



DOD System Safety Certification Guidance

The objective of the DOD system safety program is to ensure that safety, consistent with mission requirements, is designed into systems, subsystems, equipment, and facilities, and their interfaces.

System safety applies engineering and management principles, criteria, and techniques to achieve acceptable mishap risk, within the constraints of operational effectiveness, time, and cost, throughout all phases of the system life cycle. It draws upon professional knowledge and specialized skills in the mathematical, physical, and scientific disciplines, together with the principles and methods of engineering design and analysis, to specify and evaluate the environmental, safety, and health mishap risk associated with a system. Experience indicates that the degree of safety achieved in a system is directly dependent upon the emphasis given. The program manager and the developer must apply this emphasis during all phases of the system's life cycle. A safe design is a prerequisite for safe operations, with the goal being to produce an inherently safe product that will have the minimum safety-imposed operational restrictions.

Safety certifications are predominantly oriented toward the using service. Each service may independently want to conduct or verify the safety of an item prior to placing it into the service member's hands through operational test and evaluations and fielding by using the individual service Test and Evaluation Commands and Centers, or via Joint Operational Testing.

This paper contains a significant number of resources for System Safety and related test and evaluation subjects. MIL-STD-882D should be the starting point for System Safety Certification Planning.

References

- [MIL-STD-882D](#) is the primary guidance document for Safety Certification. It outlines accepted practice for the System Safety Approach and is used by the Department of Defense (DoD) and industry in development and acquisition of new and modified technology. While it is the most current guidance, technical information useful to contract development can be found in the earlier version, Mil Std 882C. This prior version contains DIDs that can be used to require and monitor safety evaluations.
- [DOD 5000.3-M-4 Joint Test and Evaluation](#) This Manual provides a description of the joint test and evaluation nomination and selection process, describes the organization framework within each Service which supports the program, and identifies principal participants and their respective responsibilities.
- [Defense Acquisition Guidebook, Chapter 9 Integrated Test & Evaluation](#). [Section 9.1](#) provides an introduction of general topics associated with T&E. [Section 9.2](#) then presents an overview of the T&E support and oversight

provided by the Offices of the Director, Operational Test and Evaluation (DOT&E); and the Under Secretary of Defense for Acquisition, Technology, and Logistics/Defense Systems/Systems Engineering (USD(AT&L)/DS/SE). The next few sections focus on specific types of T&E: [Developmental Test and Evaluation](#), [Operational Test and Evaluation](#), and [Live Fire Test and Evaluation](#). [Section 9.6](#) covers T&E planning and specifically addresses the T&E Strategy and the Test and Evaluation Master Plan. [Section 9.7](#) covers T&E Reporting; [section 9.8](#) presents best practices; and [section 9.9](#) covers special topics. [Section 9.10](#) closes with details of preparing a Test and Evaluation Master Plan. [Unmanned Systems Safety Guide for DOD Acquisition](#) Guidance for Unmanned Systems to include unmanned ground vehicles, unmanned aerial/aircraft systems, unmanned underwater vehicles, unmanned surface vessels, unattended munitions, and unattended ground sensors.”

- [PESHE - Programmatic Environmental, Safety, and Health Evaluation \(Pamphlet\)](#) -identifies system safety and occupational health risks, how these risks will be managed, and how compliance with regulatory requirements will be achieved throughout the life cycle of the system.
- [The Acquisition Community Connection](#) (previously the Program manager's community of practice, PM-COP)
- [Acquisition Deskbook](#) - acquisition knowledge sharing system.

Weapon Safety Review Organizations

Department of Defense Explosive Safety Board (DDESB) - a joint Service board responsible for providing impartial and objective advice to the Secretary of Defense and DoD Components on explosives safety matters.

2461 Eisenhower Ave
Alexandria, VA 223311-0600
<http://www.ddesb.pentagon.mil/>

Each DOD Service has established explosives safety organizations responsible for establishing explosives safety policies. These organizations offer a wealth of expertise and experience available to assist the PM, Systems/Design Engineers, and System Safety Engineers in identifying historical and current ESOH risks related to explosives and to assist in determining explosives safety program requirements for the acquisition program.

Joint Service Insensitive Munitions Technical Panel (JSIMTP)

Defense Ammunition Center (DAC)
McAlester, OK
<http://www.dac.army.mil/default1.html>

The U.S. Army Technical Center for Explosives Safety (USATCES)
Defense Ammunition Center

1 C Tree Road, Bldg 35
McAlester OK 74501-9053
<https://www3.dac.army.mil/es/usatces>

Army Fuse Safety Review Board
Army Fuse Management Office
Picatinny Arsenal, NJ 07806-5000
<http://www.pica.army.mil/PicatinnyPublic/organizations/ardec/orgchart/armyfuze.shtml>

Environmental Health Risk Assessment Program
ATTN: MCHB-TS-EHR
5158 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5403
<http://usachppm.apgea.army.mil/hra/>

US Army ARDEC Explosive Ordnance Disposal Technology Directorate
ARDEC, Picatinny Arsenal, NJ
<http://www.pica.army.mil/picaeod/>

Weapon System Explosives Safety Review Board (WSESRB)
Naval Ordnance Safety and Security Activity (NOSSA) N31
23 Strauss Avenue
Farragut Hall Bldg. D-323
Indian Head, MD 20640-5555
<http://www.nossa.navsea.navy.mil/> (click Products/Services and then click
Weapon System Explosives Review Board)

Explosives and Weapons Division, Navy Safety Center
<http://www.safetycenter.navy.mil/ashore/explosives/default.htm>

Ordnance Environmental Support Office (OESO)
Naval Facilities Engineering Service Center
NAVSEA Systems Command, Indian Head, MD

Naval Explosive Ordnance Disposal Technology Directorate
<https://naveodtechdiv.jeodnet.mil/>

MARCORPSYSCOM, PM for Ammunitions Environmental Explosives & Safety
2200 Lester St., Quantico Va. 22134-6050
http://www.marcorsyscom.usmc.mil/am/ammunition/Corporate_Center/Divisions/POSD/ees.asp

The Group on Safety and Suitability for Service for Munitions and Explosives
(NATO)
<http://www.nato.int/structur/AC/310/intro.htm>

NATO Munitions Safety Information Analysis Center
<http://www.msiac.nato.int/>

Ordnance, Munitions & Explosives Safety Management System Guidance and Reference Documents (UK, MoD)
<http://www.ams.mod.uk/content/docs/dosqweb/default.htm>

Defense Ordnance
Safety Group (Ministry of Defense)
<http://www.aof.mod.uk/content/topics/2587.htm>

Service Specific References

Army Test and Evaluation Policy

[AR 73-1](#) - This regulation implements the policies and procedures of Department of Defense Directives, Instructions, and the Defense Acquisition Guidebook. It specifically prescribes implementing policies and assigns responsibilities for test and evaluation (T&E) activities during the systems acquisition processes. It applies to all systems (materiel and command, control, communications, and computers (C4), intelligence (I), and information technology (IT) (C4I/IT) developed, evolved, acquired, and managed under the auspices of Army Regulation (AR) 70-1 and the Defense Acquisition Guidebook.

[AR 385-16](#), System Safety Management Guide –This regulation provides combat developers, materiel developers, testers, independent evaluators, and users with the information necessary to develop, initiate, and effectively manage a system safety program.

Navy & Marine Corps Safety, Test and Evaluation Policy:

- [SECNAVINST 5100.10J](#); *Department of the Navy Policy for Safety, Mishap Prevention, Occupational Health and Fire Protection Programs*, 15 June 1999 (Requires use of Mil Std 882C in all major acquisition)
- [SECNAVINST 5000.2C](#), *Implementation of Mandatory Procedures for Major and Non-Major Defense Acquisition Programs and Major and Non-Major Information Technology Acquisition Programs*. Note: An update to SECNAVINST 5000.2 is anticipated in the near future. Drafts reviewed to date have significant requirements for integration of the system safety process with systems engineering.
- [OPNAVINST 5100.24B](#), Navy System Safety Program
- [OPNAVINST 5100.19 Series](#), the *NAVOSH Afloat Program Manual*

- [OPNAVINST 5100.23 Series](#), the *NAVOSH Ashore Program Manual* (Chapter 5)
- [Marine Corps Environmental, Safety and Occupational Health Handbook](#)

Air Force Test & Evaluation Policy – [AFI 99-103](#) – Capabilities Based Test & Evaluation.

[Air Force System Safety Handbook](#) - provides considerable insight to the general principles, objectives, and requirements of applying system safety concepts to the Air Force system acquisition and logistical support processes.

Military Operational Test Agencies (OTA).

- [Army Test and Evaluation Command \(ATEC\)](#) - plans, conducts, and integrates developmental testing, safety evaluations, independent operational testing, independent evaluations, assessments, and experiments to provide essential information to Soldiers and into the hands of acquisition decision makers supporting the American Warfighter.
- [Navy Commander Operational Test and Evaluation Force \(COMOPTEVFOR\)](#) - provides an independent and objective evaluation of the operational effectiveness and suitability of naval aviation, surface, subsurface, C4I, cryptologic, and space systems in support of Department of Defense and Navy acquisition and fleet introduction decisions.
- [Air Force Operational Test and Evaluation Center \(AFOTEC\)](#) - evaluates operational system(s) mission capability, effectiveness, and suitability for Air Force and multiservice users by conducting impartial and realistic operational evaluations and assessments.
- [Marine Corps Operational Test and Evaluation Activity \(MCOTEA\)](#) - responsible for ensuring that all new equipment introduced into the Marine Corps team works properly, helping the Corps continue to be the elite fighting force it has always been. It is our goal to guarantee that the equipment in the hands of each Marine is the best it can be through "fair and objective operational test and evaluation."

Other References

- [System Safety Links](#) – A compendium of System Safety Reference Documents from Government Agencies and other useful Safety-related web sites. Courtesy of the System Safety Society.
- Risk Assessment/Hazard Analyses - systematic approach to identifying and resolving the potential safety and health hazard risks associated with the development, test, production, transport, operation, training, maintenance, and disposal of the system.

- [Data Item Descriptions \(DIDs\)](#) - for established DIDs specifying contractual requirements for hazard analyses refer to the ESOH Reference Library on the Acquisition Deskbook
- [Operational Test and Evaluation \(OT&E\)](#) - critical component in the safety assessment of the system during tests.
- [Safety Through Design](#) - book published by National Safety Council - provides resources for consumers and businesses on building in safety, for consumer products, for buildings, for machines.

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