



APPROVED

**Navy Modeling and Simulation
Standard**

Standard Title:

**Validation Process
of
Navy Air Defense and Related Threat
Simulators, Simulations, Models, and Actuals**

Signed

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Processed by the

Navy Modeling and Simulation Standards Steering Group



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<p><u>Standard Title/Name:</u></p> <p>Validation Process of Navy Air Defense and Related Threat Simulators, Simulations, Models, and Actuals</p>	<p><u>Document Date:</u></p> <p>6 August 2002</p>
<p><u>Sponsor:</u></p> <p>Navy Threat Simulation Validation Office</p> <p>NAVAIR, Code 53C000D</p> <p>1 Administration Circle</p> <p>Naval Air Warfare Center Weapons Division</p> <p>China Lake, CA 93555-6001</p>	<p><u>Point of Contact:</u></p> <p>Title: Navy Threat Simulation Validation Coordinator</p> <p>Code: 53C000D</p> <p>Telephone: (760) 939-0307</p> <p>DSN: 437-0307</p>
<p><u>Applicable Directives, Instructions, Regulations, Manuals, etc.:</u></p> <ol style="list-style-type: none"> 1. NAWCWPNS TM 7489-3: U. S. Navy Air Defense Threat Simulator Validation Procedures Manual 2. OPNAV INSTRUCTION 3960.15, Validation of Navy Air Defense Threat Simulators 3. NAVAIR INSTRUCTION 3960 Validation of Navy Air Defense Threat Simulators 4. DoD 5000.2R Mandatory Procedures for Major Defense Acquisition Programs (MDAPs) and Major Automated Information System (MAIS) Acquisition Programs 5. DoDI 5000.61 DoD Modeling and Simulation (M&S) Verification, Validation, and Accreditation (VV&A) 6. SECNAVINST 5200.40 Verification, Validation, Accreditation (VV&A) of Models and Simulations 7. COMOPTEVFORINST 5000.1 Use of Modeling and Simulation (M&S) in Operational Testing 8. Navy Threat Simulation Validation briefing to VV&A TAG on 10 May 2001 9. Navy Threat Simulation Validation Process briefing to VV&A TAG on 16 August 2001 10. List of Approved Navy Air Defense and Related Threat Validation Reports 	

Purpose:

To provide information and guidance to assist the Navy Threat Simulator Validation Coordinator in the support of independent validation (not specifically verification or accreditation) of air defense and air defense-related threat simulators used for test and evaluation (T&E) of weapon systems and training of Navy air crews. These include threat representative systems in the form of simulations, simulators, models, missile seekers, EO, IR, UV and actual threat weapons systems.

Air defense-related simulators are found both in laboratory and field versions and include hardware and software subsystems. Validation baselines the status of a simulator to represent an air defense-related threat system. If a simulator contains embedded software, the validation process also incorporates applicable verification procedures. The Navy Threat Simulator Validation Coordinator is responsible for coordinating the development of validation procedures, compiling data, and documenting the results of individual validation of air defense-related threat simulators. Documents produced during the validation process provide a basis for accreditation of a simulator for specific uses by respective user agencies.

The validation of Navy air defense-related threat simulators and models is required by DODI 5000.2, DODI 5000.61, SECNAVINST 5200.40, OPNAVINST 3960.15, NAVAIRINST 3960.00, COMOPTEVFOR 5000.1, and other applicable Navy instructions. The procedures for accomplishing validation are found in the DOD Threat Simulator Program Plan (TSPP) Policy and Procedures Manual, and the DOD Threat Simulator Program Guidelines (TSPG). The U.S. Navy Air Defense Threat Simulator Validation Procedures Manual NAWCWPNs TM 7489-3 further describes the Navy Validation Process, Policy and Procedures for Air Defense and Air Defense-related threat simulator validation.

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<p><u>Description:</u> Validation Process Summary. Briefing from the 081601 VV&A TAG meeting for detailed diagrams. See NAWCWPNS TM 7489-3: U. S. Navy Air Defense Threat Simulator Validation Procedures Manual for more detailed explanations for each step of the process.</p> <ol style="list-style-type: none"> 1. Begin planning. Identify requirements for the intended uses of the Model, Simulator, Simulation or Actual Threat Weapons System. 2. Identify the representative threat ELINT Notation (ELNOT), or ELNOTs, associated with the threat data the system is to be validated and compared against. 3. Download and print the ELNOT or threat data file from the current version of the Electronic Warfare Integrated Reprogrammable (EWIR) CD-ROM or applicable data base and software media. 4. Become familiar with the threat data contents of the file, and review the listed DIA or cognizant Intel Center approved threat reference documents listed at the end of the data section to determine the availability of exploitations and other related threat definition documents. 5. Convert the EWIR or applicable data base file to the DOD Threat Definition Document (TDD) parameter number format using the available software program. Tailor the TDD parameter tree to match the threat system configuration as your baseline to compare against. If this is a model being validated conversion of performance parameters, mass, flight profiles, trajectories, plots and flight profiles, acceleration curves, ... etc. will be included in this important step. 6. Write the Table of Contents, Introduction and Validation Procedures sections. 7. Obtain additional threat definition documents or data from the EWIR or the applicable data base references or other known sources, i.e., OEM-, FME-type documents. Obtain NSAMS or threat model. 8. Write the Section III (Threat Description) for the validation report using the EWIR or applicable data base file and other DIA or cognizant Intel Center approved documents. A thorough, comprehensive understanding of the threat system is important for the accurate validation of any model or simulation. 9. Complete the threat data entries in the Standard Validation Criteria (SVC) tables for the appendix A-2 parameters and performance data section of the report using all available source data. Add the TSO branch head parameter numbers for the branches that are not included in the EWIR data. 10. Request, obtain, collect all available Model and simulation data from the range, developer, model developer, contractors, and any others that might be involved. This Model and simulation data collection effort should be started concurrently with Item #2. Model and Simulation data can include specifications, integration plans, program review material (PDR, CDR, IPR), factory acceptance test results, acceptance test plans and results, block diagrams, site layouts, and equipment photographs, model runs, etc. Interviews with program managers, model developers and project engineers are extremely useful in understanding the model or simulation obtained. 	
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Description (continued):

11. Write section IV (Simulation or Model Description) using all available collected data. During this description writing effort, and after obtaining a thorough understanding of the threat system from writing section III, some differences between the threat and the model or simulation will become apparent.
12. Complete the model or simulator data column in the SVC tables using all available model and simulation data.
13. Review the planned, possible, and future test requirements for the model or simulation, as related to the designed or planned "intended use" of the system. Identify the possible "threat simulation critical parameters" (TSCP) or "model performance parameters" (MPP's) that could be associated with this new model or simulation when compared to its intended use and the type of test requirements that the model or simulation was designed to satisfy. Note the TSCPs or MPPs in the SVC tables for each associated parameter. Run the flyout model and run the NSAMS model. Note all differences.
14. Calculate the parametric differences between threat data / model and the simulator, simulation / model being compared to. Complete the differences column in the appendix tables. Document all differences.
15. Identify all of the noted differences between threat system and simulator. Write section V (Differences and Impacts) of the validation report. Discuss the possible impact of the noted differences while applying past experiences and knowledge of the countermeasures systems, known test requirements, and test range capabilities and limitations. Some differences can be significant while other would have no impact on testing.
16. Write section VI (Conclusions and recommendations) briefly outlining the findings.
17. Write the Executive Summary that contains a top-level overview of the entire report. No material is provided here that is not provided in the other six sections in greater detail. This section should be two to three pages in length, unless there are a very large number of differences and impacts to address. This should be a stand-alone section.