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## MILITARY HANDBOOK

# GLOSSARY OF TRAINING DEVICE TERMS



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DEPARTMENT OF DEFENSE  
WASHINGTON, DC 20301

1. This Military Handbook is approved for use by all Departments and Agencies of the Department of Defense

2 This standardization handbook was developed by the Department of Defense with the assistance of the military departments, federal agencies, and industry.

3 This document provides uniform terminology peculiar to the general field of training devices. The handbook is not intended to be referenced in purchase specifications except for informational purposes, nor shall it supersede any specification requirements.

4. The coverage of the glossary is broad. Every effort has been made to define those terms used primarily by personnel engaged in the development, production and utilization of training devices. It is intended that this handbook be reviewed periodically to insure its completeness and accuracy.

5. Terms in broad use in the Department of Defense and not unique to training and terms defined in other Military Handbooks Glossaries have not been included.

6. This glossary includes terms associated with training devices as well as the broader area of training systems, such as sound/slide programs and embedded training.

7 Beneficial comments (recommendations, additions deletions) and any pertinent data which may be of use in improving this document should be addressed to: Naval Training Systems Center, ATTN: Technical Data Management Branch, Code 424, Orlando, FL 32813-7100, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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FOREWORD

This handbook is intended to serve as a convenient reference source for training device terms and to define those terms so as to strip them of shaded interpretations, ambiguities and misuse in their application.

Used as a guide in the preparation of procurement specifications, military standards and technical manuals, this glossary will reduce misunderstanding within all department and agencies of the Department of Defense and in Government/industry exchanges of technical information.

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1. SCOPE

1.1 Purpose This handbook establishes definitions for terms peculiar to the general field of training devices.

1.2 Criteria The following criteria determine the acceptability of a term for inclusion.

- a. The term is of interest to two or more military departments
- b. The term has a specific significance related to military training devices
- c. The military application of the term is not adequately defined in any standard dictionary. Such terms may be included; however, if they have general joint service interest, and it is demonstrated that they are subject to misunderstanding or misuse.

1.3 Application. It is anticipated that this handbook will be used primarily by those personnel engaged in the development, production and utilization of training devices.

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**2. REFERENCE DOCUMENTS**

**NOT APPLICABLE**

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**3. DEFINITIONS**

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4 GENERAL REQUIREMENTS

NOT APPLICABLE

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## 5. DETAILED REQUIREMENTS

ACM (AIR COMBAT MANEUVERING) - At minimum, ACM involves a pair of pilots or aircrew in aircraft pursuing mutually exclusive objectives. One aircraft is seeking to destroy the other. The dynamic relationship between the two aircraft is constantly changing as each pilot maneuvers to counteract the maneuvering of the other.

ACTUAL EQUIPMENT TRAINER (MAINTENANCE) - An actual system or subsystem component modified to allow multiple disassembly or assembly for training of maintenance personnel as specialists for field maintenance level or depot level shops.

AIR TACTICS TRAINER - A trainer that simulates the aircraft operational systems and the environmental effects which are encountered. It is used for air crew training in the tactical application of the operational systems.

AIRCRAFT FLIGHT SIMULATOR - See Operational Flight Trainer.

ALIASING - Unnatural artifacts of simulation which result from treating continuous things as a set of discrete fragments. When simulation processing of the discrete parts is completed and the parts are recombined to form the entire thing being simulated discontinuities occur. In training simulation the term is usually applied to stairstep like structures in straight lines of a visual image, but it also applies to other similar phenomena. The discontinuities may be in space, time or any other domain.

ANIMATED PANEL TRAINING AID - A set of presentations used as a training aid to a system, or systems of a specified equipment. The presentation consists of synthetic static and dynamic component depictions mounted on a display surface. The system is integrated schematically by connecting linkages, fluid and electrical lines, and other connecting or associated elements. Lines and components may be illuminated to facilitate accomplishment of desired training.

AREA OF INTEREST (VISUAL) - A technique for producing a high quality visual image only in a narrow area at any instant while providing lower quality imagery in the surrounding area. The system may track a target the pointing direction of the head and eye.

~~AUDIO-VISUAL TRAINING AIDS - A generic term embracing audio training aids, visual training aids, and training aids which employ both audio and visual means to communicate.~~

AUTOMATIC TUTOR - This feature provides a self-paced and self-administered programmed instruction on the capabilities and use of the simulator and the instructional support features. The tutorial can be conducted at the instructor console to provide hands-on experience, however, it is desirable that this feature also be provided off-line on similar equipment thus freeing the simulator for continuous training.

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COCKPIT FAMILIARIZATION TRAINER - A trainer incorporating a facsimile of the flight stations of a specific aircraft. It is primarily for the use of pilots, other flight officers, flight engineers transitioning to a new type aircraft and for refresher training for experienced personnel. It will be used to facilitate the learning of the location of the various controls, instruments, switches, and lights in the cockpit and to learn repetitive tasks such as checklists, and normal and emergency operating procedures. The controls, switches, and instruments are not activated for response to trainee inputs. All annunciator lights are operable from the instructor's panel for demonstration purposes (Navy only).

COCKPIT ORIENTATION TRAINER - A trainer used exclusively by maintenance personnel transitioning to a new type aircraft to provide cockpit familiarization and training in both normal and emergency power plant and systems procedures. The trainer is designed to selectively delete the activation of instruments and systems used only in pilot training.

COCKPIT PROCEDURE TRAINER - A trainer which generally incorporates a replica of a specific aircraft flight station and air operator/instructor station. It is used by pilots and aircrewmembers transitioning to a new type aircraft, or undergoing basic training, and provides cockpit familiarization and training in powerplant and systems procedures of normal, alternate, and emergency types. The applicable aircraft instruments and other indicators are activated to respond appropriately to trainee control inputs. Exact dynamic simulation of all functions is not required.

COMBAT SYSTEM TRAINER - See TACTICS TRAINER

COMPOSITE TRAINER - A training device designed as a replica of several systems which are included on a given aircraft or weapon system. Most of the outer surface or hull or both is eliminated to permit viewing of component location and operation. Normally, both the instructor and the student have operating capabilities, wherein the instructor may assign tasks or problems and impose malfunctions for students to analyze, identify, correct or otherwise gain knowledge, skill, or proficiency in their tasks.

COMPUTER ASSISTED INSTRUCTION (CAI) - The application of computers to the delivery of instruction wherein there is an ongoing interchange of stimulus and reaction between computer and student. CAI often includes an automated measurement/recording function.

COMPUTER BASED TRAINING (CBT)- A training philosophy which encompasses both the Computer Assisted Instruction function for delivery of training and the management of student progress, resources scheduling, and training delivery evaluation. May be incorporated into a single device or consist of a system of multiple interfaced devices.

COMPUTER GENERATED IMAGERY (CGI) - Visual imagery generated by a digital processing system from stored digital data, which describes the visual environment being simulated.

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COMPUTER IMAGE GENERATION (CIG) - The technology for generating visual images by digital computation systems.

COMPUTER MANAGED INSTRUCTION (CMI)- That portion of computer-based training, which collects student progress data, analyzes student progress, provides scheduling of training resources, tracks student administration, and performs evaluation of the training delivery. May encompass any additional training management roles required to support the training management information system based upon user needs.

CUTAWAY - A static or dynamic demonstrative training aid, which is actual item or one of the assemblies or systems, which certain sections removed in a way that differs from normal removal in order to reveal internal structure. It may be operable, but not functional. If operable, it is capable of duplicating the action involved, but unable to produce the work for which the item was designed. If functional, it is capable of producing the work for which it was designed.

CYCLIC DEMONSTRATOR - A training aid that displays movement or change in condition which begins at a point, proceeds through one or more phases, and returns to the original point. For example, an aid which demonstrates the cycle in an internal combustion engine or of a breech block.

DAILY OPERATIONAL READINESS TEST (DORT) - A test that exercises the various trainer systems and subsystems at a functional level to validate performance prior to use. DORT may also be used as a top-level troubleshooting aid

DATA BASE - A set of related data, usually organized to permit efficient retrieval of specified subsets. In training simulation often used for environment models especially for visual and radar landmass simulation

DEMONSTRATION AID - An aid which supports knowledge and skill instruction and appeals to the senses of sight, touch, hearing or smell.

DIGITAL RADAR LANDMASS SIMULATION - Simulation of radar returns from the earth's surface using a digitally processed data base. Primary digital data data base source is the Defense Mapping Agency. Complexity of the data base detail and expanse of the simulated region will vary with the type of tasks to be taught. This term is also used to refer to the hardware and software which

~~Supports this function.~~

DIRECT FIRE TRAINER - A trainer which involves direct firing (simulated or live) at a target.

DISPLAY REPEATER - A display which usually duplicates or is slaved to another display.

DYNAMIC DEMONSTRATOR - An aid which demonstrates movement in time or space, steps of a procedure, or changes in condition.

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EGRESS TRAINER - A mockup or subsystem model which may be less than or equal to real system size which accurately represents escape related equipment on a system. The device may vary in material from the real article, but typically has all of the operational features of the actual equipment in terms of hatches, doors, life support equipment and special safety equipment to train egress tasks.

ELECTRONIC SYSTEM TRAINER - See TACTICS TRAINER.

ELECTRONICS WARFARE SIMULATION - The process of producing sensory cues which simulate/emulate circumstances encountered in electronic warfare environment. The equipment for producing electronic warfare cues which transfers training of electronic countermeasures or electronic counter-countermeasures

EMBEDDED TRAINING - Training capability built into the weapon system hardware and software such that the weapon system is used for tactical operation or for training depending on the mode selected. Usually associated with organic training.

EQUIPMENT FACILITY REQUIREMENTS (EFR) PLAN - A plan, prepared by the Training Support Agency (TSA), which, (a) identifies the training equipment, devices and aids required to be installed at a Training Activity, (b) identifies the type and amounts of shore facilities needed in association with the above; and (c) establishes a plan and schedule for the completed installation transfer from the Training Support Agency to the Training Agent.

EXERCISE - The total instruction which a trainee receives from a training device experience. Exercises include any prebriefs, written materials, training device scenarios, performance assessments, and debriefs which a trainee receives. An exercise may include more than one scenario. See SCENARIO.

FACTORY TRAINING/MATERIALS - Training or instruction provided by a vendor or manufacturer on equipment, system, or device that is furnished to the military department. Consists of specialized training required for operation and maintenance. Factory Training Materials include instructor guides, trainee guides, technical manuals, transparencies, and other materials helpful to the instructor for operation of the Training System and to maintenance personnel for maintenance of the Training System.

FAULT INSERTION DEVICE (FID) - The combination of circuit card(s), cables, power supply and remote control console used to insert faults in a set of tactical equipment.

FIDELITY - See TRAINING FIDELITY AND PHYSICAL FIDELITY.

FLAG (INSTRUCTOR) - As a scenario progresses the instructor will observe certain situations/errors which should be reexamined during the debrief. Rather than requiring the entire scenario to be replayed, the instructor may wish to automatically "flag" the error and have the computer return to the flags only, skipping those parts of the scenario which were not flagged

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**FLIGHT SIMULATOR** - A manipulative training aid which simulates all or a portion of an aircraft's systems, and is used to train air crew personnel in one, several, or all facets of aircraft operation. Simulators do not necessarily have the cues enhanced or degraded to accommodate trainee's skill and knowledge deficiencies. See TRAINING DEVICE.

**FLY-OUT** - The ability to return to the scenario from freeze state with a smooth transition.

**FORMATIVE EVALUATION** - The testing of training devices and scenarios accomplished during development of a training device and before it leaves the production facility to determine their instructional effectiveness. Sample students and instructors use the training device as they would in a school setting while Government personnel determine what problem areas might exist.

**FREE PLAY** - The ability of a training mission to respond to events as they happen totally dependent on the actions of the student and instructor. This approach differs from a mission being restricted to a preprogrammed set of events that occur at a particular time after initiation. Free play allows the student to attempt to accomplish a given task/mission on his own volition. Training scenarios that are not free play are often referred to as "canned scenarios".

**FREEZE** - The condition in which a training problem is halted with the student displays in a static condition as they were when freeze was set. Used to allow the instructor to point out performance errors or significant items to the student and then proceed on with the training problem. Freeze may be set manually or set by the computer automatically when certain conditions are met.

**G-SEAT** - A device which provides some of the cues of vehicle acceleration by pressure applied through a seat. Typically a bladder in the seat cushion is inflated or deflated to change the amount and location of pressure on the pilot's posterior. Pressure may also be applied through a lap belt or shoulder harness.

**G-SUIT (training)** - The G-suit used in operational aircraft is often activated in training simulators to provide cues of simulated vehicle acceleration to the trainee.

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or software changes to represent more than one operation system. For instance, Device 14A12 can be made to represent different ships through software changes; (Simulation for Electronic Warfare Training) SEWT can represent the Electronic Warfare (EW) equipment on different aircraft by activating different panels and initiates the appropriate software. Compare with GENERIC TRAINER.

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**GENERIC TRAINER** - A trainer designed to provide training on a type or class of equipment as opposed to a specific weapon system. For instance, Device 1D23 teaches basic navigation skills not related to any specific aircraft or navigation equipment set, whereas the F4 operational flight trainer (OFT) would teach the student to navigate in an F4. Compare with GENERAL PURPOSE TRAINER

**GRAPHIC AID** - A still picture or illustration, such as a chart, poster, diagram, produced from artwork or by photography.

**HANDLING AND CHECKOUT TRAINERS** - A device to provide training such as assembly, disassembly, erection, electrical checkout, fuse setting and arming, of various operational units.

**HELMET MOUNTED DISPLAY** - A device mounted on the observer's helmet which provides him with visual information. A helmet mounted display comprises four major subsystems. (1) A head attitude sensing system, which provides a pointing direction relative to a known frame of reference to the image generator; (2) an image generator, which computes graphic information or transforms sensor information into an electronic signal to drive a display transducer, (3) a display transducer, which converts the electronic signal into a visual image; and, (4) an optical system, which relays the image into one or both of the observer's eyes. Of these four subsystems only the optical system and helmet sensing receiver is required to be physically mounted on the observer's helmet.

**HELMET MOUNTED OCCULOMETER SYSTEM** - A device, which accurately measures eye position. Used to precisely measure where an individual is looking at any time.

**INDIRECT FIRE TRAINER** - A trainer, which involves indirect firing (simulated or live) at unseen targets

**INSTRUCTIONAL FEATURES** - Those elements of the training device which improve the probability that effective instruction will be delivered to the trainee. Any part of a training device which adds instructional capability. Most training devices incorporate some instructional features. Instructional features do not contribute to the operational and perceptual fidelity of the device

**INSTRUCTOR CONTROL CONSOLE** - A console, which provides an instructor the capability for monitoring and evaluating the actions of trainee(s) and controlling various functions of the training device.

**INSTRUMENT FLIGHT TRAINER** - A training device used to train flight crews in instrument flight procedures, specifically training in the use of all controls and instruments applicable to ground operations, take-off, landing and normal instrument flight, in-flight maneuvers, communication/navigation procedures, and such subsystems as are under the control of the personnel being trained

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**MAINTENANCE SIMULATOR (SIMULATED AIRCRAFT MAINTENANCE TRAINER (SAMT))** - A full- size or scaled device that allows training of maintenance personnel in mechanical, electrical, hydraulic, or pneumatic systems troubleshooting and repair. The device may be computer driven or may consist of actual onboard equipment that provides cues for maintenance personnel undergoing training

**MAINTENANCE TRAINERS** - Trainers representative of a system or subsystem for use in either factory, resident, mobile, or field maintenance training

**MALFUNCTION (TRAINING)** - The simulation of the improper operation of a system or equipment contrived to give specific cues to the trainee that the system is not operating correctly in order to provide the opportunity to practice recognition that the condition exists and containment of deteriorating on total failure of equipment performance in order to survive and continue in the assigned task in spite of casualties that can be expected in the operational/combat environment.

**MANIPULATIVE AID** - An aid, which support skills instruction, is manipulated by the student, and from which there is a direct transfer of learning to the job for which the student is being trained.

**MATH MODEL** - A mathematical representation of a real world phenomena primarily utilized to simulate the phenomena with computer programs. Examples of math models are aircraft flight characteristics, ocean models, radar data bases, electronic media, and electronic equipment transfer functions.

**MILITARY CHARACTERISTICS (MC)** - "The Military Characteristics is the document which defines the operational concept and functional performance baseline of a training device/system as a component of an instructional system designed to achieve stated learning objectives." It is based upon the findings of a training situation analysis which defines the knowledge and skills required to operate or maintain a weapon system or item of equipment. In the final form, the MC represents a mutual agreement or contract between the service, the user, and the sponsor of the physical and functional operating characteristics of the training device to be provided to the user.

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## MISSILE AND ROCKET TRAINERS, INERT, "NOT-TO-BE-FIRED".

TYPE I - Training Missile or Rocket - A missile or rocket similar to the tactical item, but containing inert components developed for use in training technical personnel.

TYPE II - Handling Trainer - A missile or rocket handling trainer for use by artillery units and schools for training artillery replacement personnel. It will be of the same size, configuration, weight, and center of gravity as the tactical missile or rocket.

MISSION TRAINER (MT) - A device, which enables the trainee to encounter specific mission tasks in a simulated environment. The trainer provides weapon system operator modes or a mission mode which requires tactical decision-making and provides for integration of skills. The trainee is confronted with in-flight situations that energize aircraft sensors for target acquisition, identification, tracking, evasion, and weapons management. This trainer provides primarily warfighting training.

MOBILE TRAINING SET - A set of portable system-oriented trainers, training aids, special tools, test equipment, and training accessories designed for training in the field.

MOCKUP (JCS Pub. 1) A Model, built to scale, of a machine apparatus or weapon. It is used in studying the construction and in testing a new development or in teaching personnel how to operate the actual machine, apparatus, or weapon. Mockups of ships, landing craft, and aircraft are used in training personnel to load, embark, and debark.

MOCKUP - (1) A physical representation, often full size, of a training device constructed of inexpensive material. It shows from both the maintenance and operational standpoints, the location of the device components and assemblies for study and evaluation with relation to physical appearance and accessibility. Normally from an engineering and human factors viewpoint, the layout model is used in the evaluation of the initial design of training equipment. (2) A model, full-scale or scaled-down, of a structure machine or apparatus constructed for the purpose of training of personnel. The mockup can be a cutaway model and may be capable of disassembly or operational simulation.

MOCKUP, HOT - A training aid which embodies or has the features of operational equipment, which is capable of functioning on a limited basis when power is applied.

MODEL, PHYSICAL - A static or dynamic training aid, which is representative of an operational equipment, or one or more of the parts, assemblies, or systems in which all spatial and sequential relationships are presented. It may be composed wholly or in part of material different from that of the operational equipment and may be larger, smaller, or the same size. A model may be operable, but not functional.

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MODEL SET - A group of models or replicas of aircraft, tanks, ships, or similar items used in training personnel.

MODEL, TERRAIN - A facsimile or replica of land and/or sea embodying superficial characteristics and proportional dimensions. It is designed as an aid in orientation, identification, mission planning, radar siting, artillery adjustment, teaching tactics, or as a means for generating topographical scenes in visual simulation.

MODEL, TOPOGRAPHICAL - See MODEL, TERRAIN.

MOTION SYSTEMS - Systems designed to provide motion cues representations of those occurring in an operational vehicle. These systems provide from one to six degrees of freedom (pitch, roll, and yaw attitude and acceleration; lateral vertical and longitudinal acceleration) using many types of power/drive techniques. There are five basic types of platform motion systems. (1) synergistic, (2) cascaded, (3) centrifuge, (4) beam, and (5) suspended.

MULTISERVICE TRAINING AID - A training aid used by two or more services to meet training requirements set forth in an approved training program. All training devices distributed in this manner are subject to type classification.

NCLT (NIGHT CARRIER LANDING TRAINER) - A device used to train pilots in aircraft carrier landing. The visual display presents a night scene only.

OPERABLE TRANSPARENCY - See TRANSPARENCY, OPERABLE.

OPERATIONAL EQUIPMENT - Equipment designed for use in tactical applications as distinguished from that designed for training purposes. The equipment is utilized unmodified in the trainer. Also referred to as "TACTICAL EQUIPMENT."

OPERATIONAL FLIGHT TRAINER (OFT) - A device, which dynamically simulates the flight characteristics of the designated aircraft to train flight crews in normal cockpit procedures, instrument flight procedures, emergency procedures, and limited combat mission execution. This trainer combines safety-of-flight, some warfighting tasks, and provides integration of skills.

OPERATOR TRAINER - A trainer or trainer complex simulating (or stimulating) a ~~station or an aircraft, ship, other vehicle, or weapon system, and the~~ environmental effects for individual operator training.

ORGANIC TRAINING - Training accomplished at the organic level within/on the vehicle/airplane on the tactical equipment. The training capability may be embedded in the weapon system or provided as a strap-on. Organic training generally is less sophisticated than shore-based trainers and without a specially trained instructor. Organic training is usually intended for introduction to a new weapon type or to maintain proficiency.

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**PART-TASK TRAINER** - "A trainer/simulator training selected or limited tasks as opposed to providing complete training for a weapon system. Typical part-task trainers are. fuel system trainer and radar operator trainers."

**PERFORMANCE ASSESSMENT** - The instructor synthesizes all performance measurement information to assess trainee performance. The performance measures may be objective (machine generated information such as number of target hits) or subjective (information gathered through the instructor senses such as proper communication format used).

**PERFORMANCE MEASUREMENT** - The collecting and storing of selected parameters to gain an indication of the trainee's performance. The scoring of trainee proficiency may either be subjective (instructor opinion) or objective (automatic computer measurement).

**PHYSICAL FIDELITY** - The degree of structural or dynamic correspondence of a training device to the operational system/equipment it represents.

**PICTORIAL CUTAWAY** - See MOCKUP.

**PRACTICE** - Repeated and systematic performance to gain proficiency using the skills, knowledge, and aptitudes (SKAs) acquired in the training phase. Practice enables the trainee to do the job proficiently. Initial practice occurs while the trainee is acquiring SKAs, proficiency practice occurs at intervals after training so that the SKAs may be refreshed.

**PROFICIENCY TRAINING** - Individual training to develop and maintain a given level of skill in the individual or team performance of a particular task.

**RADAR LANDMASS SIMULATION, FACTORED TRANSPARENCY** - Radar landmass simulation - using a factored transparency as a data storage medium. The transparency is scanned with a spot scanner, and the light output modified by the transparency is processed for ultimate radar scope presentation. See TRANSPARENCY, FACTORED.

**RADAR LANDMASS SIMULATION (RLMS)** - The simulation of radar returns from the earth's surface usually for a ground mapping radar. Simulation may be simple or complex and may simulate real world or generic geographic regions depending on the needs of the training task. Radar landmass simulators include a means to store a description of the land area to be simulated and a means to construct the radar presentation corresponding to the situation being simulated. Digital storage and computation are used almost exclusively today, although, analog methods using photographic transparencies and 3-dimensional models were often used in the past.

**READY-FOR-TRAINING (RFT)** - The condition in which all elements of the training system (including the training device, logistic support, maintenance support, training syllabus and lesson plans, and instructors, are certified by the cognizant Commander as being available for training, and the performance of the training device conforms with the requirements of the approved requirements document.

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**REALISM** - The extent to which an operator's (for instance pilots) experience in a training device corresponds to experiences as they actually would occur in/on the operational system/equipment (for instances, aircrafts) under a given set of conditions.

**REAL TIME** - In training the term real time refers to the fact that the events of the training scenario are occurring at the normal clock time as opposed to fast or slow time used to preview training missions or review the past mission during the replay mode.

**RECORD/PLAYBACK** - The capability within a training device to record sufficient data to replay the scenario to the student after the fact. There are two types of replay; (1) After the training session is completed, all or part of the session is replayed in real time or fast time; (2) During the training session the problem is frozen and the scenario is jumped back to a previous time and replayed through a particular event allowing the student to view the action. At that time the mission can be moved up to the point at which it was frozen or the student can FLY-OUT from replay back into the original scenario.

**SCENARIO (TRAINING)** - The programmed events in a training device, which require trainees to respond as they would to real world settings. Scenarios arrange conditions of learning external to the learner so that the learner's internal conditions of learning are appropriately satisfied for learning to take place. Scenarios are subparts of training exercises. SEE EXERCISE.

**SEAT SHAKER** - An attachment to a simulated vehicle seat to provide vibrations similar to those of the situation being simulated in a training device. The system may be powered electrically, mechanically, or pneumatically, usually under control of the simulation computer.

**SELF-INSTRUCTIONAL TRAINER** - A self-paced/self-administered program of instruction on a device that accurately represents a system or portion of a system. An instructional trainer allows the trainee to progress at trainee's own rate of learning while becoming familiar with the trainer's tasks/procedures.

**SIMULATION** - Synthetically representing the characteristics of a real world system or situation, typically by interfacing controls and displays ~~(operational or simulated) and positions of the system with a computer, which~~ solves a mathematical model of the real world system and situation. All or portions of the equipment may be simulated by solving mathematical models of the transfer functions in the simulation computer. It is a process of imitating one system with another. The simulation may encompass the interaction of the human operator with operational systems, the operating environment, and weapon platform.

**SIMULATION FIDELITY** - The degree of correspondence of one aspect(s) or element(s) of the model embedded in a trainer to those analogous characteristics of reality.

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**SIMULATION, PSYCHOLOGICAL** - Representing in a training situation the functional characteristics of an operational situation to the extent that behavior acquired during training may be transferred with minimum loss to the operational tasks. It does not necessarily imply complete physical duplication of the operational situation, but is based on phenomenal equivalence. See TRANSFER OF TRAINING.

**SIMULATION/STIMULATION** - A hybrid process where the training system may stimulate part or all of the tactical weapon system and simulate the remainder of the tactical system and the environment.

**SIMULATOR** - A training device which substitutes for, by emulation, the functions and environment of actual equipments or systems. Any training device, machine, or apparatus that reproduces a desired condition or set of conditions synthetically. Specifically for training, a relatively complex item of training equipment, using electronic/mechanical means to reproduce conditions necessary for an individual, or a crew, to practice operational tasks in accordance with training objectives. It represents the operational equipment physically and functionally to varying degrees and follows the mathematical equations which describe performance.

**SITUATION DISPLAY** - A geographical plot representing the relative location of the various platforms or elements in the training scenario. Location, platform type, platform number, and other pertinent information are represented by words, numbers, and special symbols to provide the instructor with an overall view of the training situation.

**SKILL** - The ability to perform a job-related activity which contributes to the effective performance of a task.

**SMART TARGETS** - Smart targets are simulated platforms, operating in a scenario, which respond to student activities in a manner appropriate to expert platform commanders. Smart targets take into account situational constraints, such as wartime verses peacetime or mission requirements, and apply a set of production rules which determine the target's movement or employment of communications, sensors, weapons, countermeasures, and counter-countermeasures. These "targets" can be either hostile, neutral, or friendly; but must be preprogrammed with production rules appropriate to their role. Smart targets serve two important functions. They reduce the intensive manpower required to maneuver and target ~~platforms in an exercise~~ if based on well developed production rules, they increase the variation and realism with which platforms operate in an exercise. Also called intelligent platforms.

**SOUND SLIDE PROGRAM** - A training aid consisting of a set of 35mm slides and a reel or cartridge of magnetic tape. Tape signals automatically change slides and control the projector to maintain synchronization between the narration and the picture.

**STIMULATION** - The process of simulating the signals normally detected and processed by the operational system and injecting the signals into the operational system (stimulating) for training purposes.

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**STIMULATOR** - A training device designed for interconnection with operational equipment, and which will create synthetically in the operational equipment, conditions that replicate those created in the operational environment. All or portions of an operational system may be stimulated dependent on training needs and technical trade offs to achieve the desired training capability.

**STUDENT RESPONSE MONITOR** - A system, which presents to a student or group of students problems having two or more possible answers. The students are required to solve each problem and then indicate their answer by selecting the appropriate number on a control unit. The unit registers the answers for instructor's review at a remote point.

**STUDY CARD SET** - A training device or aid in the form of a deck of cards (playing card size), worksheets, and overlays, which presents information about a specific training problem. Examples of the information presented are: edible plants and animals, aircraft and ship silhouettes, and electronic equipment trouble-shooting.

**TACTICAL DECISION MAKING TRAINER** - A device designed to teach decision making and battle management skills for leaders at various levels within the Naval or other service. Different from a tactics trainer in that operators and/or supervisors are usually not involved.

**TACTICAL EQUIPMENT** - See OPERATIONAL EQUIPMENT.

**TACTICS TRAINER** - A trainer which provides a simulated tactical environment in which the skills and techniques of tactical decision makers or operational crews are developed or renewed. The trainer, containing one or more trainee stations, is designed to integrate the skills of the individual crew members into a tactical team capable of transferring these skills to the operational situations. The individual trainee stations are designed to provide equipment responses and indications equivalent to those in the tactical situation, utilizing operational or simulated equipments. The device includes instructor/operator station(s) for establishment and control of problem parameters, introduction of malfunctions, and monitoring/recording of trainee performance.

**TASK** - Formed in clusters which make up duties. A task is the lowest level of behavior in a job that describes the performance of a meaningful function in ~~the job under consideration.~~

**TASK FIDELITY** - The degree of correspondence of cues and responses accompanying task performance on a training device to those characteristics of analogous performance on the operational system/equipment.

The **TRAINING DEVICE DECISION COORDINATING PAPER (TDDCP)** - The TDDCP documents the results of a Training Situation Analysis (TSA). The TDDCP states the background, training objectives, training alternatives in terms of advantages, disadvantages, cost estimates, conclusions and recommendations which provide management and sponsors with a summary to make training decisions.

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**TEAM TRAINER** - An operator trainer which takes personnel trained and qualified in their individual skill specialties and trains them together to perform as a team. Communication skills are emphasized.

**TECHNICAL TRAINING EQUIPMENT (TTE)** - Technical Training Equipment is defined as technical fleet operational equipment devoted to the training and instruction of Naval personnel.

**TRAIN FIRE TARGET MECHANISM** - An electromechanically driven target mechanism that can raise and lower silhouette targets for use in small arms marksmanship and in recognition training.

**TRAINEE CONSOLE** - A console which contains the controls, indicators, and displays necessary to simulate the function and performance of operational equipment. The console is used to educate a student trainee.

**TRAINEE STATIONS** - Locations designed for use by a trainee while undergoing training in a training device.

**TRAINEP** - Manipulative aids or devices used in the development and transfer of skills instruction to performance on the job, used interchangeably with the term "Training Device."

**TRAINER, WALL** - A wall-mounted device provided with rotating or sliding parts on which data are printed. The device is designed for student operations for training or for the imparting of information.

**TRAINING** - A totality of instructions, planned circumstances, and directed activity by which personnel acquire and strengthen new concepts, knowledge, skills, habits, or attitudes. This totality will enable the personnel to perform assigned duties with maximum reliability, efficiency, uniformity, safety, and economy.

**TRAINING ACCESSORY** - A visual or graphic item of training equipment used as an instructional supplement to a training course, it has no training capability of its own, but is used in conjunction with training aids or other trainers (examples are projection devices and display stands).

**TRAINING AID** - A training device designed to demonstrate or illustrate a concept, or to portray the functional characteristics of an end item without use of the actual working medium as a motivating force. The device is usually instructor-operated, but may also be used by the student for self-instruction.

**TRAINING AID EQUIPMENT** - A category of logistic support equipment. Equipment used to display training aids but which is not itself the subject of instruction, it includes items such as motion picture projectors, slide projectors, overhead projectors, tape recorders and playback units, sound film readers, record players, sound/slide projectors, opaque projectors. It also includes secondary items like easels and projector stands. Most kinds of training aid equipment can be used for purposes of other training.

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**TRAINING AIDS** - (JCS Pub. 1) Any item which is developed or procured with the primary intent that it shall assist in training and in the process of learning.

**TRAINING ATTACHMENT** - An end item of training equipment which must be used in conjunction with other training equipment in order to perform the function; (examples are a visual flight attachment for an aircraft simulator and an instructor enhancement attachment to an ASW trainer).

**TRAINING COMPLEX:**

- a. A number of "Training Equipments" and "Training Devices", which may be installed at an activity in such a manner that they may be operated in conjunction with each other. Installations of this type are spoken of as "Training Complexes."
- b. Combinations or groups of schools, training units or commands under a single officer in command, or at a single locality.
- c. A specific linkage of common service between schools, equipments.

**TRAINING DEVICE** - A training device consists of hardware and software which have been designed or modified exclusively for training purposes and involves, to some degree, simulation or stimulation in its construction or operation. A training device includes the required methodological and evaluation techniques to train, refresh, or expose personnel, individually or in groups, to a defined level of performance proficiency.

**TRAINING DEVICE INSTRUCTOR** - A designated individual, who specifies the training problem to be simulated, and directs the operator(s) and student(s) participation in the problem and assesses the outcome.

**TRAINING DEVICE OPERATOR** - A designated individual, who, by manipulating controls, initializes and prepares the trainer and introduces and changes simulated conditions in trainers at the direction of an instructor.

**TRAINING DEVICE REQUIREMENT** - A requirement for a new kind of trainer or mod to existing trainer. The requirement is based upon the analysis of a training problem, and includes a recommended approach with alternatives, which gives due consideration to such factors as training effectiveness, reliability, safety, simplicity, and economy.

**TRAINING EFFECTIVENESS** - The training benefit gained in terms of operational readiness. Also, the thoroughness with which training objectives have been achieved, regardless of training efficiency.

**TRAINING EFFICIENCY** - The extent to which training resources (including time) are used economically while achieving training effectiveness. Refers to resource investments required to achieve specific training objectives or requirements. Resources may include time, instructor assets, training device assets, aircraft assets and costs. Training efficiency is directly related to

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training effectiveness There can be no efficiency if there is no effectiveness, because effectiveness implies a benefit from the resources invested.

**TRAINING EQUIPMENT** - Equipment which is used exclusively for the instruction of personnel It consists of, but is not limited to, training aids, nontechnical training equipment, commercial scientific training equipment, training devices, and civilian training equipment.

- a. Nontechnical Training Equipment. Nontechnical equipment required for use as training equipment. Equipment which has not been assigned to a Systems Command for design, development, modernization, procurement, selection for special use, and similar functions
- b. Technical Training Equipment (TTE) See definition.

**TRAINING EXERCISE** - A series of training scenarios whose purpose is to increase the level of expertise within a particular warfare or mission area

**TRAINING FIDELITY** - The extent to which cue and response capabilities in training allow for the learning and practice of specific tasks so that what is learned will enhance performance of the tasks in the operational environment.

**TRAINING OBJECTIVES** - Statements about skills, knowledge, and attitudes that a trainee is expected to acquire as a result of formal training including; (1) principles and relationships; (2) procedures, (3) perceptual-motor acts; (4) motives and attitudes; (5) identifications and discriminations, and (6) techniques of decision-making and choosing courses of action. Objectives consist of three elements. actions, conditions, and standards

**TRAINING RANGES** - Areas where training is delivered via equipment operation, maneuvering and live firing. These ranges are as much training media as are other instructional delivery tools (television, training devices). They represent opportunities for the arrangement of external conditions of learning, especially when performance measurement capabilities are provided.

**TRAINING SITUATION ANALYSIS** - An analytic procedure for determining the nature of the tasks to be accomplished in work performance and classifying these tasks in a framework of frequency, difficulty, and criticality. The results of the analysis form the basis for ~~the development of training objectives~~ concepts and functional characteristics.

**TRAINING SUPPORT AGENCY (TSA)** - A Training Support Agency is an activity that is responsible for supporting the Training Agencies by providing material and other forms of support within its cognizance

**TRAINING SYSTEM** - The term training system includes all of the elements with which the student interacts to achieve stated training objectives Included are the training device (hardware, software, and courseware), instructors,

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instructional materials, training syllabus, logistics support, maintenance support, facilities, and supporting courseware development services required to perform and support a training requirement.

TRAINING UNIQUE EQUIPMENT (TUE) - Commercial off-the-shelf equipment, modified operational equipment, and equipment specifically designed for a training system as an integral part of the training system

TRAINING UTILIZATION - The extent to which the capacity of a training activity, school, device, or course is being used.

TRANSFER OF TRAINING - The effect of a specific learning experience on an individual's performance of a task at a later time. Transfer is said to be positive when the learning experience facilitates performance of the task, and negative when it interferes with task performance. It is a function of the amount of insight possessed by the learner, and, in general, the degree of similarity between the learning situation and the task in terms of contents, principles, and techniques (See Simulation, Psychological.)

TRANSFER OF LEARNING - The use of skills learned in one context (a training device) in a substantially different context (an aircraft). The carry-forward of trained performance to real-world applications.

TRANSFER OF TRAINING EFFECTIVENESS EVALUATION - Tests specifically performed to determine the extent of transfer of training from the training to the operational environment.

TRANSITION TRAINING - Training provided to personnel who are qualified on one system or equipment to the point of qualification on a replacement system or equipment. For example, a squadron flying aircraft X must receive "Transition Training" when assigned aircraft Y to replace X.

TRANSPARENCY - (JCS Pub. 1) A photographic image, positive or negative, made on a transparent base (such as film) and capable of being viewed by transmitted light.

TRANSPARENCY, OPERABLE - A training aid fabricated from transparent, colored plastics, and designed for use on an overhead projector. It presents a projected depiction, generally schematic, of an operational item, and incorporates the additional facility of permitting the demonstration of relative movement of the component parts, to illustrate functional operation.

VISUAL AIDS - See Graphic Training Aid.

VISUAL SIMULATION - The simulation of relevant parts of a place or object as seen by the eye, often as seen through an optical system. For a training simulator, usually the presentation of the external, out-the-window or through-the-periscope visual environment of a training program. Visual simulation generated through computer systems are often referred to as CGI (Computer Generated Imagery), CIG (Computer Image Generation), CSI (Computer

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Synthesized Image) or DIG (Digital Image Generation). Other visual simulation image generation technologies include camera model, point light projection through film, flying spot scanners and motion picture films.

WARHEAD TRAINERS, MISSILE - These trainers are in warhead section configuration and consist of five types (Types V, W, X, Y, and Z). All warhead sections, except the plastic model, are compatible with the war reserve rockets and missiles, and with the Type I and Type II Missile and Rocket Trainers, Inert, "Not-To-Be-Fired."

Type V - Practice Firing Warhead Section - A "to-be-fired" warhead section with a high explosive (HE) or similar spotting charge, for service practice, maneuvers or field exercises.

Type W - Warhead Section Assembly Trainer - A "not-to-be-fired" inert warhead section developed for use in ordinance units and activities which have depot storage and maintenance capabilities, and in schools that train maintenance or assembly personnel.

Type X - Atomic, Warhead Section Handling and Checkout Trainer - An inert, "not-to-be-fired" warhead section for use in delivery units, certain support units, and in schools which train delivery personnel.

Type Y - Scale Model Warhead Section - A plastic model atomic warhead section intended for use in schools not requiring a functional warhead section.

Type Z - Conventional Training Warhead Section - An inert "not-to-be-fired" training warhead section which will simulate an HE warhead of the missile system.

WEAPON SYSTEM TRAINER, AIRCRAFT - A trainer which provides a synthetic flight and tactics environment in which pilots and flight crews learn, develop and improve the techniques associated with their individual tasks in a specific type aircraft. They operate as a team in the execution of simulated missions, such as radar intercept, air-to-air and air-to-ground weapons delivery, anti-submarine warfare search, weapons scoring, visual tactics, navigation, electronic countermeasures, etc. The trainer is an electro-mechanical device which simulates the aircraft flight and engine characteristics and systems operation. It provides appropriate instrument indications as a result of the operation of controls in the flight crew compartment. The device includes instructor and/or operator stations which are used for establishing problem parameters, introducing malfunctions, and monitoring and recording trainee performance.

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WEAPON TACTICS TRAINER - A trainer which provides a synthetic flight and simulated tactical environment in which pilots and flight crews learn, develop and improve the tactical techniques associated with their individual tasks in a specific type aircraft. The trainer retains all the capabilities of a Weapon System Trainer, but does not have aircraft ground handling effects such as landing and take off capabilities.

Custodians.

Army - EL  
Navy - TD  
Air Force - 11

Preparing activity:

Navy - TD  
(Project DoD 6930-0056)

Review activities:

Army - MO, WC  
Navy - OS, WP  
Air Force - 70  
Defense Supply Agency - DM

User activities:

Navy - AS, CG, MC, SH, YD

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6. NOTES

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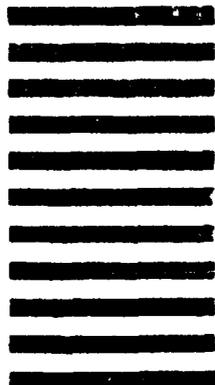
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## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

*(See Instructions - Reverse Side)*

1. DOCUMENT NUMBER

2. DOCUMENT TITLE

MIL HDBK 220B

3a. NAME OF SUBMITTING ORGANIZATION

4. TYPE OF ORGANIZATION (Mark one)

 VENDOR USER MANUFACTURER OTHER (Specify) \_\_\_\_\_

b. ADDRESS (Street City State ZIP Code)

5. PROBLEM AREAS

c. Paragraph Number and Wording

b. Recommended Wording

c. Reason/Rationale for Recommendation

6. REMARKS

7a. NAME OF SUBMITTER (Last, First MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street City State ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)