JOSEPH HEWES
COMNAVSURFLANT NORFOLK VA//00//**Office code as applicable**//
COMNAVAIRWARCENWPNDIV CHINA LAKE CA//00//**Office code as applicable**//
(The "INFO" list must not exceed 55 characters across
the page. When wrapping text to the next line, indent five
spaces.)

**For the above info addressees, select from the "Copy to" list of the standard report format. All required addressees in the standard report will also be required for the VCD.**

BT (no lines from this point through the remainder of the message can exceed 69 characters across the page.)
UNCLAS//N03980//
MSGID/GENADMIN/COMOPTEVFOR//
SUBJ/VERIFICATION OF CORRECTION OF DEFICIENCIES OF ... CNO PROJECT NO. XXX//
REF/A/DOC/ /8 SEP 98//
REF/B/LTR/COMOPTEVFOR/21 JUN 99//
REF/C/DOC/ / //
NARR/REF A IS .../REF B IS…/REF C IS…//
RMKS/1. SUMMARY. THIS IS A REPORT OF COMOPTEVFOR'S VERIFICATION OF CORRECTION OF DEFICIENCIES (VCD) (OT-IIB1) (or new OT-C1 (VCD)) OF THE ..., PERFORMED UNDER CNO PROJECT NO. XXX. THE PURPOSE OF THE EVALUATION WAS TO VERIFY CORRECTION OF MAJOR DEFICIENCIES FROM OT-.... THE TEST WAS CONDUCTED PER REFERENCES (A) AND (B). ***(The references will include the TEMP and test plan)***

A. THE NWS ACCUMULATED ... FLIGHT HOURS IN... SORTIES OVER A ..-DAY PERIOD (…FEBRUARY TO …MARCH 2000) AT.... ALL TEST OBJECTIVES WERE ACCOMPLISHED. **(OR-ALL TEST OBJECTIVES WERE ACCOMPLISHED EXCEPT....)**

B. MAJOR LIMITATIONS WERE:

(1)... (COI)

(2)... (COI) END SUMMARY.

2. SYSTEM DESCRIPTION

**Show here the test configuration only, then reference the TEMP for details.**

3. BACKGROUND. THE FOLLOWING MAJOR DEFICIENCIES FROM OT-... WERE EXAMINED:

**( for *pre-OPEVAL* phases, see format for subpar. 3A and B and par. 4, below)**

A. ……. (DETECTION)

B. ……. (CLASSIFICATION)

4. CRITICAL OPERATIONAL ISSUES (COI)

| COI | DEMONSTRATED |
|---|---|
| DETECTION (E-1) | CORRECTED |
| CLASSIFICATION (E-2) | NOT CORRECTED |
| ETC. | |

**(for *post-OPEVAL* phases, see format for subpar. 3A and B and par. 4, below)**

A. ... (COI) (CORRECTED; NOT CORRECTED; UNDETERMINED; NOT TESTED)
B. ... (COI) etc.

4. CRITICAL OPERATIONAL ISSUES FOR THIS PHASE WERE ASSESSED/RESOLVED AS FOLLOWS:

| COI | RESOLUTION |
|---|---|
| DETECTION (E-1) | RESOLVED (SAT) |
| CLASSIFICATION (E-2) | RESOLVED (SAT) |
| RELIABILITY (S-1) | RESOLVED (SAT) |
| ETC. | |

**Show COI resolution above, if applicable.**

5. TEST RESULTS

MAJOR QUANTITATIVE TEST RESULTS

***Because of limited space in this section (69 character limit for messages), use the E/S test number under the COI column.***

| COI | PARAMETER | RESULT | THRESHOLD | SUCCESSES |
|---|---|---|---|---|
| E-1 | PD | 1.0 | 0.90 | 9 OF 9 |
| | PCC | 1.0 | 0.95 | 9 OF 9 |
| E-2 | PC | 0.96 | 0.92 | 8 OF 9 |
| (etc.) | | | | |

**(use color code columns above for VCDs pertaining to EOAs/OAs)**

**Text following test results is for expansion of major test results (if needed), discussion of critical programmatic areas the DA must know about, and/or for major effectiveness and suitability deficiencies only (showstoppers). Discussion of minor deficiencies does not go here.**

A. ... (COI)
B. ... (COI)

6. OPERATIONAL CONSIDERATIONS **(OPTIONAL)**
7. CONCLUSIONS. THE NWS IS ... **(IF CONCLUSION IS APPLICABLE)**
   A.
   B.
8. RECOMMENDATIONS **(IF APPLICABLE)**
9. OTHER RECOMMENDATIONS **(IF APPLICABLE)**

**Conclusions and recommendations are addressed here as per the full evaluation report, if applicable.**

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**Sample 8-5**
**DT Assist Letter of Observation**

**This format is only for informing the PEO/PM of our observations from the informal DT assist. It is signed by the ACOS of the applicable warfare division**

3980 (908-DTA)
Ser xxx/
Date

From: Commander, Operational Test and Evaluation Force
To: (PEO/PM)

Subj: DEVELOPMENTAL TESTING (DT) ASSIST OF THE XXXXXX PROGRAM

Ref: (a) COMOPTEVFOR ltr 3980 Ser... of 18 Sep 97

**This reference is the DT assist MOA**

**1. SUMMARY**. Per reference (a), COMOPTEVFOR participated in DT-xx of the XXXXXX program, performed under CNO Project No. XXXX in the capacity of DT assist. The objective of the DT assist was to provide program management with early insight into operational testing issues and concerns.

**CAVEAT: DT assist is not a formal phase of OT, but rather a period of DT in which OT testers are actively involved, providing operational perspective and gaining valuable hands-on familiarity with the system. Data and findings from the DT assist may be used to supplement formal OT data, provided certain criteria are met. DT assist does not resolve COIs, does not reach conclusions regarding operational effectiveness or suitability, and does not make a recommendation regarding fleet introduction/release.**

**2. BACKGROUND**. (What it is and why we are doing it.)

**3. AREAS OF FUNCTIONALITY OBSERVED**. (Specific functions observed and comments on how the system performed. Include potential problem areas that need attention to perform at an acceptable level prior to formal OT, as well as enhancements. However, do not address as COIs, nor formulate or postulate conclusions regarding operational effectiveness or suitability; only document observed functionality.)

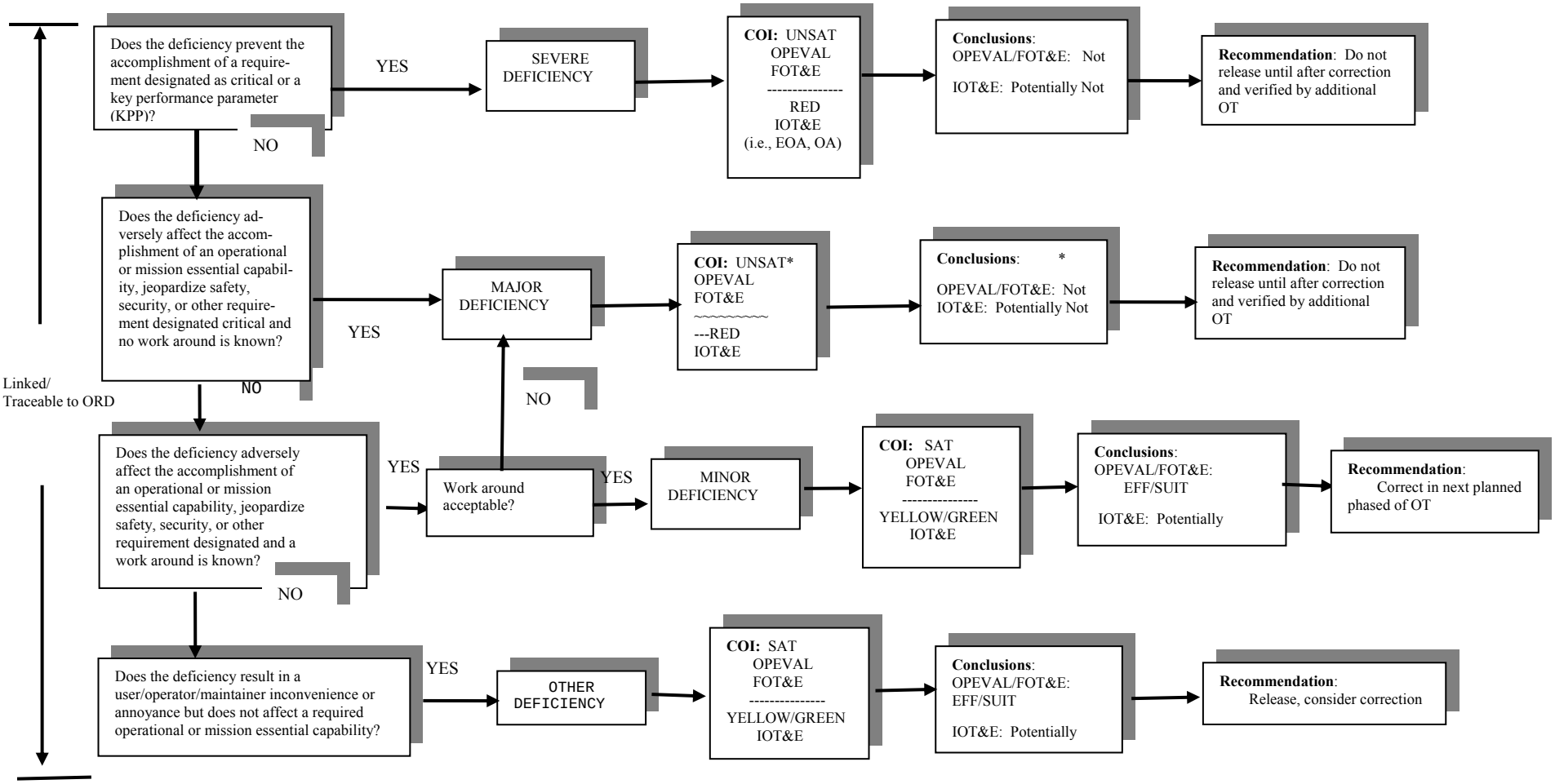
Subj: DEVELOPMENTAL TESTING (DT) ASSIST OF THE XXXXXX

**4. ADDITIONAL ISSUES**. (If needed.)

D.M.CROCKER

Distribution limited to U.S. Government agencies only; test and evaluation document dated_____. Other requests for this document must be referred to CNO (N091) or COMOPTEVFOR via DTIC using DTIC form 55.

## *BASELINE DEFICIENCY DECISION TREE*




- A deficiency is defined as "lacking in some necessary quality, capability or element" or "not up to a normal standard or complement".
- Operational capability is defined as an ability or means that is directly traceable to an approved requirement (i.e., ORD, FD, etc)
- Mission essential capability is defined as an ability that is inherently necessary to complete an assigned mission (e.g., a targeting mechanism is required to properly aim a weapon system but the targeting mechanism/system may not be part of the weapon system under test).

* See details

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# CHAPTER 9

# TACTICS GUIDES

**901. INTRODUCTION**. A major function of OT&E is the assessment of tactics for employment of new weapon systems. Tactical development and evaluation (TAC D&E) strives to improve tactics for existing U.S. weapon systems against new threat systems.

**a.** Planning for proper tactics development and evaluation that will occur during the life of the test program must commence as early as possible in the program.

**(1) Early System Development**. In EOAs and OT-II conducted prior to OPEVAL, modeling and simulation may be used extensively to develop and evaluate tactics or to verify the applicability of current tactics to the new system.

**(2) OPEVAL**. Tactics should be developed and evaluated using operationally realistic scenarios during underway operations whenever feasible. If system characteristics or lack of adequate targets make it necessary, evaluation of tactics may be based on a combination of normal air or at-sea operations and modeling and simulation.

**(3) FOT&E and TAC D&E**. Evaluation of tactics should be conducted during air or at-sea operations that employ operationally realistic combat scenarios. Again, modeling and simulation may be required to supplement some portion of TAC D&E when system characteristics dictate; adequate targets are not available; when the OT is to evaluate tactics developed for an improvement to an existing system; or to evaluate current tactics as they apply to system improvements.

**b.** As part of the planning for evaluation of tactics and to ensure that tactics are addressed as a critical issue, include a Tactics effectiveness COI in the TEMP part IV for programs where tactics development and evaluation is necessary. Tactics COIs will be developed to support the following: (Example COIs are provided in the TEMP part IV examples in chapter 5.)

**(1)** Those programs where the system in question is a new system and no tactics exist, and tactics development must commence very early in the program (e.g., Phase I - the demonstration and validation phase).

**(2)** Those programs where verification of tactics for an existing system is required because of system improvements or where existing tactics will be used and/or expanded to support a new system.

**902. TYPES OF OTGs**. OTGs may be promulgated following any phase of OT&E (also to include foreign military exploitation, TAC D&E, etc.) in which information concerning the tactical employment of the weapon system has been developed. OTGs which provide early information on a system entering engineering & manufacturing development, and are promulgated based on IOT&E prior to OPEVAL, will be designated as "OPTEVFOR Preliminary Tactics Guides." OTGs promulgated following OPEVAL based on evaluation of the Preliminary Tactics Guide, will provide the fleet with baseline tactics for employment of the weapon system and will be designated as "OPTEVFOR Tactics Guides." OTGs which provide refined tactics for systems already in production, and are based on phases of FOT&E, will be designated as "OPTEVFOR Follow-on Tactics Guides."

**903. THE ELEMENTS OF AN OTG**. OTGs are designed to provide the fleet user with the following types of information:

**a. Operational Capabilities of the Equipment**. What will it do for the user -- in operational terms? DT&E may tell what the equipment does against some specification that means something to an engineer. OT&E tells what it will do for a fleet user. For example, DT&E may say that a towed array acoustic receiver will have a receiver sensitivity of X dB -- OT&E says what it will do against specific threat submarines and identify optimum operating speeds and depths. Operational capabilities include operating procedures that tell you how to get the most out of the equipment; e.g., if you want to listen at ___ kHz, secure the ____. Operating procedures do not tell how to turn the equipment on and how to tune it -- they do not substitute for operator manuals.

**b.** Tactical concepts are not pat solutions to big problems, but rather starting points for the user's thinking. These may be building blocks, or small pieces of the problem, such as what sonobuoy pattern worked best under what conditions, how HARPOON seeker characteristics can be used to increase the probability of acquiring a selected target in a formation, etc.

**c.** Tactical procedures are the means by which a commander could implement tactical concepts (e.g., maneuver so that the target has an open-ocean background).

**d.** Areas for Further Study identify areas that warrant further investigation.

**e. NWP Transition Plan**. The OTD should provide a transition plan to Navy Doctrine Command (NDC) from which the OTG can be properly incorporated into tactical doctrine. This plan should include the affected NWPs, NWP Model Manager point of contact, and a recommended timeline based on the revision cycle of the specific NWP. State if no appropriate warfare publication exists into which the OTG can be incorporated.

**904. PUBLICATION OF TACTICS GUIDES**. When an OTG is required, it will be published within 120 calendar days after promulgation of the associated evaluation report. AIRTEVRON COs are authorized to sign COMOPTEVFOR OTGs originated at their activities "by direction." Controversial or special interest OTGs will be signed by the Commander.

**905. TAC D&E CATEGORY CODES**. The TAC D&E category code will be derived from Appendix F of NWP 1-01 (Naval Warfare Documentation Guide). Further information and clarification of TAC D&E category codes can be provided by the OPTEVFOR Tactics Coordinator (Code15) (DSN 564-5087/88).

**906. TRANSITION TO DOCTRINE**. Each OTG should have an ultimate home in an NWP. Section 5 of the OTG, which delineates the specifics of the NWP transition plan, must be carefully monitored and updated if required. It is the responsibility of both the originating command and the NWP model manager to track the status of all applicable OTGs and ensure that they are properly transitioned into the appropriate NWP.

**907. CANCELLATION OR REVIEW DATES**. A cancellation or review date 2 years after the date of publication will be assigned to each OTG. An OTG will be extended if it has been determined that no appropriate warfare publication exists for doctrine transition. COMOPTEVFOR must be notified when OTGs have to be extended beyond the normal 2-year life cycle.

The following pages contain a sample OTG format that has been used several times. You can also use a format that best suits your needs.

**(STAMP CLASSIFICATION)**

THE FORM OF THE COVER IS THE SAME, WHETHER THE GUIDE IS PROMULGATED BY A VX SQUADRON OR BY COMOPTEVFOR. THE COLOR OF the COVER INDICATES THE OVERALL CLASSIFICATION OF THE GUIDE. IF THE GUIDE IS PROMULGATED BY A VX SQUADRON, THE APPLICABLE SQUADRON SEAL WILL APPEAR IN THE UPPER LEFT HAND CORNER.

# OPTEVFOR TACTICS GUIDE SZ 5033-1-89

# NEW WEAPON SYSTEM

**DOWNGRADING STATEMENT***

*IF APPLICABLE. DO NOT USE ON **UNCLASSIFIED** TACTICS GUIDES

Distribution limited to U.S. Government agencies only. Reproduction and further dissemination of this document require approval of **COMOPTEVFOR** or **CNO** (N091).

**(STAMP CLASSIFICATION)**

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3980
Ser XX/

CLASSIFICATION

From: Commander, Operational Test and Evaluation Force

Subj: OPTEVFOR TACTICS GUIDE SZ5033-1-96 FOR THE NEW WEAPON SYSTEM (NWS)

This sample title indicates that OPEVAL was just completed. If the tactics guide was developed prior to OPEVAL of during FOT&E, start the title with "Preliminary" of "Follow-on."

Ref: (a) NWP 1-01

The only reference that normally would be required here is a previous OPTEVFOR Tactics Guide being superseded or modified, or a high classification supplement to this document.

**1**. This OPTEVFOR Tactics Guide contains information on tactical employment of the NWS. Section 1 of this guide describes the NWS as it was tested, and the scope of testing; Section 2 discusses the tactical capabilities and/or limitations of the NWS that were demonstrated during testing; Section 3 presents recommended tactics for employing the NWS; Section 4 describes areas that warrant further investigation; and Section 5 describes the NWP transition plan.

**2**. This tactics guide summarizes, for early fleet use, those tactical considerations OPTEVFOR was able to develop during operational test and evaluation (OT&E). The information contained herein, though sound, is preliminary in nature and therefore subject to change. Comments on the tactics and procedures are invited and encouraged.

**3**. Navy organizations on the distribution list may request additional copies of this document from DIRECTOR, NAVY TACTICAL SUPPORT ACTIVITY. All other requests for copies should be forwarded to (COMOPTEVFOR, VX-1, etc., as appropriate).

Subj: OPTEVFOR TACTICS GUIDE SZ5033-1-96 FOR THE NEW WEAPON SYSTEM (NWS) (*)

**4**. The following pertains to this Tactics Guide:

**a**. TAC D&E Category Code (See Appendix F, NWP 1-01).

**b.** Appropriate NWPs.
**c**. Cancellation date (No more than 2 years from date of issue).

Signature Block

Distribution limited to U.S. Government agencies only. Reproduction and further dissemination of this document requires approval of COMOPTEVFOR and NTSA.

**Downgrading Statement**
**(required if not on cover sheet)**

**VX COs will sign OTGs originated by their squadrons "by direction." The Commander will sign controversial or special interest OTGs.**

DISTRIBUTION:

| | |
|---|---|
| CNO (N8, 091, Program Sponsor) | |
| CINCLANTFLT | |
| CINCPACFLT | |
| CINCUSNAVEUR | |
| CMC | (For Marine Corps related programs) |
| COMSECONDFLT | |
| COMTHIRDFLT | |
| COMFIFTHFLT | |
| COMSIXTHFLT | |
| COMSEVENTHFLT | |
| TYCOMs (as required) | |
| COMNAVDOCCOM | |
| SYSTEM (NWS) | |
| OPCOMS | |
| OPUNITs | (with capability) |
| CG FMFLANT | (For Marine Corps related programs) |

Subj: OPTEVFOR TACTICS GUIDE SZ5033-1-96 FOR THE NEW WEAPON SYSTEM (NWS) (*)

| | |
|---|---|
| CG FMFPAC | (For Marine Corps related programs) |
| COMOPTEVFOR | (When OTG is drafted by a VX/HMX) |
| COMSURFWARDEVGRU | (For surface force related programs) |
| COMSUBDEVRON TWELVE | (For submarine force related programs) |
| NAVTACSUPP | (10 copies) |
| NAVAIRWARCEN | (add WEPDIV or ACDIV as applicable and city/state) |
| NAVSTKWARCEN | (For strike warfare related programs) |
| MAWTS ONE | (For Marine Corps aviation related programs) |
| NAVFITWEPSCOL | (For aviation related programs) |
| PRA, CRA, | (and Model Manager of appropriate NWP) |

**This is the minimum distribution. The number of copies reproduced for retention internally will be limited to five (two for the warfare division and three for the command files.**

**The originator must give careful consideration to the distribution of OTGs. Distribution will be limited to those commands and activities that must receive them.**

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| Appendix A -- OPTEVFOR Tactics Guide Feedback | A-1 |


**Note: Other appendices may be added if necessary**

## Acronyms and Abbreviations

| | |
|---|---|
| CIC | combat information center |
| FCS | fire control system |

Acronyms should be defined (spelled out) on the first occurrence in the test and listed here. Acronyms which are defined in the letter need not be spelled out again in the subsequent sections, except on this page.

The method used to define an acronym will be "Combat Information Center (CIC)."

Acronyms for Navy activities included in the Standard Navy Distribution List (which includes almost every activity) need not be spelled out or listed on the acronym page. The OTD is not precluded from spelling out and listing such acronyms if readability will be improved (e.g., acronyms for obscure activities).

## References

If references were used in this letter, repeat them here in the same order in which they appear in the letter. Follow with references mentioned in the sections to follow, in the order in which they are first mentioned in these sections.

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## Section 1

## Introduction

### 101. SYSTEM DESCRIPTION

The purpose of this paragraph is to provide a sufficiently detailed description of the system so that subsequent discussion of its capabilities, limitations, and employment are readily understood. If the system being discussed is completely new, and, therefore, not well known in the fleet, this paragraph may be quite lengthy. If, on the other hand, the system is an improved version of an older system, this paragraph need only address the improvements and can be relatively short. The use of photographs, diagrams, and tables for conciseness and clarity is encouraged.

Within this paragraph, describe any ways in which the system tested is known to differ from the system to be installed in the fleet. These differences include system differences, per se, and differences in the way the system will be installed (for instance, antenna location). Be as operationally specific as possible (for instance, don't say "the system tested was a prototype"). This type of statement conveys little useful information to the operational commander.

### 102. SCOPE OF TESTING

The purpose of this paragraph is to describe what was done that led to the tactical employment considerations discussed later. The object is to present, as clearly as possible, a summary of the testing, so the reader can decide for himself how much confidence to place in our findings and recommendations. The important elements of this paragraph are the ship, aircraft, etc., in which the system was installed and the scenarios in which the system was exercised, together with a summary of the amount of time (and weapons delivered, etc.) the system

was exercised. Do not include material of no interest to operational commanders, such as listings of suitability tests. Do include pertinent information on weather conditions during the testing, and the level and type of enemy threat the system was employed against.

If simulations were employed in the testing, they should be mentioned specifically. Simulations include U.S.-built versions of threat emitters and computer simulations of missile intercepts.

## 103. LIMITATIONS

Identify there the aspects of the system that were not adequately tested. Inadequate testing is defined to include a total absence of testing, and testing whose results are suspect because of limited data, unrepresentative pretest preparation, etc. The purpose of this paragraph is to flag for the reader those aspects of the system that we're not sure we have a complete handle on -- to avoid misleading him.

## Section 2

## Tactical Considerations

This section discusses the capabilities and limitations of the system that were determined during testing, and on which recommended tactics were based. The purpose is to identify known system elements, so that they need not be reestablished by fleet units investigating different tactics or different scenarios. These known system elements are those operationally interesting parameters that have been sufficiently defined for reasonable confidence. They include such things as target acquisition range as functions of target size, geometry, atmospheric ducting, etc. They include (and these are very important) negative system elements, such as a system's inability to counter the threat. This section contains a listing of the system's tactical capabilities and its tactical limitations that form the basis of any discussion of tactical employment.

The organization of this section should present the facts in the most understandable manner. In some cases, this section will best be organized by addressing individual missions in which the system will be employed. In other cases, it will best be organized by discussing system modes of operation. Still others will best be organized by threat categories. No rules are established, except the standard one to strive for accuracy, readability, clarity, and brevity, in that order.

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## Section 3

## Tactical Applications

This section provides guidance on the tactics to use with a system. This guidance may take many forms. For a towed array, it might be an operating guideline addressing questions such as the depth to operate as a function of layer, or bearing resolution procedures. For a projectile or fuse, it might be a decision matrix of projectile and fuse combinations for different targets. Realistic operational situations might be posed (XYZ missile ready to launch, enemy deploys chaff), and our guidance specifies the best tactic in response (check fire, fire salvo of three, etc.).

Organize the section as logically as possible. Consider organizing it to parallel Section 2. Avoid too much knobology and making this an OPERATOR's manual. Present only procedures for tactical employment of the system.

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## Section 4

## Areas for Further Study

This section identifies areas that warrant further investigation. Some of these areas may follow from the discussion of limitations in paragraph 103 and section 2. Others may be suggested by possible changes in the threat, or by possible other uses of the equipment.

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## Section 5

## NWP Transition Plan

The first part of this section identifies the applicable NWPs that the OTG will be incorporated into. This includes the NWP Model Manager Agent (MMA) POC as well as a proposed NWP revision timeline for the OTG (this timeline will be based on the NAVTACSUPP Activity revision plan furnished by the MMA).

The last part of this section will present proposed wording for changes to applicable NWP(s). Wording should be appropriate to the style used in the applicable NWP(s) and should identify the chapter, section and/or paragraph where the proposed wording would be inserted. It is intended that this wording would be directly incorporated into the next revision of the applicable NWP(s) unless response to this OTG suggests otherwise.

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## Appendix A

## OPTEVFOR Tactics Guide Feedback

After evaluation and validation of the OPTEVFOR Tactics Guide (OTG), applicable portions will be included in NWP XX series.

Users of this OTG are requested to provide comments regarding its usefulness to:

Commander, Operational Test and Evaluation Force
7970 Diven St. Norfolk, VA 23505-1498

Message PLAD: COMOPTEVFOR NORFOLK VA//51/OTD Code//

and

| Enter above information for originating activity. |
|---|

Comments should address technical accuracy, lessons learned, and evaluation of the proposed procedures or tactics. For subjective evaluations, comment on readability, clarity, and utility of procedures and tactics. Note strengths or weaknesses, recommend corrections or modifications, and provide comments concerning incorporation into the TACMAN.

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# CHAPTER 10

# TIPS ON CORRESPONDENCE PREPARATION

**1001. INTRODUCTION**. This chapter is a compilation of editorial areas that are commonly misused while writing our OT&E outlines, test plans, and evaluation reports. This chapter is designed to help you produce concise written products. The source references we follow are:

- SECNAVINST 5216.5D, Navy Correspondence Manual
- OPNAVINST 5510.1H, Navy Information and Personnel Security Program Regulations
- Government Printing Office Style Manual
- Warriner's English Grammar and Composition
- Webster's Ninth New Collegiate Dictionary
- standard English Books

## 1002. BASIC WRITING

### a. Use Simple Words

| Not | But |
|---|---|
| facilitate | help |
| utilize | use |
| promulgate | issue |
| in addition | also |
| in accordance with | by, per, following, under |
| in order to | to |
| for the purpose of | for, to |

- Keep sentences short (average under 20 words).
- Avoid using "it is" in sentences:

| Not | But |
|---|---|
| it is requested | we request, please |
| it is apparent that | clearly |
| it is the recommendation of... | I (we) recommend |

**b. Reference Blocks**. Dates are always first three letters of the month and last two numbers of the year (spell out fully in text). Avoid commas and quotation marks in the reference block.

| |
|---|
| Correspondence requires (1) standard Navy distribution list short titles or originator, (2) type of correspondence (ltr or memo), (3) SSIC, (4) originator's code by itself or in a serial number, (5) date. |

- Ref: (a) COMOPTEVFOR ltr 3980 Ser 500/C231 of 17 Jun 98

- Ref: (a) CNO memo 5216 Ser 09B33/317731 of 11 Sep 98

| |
|---|
| Messages require (1) title of originator as shown in From block of message, (2) date-time group with month and year. |

- Ref: (a) NAS Norfolk VA 101300Z Sep 98

| |
|---|
| Telephone conversations require (1) PHONCON, (2) individuals and their activities, (3) date. |

- Ref: (a) PHONCON OPNAVSUPPACT (N09B15) Mrs. Smith/NAVSUP (Code 79) Mr. Henry of 21 Jan 98

| |
|---|
| Meetings require (1) MTG, (2) individuals and their activities, and (3) date. |

- Ref: (a) MTG COMOPTEVFOR (Code 597) LCDR Smith/ COMNAVAIRSYSCOM (PMA-11) LCDR Jones of 2 Mar 98

| |
|---|
| Use a classification mark ((U)) only when using the full title of a classified reference. |

- Ref: (a) ONI Threat Assessment 014-94 U.S. Navy Tactical ESM/ECM Systems of Dec 98 (U)

(Use full titles only for clarity, otherwise, leave them out.)

**c. Paragraph Format**

• Major paragraphs are numbered at the left margin.

• If subparagraphs are needed, use at least two; no a. subparagraph without at least a b. subparagraph (also, no (1) without a (2), etc.).

• Double-space between all paragraphs and subparagraphs.

• When citing paragraphs or subparagraphs, write numbers without periods or spaces: "paragraph 1b(1)(a)."

• Use bold and all caps for major paragraph headings. Use bold and initial caps for subparagraph headings. If paragraph 1 has a heading, paragraph 2 should have one, although that is not possible in every case.

• Use letters or numbers in parentheses to emphasize a few <u>short</u> statements without the added emphasis lines for each: This format (a) highlights ideas, (b) improves readability, and (c) saves space.

• Instead of using subparagraphs for <u>short, incomplete</u> thoughts, use hyphens, bullets, or other marks (no periods after incomplete thoughts). Whatever you use, be consistent throughout the document.

1. (C) The system upgrade provides the following benefits:

• systematized digital projection
• compatible organizational flexibility
• synchronized transitional contingency

• Start a paragraph near the end of a page only if you have room for two or more lines. Continue a paragraph on a following page only if two or more lines can be carried over. A signature page must have at least two lines of text.

**d. Military Rank Abbreviations**. We deal daily with all branches of the military. It's professional and common courtesy to use the appropriate and correct rank abbreviation when addressing a fellow officer. Note the following:

| Navy & Coast Guard | Marine Corps | Air Force | Army |
|---|---|---|---|
| ADM | Gen | Gen | GEN |

| | | | |
|---|---|---|---|
| VADM | LtGen | Lt Gen | LTG |
| RADM | MajGen | Maj Gen | MG |
| COMO | BGen | Brig Gen | BG |
| CAPT | Col | Col | COL |
| CDR | LtCol | Lt Col | LTC |
| LCDR | Maj | Maj | MAJ |
| LT | Capt | Capt | CPT |
| LTJG | 1stLt | 1st Lt | 1LT |
| ENS | 2ndLt | 2d Lt | 2LT |
| CWO W4 | CWO | | CW4 |
| CWO W3 | CWO | | CW3 |
| CWO W2 | CWO | | CW2 |
| WO | WO1 | | WO1 |

**1003. GENERAL EDITORIAL**. There are two spaces after periods and colons and one space after parentheses.

**a. Draft Documents**. Drafts for approval should be double-spaced. This allows changes and corrections to be made neatly, without awkward writing in the margins.

• Draft test plans are routed with the associated TEMPs; draft formal evaluation reports are routed with the TEMP, test plan, and any quick-look reports that preceded them. The OTD may include other background material considered necessary.

• Original artwork and other irreplaceable material (e.g., original reports from commanding officers of project ships) are <u>not</u> routed with drafts -- use a copying machine.

**b. Documents for Signature**. Smooth, for-signature documents are routed to the signer in ready-for-printing form. If in doubt about printability, ask the Graphics Shop supervisor -- early.

• "Ready-for-printing" means:

° original (original quality) drawings and typed material
° glossy prints of photos

**c. Intentionally Left Blank Pages**. When preparing test plans and evaluation reports where the notation is required that the reverse of a page is blank, include the page and place the notation "THIS PAGE INTENTIONALLY LEFT BLANK." in the center of the page.

**1004. ACRONYMS AND ABBREVIATIONS.** Apply the below guidelines for acronyms and abbreviations when writing our documents:

• Excessive use of these is false economy. Try to avoid as much as possible.

• If an acronym or abbreviation is used only twice or infrequently, or is widely separated in the text, spell out the term throughout the document. Put clarity before economy.

• When you need to use an acronym or abbreviation, spell out the term the first time it's used: full mission capability (FMC).

. Not all acronyms or abbreviations are capitalized when defined. See paragraph 5 of COMOPTEVFORINST 3960.12E, COMOPTEVFOR Acronym and Abbreviation List (CAAL) for our guidelines on this (the CAAL is in Y:\general\ot&efmts\caal.doc on the command's LAN).

• Plurals of acronyms or abbreviations are designated by a lower case s, not an apostrophe (i.e., FFs, CVs). The apostrophe only shows possession (i.e., FF's position).

• Only use plural acronyms when they are used by themselves, not when first defined (i.e., data gathering systems (DGS)).

• Abbreviations for terms of measurement are never pluralized, i.e., 24 hr, 0.4 hr, not 24 hrs, etc.

• Do not abbreviate foot as ', inch as " or number as #; instead use ft, in., and no., respectively. These abbreviations should only be used in figures or tables, not in text.

• In order to avoid confusion, use periods after abbreviations which spell other English words. Ft, lb, km, nm, and dc, for example, do not spell English words, while in., gal., fig., and no. do.

• Don't use major commands found in the SNDL in the acronym and abbreviation list.

• It's not necessary to define abbreviations for terms of measurement, nor do you put them in your acronym and abbreviation list.

• You don't need to define well known acronyms or abbreviations that have become almost common terms (e.g., NATOPS, OT&E, etc.).

• Stand-alone acronyms and abbreviations may be used as paragraph heads or table/figure titles. Spell out if the acronym is obscure and has been used infrequently.

• The following suggestion will help in preparing a better document: Don't define any abbreviation or acronym in the text until the document is complete, but make sure to keep a list of all you use. After the document text is fairly well set, pull out your list, search for the first occur-

rence of each item, and then add the definition. (Ensure each item is used at least one other place in the document. If the acronym is not used again, delete the acronym and spell out the term.)

**1005. SECURITY MARKINGS**. The following information, from OPNAVINST 5510.1H, the Navy Information and Personnel Security Program Regulations, is very important and must be properly used:

**• Portion Markings (paragraph, subparagraph)**

° The appropriate symbol will be placed immediately following the paragraph or subparagraph number. The symbols are (TS) for top secret; (S) for secret; (S-NF) for secret NOFORN; (C) for confidential; and (U) for unclassified.

° When a major numbered or lettered paragraph (a paragraph flush to the left margin) and all of its subparagraphs are unclassified, each paragraph <u>need not</u> be marked; mark only the major paragraph.

| | | |
|---|---|---|
| 1. (U) | | A. (U) |
| a. | or | 1. |
| b. | | 2. |

• When a major numbered or lettered paragraph, or one or all of its subparagraphs are classified, <u>each</u> paragraph <u>must</u> contain the appropriate marking.

| | | |
|---|---|---|
| 1. (U) | | A. (U) |
| a. (U) | | 1. (C) |
| (1) (S) | or | a. (U) |
| (2) (U) | | b. (C) |
| b. (U) | | 2. (U) |

• For tables and figures, the classification will be marked in full, not abbreviated form. The abbreviated form will precede the title.

Table 1-1. (U) Program Schedule

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Figure 1-1. (U) Program Schedule

• **Overall Classification**

° The overall (highest) classification of the entire document will be stamped top and bottom center on each page of the document.

° For more detailed information on other security aspects, see Chapters 9 and 12.

° For classifying references, see example under Reference Blocks (letter).

**1006. CAPITALIZATION**. Capitalization is an area widely open to interpretation, and is one of our largest problem areas. Showing an example of every problem in capitalization here is just not possible. The following are general rules and describe the most common uses of capitalization.

• Capitalize the first word of a sentence (standard usage).

• Capitalize the first word of an independent clause following a colon (standard usage):

° The following limitation ...: Elements of ... were not available.
° The test accomplished three objectives: Completion of ...; ...; and ....

• Don't capitalize the first word after a colon if it begins a simple list of items, or is not a complete sentence.

• Capitalize proper nouns (person, place, or thing) (standard usage).

• Capitalize proper adjectives (standard usage):

| Proper Noun | Proper Adjective |
|---|---|
| England | English |
| Europe | European |

• Do not capitalize common nouns when used as a substitute for proper nouns (standard usage):

° Spy 1D Radar System; but, the radar system; the system
° Naval War College; but, the college
° Suez Canal; but, the canal

• Capitalization of panel nomenclature (placards) should match that on the hardware; in most cases this means all caps. If a switch or control position is not marked (often "on" and "off" are not), use lower case. Capitalization of digital data from a HUD, MFD, DDI, or computer monitor should match that of the actual display.

• Capitalize (all caps) names of naval ships.:

° USS CALIFORNIA (CGN 36) (no hyphens used in hull numbers)
° USS NIMITZ (CVN 68)

• Capitalize military ranks when used as a proper noun. Don't capitalize military titles when they stand alone or when following the name:.

° Admiral Nimitz; but, the admiral.
° Airman Jones; but, the airman.
° Charles F. Hughes, rear admiral, U.S. Navy

• Capitalize billet or organizational titles when used with a proper name or in place of a proper name. Don't capitalize generic job descriptions:

° Administrative Officer; but, administrative officers
° Department Head; but, department heads
° Division Officer; but, division officers
° Commanding Officer, USS ..., but, commanding officer

• Capitalize days, months, and holidays (standard usage).

• Don't capitalize seasons (spring, summer, etc.) (standard usage).

• Capitalize compass directions used to indicate geographical regions, or when part of names (standard usage):

° the Midwest
° the West Coast
° Middle East

• Don't capitalize compass directions when used to denote mere direction or position (standard usage):

° north, east, south, west
° northerly, northern
° southern California

° eastern region

• Don't capitalize words like test plan, evaluation report, etc., in text unless you are citing a specific test plan, evaluation report, etc., by title.

• Capitalize the second word of a hyphenated word when used as a title or heading. (Man-Hour).

**1007. PREFIXES**. Words using the prefixes and combining forms shown below are generally one word, although each does have a few hyphenated forms. Each of the following can be found in a list of undefined words in your dictionary. Don't guess at these! If you're not sure how they're used, look them up. After all, you're the one who has to make the change to correct it. The exception to all of these is the prefix "self," which is always hyphenated. Keep in mind, the prefixes anti, multi, non, post, pre, and re are almost always one word:

| | | |
|---|---|---|
| anti | multi | re |
| co | non | sub |
| counter | out | super |
| hyper | over | ultra |
| inter | post | un |
| mis | pre | |

**1008. COMPOUND WORDS**. These are sometimes difficult. If in doubt, check your dictionary for the correct usage. The following are examples of the most commonly misused compound words in our documents. This is by no means a complete list.

**• hyphenated or two words, never one word:**

| Unit Modifier | Standard Usage |
|---|---|
| on-line | on line |
| start-up | start up |
| warm-up | warm up |
| stand-alone | stand alone |
| turn-on | turn on |
| own-ship | own ship |
| on-board | on board |
| follow-up | follow up |

- **one or two words, <u>never hyphenated</u>:**

| | |
|---|---|
| twofold | |
| colocate(d) | |
| backup | back up |
| checkoff | check off |
| checkout | check out |
| setup | set up |
| handoff | hand off |
| standby | stand by |
| lineup | line up |
| standoff | stand off |
| oncoming | |
| outgoing | |
| | en route |
| workup | work up |
| postflight | |
| lockup | lock up |
| buildup | build up |
| | data base |

- **Other uses of hyphens:**

° Use a hyphen when joining two or more words serving as a single adjective before a noun.

110-volt line
30-foot depth
signal-to-noise ratio

° For two or more words that name one subject:

| | |
|---|---|
| light-year | man-weeks |
| man-hour | man-years |
| watt-hour | |

° When spelling out numbers twenty-one through ninety-nine (usually only at the beginning of a sentence).

° To reduce confusion and ambiguity:

a 1-kg component

the 20-mile range

• Do not use hyphens in Mark and Mod designations; i.e., Mk 4, Mod 3.

• If in doubt about hyphenating a word, don't.

**1009. TERMS OF MEASUREMENT**. The following preferred terms and forms are to be used when writing our documents.

• Terms of measurement are always expressed in figures.
• Compass directions are abbreviated as:

| | | |
|---|---|---|
| N. | S. | 10°N.25°W. (no spaces) |
| NE. | NNW. | NW.byN.1/4W. (no spaces) |
| E. | W. | |
| SW. | ESE. | |

• Latitude and longitude followed by figures are shown as:

| | |
|---|---|
| lat. 52°33'05"N. | long. 13°21'10"E. (no spaces in figures) |

• Temperature is shown in figures, using the degree symbol:

°F 212 °F (space between number and °F)

C 100 C (space between number and C) (no degree symbol for Celsius)

° When showing a range of temperatures use; e.g., 45 to 65 °F, not 45° to 65° F.

• A space is used between a figure and the unit symbol:

| | |
|---|---|
| 3 m | 7 ft |
| 20 min | 120 V |

• Use the percent symbol (%) vice spelling out the word percent.

The following are abbreviations of the terms of measurement we use most in our documents. The singular and plural forms for these are the same; don't add an "s" to make it plural:

| | | |
|---|---|---|
| Bd, baud | kHz, kilohertz | V, volt |
| dB, decibelkW, kilowatt | VA, voltampere | |

| | | |
|---|---|---|
| dBu, decibel unit | kWh, kilowatthour | yd, yard |
| ft, foot | m, meter | yr, year |
| G, giga (prefix, 1 billion) | MHz, megahertz | |
| g, gram | mHz, millihertz | |
| GHz, gigahertz | mi, mile | |
| hr, hour | min, minute | |
| Hz, hertz | mm, millimeter | |
| in., inch | ms, millisecond | |
| k, thousand | nm, nautical mile | |
| kg, kilogram | sec, second | |

• When showing distance in thousands of feet, the abbreviation to use is k ft; i.e., 25k ft; <u>not</u> 25K FT, 25KFT, 25 KFT, 25kft, 25 kft.

• Limit abbreviations such as hr, min, sec, ft, in., m, mi, yd, K ft, and yr to tables, figures, matrices, etc., where space is limited. Spell them out in the text.

**1010. NUMBERS**

• Numbers under 10 are spelled out except for time and measurement, or when used with related numbers of 10 or greater:

° "A team of four runners completed the 8-mile course in 1.5 hours."
° "Of the 14 swimmers assigned to perform the mission, 8 were UDT swimmers."

• Numbers are spelled out at the beginning of a sentence or heading. Rephrase a sentence or heading to avoid beginning with figures.

• A spelled out number is <u>not</u> repeated in figures in our documents, e.g., nine (9) missiles were launched.

• Numbers less than 100 preceding a compound modifier containing a figure are spelled out:

two 3/4-inch boards <u>but</u>, 120 8-inch boards
twelve 6-inch guns

• Use tenths of hours when reporting results compared to a threshold that is in hours:

° The demonstrated MCMTOMF was 1.7 hours (criterion: $\leq$2.0 hours), based on ....

° Don't say, e.g., the demonstrated MCMTOMF was 1 hour 45 minutes ....

**1011. TABLE AND FIGURE HEADINGS**. The examples below should be placed and numbered properly:

• **The table heading is centered above the table:**

Table 1-1. (U) Launch Thresholds

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• **The figure heading is centered below the figure:**

CONFIDENTIAL

Figure 1-1. (U) Program Schedule

**1012. PROBLEM AREAS OF WORD USAGE**. We find some words are being used when, in fact, a similar word is actually the one we want. The following examples are the most common:

• **Accept and Except**. Accept is a verb, and means "to receive." Except, when used as a verb, means "to leave out"; as a preposition it means "excluding."

• **Affect and Effect**. Affect, usually a verb, means "to impress" or "to influence (frequently the mind or feelings)." Effect, when used as a verb, means "to accomplish, to bring about"; as a noun it means, "the result of some action."

• **Assure, Ensure, and Insure**. Do not use these words interchangeably. If you mean "make sure" or "be sure," use <u>ensure</u>. Reserve <u>insure</u> for references to insurance, and <u>assure</u> for cases where you wish to convince, affirm, or guarantee.

• **Credible and Creditable**. Credible means "believe." Creditable means "praiseworthy."

• **Data**. Data is the plural form of the Latin datum. In our documents we say "data were," not "data was."

• **Imply and Infer**. Imply means "to suggest something." Infer means "to interpret" something.

• **Or and Nor**. Use "or" with "either"; use "nor" with "neither."

• **Ability or Capability**. Use "ability" when referring to a person; use "capability" when referring to a machine.

• **e.g. and i.e.** e.g. (from exempli gratia) means "for example," while i.e. (from id est) means "that is" or "in other words."

• **Compose, Comprise, and Consist**. Although "composed of" and "consists of" have similar meanings, do not use both in one document. Comprise is frequently misused as "comprised of." A radio system, for example, consists of (or is composed of) a transmitter-receiver, a control, and an antenna. But: The radio system comprises the transmitter-receiver, control, and antenna. Since comprise is somewhat tricky to use, and even when used correctly will look "wrong" to many readers, stick to consist or compose.

**1013. PUNCTUATION**. Standardized marks are used to separate groups of words in sentences, clauses, and phrases in order to clarify their meaning. See the following punctuation marks, together with examples of their use:

• **Comma**

° Use commas to separate items in a series. Don't place a comma before the first item or after the last item in a series.

° Use a comma to separate two or more adjectives preceding a noun.

° Use a comma before and, but, or, nor, for, and yet when they join independent clauses.

° Parenthetical expressions are set off by commas. The following expressions are commonly used parenthetically: I believe (think, know, hope, etc.), I am sure, on the contrary, on the other hand, after all, by the way; incidentally, in fact, indeed, naturally, of course, in my opinion, for example, however, nevertheless.

• **Semicolon**

° Use a semicolon between independent clauses not joined by and, but, or, nor, for, yet. (A semicolon is used only when the ideas in the two clauses are so closely related that a period would make too distinct a break.)

° Use a semicolon between independent clauses joined by words such as for example, for instance, that is, besides, accordingly, moreover, nevertheless, furthermore, otherwise, therefore, however, consequently, instead, hence.

° Use a semicolon between items in a series if the items contain commas. "The following are members of the new committee: Jan Bates, president of the Student Council; Alan Drew, president of the Senior Class; and Helen Berger, vice-president of the Honor Society."

• **Colon**

° Use a colon before a list of items, especially after expressions like "as follows" and "the following."

° Use a colon before a long, formal statement or quotation.

° Use a colon between independent clauses when the second clause explains or restates the idea in the first.

• **Quotation Mark.** We try to avoid using quotation marks in our documents, except for detailed comments to a TEMP. When using quotation marks combined with other forms of punctuation, use these rules:

° Commas and periods are <u>always</u> placed <u>inside</u> the closing quotation marks.

° Semicolons and colons are <u>always</u> placed <u>outside</u> the closing quotation marks.

° Question marks and exclamation points are placed inside the closing quotation marks if the quotation is a question or an exclamation; otherwise, they are placed outside.

• **Apostrophe**

° Use to show possession by adding the apostrophe and an s to a singular noun.

° Use to show possession by adding only the apostrophe after the s in a plural noun.

° The words minute, hour, day, week, month, year, etc., when used as possessive adjectives, require an apostrophe.

° <u>Do not</u> use an apostrophe when showing plurals of acronyms or abbreviations (COIs, not COI's).

**1014. EDITORIAL MARKS.** These must be viewed using the Page Layout view.

| | | | |
|---|---|---|---|
| ≡ ↑ | capitalize | armed forces | Armed Forces |
| ≡ ↓ | lower case | ElecTRONICS | Electronics |

| | | | |
|---|---|---|---|
| # or ⌉ | insert space | Now isthe time | Now is the time |
| ⌒ | delete | durming | during |
| ^ | insert | when will ^he | when will he |
| stet | leave in | there goes John stet | there goes John |
| ] | move to right | classified material ] requires proper | classified material requires proper |
| [ | move to left | classified material [ requires proper | classified material requires proper |
| ∩ | invert | m i s s o i n | mission |
| ⌒ | close up | LAW | IAW |
| ⌒ | delete & close up | I&AW | IAW |
| (sp) | spell out | AFS(sp) | Armed Forces Staff (AFS) |
| AWK | awkward | Wording used in the sentence or paragraph is confusing or unclear. Used to draw attention to the author. No changes made by editor. | |
| ¶ | paragraph | Start a new paragraph with the sentence beginning at this point. | |
| [ ] | center | Center the material in brackets in the center of the page. | |
| ? | question | Indicates that the material is incomplete, unclear or for some other reason was not understood by the editor. Used to draw attention to author. | |
| — | attention mark | Used in right margin of page to draw attention to some editing mark in the sentence. | |
| # → | add return | | |

# GLOSSARY

**ACQUISITION CATEGORIES (ACAT)**. Categories established to facilitate decentralized decisionmaking and execution and compliance with statutorily imposed requirements. The categories determine the level of review, decision authority, and applicable procedures.

- **ACAT I**. These are "major defense acquisition programs." They have unique statutorily imposed acquisition strategy, execution, and reporting requirements. Mile-stone decision authority for these programs is the:

  - Under Secretary of Defense for Acquisition -- acquisition category I D -- or, if delegated by the Under Secretary, the

  - Cognizant DoD Component Head -- acquisition category I C -- or, if delegated by the component head, the component acquisition executive.

- **ACAT II**. Milestone decision authority for these programs is delegated no lower than the DoD Component Acquisition Executive. They have unique statutorily imposed requirements in the test and evaluation area.

- **ACAT III and IV**. The additional distinction of acquisition categories III and IV allow DoD component heads to delegate milestone decision authority for these programs to the lowest level deemed appropriate within their respective organizations.

**APPLICATION SOFTWARE**. Consists of the computer program, firmware, and associated data that implement the operational capabilities required for tactical weapon system employment; e.g., target tracking, navigation, avionics programs, and BIT. A software change required because of changed system performance requirements or new or redesigned hardware shall be termed application vice support software.

**APPROVAL FOR FULL PRODUCTION (AFP)**. The decision for full production of a system. Normally occurs at the final Milestone III.

**APPROVAL FOR LIMITED PRODUCTION (ALP)**. The decision to produce a limited number of systems for use as additional test articles.

**AVAILABILITY**. A measure of the degree to which an item is in an operable and committable state at the start of a mission when the mission is called for at an unknown (random) time. In OT&E, operational availability ($A_o$) is the usual measure. (See Operational Availability.)

**CAPSTONE TEST AND EVALUATION MASTER PLAN (CAPSTONE TEMP)**. A Test and Evaluation Master Plan which address the testing and evaluation of a defense system comprised of a collection of "stand alone" component systems which function collectively to achieve the objectives of the defense system.

**COMBINED DT AND OT**. Used to save time and reduce costs; must be configured to meet both operational capabilities/functions and developmental test objectives; must be covered by an MOA; and must be followed by an appropriate final period of testing which will emphasize appropriate separate operational testing before a Milestone III decision.

**COMPATIBILITY**. One of the elements of operational suitability. The capability of a system or subsystem to operate in its intended environment without adverse effects to or from other systems. Compatibility includes physical, functional, electrical and electronic, and environmental issues.

**COMPUTER RESOURCES**. The totality of computer hardware, firmware, software, personnel, documentation, supplies, services, and support services applied to a given effort.

**COMPUTER SOFTWARE (OR SOFTWARE)**. A combination of associated computer instructions and computer data definitions required to enable the computer hardware to perform computational or control functions.

**COMPUTER SOFTWARE DOCUMENTATION**. Technical data or information, including computer listings and printouts, which documents the requirements, design, or details of computer software, explains the capabilities and limitations of the software, or provides operation instructions for using or supporting computer software during the software's operational life.

**CONCURRENT TESTING**. A form of combined DT/OT in which events are generally broken into separate DT and OT events. Concurrent testing would be having both DT and OT testers on a ship, conducting separate and distinct test scenarios, some for DT, some for OT.

**COST AND OPERATIONAL EFFECTIVENESS ANALYSIS (COEA)**. An analysis of the estimated costs and operational effectiveness of alternative materiel systems to meet a mission need and the associated program for acquiring each alternative.

**CRITICAL INTELLIGENCE PARAMETERS (CIP)**. CIPs are a series of threat thresholds established by program developers and managers for the purpose of improving threat support products over the life of the system. Emerging foreign capabilities or reevaluations which cross over these thresholds would critically impact the effectiveness and survivability of the U.S. acquisition program. CIPs are expressed in terms of a potential adversary's quantity, type, force mix, and system capabilities for actual and projected specific threats.

**CRITICAL OPERATIONAL ISSUES (COI)**. The critical aspects of a system's operational effectiveness and operational suitability that are intended for resolution during OT&E. They are developed by COMOPTEVFOR, they do not all address CNO-provided minimum acceptable operational performance requirements per se, and they appear in part IV of the TEMP.

**CURRENT THREAT**. The threat which has been fielded or is assessed to be currently available.

**DEVELOPING AGENCY (DA)**. DA (usually a SYSCOM). The agency responsible for system design and development, and accomplishment of DT&E to verify attainment of technical performance specifications and objectives.

**DEFENSE ACQUISITION BOARD (DAB)**. The senior DoD acquisition review board chaired by the Under Secretary of Defense for Acquisition. The Vice Chairman of the Joint Chiefs of Staff is the Vice-Chair. Other members of the board are the Deputy Under Secretary of Defense for Acquisition, service acquisition executives of the Army, Navy, and Air Force; the Director of Defense Research and Engineering; the Assistant Secretary of Defense for Program Analysis and Evaluation; the Comptroller of the Department of Defense; the Director of Operational Test and Evaluation, the appropriate DAB Chair, and the Defense Acquisition Board Executive Secretary. Other persons may attend at the invitation of the Chair. (see DoD Directive 5000.49, "Defense Acquisition Board")

**DIRECTOR, OPERATIONAL TEST AND EVALUATION (DOT&E)**. According to DoD Directive 5000.1, DOT&E is the principle advisor to the Secretary of Defense on DoD Operational Test and Evaluation matters.

**DT ASSIST**. Similar to an early phase of combined DT/OT, but with a predominantly DT flavor. OTDs take an active role in the DT effort. See paragraph 407 for detailed information.

**DEVELOPMENTAL TEST AND EVALUATION (DT&E)**. T&E conducted by the DA to assist in engineering design and development, and to verify attainment of technical performance specifications and objectives.

**EARLY OPERATIONAL ASSESSMENT (EOA)** . An operational assessment (OT-I) conducted prior to, or in support of, Milestone II. (See Operational Assessment)

**EVALUATION REPORT**. One of the two products of OT&E (the other product is the Tactics Guide).

**EXIT CRITERIA**. Program specific accomplishments that must be satisfactorily demonstrated before an effort or program can progress further in the current acquisition phase or transition to

the next acquisition phase. Exit criteria may include such factors as critical test issues, the attainment of projected growth curves and baseline parameters, and the results of risk reduction efforts deemed critical to the decision to proceed further. Exit criteria supplement minimum required accomplishments and are specific to each acquisition phase.

**FLEET RELEASABLE SOFTWARE**. Software for which OT&E results confirm that all significant design problems have been identified, that solutions to these problems are available, and that the software actually tested is effective and suitable for its intended use and meets operational requirements. This term is reserved for use by CNO following successful OT&E.

**FOLLOW-ON OPERATIONAL TEST AND EVALUATION (FOT&E)**. That test and evaluation that is necessary during and after the production period to refine the estimates made during OT&E to evaluate changes, and to reevaluate the system to ensure that it continues to meet operational needs and retains its effectiveness in a new environment or against a new threat.

**FULL MISSION CAPABILITY (FMC)**. The percentage of time the test aircraft is capable of performing all its missions as defined in the Mission Essential Subsystem Matrices (MESM) as supplemented by operational experience.

**HUMAN FACTORS**. A body of scientific facts about human characteristics. The term covers all biomedical and psychosocial considerations. It includes, but is not limited to, principles and applications in the areas of human engineering, personnel selection, training, life support, job performance aids, and human performance evaluations (DODINST 5000.2). Operational testing includes examination of those elements of system operation and maintenance which influence the efficiency with which people can use systems to accomplish the operational mission of the system (e.g., arrangement of controls and displays); the work environment (e.g., room layout, noise level, temperature, lighting, etc.); the task (e.g., length and complexity of operating procedures); and personnel (e.g., capabilities of operators and maintainers).

**INITIAL OPERATIONAL CAPABILITY (IOC)**. The first attainment of the capability to employ effectively a weapon, item of equipment, or system of approved specific characteristics, and which is manned or operated by a trained, equipped, and supported military unit or force.

**INITIAL OPERATIONAL TEST AND EVALUATION (IOT&E)**. All OT&E conducted on production or production representative articles, to support the decision to proceed beyond low-rate initial production. It is conducted to provide a valid estimate of expected system operational effectiveness and operational suitability.

**INTELLIGENCE PRODUCTION REQUIREMENT (IPR)**. An IPR may be initiated by a user whenever there is a perceived data gap. It may cover current, midterm, or long range intelligence requirements which cannot be wholly satisfied by the resources of the requester.

**INTEGRATED PROGRAM SUMMARY (IPS)**. A DoD component document prepared and submitted to the milestone decision authority in support of Milestone I, II, III, and IV reviews. It concisely highlights the status of a program and its readiness to proceed into the next phase of the acquisition cycle.

**INTEROPERABILITY**. The capability of systems, units, or forces to provide services to or accept services from other systems, units, or forces, and to use the services so exchanged to operate effectively (DODINST 5000.2). Effective exchange of information is emphasized. For example, a radar is interoperable with a gun system if the radar causes the gun to point a the target; the Carrier Aircraft Inertial Navigation System must be interoperable with the Ship's Inertial Navigation System for initial alignment; a fuze must be interoperable with the warhead in order for the firing signal to get through.

**JOINT INTEROPERABILITY**. Joint Interoperability is an E-test designed to examine the use of systems which must exchange information or services with non-Navy systems and platforms; that is, Army or Air Force and in some cases, Marines or Coast Guard. For instance, in designing an SP test for a submarine antenna, the capability of the antenna to assist the platform in communicating with Army helicopters, USAF aircraft and satellites, and a Marine CP would have to be examined.

**JOINT PROGRAM**. Any Defense acquisition system, subsystem, component, or technology program that involves formal management or funding by more than one DoD component during any phase of a system's life-cycle.

**JOINT TEST AND EVALUATION (JT&E) PROGRAM**. An OSD program for JT&E. The program is structured to evaluate or provide information on system performance, tech-nical concepts, system requirements or improvements, system interoperability; to improve or develop test methodologies; or for Force structure planning, doctrine, or procedures.

**LEVEL OF REPAIR ANALYSIS (LORA)**. The technique used to determine whether an item should be repaired and at what maintenance level; i.e., organizational, intermediate, or depot.

**LOGISTIC SUPPORTABILITY**. The degree to which the planned logistics (including test equipment, spares and repair parts, technical data, support facilities, and training) and manpower meet system availability and wartime usage requirements.

**LOGISTIC SUPPORT ANALYSIS (LSA)**. The selective application of scientific and engineering efforts undertaken during the acquisition process, as part of the system's engineering and design process, to assist in complying with supportability and other logistic support areas.

**LOW RATE INITIAL PRODUCTION (LRIP)**. The production of a system in limited quantity to provide articles for additional OT&E to establish an initial production base, and to permit an orderly increase in the production rate sufficient to lead to full-rate production upon successful completion of OT&E.

**MAINTAINABILITY**. The capability of an item to be retained in or restored to specified conditions when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair. MTFL, MCMTOMF and MR are frequently calculated in maintainability evaluations.

**MAJOR DEFICIENCY**. An operational mission failure or software fault (precludes successful completion of a mission). If occurring in sufficient numbers during testing, can lead to a partially resolved or UNSAT resolution of a COI. On the other hand, only one major deficiency occurring may not lower the result to below a stated threshold, meaning that the COI is still resolved as SAT.

**MATERIAL SUPPORT DATE (MSD)**. The date when all necessary supply support of the system or equipment is furnished. Supply support includes allowance quantities stocked in the supply system or furnished directly to the end-user.

**MARINE CORPS OPERATIONAL TEST AND EVALUATION AGENCY (MCOTEA)**

**MEAN CORRECTIVE MAINTENANCE TIME FOR OPERATIONAL MISSION FAILURES (MCMTOMF)**. Normally computed as part of Test S-2, MCMTOMF is the average time required to perform active corrective maintenance. Corrective maintenance is the time during which one or more personnel are repairing an operational mission failure and includes: preparation, fault location, part procurement from local (on-board) sources, fault correction, adjustment and calibration, and follow-up checkout times. It excludes off-board logistic delay time.

**MEAN TIME TO FAULT-LOCATE (MTFL)**. The total fault-location time divided by the number of critical failures. Frequently computed as part of Test S-2, Maintainability.

**MILESTONE I DECISION**. The decision to establish a new acquisition program and establish a concept baseline containing initial program cost, schedule, and program objectives.

**MILESTONE II DECISION**. The decision to begin engineering and manufacturing development of a concept.

**MILESTONE III DECISION**. The decision to produce a system.

**MINIMUM ACCEPTABLE OPERATIONAL PERFORMANCE REQUIREMENT**. The value for a particular parameter that is required to provide a system capability that will satisfy the validated mission need. Also known as the performance threshold. This is used in programs dating prior to March 1996. These programs may or may not change terminology during TEMP updates.

**MINOR FAILURE**. One that affects system performance but does not impact the ability to perform the mission. This definition will be included in aircraft program documents where minor failures will be used in calculations such as maintenance ratio (MR) or mean flight hours between failures (MFHBF) (for older programs that still use this parameter).

**MINOR DEFICIENCY**. One that affects system performance but does not impact the ability to perform the mission. Usually requires only a minor workaround to continue testing.

**MISSION CAPABILITY BY PRIMARY MISSION AREA ($MC_{MA}$)**. The percentage of time the test aircraft is capable of performing a specified mission.

**MISSION NEED STATEMENT (MNS)**. A statement of operational capability required to perform an assigned mission or to correct a deficiency in existing capability to perform the mission.

**MISSION RELIABILITY**. See Reliability.

**MODEL**. A model is a representation of an actual or conceptual system that involves mathematics, logical expressions, or computer simulations that can be used to predict how the system might perform or survive under various conditions or in a range of hostile environments.

**MULTISERVICE OT&E**. OT&E conducted jointly by two or more services for systems to be acquired by more than one service, or for a service's systems which have interfaces with equipment of another Service.

**NAVY SUPPORT DATE (NSD)**. The date the Navy is responsible for providing material support for both retail outfitting and wholesale requirements from the supply system. Support elements could include allowance quantities in the supply system, training, technical manuals, and other support documents such as allowance parts lists and preliminary allowance parts lists.

**NONDEVELOPMENTAL ITEM (NDI)**

- Any item of supply that is available in the commercial marketplace;

- Any previously developed item of supply that is in use by a department or agency of the United States, a State or local government, or a foreign government with which the United States has a mutual defense cooperation agreement;

- Any item of supply described in definition a or b, above, that requires only minor modification in order to meet the requirements of the procuring agency; or

- Any item of supply that is currently being produced that does not meet the requirement of one of the above definitions, solely because of the item is not yet in use or is not yet available in the commercial marketplace.

**OPERATIONAL ASSESSMENT (OA)**. An evaluation of operational effectiveness and operational suitability made by an independent operational test activity, with user support as required, on other than production systems. The focus of an OA is on significant trends noted in development efforts, programmatic voids, areas of risk, adequacy of requirements, and the ability of the program to support adequate OT. OAs may be made at any time using technology demonstrators, prototypes, mockups, engineering development models, or simulations, but will not substitute for the independent OT&E necessary to support full production decisions.

**OPERATIONAL AVAILABILITY**. (See Availability for basic definition.) $A_o$ is computed and reported as follows:

- For continuous use systems, operational availability shall be designated $A_o$ and shall be determined as the ratio of system "uptime" to system "uptime plus downtime."

- For "on-demand" systems, operational availability shall be designated $A_{od}$ and shall be determined as the ratio of the "number of times the system was available to perform as required to the total number of times its performance was required." (Note: "Total number of times its performance was required" shall be the number of times attempted and the number of times it was operationally demanded but not attempted because the system was known to be inoperable.)

**OPERATIONAL EFFECTIVENESS**. The overall degree of mission accomplishment of a system when used by representative personnel in the environment planned or expected (e.g., natural, electronic, threat etc.) for operational employment of the system considering organization, doctrine, tactics, survivability, vulnerability, and threat (including countermeasures, initial nuclear weapons effects, nuclear, biological, and chemical contamination (NBCC) threats).

**OPERATIONAL EVALUATION (OPEVAL)**. The last phase of IOT&E. A prerequisite for a system to proceed to a Milestone III decision.

**OPERATIONAL MISSION FAILURE**. One which precludes successful completion of a mission and must be specifically defined for each system.

**OPERATIONAL MISSION SOFTWARE FAULT.** One which precludes successful completion of a mission, and must be specifically defined for each system.

**OPERATIONAL SUITABILITY**. The degree to which a system can be placed satisfactorily in field use with consideration given to reliability, maintainability, availability, logistic sup-portability, compatibility, interoperability, training, human factors, safety, documentation, transportability, wartime usage rates, and manning requirements, and natural and environmental effects and impacts.

**OPERATIONS SECURITY (OPSEC)**. The identification and protection of a broad spectrum of classified and open source information that collectively reveals current and future U.S. military capabilities, plans and operational procedures.

**OPERATIONAL TEST AND EVALUATION (OT&E)**. T&E conducted to determine a system's operational effectiveness and operational suitability, identify system deficiencies, and the need for potential modifications to meet established OT&E minimum acceptable operational performance requirement and develop tactics.

**PRODUCTION ACCEPTANCE TEST AND EVALUATION (PAT&E)**. Testing conducted on production items to ensure systems meet contract specifications and requirements.

**PROGRAM EXECUTIVE OFFICER (PEO)**. A military or civilian official who has primary responsibility for directing several acquisition category I programs and for assigned acquisition category II, III, and IV programs. A PEO has no other command or staff responsibilities within the component, and only reports to and receives guidance and direction from the DoD Component Acquisition Executive.

**PROGRAM MANAGER (PM)**. A military or civilian official who is responsible for managing an acquisition program.

**PROJECTED THREAT**. A best estimate based on historical trends data, evidence of continuing research and development, postulated military requirements, technological capabilities, and the best intelligence available. This threat consists of the weapon systems and characteristics that an adversary can be expected to develop and deploy during the specified period.

**PROVISIONING REQUIREMENTS STATEMENT (PRS)**. The PRS (DD Form 1949-2) is a document that gives the contractor specific guidance on the exact provisioning information

required by the government. It provides the methods to be used in the generation of provisioning data, and the range and depth of required data.

**PROVISIONING TECHNICAL DOCUMENTATION (PTD)**. The document furnished by the contractor for identification, determination of repair parts requirements, cataloging, and contractual formalization of items to be procured through the provisioning process. The PTD includes, but should not be limited to, provisioning lists, drawings, item descriptions, and cards and/or magnetic tapes.

**QUICK-LOOK REPORT**. Directed only by CNO. An informal, usually abbreviated, evaluation report published by COMOPTEVFOR. Always superseded by a formal evaluation report.

**QUICK REACTION ASSESSMENT (QRA)(U.S. NAVY)**. Used when operational necessity dictates to achieve a rapid capability in the fleet. A quick assessment that examines specific operational considerations and capabilities of a system. A QRA will not be used to resolve critical operational issues.

**RESEARCH, DEVELOPMENT, TEST, AND EVALUATION (RDT&E)**. See NAVSO P-2457 (RDT&E Management Guide).

**RELIABILITY**. The duration or probability of failure-free performance under stated conditions. In OT&E, reliability is usually reported in one of two ways:

- **Mission Reliability (R)**. For equipment operated only during a relatively short-duration mission (as opposed to equipment operated more or less continuously), the probability of completing the mission without an operational mission failure.

- **MTBOMF**. Mean time between operational mission failures. For more or less continuously operated equipment or systems. MTBOMF measures reliability as it relates to the overall mission of the equipment or system being tested and is the total operating time divided by the number of operational mission failures. MTBOMF is the figure used in the calculation of overall mission reliability (R). MTBOMF is sometimes modified to mean flight hours between operational mission failures (MFHBOMF).

**SECNAVINST 5000.2B**. The fundamental Navy instruction on T&E.

**SIMULATION**. A simulation is a method for implementing a model. It is the process of conducting experiments with a model for the purpose of understanding the behavior of the system modeled under selected conditions or of evaluating various strategies for the operation of the system within the limits imposed by developmental or operational criteria. Simulation may include the use of analog or digital devices, laboratory models, or "testbed" sites. Simulations are

usually programmed for solution on a computer; however, in the broadest sense, military exercises and war games are also simulations.

**SIMULATOR**. A generic term used to describe a family of equipment used to represent threat weapon systems in developmental testing, operational testing, and training. A threat simulator has one or more characteristics which, when detected by human senses or man-made sensors, provide the appearance of an actual threat weapon system with a prescribed degree of fidelity.

**SOFTWARE UPGRADE (U.S. NAVY)**. Navy software upgrades (releases) fall into three categories: ***Major*** -- adds new functions or warfare capabilities, interfaces with a different weapon system, redesigns the software architecture, or rewrites the software in a different language (requires OT by OPTEVFOR); ***Minor*** -- changes that do not add any significant functions or interfaces as determined by CNO (OT by OPTEVFOR upon CNO approval); ***Maintenance*** -- releases that are fixes to minor problems (no testing by OPTEVFOR).

**STANDARDIZED S-TESTS**. In OPTEVFOR test plans, the following standardized S-tests address the major elements of operational suitability. (Others may be added, as appropriate.)

Test S-1, Reliability

Test S-2, Maintainability

Test S-3, Availability

Test S-4, Logistic Supportability

Test S-5, Compatibility

Test S-6, Interoperability

Test S-7, Training

Test S-8, Human Factors

Test S-9, Safety

Test S-10, Documentation

**SUPPORT MATERIAL LIST (SML)**. A list of spares and repair parts required to support a system or equipment based on maintenance and phased support plans for a specified period of time, dollar amount, and degree of supply effectiveness.

**SUPPORT SOFTWARE**. The system compilers, assemblers, utility packages, diagnostic routines, integration test programs, simulations, quality assurance programs, and other software required or used in the development and support of weapon system software.

**SURVIVABILITY**. The capability of a system to avoid or withstand man-made hostile environments without suffering an abortive impairment of its capability to accomplish its designated mission.

**SUSCEPTIBILITY**. The degree to which a device, equipment, or weapons system is open to effective attack due to one or more inherent weaknesses. (Susceptibility is a function of operational tactics, countermeasures, probability of the enemy fielding a threat, etc.) Susceptibility is considered a subset of survivability.

**SYSTEM THREAT ASSESSMENT**. Describes the threat to be countered and the projected threat environment. The threat information should reference DIA or Service Technical Intelligence Center approved documents.

**SYSTEM THREAT ASSESSMENT REPORT (STAR)**. The STAR is the basic authoritative threat assessment tailored for and focused on a particular U.S. defense acquisition program. Included in the STAR is an assessment of those projected capabilities -- doctrine, strategy, tactics, organization, equipment, and military forces -- that a potential enemy could use to defeat or degrade the U.S. system during its employment. The STAR is initially prepared at Milestone I for all ACAT I programs, and updated at Milestone II, III, and IV. A component prepared system threat assessment is required at ACAT II, III, and IV programs.

**TACTICAL DEVELOPMENT AND EVALUATION (TAC D&E)**. A program designed to improve tactical readiness through development of tactical doctrine for the effective employment of current combat systems or systems approaching IOC.

**TEST AND EVALUATION MASTER PLAN (TEMP)**. The controlling document for all T&E. See SECNAVINST 5000.2B, DoD Directive 5000.1, and DoD Regulation 5000.2-R for format and content.

**THREAT**. The sum of the potential strengths, capabilities, and intentions of any enemy which can limit or negate mission accomplishment or reduce force, system, or equipment effectiveness.

**THREAT ASSESSMENT**. The provisions of intelligence assessment of the threat in the appropriate context and detail necessary to support plans, programs, or actions. Threat support is normally provided in the form of threat or capabilities publications, generic threat assessments and specific threat statements, all of which emphasize system projections and threat forecasts. Threat support also includes operational intelligence on foreign naval targets and force employment.

**THREAT SUPPORT**. The provisions of intelligence assessments of the threat in the appropriate context and detail necessary to support plans, programs, or actions. Threat support is normally provided in the form of threat or capabilities publications, generic threat assessments and specific threat statements, all of which emphasize system projections and threat forecasts. Threat support also includes operational intelligence on foreign naval targets and force employment.

**THREAT VALIDATION**. The evaluation of, and concurrence with, threat documentation. Defense Intelligence Agency evaluation of service-produced threats stresses the appropriateness and completeness of the intelligence positions and the logic of extrapolations from existing intelligence.

**VALIDATED SOFTWARE**. Validated software is application software with a technical evaluation completed by the procuring activity to determine whether the application software is functioning in a technically acceptable manner, whether it meets design and technical performance specifications, and whether it is technically suitable for operational evaluation.

**VERIFICATION OF CORRECTION OF DEFICIENCIES (VCD)** (U.S. Navy). VCDs are used to support acquisition decisions for limited or full rate production. Evaluation of corrections to specific deficiencies cited in a previous OT&E report will apply to only those critical operational issues that have been corrected, and the evaluation will not require end-to-end testing of the complete system.

**VULNERABILITY**. The characteristics of a system that causes it to suffer a degradation (loss or reduction of capability to perform the designated mission) as a result of having been subjected to a certain (defined) level of effects in an unnatural (man-made) hostile environment. Vulnerability is considered a subset of survivability.

**WEAPON SYSTEM SELECTION AND PLANNING**. This is the entire weapon system acquisition process, including planning and study and acquisition review, as well as research, development, test and evaluation, and involves the Office of the Chief of Naval Operations, the systems commands and research and development centers, COMOPTEVFOR, and senior review authorities (e.g., SECNAV).

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