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MILITARY STANDARD

MILITARY TRAINING PROGRAMS

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FOREWORD

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

2. Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 55Z3, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

3. In contrast to previous editions of MIL-STD-1379, Section 5 of this edition is systematically organized along the line of work tasks to be performed, task inputs, and task outputs. Task descriptions list work tasks associated with the production of specific deliverables or data. Each task description is made up of detailed subtasks. Task inputs describes the general information needed to accomplish a task. Task outputs identify the products expected from the performance of one or more tasks/subtasks.

4. The purpose of the task statement structure is to make Government contracting for training services more precise and enable more accurate contractor's pricing, and to facilitate Computer-aided Acquisition and Logistic Support (CALS) initiatives.

5. This edition also expands the scope of MIL-STD-1379 to include work tasks, task inputs and task outputs associated with the conduct and evaluation of training, Interactive Courseware (ICW) development, and detailed requirements for software interfaces and related commands to ensure ICW and ICW authoring system portability on interactive video delivery systems.

6. The ultimate goal of MIL-STD-1379D is to enable the Government to identify more accurately the data or information that the Government must have to fulfill a training requirement. Because the standard has been prepared for joint service use, understanding how to tailor the task descriptions and data requirements cited in MIL- STD-1379D is critical. Failure to tailor accurately and intelligently will result in performance of tasks and purchase of data that either extend significantly beyond the minimum scope of the original training requirement or that do not meet the needs of the end user, while unnecessarily escalating the cost. The contracting activity and training activity must work as a team to tailor the tasks and Data Item Descriptions (DIDs) cited in this standard to meet Service-specific needs.

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1. SCOPE

1.1 Scope. This standard provides tailorable requirements and task descriptions for acquisition of military training programs.

1.2 Application of standard. This standard is applicable to military departments, defense agencies, and to industry, and should be applied in all military training program acquisitions and major modification programs. Tasks described in this standard should be selectively applied to DoD contract acquisitions, and Government developments requiring military training programs. As used in this standard, the "contracting activity" is generally a Government activity but may be a contractor when training program development requirements are levied on subcontractors. The term "contractor" herein also includes Government activities developing military training programs. The use of the term "contract" in this standard includes any document of agreement between organizations to include between a Government activity and another Government activity, between a Government activity and a contractor, or between a contractor and a subcontractor.

1.2.1 Tailoring of task descriptions. The task descriptions contained in this standard should be tailored for the specific acquisition phase and program. This approach supports acquisition streamlining initiatives. MIL-HDBK-248 also provides tailoring guidance. The contractor may recommend additional tasks, subtasks, or task modifications with appropriate supporting rationale.

1.2.2 Application guidance. Application guidance and rationale for selecting tasks (subtasks) to meet the needs of a particular military training program and interactive courseware (ICW) development are included in Appendixes A and B.

1.2.3 Method of reference. Specific task description number(s) and appropriate paragraphs, as well as applicable task inputs and task outputs, should be included in the Statement of Work (SOW) of the Request for Proposal (RFP) and the contract.

1.2.4 Style and format requirements for data products. Detailed style and format requirements for data products related to a military training program are included in Appendix C. These requirements are cited in the preparation instructions of the Data Item Descriptions (DIDs) issued to acquire data generated as a result of this standard (see 6.3).

1.2.5 Interactive courseware portability protocols. The portability protocols for interactive courseware and authoring system portability on interactive video delivery systems are included in Appendix D. This appendix provides required portability commands and interface mechanism for input to the tasks specified in this standard.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

STANDARDS

MILITARY

MIL-STD-1388-1	Logistic Support Analysis
MIL-STD-1388-2	DoD Requirements for a Logistic Support Analysis Record
MIL-STD-1840	Automated Interchange of Technical Information

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from: Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

2.1.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this standard to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

DEPARTMENT OF DEFENSE

DOD 5220.22-M	Industrial Security Manual for Safeguarding Classified Information

(Copies of DoD 5220.22-M are available from the Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA, 19120-0000.

2.2 Order of precedence. In an event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. DEFINITIONS

3.1 General. Key terms used in this standard and its appendixes are defined in this section. All abbreviations and acronyms used in this standard and its appendixes are defined in 3.173 of this section.

3.2 American Standard Code for Information Interchange (ASCII). The standardized, eight-bit data character code system used internationally to code alphabetic, numerical, and other symbols into the binary values used in computer applications.

3.3 American Standard Code for Information Interchange (ASCII) interface. An interface between ICW or authoring systems and Virtual Device Interface (VDI) Management that accepts commands and returns responses in the form of standard ASCII strings.

3.4 Architecture. In computing, the design philosophy of computer hardware. Open architecture allows for addition of peripherals and enhancements from third party hardware vendors. Closed architecture denotes a turn-key computer system where adding of peripherals or enhancements is discouraged or impossible.

3.5 Authoring system. Prepackaged prompted authoring aides, courseware templates, or menu driven editors designed to help authors (without formal computer programming skills) create interactive courseware without elaborate programming. A high level interface and structured approach to developing and editing interactive courseware. The instructional logic and instructional content are separate.

3.6 Basic input-output system (BIOS). The computer hardware and software which describes the conventions of input/output for a particular computer.

3.7 Behavior. Any activity, overt or covert, capable of being measured.

3.8 Binary interface. An interface between ICW or authoring systems and VDI Management that accepts commands and returns responses in the form of command and response codes and pointers to parameter packets containing parameter token numbers and associated values.

3.9 Blanking. A term used to denote any one of the following:

a. The period of time in which no video image is displayed, because video image is being refreshed.

b. The information-free waiting period built into each field of a video signal to allow the picture-forming beam of a CRT to be re-aimed for the start of the next field. The suppression of the video portion of a television signal.

c. The search interval between sequences when the video image is turned off, during the time it takes for a videodisc player to search from one sequence to another.

3.10 Buffer. A temporary storage device for data, usually used to compensate for a difference in data rate and data flow between two devices (for example, a computer and a printer).

3.11 Collective analysis. The initial part of performance analysis that examines missions, identifies collective tasks, and analyzes the critical collective tasks.

3.12 Collective task. A unit of work or action requiring interaction between two or more individuals for its accomplishment (for example, operate an artillery piece). It may also be a mission requirement, such as secure a beachhead, that can be broken down into individual tasks. A collective task has identifiable start and end points and results in measurable accomplishment or product. Some parts of a collective tasks may be achievable by an individual, in which case they constitute individual tasks in their own right.

3.13 Collective training. Instruction and applied exercises that prepare an organizational team (such as a squad, crew, battalion, or multi-service task force) to accomplish required military tasks as a unit.

3.14 Color graphics adapter (CGA). An expansion card for IBM compatible personal computers, inserted into the computer's expansion slot to enable the computer to process and display color graphics and text at a resolution of 320x200 pixels.

3.15 Condition. That portion of the learning objective that describes the situation/environment in which the trainees write/express/perform the specified behavior. Conditions include any pertinent influence upon task performance, including any or all of the following: location of performance, environment, equipment, manuals, or supervision required.

3.16 Constant angular velocity (CAV). A mode of videodisc playback where a disc rotates at a constant speed, regardless of the position of the reading head or stylus, making each frame separately addressable. A videodisc with information configured in concentric circles in order to provide rapid and discrete access. Individual frames can be identified and retrieved quickly and easily--the rapid, random access which is a basic requirement for an interactive videodisc (IVD). A CAV videodisc revolves at a continuous speed of 1,800 rotations per minute, contains 54,000 frames per side, and assigns a variable track length to each frame. One revolution generates one video frame. Compare with definition for "CLV" (see 3.17).

3.17 Constant linear velocity (CLV). An extended-play videodisc with information configured in a spiral, similar to a record, to provide continuous, linear play. A consistent length for each frame is maintained, thus enabling longer playing time per side. CLV videodiscs assign a fixed track length to each frame and spin at a speed which gradually decreases as the disc plays. CLV discs allow twice as much playing time per side than CAV discs, but many user control capabilities of the CAV format are forfeited. The CLV disc can

be read in linear play only, but can provide chapter search capability. A CAV videodisc contains 108,000 frames per side but restricts access in terms of chronological time. They are usually used for entertainment such as movies. Compare with definition for "CAV" (see 3.16).

3.18 Contract Data Requirements List (CDRL), DD Form 1423. A list of the data requirements that are authorized to be acquired for a specific acquisition, which is made a part of the contract.

3.19 Contract deliverables. Materials delivered by a contractor. Examples of contract deliverables are Lesson Plans, Trainee Guides, and Test Packages.

3.20 Contracting activity. An element of an agency designated by the agency head and delegated broad authority regarding acquisition functions.

3.21 Contractor-acquired property (CAP). Property acquired or otherwise provided by the contractor for performing a contract and to which the Government has title. Also, see definitions for "contractor-furnished equipment" (see 3.22), and "Government property" (see 3.51).

3.22 Contractor-furnished equipment (CFE). Items manufactured or purchased by the contractor for inclusion in or support of contract work. Also, see definition for "contractor-acquired property" (see 3.21).

3.23 Core command. A command that shall be implemented for the service group in which it is contained to be complaint.

3.24 Core parameter. A parameter that shall be implemented to the command that uses it to be compliant.

3.25 Cost-effectiveness. A comparative evaluation of potential instruction methods and media to determine the most efficient alternative.

3.26 Course. A term used to denote any one of the following:

a. Logically grouped instruction on a subject, designed to achieve predefined learning objectives. Usually concerns a single job or task (job skills type training) or a section of organized knowledge (information type training). A course consists of one or more modules. Also, see definitions for "curriculum" (see 3.29), "lesson" (see 3.86), and "module" (see 3.101).

b. A complete series of instructional units identified by a common title or number.

c. An ordered arrangement of subject matter designed to instruct personnel in the knowledge, skills, or techniques required in the performance of tasks in a designated area of specialization.

3.27 Course mission. A description of the ultimate purpose of the course including a statement of who is to be trained, what is to be trained, the degree of qualification brought about by the training, and where and under what general conditions the graduate will perform on the job.

3.28 Courseware. Paper-based, audiovisual, and electronically stored instructional material necessary to deliver a lesson, instructional module, or course. For purposes of this document courseware also includes the special applications programs and other software necessary to present instruction.

3.29 Curriculum. A set of courses constituting an area of specialization. All training conducted within a school, outlined into specific topics, along with detailed training objectives, to include behavior, conditions, and standards. Also, see definition for "course" (see 3.26).

3.30 Data Item Description (DID), DD Form 1664. A completed form that defines the data required of a contractor. The form specifically defines the data content, preparation instructions, format, and intended use.

3.31 Device. A mechanism designed to serve a special purpose or perform a special function. A device has a name/nomenclature and reference designator and can be operated and maintained. Commonly referred to as "hardware" (see 3.52).

3.32 Disk operating system (DOS). An essential program that controls the operations of a computer, including how all information is stored on and retrieved from a disk.

3.33 Effectiveness. The degree to which a training product or program meets its stated training objectives.

3.34 Enhanced graphics adapter (EGA). An expansion card for IBM compatible personal computers, inserted into the computer's expansion slot to enable the computer to process and display color graphics and text at a resolution of 640x350 pixels (see 3.117).

3.35 Element. In training developments, the smallest unit of behavior that has practical meaning to instructional analysts/designers. Elements are basic motions, movements, and mental processes that compose the procedural steps of task performance.

3.36 Environment. The physical conditions and surroundings in which a job is performed, or in which learning takes place, including tools, equipment, and job aids.

3.37 Equipment. Any device that supports any system or subsystem. A major unit of a subsystem for which operation and maintenance can be performed. Equipment is made up of various components.

3.38 Evaluation. A judgement expressed as a measure or ranking of trainee achievement, instructor performance, job performance, process, application, training material, and other factors.

3.39 Exercise. A term used to denote any one of the following:

a. The total instruction that a trainee receives from a training experience.

b. An act that is performed or practiced in the learning experience to develop, improve, or display a specific knowledge, skill, or aptitude.

3.40 Extended command. An optional command that does not have to be implemented for the service group in which it is contained to be complaint.

3.41 Extended parameter. An optional parameter that does not have to be implemented for the command that uses it to be compliant.

3.42 Fault. A malfunction of equipment/firmware/software.

3.43 Formal training. Training (including special training) in an officially designated course conducted or administered in accordance with appropriate course outline and training objectives.

3.44 Formative evaluation. An evaluation that provides information about the effectiveness of training materials to meet the training objectives and the trainee acceptance of training materials as they are being developed.

3.45 Function. A broad category of activity performed by a system (for example, transportation).

3.46 Functional. Capable of producing the work for which it was designed.

3.47 Government-furnished equipment (GFE). Equipment(s) which has/have been selected to be furnished by the Government to a contractor or Government activity for installation in, or for use with, or in support of the system/equipment during production, conversion, or modification. Also, see definition for "Government property" (see 3.51).

3.48 Government-furnished information (GFI). Information which is to be furnished by the Government to a contractor. Also, see definition for "Government property" (see 3.51).

3.49 Government-furnished material (GFM). Documents, equipment, facilities, and services supplied to a contractor before and during the execution of a contract. Also, see definition for "Government property" (see 3.51).

3.50 Government-furnished property (GFP). Property (real and personal, including facilities, material, special tooling, special test equipment, and agency-peculiar property) in the

possession of or directly acquired by the Government and subsequently made available to the contractor. Documents, equipment, facilities, and services supplied to a contractor before and during the execution of a contract. Also, see definition for "Government property" (see 3.51).

3.51 Government property (GP). All property (real and personal, including facilities, material, special tooling, special test equipment, and agency-peculiar property) owned by or leased to the Government or acquired by the Government under the terms of the contract. It includes contractor-acquired property (see 3.21), Government-furnished equipment (see 3.47), Government-furnished information (see 3.48), Government-furnished material (see 3.49), and Government-furnished property (see 3.50).

3.52 Hardware. A term used to denote any one of the following:

a. The physical components and equipment which actually makes up a computer system (everything except the programs or software). Physical equipment or peripheral devices. The mechanical,electrical, or electronic equipment used for processing data. The various devices of a computer system, including the machine itself, printers, disk drives, monitors, modems, and allied accessories such as cables. Hardware is tangible, whereas software is not.

b. The physical components of a system.

3.53 Implementation. Conducting and evaluating training.

3.54 Individual Task Training Package (ITTP). A training package that provides commanders, trainers, and soldiers with critical task performance requirements associated with a specific job.

3.55 Individual Training Standards (ITSs). The standards used to specify individual training proficiency requirements (tasks) that support unit mission performance. They include a task (behavior), conditions, proficiency standards (often steps), and references. ITSs are generally derived from mission performance standards.

3.56 Input. A term used to denote any one of the following:

a. Information fed into or transferred from any source to a computer or processing system.

b. Data or information fed or entered into a computer via such devices as keyboards, keypads, and light pens.

3.57 Input and output (I/O). Information exchanged between a computer and peripheral equipment.

3.58 Input device. A mechanism used to feed or transfer information into a computer or processing system (for example, keyboard, keypad, light pen, trackball, mouse, joystick, and touch screen).

3.59 Inspection. The action of determining whether a process or product is in compliance with established regulatory standards and procedures.

3.60 Instruction. The delivery of information to enable learning. The process by which knowledge and skills are transferred to students. Instruction applies to both training and education.

3.61 Instructional material. All items of material prepared, procured, and used in a course or programs as part of the teaching or general learning process.

3.62 Instructional media. The means used to present information to the trainee.

3.63 Instructional media materials (IMM). Instructional materials that present a body of information and are largely self-supporting rather than supplementary in the teaching-learning process. These materials have applications for independent study/skill acquisition.

3.64 Instructional setting. The location and physical characteristics of the area in which instruction takes place. The setting can be in a classroom, a laboratory, a field, or workplace location. An example is: a clean, well lighted, temperature controlled classroom equipped with individual desks, chairs, and individual video monitors.

3.65 Instructor. The personnel, military and civilian, tasked with teaching.

3.66 Interactive. Two-way, immediate communication between a computer and a user. It involves the active participation of the user in directing the flow of the computer or video program. Interactive is a system that exchanges information with the viewer, processing the viewer's input in order to generate the appropriate response within the context of the instruction.

3.67 Interactive courseware (ICW). A computer program controlled instruction that relies on trainee input to determine the order and pace of instruction delivery. The trainee advances through the sequence of instructional events by making decisions and selections. The instruction branches according to the trainee's responses.

3.68 Interactive courseware (ICW) support software. Software that supports application unique ICW requirements (for example; simulation models, unique device drivers and course management features not supported by authoring systems) (see 3.5).

3.69 Interactive Multimedia Association (IMA). An association of organizations, institutions, individuals actively involved in the production and use of interactive technology and optical media systems, and those who provide services to the industry.

3.70 Interactive video (IV). Interactive video uses analog and digital video data bases to present instructional material in the ICW environment.

3.71 Interface. A term used to denote any one of the following:

a. The link between two pieces of dissimilar equipment, allowing them to communicate with each other. A physical or functional connection between two or more devices or systems.

b. The device or circuit that provides the communicating transition between different systems. The hardware and software for connecting a device to a system or one system to another.

3.72 International Business Machines (IBM) compatible. A personal computer which is 100 percent compatible in form and function with the IBM PC family of personal computers.

3.73 International Business Machines personal computer (IBM PC). A term used to denote one of the following:

a. A term used to denote a family of personal computer manufactured by IBM. This series of computers was commercially available but still widely used in the business world. The family includes the IBM PC, XT, and AT.

b. The original commercially available IBM 8-bit microprocessor-based microcomputer, which used the Intel 80286 chip as its central processing unit. It came standard with the DOS operating system and two 360 kilobytes 5.25 inch floppy disk drives.

3.74 International Business Machines personal computer Advanced Technology (IBM PC-AT). The original commercially available IBM 16-bit microprocessor-based microcomputer, which used the Intel 80286 chip as its central processing unit. It came standard with the DOS operating system, a 1.2 megabyte 5.25 inch floppy disk drive, and a hard disk.

3.75 Interoperability. The ability to interchange hardware components having the same form, fit and function, across hardware platforms, without affecting the functionality of the system.

3.76 Interrupt. An instruction which temporarily stops the normal operation of a routine by a special signal from the computer. Normal operation can be resumed from that point at a later time.

3.77 Job. The duties, tasks, and task elements performed by one individual that constitutes his/her job. The job is the basic unit used in carrying out the personnel actions of selection, training, classification, and assignment.

3.78 Job aid (JA). A checklist, procedural guide, decision table, worksheet, algorithm, or other device used by job incumbent to aid in task performance. Job aids reduce the amount of information that personnel must recall or retain.

3.79 Job performance measure. An instrument used to evaluate proficiency of a job holder on each tasked performed. Also, see definition for "performance measure" (see 3.109).

3.80 Job task analysis. A process of examining a specific job to identify all the duties and tasks that are performed by the job incumbent at a given skill level.

3.81 Knowledge. Information required to develop the skills and attitudes for effective accomplishment of the jobs, duties, and tasks.

3.82 Learning. A change in the behavior of the student as a result of stimulus or experience. The behavior can be physical and overt, or it can be intellectual or attitudinal or both.

3.83 Learning activities. Events intended to promote student learning; those activities that, along with the media used, create or stimulate the desired learning.

3.84 Learning analysis. A procedure to identify task sub-elements and their related skills/knowledge that must be learned before a person can achieve mastery of the task itself.

3.85 Learning objective. A statement of the behavior or performance expected of a trainee as a result of a learning experience, expressed in terms of the behavior, the conditions under which it is to be exhibited, and the standards to which it will be performed or demonstrated. Also called "training objective" (see 3.157). Also, see definition for "objective" (see 3.103).

3.86 Lesson. A segment of instruction that contains an objective, information (to be imparted to the student), and an evaluation instrument (test). A segment of instruction that covers a specific maintenance task, procedure, or idea. That element of a module that is designed to teach one or more learning objectives. Also, see definitions for "course" (see 3.26) and "module" (see 3.101).

3.87 Lesson plan. An approved plan for instruction that provides specific definition and direction to the instructor on learning objectives, equipment, instructional media material requirements, and conduct of the training. Lesson plans are the principal component of curriculum materials in that they sequence the presentation of learning experiences and program the use of supporting instructional material.

3.88 Logical colors. The number of colors that can be displayed simultaneously by a graphics adapter is the number of available logical colors. For example, an adapter might support 16 logical colors from a palette of 4096 physical colors (see 3.116).

3.89 Logistics support. Resources required to support instructional delivery.

3.90 Maintenance. The physical act of preventing, determining, and correcting equipment or software faults. It includes all actions taken to retain system,/equipment/product in a useful serviceable condition or to restore it to usefulness/serviceability. Maintenance includes inspection, testing, servicing, classification as to serviceability, repair, rebuilding, and reclamation.

3.91 Management plan. A program for the assignment, monitoring, and assessment of the personnel, materials, and resources dedicated to a specific mission, operation, or function.

3.92 Manpower. The requirements or billets needed in an organization, to accomplish a task or service. Compare with definition for "personnel" (see 3.113).

3.93 Media. The delivery vehicle for presenting instructional material or the basic communication stimuli presented to a student to induce learning. Examples include: text, pictorial, tactile, aural, motion, color, odor, and taste.

3.94 Media selection. The process of selecting the most effective means of delivering instruction.

3.95 Microprocessor. The electronic components of an entire central processing unit contained on a single chip. A miniaturized central processor. One of the principal components of a microcomputer. A device which offers specialized, but limited, computer power and storage in equipment which is self-contained (for example, videodisc player) -- not necessarily part of a complete computer system. For the purpose of this standard, an Intel microprocessor with the numeric designation 8086, 8088, 80186, 80188, 80286, 386 SX, 386 DX or i486, or a functionally equivalent non-Intel microprocessor.

3.96 Microsoft Disc Operating System (MS-DOS). A general purpose computer disk operating system developed by Microsoft and used on microcomputers. This term is used generically for operating systems including Microsoft MS-DOS versions 2.0 and higher and compatible operating systems such as IBM PC-DOS versions 2.0 and higher (see 3.112).

3.97 Milestone. A major point in the development of a project.

3.98 Military training. The instruction provided personnel to develop capability to perform specific military functions and tasks, and to enhance their knowledge of the science and art of war.

3.99 Mission analysis. A process of reviewing mission requirements, developing collective task statements, and arranging the collective tasks in a hierarchial relationship.

3.100 Mission Performance Standards (MPS). Criteria that specify mission and functional area unit proficiency standards for combat, support, and combat service support units. They include task, conditions, standards, evaluator instructions, and key indicators.

3.101 Module. A stand-alone instructional unit which is designed to satisfy one or more learning objectives. A separate component complete within itself which can be taught, measured, and evaluated for a change or bypassed as a whole; one which is interchangeable with others, used for assembly into units of differing size, complexity, or function. An individualized self-instructional package, usually containing all the necessary materials a student needs to meet some or all of a learning objective/task. A module consists of one or more lessons. Also, see definitions for "course" (see 3.26) and "lesson" (see 3.86).

3.102 National Television Standards Committee (NTSC). A term used to denote any one of the following:

a. National Television Standards Committee. A committee of the Electronics Industries Association (EIA) that prepared the standard specifications approved by the FCC.

b. An acronym for referring to the American television standards set by the National Television Standards Committee. The American color television standard having 525 scan lines, a field frequency of 60 Hz, a broadcast bandwidth of 4 MHz, line frequency of 15.75 KHz, frame frequency of 1/30 of a second, field frequency of 1/60 of a second, and a color subcarrier frequency of 3.58 MHz.

3.103 Objective. Statements that specify precisely what behavior is to be exhibited, the conditions under which behavior will be accomplished, and the minimum standard of performance. Objectives describe only the behaviors that directly lead to or specifically satisfy a job performance requirement. Many terms have been used to describe the various levels of objectives, but basically they are all objectives and should describe behavior, conditions, and standards. An objective is a statement of instructional intent. Also, see definition for "learning objectives" (see 3.85).

3.104 On-the-job training (OJT). Training in designated job skills provided at the job sites.

3.105 Operating system (OS). A set of programs that facilitates computer system operation. A set of programs which control the running of a computer and its peripherals. The fundamental instructions by which a computer can store, process, and retrieve information. Software which controls the execution of computer programs and which may provide scheduling, debugging, input/output control, accounting, compilation, storage assignment, data management, data transfer, and related services.

3.106 Output. Information fed out by a computer or system. Material generated by a computer from its memory for display on a screen, or for transfer to some other medium such as paper (via printer) or magnetic storage.

3.107 Output device. Hardware that handles output operations.

3.108 Performance. Part of a criterion objective that describes the observable student behavior (or the product of that behavior) that is acceptable to the instructor as proof that learning has occurred.

3.109 Performance measure. The absolute standard by which job performance is judged. It includes behaviors, results, and characteristics that can be observed and scored to determine if a trainee has performed a task correctly. Also, see definition for "job performance measure" (see 3.79).

3.110 Personal computer (PC). A microcomputer. An relatively inexpensive, somewhat portable computer for business and home use.

3.111 Personal computer (PC) compatible. Refers to computers compatible with the IBM Personal Computer standard.

3.112 Personal computer-disk operating system (PC-DOS). A computer operating system developed by IBM and used on IBM PC class microcomputers. Similar to "MS-DOS" (see 3.96).

3.113 Personnel. The individuals who accomplish specific task. Personnel connotes individuals whereas "manpower" connotes requirements or billets. Compare with definition for "manpower" (see 3.92).

3.114 Personnel Performance Profile (PPP) Tables. A document that provides a minimum requirements listing of all knowledge and skills required to operate and maintain a system, subsystem or equipment, or to perform a task or function. PPPs are a basic element in the design, development, and management of training. The five types of PPPs are:

a. System. The System PPP table identifies the knowledge and skills required to operate and maintain a system. The System PPP identifies the interrelationship of subsystem functions within the system.

b. Subsystem. The Subsystem PPP table identifies the knowledge and skills required to operate and maintain a subsystem in sufficient detail to allow the user to identify the equipment integration.

c. Equipment. The Equipment PPP table identifies the knowledge and skills required to operate and maintain an individual equipment, or equipment assemblage, including software-related activities.

d. Task/Function. The Task/Function PPP table identifies the occupational specialty knowledge and skills that are either operational, maintenance, administrative/managerial, or specialized in nature and purpose, or that describe a

mission that is broader in scope and importance than that of individual equipments being operated/maintained simultaneously or over time.

e. Background. The Background PPP table identifies the prerequisite knowledge and skills required to learn the operation and maintenance of a system, subsystem, equipment, or the performance of a task or function.

3.115 Phase alternation by line (PAL). The 625 line, 50 field, color TV standard of western Europe (excluding France), Africa, Australia, and South America.

3.116 Physical colors. The total possible colors that can be displayed, not necessarily simultaneously, by a graphics adapter is the number of available physical colors - this is also commonly called the palette size. For example, an adapter might support 16 logical colors from a palette of 4096 physical colors.

3.117 Physical picture element (Pixel). An abbreviation of picture element. A single point of illumination on a display device. One of thousands of points of light and color which make up a screen. The medium raster display element, represented as a point with a specified color and intensity level. The smallest dot that can be displayed on a monitor. A discrete element dot in a screen of information.

3.118 Pilot course. A full length course conducted in a target environment (facilities, instructors and trainees) using the curriculum and supporting training material prepared for that course. It has as its purpose the "shaking down" or "validating" of the curriculum and materials in a classroom situation to determine their effectiveness in attaining the approved learning objectives or training goals.

3.119 Population. A well-defined group of subjects, things, or characteristics from which measurements are taken (for example, all students 6 feet or taller).

3.120 Portability. The capability to run courseware and associated application programs without modification on a delivery system other than the one for which they were originally designed. Also called "transportability".

3.121 Prerequisite. A needed requirement the student must possess before being able to take training. It covers what a student must know before taking a lesson of instruction.

3.122 Profile item-to-topic learning objectives assignment chart. An administrative tool designed to reflect the coverage of PPP line items within a curriculum.

3.123 Programming script. A detailed plan of the computer program information for each frame of interactive courseware. Also, see definition for "script" (see 3.129).

3.124 Quality assurance. Those actions taken by the Government to assure that services meet the requirements in the Statement of Work (SOW).

3.125 Read only memory (ROM). A term used to denote any one of the following:

a. A type of internal computer memory in which data can be read but cannot be altered. Non-changeable computer memory with permanently stored data that is retained when power is removed from a computer. The smaller part of a computer's memory in which essential operating information is recorded in a form which can be recalled and used (read) but not amended or recorded (written).

b. A computer storage medium which allows the user to use information (read) but not record or amend (write).

3.126 Register. An internal circuit in a microprocessor used for holding and manipulating data and memory addresses. Specific registers referenced in Appendix D of this standard include the Intel 80x86 microprocessor 16-bit AX, BX, ES, and DI registers.

3.127 Reliability. A term used to note any one of the following:

a. A characteristic of evaluation which requires that testing instruments yield consistent results. The degree to which a test instrument can be expected to yield the same result upon repeated administrations to the same population.

b. The characteristic that a device, equipment, or system will operate effectively for a period of time without a failure or breakdown.

3.128 Resource requirements list. An overall list that identifies the texts, references, equipment, films, graphics, and instructional media materials required to support the curriculum.

3.129 Script. The detailed plan, including a numbered list of each scene or frame showing description, talent, props, audio, narration, sound effects, camera angle, image size, and all that is necessary to produce an audiovisual program. It is a printed narration with instructions and cues used to develop video presentations for programs or program segments. Also, see definition for "programming script" (see 3.123).

3.130 Script-storyboard. A combination storyboard and audiovisual script. It is a detailed description of an individual or series of frames containing important script features of scene description, reference information,text displayed, audio content, camera directions, special effects, program flow, programming function information, production information, post-production information, props needed, graphics needed, and special notes. Also, see definition for "storyboard" (see 3.135).

3.131 Self-study. Individual study by which a person learns new skills or knowledge or reinforces skills or knowledge already learned.

3.132 Service group. A segregated set of commands that relate to a specific functional area. For example, the videodisc (vd) service group contains commands for controlling videodisc players.

3.133 Skill. The ability to perform a job related activity that contributes to the effective performance of a task.

3.134 Software. A term used to denote any one of the following:

a. The programs and routines that tell the computer and its peripherals what to do. Any system of instructions that direct computer operation. Category of computer components which is restricted to instructions to the equipment (hardware). The programs for the computer. Typically, software can be divided into operating systems, computer languages including authoring tools, and application programs.

b. The media which stores software, such as floppy disks, flowcharts, manuals, and other computer programming documentation.

c. Non-equipment training material, such as pamphlets, handouts, schematics, charts, audiovisual products, and guide sheets.

3.135 Storyboard. A layout and detailed graphic description of a single frame or series of frames, arranged sequentially, that describe the action and content of the interactive courseware and specifies all details such as graphics, text, visuals, video, audio, special effects. It is a graphic depiction that visually shows the interactive courseware presentation on paper. Also, see definition for "script-storyboard" (see 3.130).

3.136 Student. The term includes the individual being trained, the individual learning from the interactive courseware, or an individual who has been placed in a learning situation in order to acquire knowledge and skills required for accomplishment of specific tasks. Also called "trainee" (see 3.146).

3.137 Subtask. Activities (perceptions, decisions, and responses) that fill a portion of the immediate purpose within a task (for example, remove a lug nut).

3.138 Summative evaluation. The overall assessment of a program at the completion of the developmental process.

3.139 Surveillance. A process that provides on-going evaluation of training or training materials to insure continued effectiveness and currency of content to meet the training requirements as dictated by the operational systems, support systems, mission, and threats.

3.140 System. A term used to denote any one of the following:

a. An organized set of related components established to perform certain tasks.

b. A grouping of functionally related subsystems operating together to support a major function.

3.141 Tailoring of data requirements. The deletion of data requirements, from an approved Data Item Description or source document, that are unnecessary to meet the needs specific contract.

3.142 Task. A single unit of specific work behavior with clear beginning and ending points and directly observable or otherwise measurable process, frequently but not always resulting in a product that can be evaluated for quantity, quality, accuracy, or fitness in the work environment. A task is performed for its own sake, that is, it is not dependent upon other tasks, although it may fall in a sequence with other tasks in a duty or job array.

3.143 Task description. Verbal description, in column, outline, decision table, or timeline format which describes the required job behavior at the highest level of generality. Intended to provide an overview of the total performance.

3.144 Task statement. A written description of task performance that contains an action verb, an object, and must express the conditions under which the task is performed and the standard that the performance must meet.

3.145 Test. Any device/technique used to measure the performance, skill level and knowledge of an individual.

3.146 Trainee. Identical to definition for "student" (see 3.136).

3.147 Trainee Guide (TG). A generic term for the various printed materials developed for trainee use. A publication that provides each trainee with the supplementary material (in addition to technical manuals) judged to be required for his/her successful completion of a course of study. The trainee guide includes instruction sheets that contain material such as homework assignments and homework study questions, problem analysis exercises, job performance sequences and performance evaluation criteria, special instructor handouts, and special units of additional or amplifying information.

3.148 Training. Instruction and applied exercises for the attainment and retention of skills, knowledge, and attitudes required to accomplish military tasks.

3.149 Training aid. A generic term referring to any item developed, procured, or fabricated for the purpose of assisting in the conduct of training and the process of learning, such as models, mockups, interactive courseware, audiovisual aids, displays, slides, books, pictures, and magnetic/optical recordings.

3.150 Training capabilities analysis. An analysis that provides information about what the training material or training equipment could train.

3.151 Training devices. Hardware and software designed or modified exclusively for training purposes involving simulation or stimulation in its construction or operation to demonstrate or illustrate a concept or simulate an operational circumstance or environment.

3.152 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.

3.153 Training effectiveness evaluation. The systematic process of measuring the training benefit gained through a course of instruction in terms of operational readiness. Also, the process of determining the thoroughness with which training objectives have been achieved, regardless of training efficiency.

3.154 Training equipment. Materiel used in training.

3.155 Training facility. A permanent or semi-permanent military real property or contractor property, used for the purposes of conducting training.

3.156 Training materials. A general term covering plans, control documents, and instructional materials.

3.157 Training objective. Identical to definition for "learning objective" (see 3.85).

3.158 Training Path System (TPS). A coordinated system for identifying the training requirements for categories of personnel in a training program. The trainee must obtain the knowledge and skills necessary to coordinate, direct, or perform operation and maintenance of a system, subsystem, or equipment or perform task/functions. It is based on the knowledge and skill items set forth in personnel performance profiles (PPPs), and upon an orderly categorization of these items.

3.159 Training plan. A document which includes program information and data concerning the system or equipment program, event, or situation that originated the training requirement, and describes the training required and the training program(s) to satisfy the requirement. Training plans are designed to provide for planning and implementation of training and to ensure that all resources and supporting actions required for establishment and support are considered.

3.160 Training program. An assembly or series of courses or other requirements that have been organized to fulfill a broad overall training objective.

3.161 Training site. The geographic location(s) at which a course or training is conducted.

3.162 Training support. The providing of resources, such as billets, personnel, funds, facilities, hardware, course materials, and services, for the use of the training activity.

3.163 Training system. An integrated combination of all elements (such as; training material and equipment, personnel and logistic support) necessary to conduct training.

3.164 Training System Utilization Handbook. A document that is designed for User personnel to aid them in operating and achieving full utilization of a specific training system during the presentation of a course(s) of instruction, training exercise(s) or mission(s).

3.165 Training task. A task selected for training.

3.166 Training task analysis. The process of examining each unique unit of work from job task analysis to derive descriptive information (for example; procedural steps, elements, task conditions, standards, and other information) used in the design, development and testing of training products.

3.167 Validation. The process by which the curriculum materials and instruction media materials are reviewed by the contractor for instructional accuracy and adequacy, suitability for presentation, and effectiveness in providing for the trainees' accomplishment of the learning objectives. Validation is normally accomplished in tryouts with a representative target population. The materials are revised as necessary as a result of the validation process.

3.168 Videodisc. A generic term used to describe a medium of audiovisual information storage. A thin circular plate composed of translucent layered plastics sandwiching a metal layer on which video, audio, and digital information is encoded as a series of shallow microscopic pits along a circular or spiral track for playback on a television monitor. Videodisc is an information storage medium for analog/digital (for example, video, audio, and control signals) data.

3.169 Videodisc player. A device used to read (play) a videodisc.

3.170 Video graphics array (VGA). An expansion card for IBM personal computers that is inserted into the computer's expansion slot to enable the computer to process and display color graphics and test at a resolution of 640x480 pixels (see 3.117).

3.171 Virtual Device Interface (VDI). This term is used interchangeably with VDI Management (see 3.172).

3.172 Virtual Device Interface (VDI) Management. The system-level software that is responsible for executing and responding to core and extended commands received from ICW or authoring systems via the ASCII or binary interface (see 3.171).

3.173 Abbreviations and acronyms used in this standard. The abbreviations and acronyms used in this standard and its appendixes are defined as follows (terms with cross-references are defined herein):

ACCP	-	Army Correspondence Course Program
AMSC	-	Acquisition Management Systems Control
AMSDL	-	Acquisitions Management Systems and Data Requirements Control List
ASCII	-	American Standard Code for Information Interchange (see 3.2)
BIOS	-	Basic Input - Output System (see 3.6)
BSOT/BD	-	Basic Sonar Operation/Basic Diagnostic
CAD	-	Computer-aided Design
CAD	-	Computer-aided Drafting
CALS	-	Computer-aided Acquisition and Logistic Support
CAP	-	Contractor-acquired Property (see 3.21)
CAV	-	Constant Angular Velocity (see 3.16)
CDRL	-	Contract Data Requirements List (see 3.18)
CEA	-	Cost Effectiveness Analysis
CFE	-	Contractor-furnished Equipment (see 3.22)
CGA	-	Color Graphics Adapter (see 3.14)
CGM	-	Computer Graphics Metafile
CLTV	-	Collective
CLV	-	Constant Linear Velocity (see 3.17)
COEA	-	Cost and Operational Effectiveness Analysis
CONCEPT	-	Concept Exploration

CPR	-	Cardio Pulmonary Resuscitation
CR	-	Carriage Return (ASCII character code 0DH)
CR/LF	-	Carriage Return/Line Feed
CRT	-	Cathode-ray Tube
CTEA	-	Cost and Training Effectiveness Analysis
DEMVAL	-	Demonstration and Validation
DEPL	-	Deployment
DEV	-	Development
DID	-	Data Item Description (see 3.30)
DMA	-	Direct Memory Access
DODISS	-	DoD Index of Specifications and Standards
DoD or DOD	-	Department of Defense
DOS	-	Disk Operating System (see 3.32)
EGA	-	Enhanced Graphics Adapter (see 3.34)
EIA	-	Electronics Industries Association
EISA	-	Enhanced Industry Standard Architecture
FCC	-	Federal Communication Commission
fps	-	Feet per Second
FSD	-	Full-scale development
FUNCT	-	Functional
fwd	-	Forward
G	-	Generally
GFE	-	Government-furnished Equipment (see 3.47)

GFI	-	Government-furnished Information (see 3.48)
GFM	-	Government-furnished Material (see 3.49)
GFP	-	Government-furnished Property (see 3.50)
GP	-	Government Property (see 3.51)
HARDMAN	-	Military Manpower/Hardware Integration
HT	-	Horizontal Tab (ASCII character code 09H)
Hz	-	Hertz
IBM	-	International Business Machines Corporation
IBM PC	-	IBM Personal Computer (see 3.73)
IBM PC-AT	-	IBM PC Advanced Technology (see 3.74)
IBM PC-DOS	-	IBM PC Disk Operating System (see 3.74)
IBM PC-XT	-	IBM PC-Extended (see 3.73)
ICW	-	Interactive Courseware (see 3.67)
ICWTS	-	Interactive Courseware Training Systems
ID	-	Identification
IGES	-	Initial Graphics Exchange Specification
ILS	-	Integrated Logistic Support
ILSS	-	Integrated Logistic Support Standards
IMA	-	Interactive Multimedia Association (see 3.69)
IMM	-	Instructional Media Materials (see 3.63)
INDV	-	Individual
Int	-	Interrupt (referring to specific MS-DOS interrupt functions (see 3.76)

Intel	-	Intel Corporation
I/O	-	Input and Output (see 3.57)
IOCTL	-	Input and Output Control
IPR	-	In-process Review
ITP	-	Individual Training Plan
ITS	-	Individual Training Standard (see 3.55)
ITTP	-	Individual Task Training Package (see 3.54)
IV	-	Interactive Video (see 3.70)
IVD	-	Interactive Videodisc
JA	-	Job Aid (see 3.78)
KB	-	Kilobytes
KHz	-	Kilohertz
LF	-	Line Feed (ASCII character 0AH)
LSA	-	Logistic Support Analysis
LSAR	-	Logistic Support Analysis Record
MATL	-	Material
MGR	-	Manager
MGMT	-	Management
MHz	-	Megahertz
MILCON	-	Military Construction
Microsoft	-	Microsoft Corporation
MOD	-	Modification

MPS	-	Mission Performance Standard (see 3.100)
MPT	-	Manpower, Personnel, and Training
MQS	-	Military Qualification Standards
MS-DOS	-	Microsoft Disk Operating System (see 3.96)
MTP	-	Mission Training Plan
MTP	-	Military Training Program
N/A	-	Not Applicable
NTSC	-	National Television Standards Committee (see 3.102)
NUL	-	Null (ASCII characater code 00H)
OCC	-	Occupational
OJT	-	On-the-job Training (see 3.104)
OS	-	Operating System (see 3.105)
PAL	-	Phase Alteration by Line (see 3.115)
PC	-	Personal Computer (see 3.110)
PC-DOS	-	Personal Computer - Disk Operating System (see 3.112)
PDB	-	Project Development Brochure
Pixel	-	Physical Picture Element (see 3.117)
PKG	-	Package
POI	-	Plan of Instruction
POI	-	Program of Instruction
PPP	-	Personnel Performance Profile (see 3.114)
PROD	-	Production
RAM	-	Random Access Memory

RC	-	Reserve Component
RFP	-	Request for Proposal
ROM	-	Read Only Memory (see 3.125)
ROM BIOS	-	Read Only Memory Basic Input-Output System
S	-	Selectively
SMGL	-	Standard Generalized Markup Language
SME	-	Subject Matter Expert
SOW	-	Statement of Work
SQT	-	Skill Qualification Test
STP	-	Soldier Training Publication
STRAP	-	Systems Training Plan
sy	-	System (referring to service group and as command prefix in Appendix D)
TDNS	-	Training Device Need Statement
TDR	-	Training Device Requirements
TG	-	Trainee Guide (see 3.101)
TPS	-	Training Path System (see 3.112)
TRADOC	-	Army Training and Doctrine Command
TSP	-	Training Support Package
TV	-	Television
U	-	Update
U.S.	-	United States

vd	-	Videodisc (referring to service group and as command prefix in Appendix D)
VDI	-	Virtual Device Interface (see 3.171 and 3.172)
VGA	-	Video Graphics Array (see 3.170)
vm	-	Visual Management (referring to service group and as command prefix in Appendix D)
xy	-	XY-Input (referring to service group and as command prefix in Appendix D)

4. GENERAL REQUIREMENTS

4.1 Training program. The military training program shall support personnel performance requirements. It shall provide the information and experiences necessary to support attainment of the physical and mental skills required for mission accomplishment. It shall use practical or laboratory situations to the maximum extent feasible, ensuring all training tasks are related to the actual job requirement.

4.1.1 Technical documentation. When available, use of technical manuals and other formal documentation, including automated data, shall be the prime source of information for the development of training programs and training materials. Technical documentation may be in development at the same time as training material and not available in final form.

4.1.2 Hazard awareness and safety precautions. Hazard awareness and safety precautions shall be included in every military training program. Human factors engineering and emphasis on methods of preventing system or equipment damage and personal injury or death shall be included. The instructional effort shall emphasize each person's responsibilities both as an individual and as a supervisor for the prevention of accidents. Actual hazardous conditions and hazardous acts, accompanied by the possible consequences of each, shall be delineated. Directions for the reporting of hazardous conditions shall be provided. An awareness of the fact that people cause accidents shall be stressed. Hazardous conditions shall include those conditions which would endanger the environment.

4.2 Systems approach. The contractor shall use a systematic approach to develop the training program and training materials. This approach shall integrate the processes of analysis, design, development, implementation, and evaluation.

4.2.1 Analyze. An analysis of the mission and job shall be accomplished to determine the specific inventory of tasks, knowledge and skills required to perform the job and to identify those that require training. This shall involve determining the number, type, and skills of all personnel required to support the performance requirements. Quantitative and qualitative personnel and training requirements shall be identified by recording and analyzing task frequencies, learning difficulty, delay tolerance, probability of inadequate performance, and other factors.

4.2.2 Design. The training design shall be based upon the analysis results. Design shall include converting tasks into learning objectives, sequencing training, preparing course outlines, selecting media, planning for trainee evaluation, constructing written/performance tests, and identifying facility and resource requirements.

4.2.3 Develop. Training development shall be based on the design. It shall include developing lesson plans, trainee materials, media, and any other training materials. Review of developed materials for technical and doctrinal accuracy shall occur throughout this phase with validation of the developed materials as the final step.

4.2.4 Implement. Implementation shall be accomplished by the conduct and management of the validated and approved training program.

4.2.5 Evaluate. Evaluation of the training shall be conducted for accuracy and effectiveness over the life cycle of the program. Feedback from the evaluation process shall be used to modify the training program as necessary.

4.3 Contract training program management. The contractor shall plan, manage and execute the requirements and tasks specified in the contract. The contractor shall identify a Training Program Manager, participating organizations, subcontractors, and points of contact.

4.4 Quality assurance. The contractor shall be responsible for the development and implementation of a quality assurance program designed to ensure the requirements of the contract are met.

4.5 Government access to information and data. The contractor shall provide information and assistance as requested by the contracting activity for evaluation of compliance with this standard.

4.6 Training program management team. A joint Government and contractor team shall be established as a primary management vehicle for monitoring the status of the training development/services contract. The chairperson will be appointed by the Government.

4.6.1 Training program management team planning conference. A training program management team planning conference shall be convened by the chairperson for the purpose of organizing the joint Government and contractor efforts. The planning conference shall serve to achieve mutual understanding of the scope of effort and responsibilities assigned to members.

4.6.2 Conference support and participation. The contractor shall provide administrative support for and participation in the joint team conferences. The contractor shall assure the participation of subcontractors, as appropriate, provide facilities, technical data, and technical support as appropriate. The contractor shall provide minutes and agendas as specified (see 6.3).

4.7 Data application requirement. The contractor shall use, to the maximum extent possible, all Government approved data incidental to other contracted requirements that can be applied toward satisfying task requirements of this standard. The contractor shall incorporate the manpower, personnel, and training (MPT) requirements, Service policy and guidance, Service specified restrictions, and other integrated logistic support (ILS) elements into the design of the training program to ensure their most effective approach from a total MPT supportability standpoint.

4.7.1 Logistic support analysis (LSA)/ logistic support analysis record (LSAR) data. The contractor shall use all available LSA/LSAR data resulting from work performed in accordance with MIL-STD-1388-1 and MIL-STD-1388-2.

4.7.2 Data exchanges. Training program results shall be fed back to update the appropriate data sources. Automated interchange of technical information shall be in accordance with MIL-STD 1840.

4.7.3 Digital delivery of training data. When specified in the contract, training data shall be required in the form of electronic media (see 40.2 of Appendix C).

4.7.4 Integration/coordination of plans. The contractor shall insure full integration and coordination of all existing and developing data bases as a training plan prerequisite. Specifically, correlation between training program plans and integrated support plan and other logistics related plans specified in the contract shall be addressed.

4.8 Contractor conduct of training. The contracting activity will express all schedule, trainee input requirements, location (Government or contractor), and other requirements in the contract Statement of Work. The contractor shall conduct training as specified in the following requirements.

4.8.1 Facilities.

4.8.1.1 Classroom and practical application/laboratory facilities. For each training program there shall be a minimum of 36 square feet (3.312 square meters) of classroom floor space and a minimum of 75 square feet (6.967 square meters) of practical application/laboratory floor space per trainee. Classroom and practical/laboratory facilities shall be sufficiently soundproofed to ensure that ambient noises are held to a minimum and that the instructors can be clearly heard. All facilities shall have adequate heating/cooling, lighting, laboratory facilities, consumable supplies, and laboratory and classroom furniture necessary for the health, comfort, and convenience of the trainee.

4.8.1.2 Housing and messing facilities. When training is conducted at a non-Government facility, the contractor shall include as part of the proposal a listing of housing and messing facilities, and transportation available in the area of the training site.

4.8.2 Schedule of classes. Unless otherwise specified by the contracting activity, classes shall be scheduled on a 40-hour workweek basis, 8 hours per day, and 5 workdays per week. Class instruction periods for lecture/demonstration shall normally be 50 minutes duration with a 10-minute break between periods of instruction. The length of practical application periods may vary as the situation requires. The trainee may be assigned additional hours for homework. Holidays will be absorbed in the overall course length unless the contractor and the contracting activity mutually agree that additional time is required. To meet urgent requirements, the contracting activity may direct a second shift or accelerated training where circumstances and availability of system/equipment so dictate. The daily schedule of the training program(s) shall be conducted so as to allow optimum utilization of the system/equipment for training purposes.

4.8.3 Reporting instructions. Trainees will be directed to report to a designated individual at the training facility for endorsement of orders. The names of authorized trainees for each training program will be provided to the training facility prior to the course convening date. The training facility shall ensure that only personnel designated by the Government are in attendance and allowed to participate in training programs acquired under the provisions of this standard.

4.8.4 Trainee-instructor ratio. The trainee-instructor ratio shall be no greater than 25 to 1 in the theoretical phase of the course and no greater than 5 to 1 during the practical application phase.

4.8.5 Training equipment/material. The contractor shall provide those training equipment(s), test equipments, hand tools, and other materials, to be used in the training program not provided as Government-furnished property (GFP) (see 3.50). These items shall duplicate as much as necessary those items that will be used in the real operational environment. The contractor shall be responsible for maintaining all equipment and materials used in the training program in an operable/usable condition during each training program except for those periods of instruction that require rendering equipment inoperable, such as disassembly performed as a part of the training program. The contractor shall notify the contracting activity immediately by telephone when the equipment is not usable for training purposes. Upon completion of a training program, all GFP and contractor-acquired property (CAP) (see 3.21) used therein, that are to be returned to or become the property of the Government, shall be refurbished and restored to Government acceptance standards prior to requesting disposition instructions. This requirement for refurbishment will not apply to equipment and materials used in training programs at a Government training facility when a Government maintenance and repair capability has been previously established or if such effort is covered by separate existing contract or order items.

4.8.5.1 Government system or equipment availability. When training is performed at a Government site, the training system or equipment will be made available for a minimum of four (4) hours a day for the practical application requirement of the training programs. Due to conflicts with the using activity daily schedule, the availability of the training system or equipment may be after the normal duty hours, Monday through Friday.

4.8.5.2 Transferability. To the extent appropriate, the same training and instructional media materials shall be used in support of initial (factory) training instruction as that which is to be delivered to the Department of Defense service or agency for use in the classroom.

4.8.6 Monitoring/inspection. The contractor's facilities and training site may be visited at any time by representative(s) of the contracting activity to inspect, monitor, or appraise the development and conduct of the training program.

4.8.6.1 Monitoring of the training program. The contracting activity may request that a sample topic (lesson) or topics (lessons) be taught by the proposed instructor(s) before the start of the training program(s). The contracting activity has the right to reject an instructor, using

the critique of the instructor's topic (lesson) presentation as one of the factors. Representatives of the contracting activity and other designated Government activities may monitor and evaluate the training program to ensure that objectives and training requirements are being met. Any circumstance, that may be hindering the conduct of the training program will be reported to the appropriate representative of the contracting activity.

4.8.6.2 Inspection of facilities. Designated representatives of the contracting activity or other designated Government activities may visit the training facility prior to the start of the training program(s) to determine the adequacy of the classroom and laboratory spaces.

4.9 Security.

4.9.1 Security clearances. Non-Government personnel involved in the development or conduct of the training program and requiring access to a Government facility shall forward security clearances and visit requests to Government installations at least 30 days prior to the start of the training program.

4.9.2 Security regulations. All personnel shall be required to comply with the security requirements applicable to the system/equipment upon which the training is to be conducted. Security regulations shall apply to personnel, training materials, and space being used for the training program. Contractors security shall be in accordance with DoD 5220.22-M.

5. DETAILED REQUIREMENTS

5.1 Task descriptions. Individual task requirements are provided for the management; analysis and design; development; and support, conduct and advisory services for training programs as follows:

TASK SECTION 100. TRAINING PROGRAM MANAGEMENT

Task 101 Training Situation Analysis
Task 102 Training Program Development and Management Planning
Task 103 Training Development Control
Task 104 Training Equipment Requirements Identification
Task 105 Training Implementation Planning
Task 106 Training Implementation Control
Task 107 Training Evaluation Planning

TASK SECTION 200. TRAINING PROGRAM ANALYSIS AND DESIGN

Task 201 Mission, Collective, Individual, and Occupational Training Task Analysis
Task 202 Training Technology Assessment
Task 203 Learning Analysis
Task 204 Media Selection
Task 205 Tests for Measurement of Personnel Achievement
Task 206 Training System Alternatives Identification
Task 207 Training System Modification Requirements
Task 208 Training System Functional Requirements
Task 209 Training Facilities Requirements Identification
Task 210 Lesson Specifications Development
Task 211 Instructional Media Design

TASK SECTION 300. TRAINING MATERIALS DEVELOPMENT

Task 301 Instructional Media Production
Task 302 Training System Support Materials
Task 303 Training Materials for Instructors
Task 304 Training Materials for Trainees

TASK SECTION 400. TRAINING SUPPORT, CONDUCT AND ADVISORY SERVICES

Task 401 Conduct of Training
Task 402 Training Evaluation

5.1.1 Task structure. Tasks are comprised of four parts:

(a) The purpose identifies the rationale for each task. The paragraph that provides the purpose will be designated by .1 following the task number (for example, 102.1, 203.1, 207.1 and other tasks numbers).

(b) The task description identifies the detailed subtasks that comprise the overall task. The paragraph that provides the task description will be designated by .2 following the task number.

(c) The task input identifies the general information needed to define the scope and parameters of each task, and specific information required for task completion. The paragraph that provides the task input will be designated by .3 following the task number. Task inputs may contain two types of information as follows:

(1) Details to be specified are listed in the first subparagraph under task inputs. They identify information required to be specified in the requirements document and provided by the contracting activity to enable task performance.

(2) Inputs resulting from performance of other task requirements are listed in the second and subsequent subparagraphs under task inputs. These inputs are information developed by completion of another task under this (or another) standard, and that are necessary for task or subtask completion.

(d) The task output identifies the expected results from task performance. The paragraph that provides the task output will be designated by .4 following the task number. Task outputs may contain two types of information as follows:

(1) Data items are listed in the first subparagraphs under task output. These outputs are for instances where deliverable data may be required, and are cross-referenced to 6.3 of this standard.

(2) Information requirements are listed following data item requirements. These outputs identify requirements for instances where information is needed to perform other tasks contained in this standard.

5.1.2 Task notations. When an element of task input or output is only applicable to certain subtasks under the task description, the applicable subtask numbers are identified in parentheses following that specific input or output. Where subtask numbers are not listed in parentheses following the specific input or output, the input or output applies to all subtasks listed under the task description.

5.1.3 Application of tasks and subtasks. Tasks and subtasks provide an orderly and logical way to ensure complete and effective accomplishment of contractual requirements. Section 100 tasks may be selectively applied during any phase of the training development process. Sections 200 through 400 generally follow a systematic approach to training development and would normally be serially applied, as required. As a general rule, the determination of which tasks, subtasks, inputs and outputs apply is dictated by the complexity of the training program needed to support the materiel (weapon) system, equipment or function.

5.1.4 Tailoring of tasks and subtasks. Tailoring of tasks and subtasks is required when applying this standard in requirements documents to ensure cost effective, streamlined training development. See Appendixes A and B for suggested tailoring guidance.

5.1.5 Task output delivery/approval. When a task output product is to be delivered to the contracting activity, the related Data Item Description delivery and approval will be cited as a deliverable in the requirements document (see 6.3). The contracting activity may also reserve approval of task output information required for performance of other tasks by citing the schedule and procedures for approval in the requirements document.

TASK SECTION 100

TRAINING PROGRAM MANAGEMENT

Task section 100 provides the specific requirements for planning and managing the cost effective analysis, design, development, implementation, and evaluation of training.

TASK 101
TRAINING SITUATION ANALYSIS

101.1 PURPOSE. The purpose of Task 101 is to verify the effectiveness of training systems to meet existing training needs and to survey existing training programs for applicability to new requirements.

101.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

101.2.1 Identify the training system deficiency or emerging needs that may impact the existing training program, perform trade-off and cost analysis, develop alternative solutions, and provide conclusions and recommendations.

101.2.2 Develop recommendations for implementing the alternative training program, justification for the recommendations and the impact if not implemented.

101.2.3 Develop life-cycle training cost data on a per student (or per organizational team) basis.

101.3 TASK INPUT.

101.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

101.3.1.1 Identification of deliverable data items.

101.3.1.2 Materiel (weapon) system mission, equipment, and performance data.

101.3.1.3 New or modified materiel (weapon) system equipment requirements.

101.3.1.4 Existing training system data.

101.3.2 Input results from MIL-STD-1388-1, Logistic Support Analysis (LSA) Tasks 201 (Use Study) and 203 (Comparative Analysis) (See 4.7.1).

101.4 TASK OUTPUT.

101.4.1 Training Situation Analysis Report (See 6.3, DI-ILSS-81069).

101.4.2 Training system deficiencies and alternative solutions. (101.2.1)

101.4.3 Listing of existing training equipment/material applicable to the new requirements. (101.2.1)

101.4.4 Listing of projected facilities required to support training. (101.2.1)

101.4.5 Justification for training program development and impact if not implemented. (101.2.2)

101.4.6 Life cycle training cost data. (101.2.3)

TASK 102
TRAINING PROGRAM DEVELOPMENT AND MANAGEMENT PLANNING

102.1 PURPOSE. The purpose of Task 102 is to plan for training development which will identify and integrate all training program management tasks required to accomplish program requirements; and to determine the overall scope and strategy for a training program.

102.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

102.2.1 Describe resource requirements, data requirements, procedures, milestones, and the time phasing of each task included in the contractual requirements and its interrelationship to other tasks.

102.2.2 Conduct a training program development make-or-buy analysis.

102.2.3 Develop the approach, procedures, and management controls to be employed in consideration of follow-on configuration control of curricula materials.

102.2.4 Develop the approach, procedures, and management controls to be used in integrating course changes and new training resources into course curricula and instructional methodologies.

102.2.5 Develop a plan for test item construction and test design that (1) identifies the planning, designing, and development factors for all test items and tests and (2) describes the overall testing strategy.

102.2.6 Determine training development in-process review requirements.

102.2.7 Develop a chart identifying milestones and time phasing of each task included in the contractual requirements.

102.2.8 Develop individual training strategies and identify long-range plans for training needs, resource requirements, resource acquisition system, and program changes.

102.2.9 Develop a plan to validate training materials, test items, and tests.

102.2.10 Develop a training program development internal surveillance plan.

102.2.11 Develop a quality control program that specifies the indicators and controls used to ensure that tasks are correctly performed and deliverables meet contractual requirements.

102.2.12 Integrate the logistics support analysis (LSA) plan and integrated support plan output with training development planning.

102.2.13 Provide identification of any major subcontractors, and major subcontractor efforts, their inherent control and management, and the proposed procedures for administration of the efforts as applied to subcontractors.

102.2.14 Identify the relationship of task requirements to the program work breakdown structure and identify management system to provide cost and progress reporting.

102.3 TASK INPUT.

102.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

102.3.1.1 Identification of deliverable data items.

102.3.1.2 Identification of each training program task that is required to be performed as part of the training program development.

102.3.1.3 Identification of the time period over which each task is to be conducted.

102.3.1.4 Identification of approval procedures for plan updates.

102.3.1.5 Service specific training and training development policies and procedures.

102.3.1.6 Identification of government furnished equipment, material, and existing related training course data.

102.3.1.7 Approved Training Situation Analysis Report from Task 101.4.1.

102.3.2 Input listing of projected facilities required to support training from Task 101.4.4.

102.3.3 Input results of MIL-STD-1388-1, LSA Tasks 102 (LSA Plan), 201 (Use Study), 205 (Controls and Constraints), 303 (Evaluation of Alternatives and Tradeoff Analysis), 401 (Task Analysis), and training constraints (See 4.7.1).

102.3.4 Input Integrated Support Plan data.

102.4 TASK OUTPUT.

102.4.1 Training Program Development and Management Plan (102.2.1 through 102.2.14, except 102.2.8) (See 6.3, DI-ILSS-81070).

102.4.2 Individual Training Plan (102.2.8) (See 6.3, DI-ILSS-81071).

102.4.3 Training program development make-or-buy analysis data. (102.2.2)

102.4.4 Training test design data. (102.2.5)

102.4.5 Training development milestones. (102.2.7)

102.4.6 Individual training strategies and long range plans for training needs, resource requirements, resource acquisition system, and program changes. (102.2.8)

102.4.7 Planning data for test item, tests, and training materials validation. (102.2.9)

102.4.8 Training program development internal surveillance planning data. (102.2.10)

102.4.9 Integrated Support Plan training planning data (102.2.12).

TASK 103
TRAINING DEVELOPMENT CONTROL

103.1 PURPOSE. The purpose of Task 103 is to develop the controls necessary for cost effective training analysis, design, and development.

103.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

103.2.1 Develop or adapt a media selection model that defines the procedures for selecting primary and alternate media to be used in supporting the training objectives. The automation capabilities of the model, hardware, and software requirements, current ownership, and unique proprietary licensure on the model shall be identified.

103.2.2 Identify the relationship between media selection and course outline development (for example, course outline followed by media selection by learning skills and knowledge requirements; or media selection by objective followed by course outline development).

103.2.3 Develop a process flow chart that shows the media selection model decision points, and the sequence of events, and which identifies questions asked.

103.2.4 Develop a media allocation table that identifies media options applicable to the selection model and identifies attributes and values assigned for each type of media.

103.2.5 Develop examples of application of the media selection model. (Sample objectives processed through the model shall demonstrate how the model differentiates among media across the full range.)

103.2.6 Develop a synopsis of the research and theoretical basis of the model and a history of the model's prior application.

103.2.7 Identify all cost, schedule, and other resource constraint elements that could impact support of candidate media (for example, trainer facilities, environmental or personnel limitations or both, and other elements).

103.2.8 Develop conference agenda.

103.2.9 Develop conference minutes.

103.2.10 Conduct in-process reviews.

103.2.11 Prepare training development contract progress reports.

103.3 TASK INPUT.

103.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

103.3.1.1 Identification of deliverable data items.

103.3.1.2 Identification of underlying family of media selection models to be utilized as the basis for development of the media selection model. (103.2.1)

103.3.1.3 Identification of the expected mission and functional requirements of the parent materiel (weapon) system, equipment or function. (103.2.1)

103.3.1.4 Identification of approval procedures for media selection model. (103.2.1)

103.3.2 Input listing of existing training equipment, state-of-the-art and emerging technology to support training equipment from Task 202.4.2. (103.2.1, 103.2.4)

103.3.3 Input listing of existing training, state-of-the-art and emerging technology to support training requirements from Task 202.4.3. (103.2.1, 103.2.4)

103.3.4 Input results of MIL-STD-1388-1, LSA Tasks 201 (Use Study), 205 (Controls and Constraints), 303 (Evaluation of Alternatives and Tradeoff Analysis), 401 (Task Analysis), and training constraints (See 4.7.1).

103.3.5 Input Integrated Support Plan data.

103.4 TASK OUTPUT.

103.4.1 Media Selection Model Report (103.2.1 through 103.2.7), (See 6.3, DI-ILSS-81072).

103.4.2 Conference Agenda (103.2.8), (See 6.3, DI-A-7088).

103.4.3 Conference Minutes (103.2.9, 103.2.10), (See 6.3, DI-A-7089).

103.4.4 Program Progress Report (103.2.11), (See 6.3, DI-MGMT-80555).

103.4.5 Examples of application of the media selection model. (103.2.5)

103.4.6 Synopsis of the theoretical basis of the model and history of the models prior application. (103.2.6)

103.4.7 Integrated Support Plan training planning data. (103.2.7)

TASK 104
TRAINING EQUIPMENT REQUIREMENTS IDENTIFICATION

104.1 PURPOSE. The purpose of Task 104 is to identify training equipment requirements for the proposed training.

104.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

104.2.1 Identify training equipment requi l develop rationale for the requirements.

104.2.2 Identify sites for installation of the training equipment.

104.2.3 Develop a projection of the logistics support requirements for the training equipment.

104.2.4 Define the scope of required training equipment.

104.2.5 Develop the initial budgetary estimate and detailed justification for the training equipment.

104.2.6 Develop descriptions and a listing of training equipment.

104.3 TASK INPUT.

104.3.1 Details to be specified in the appropriate contractual documents will include the following:

104.3.1.1 Identification of deliverable data items.

104.3.2 Input training system deficiencies and alternative solutions from Task 101.4.2. (104.2.1)

104.3.3 Input individual training strategies and long range plans for training needs, resource requirements, resource acquisition system, and program changes from Task 102.4.6. (104.2.1, 104.2.2, 104.2.3)

104.3.4 Input examples of application of the media selection model from Task 103.4.5. (104.2.1)

104.3.5 Input a listing of media selected from Task 204.4.5. (104.2.1)

104.3.6 Input interactive courseware media features required to support learning events and activities from Task 204.4.6. (104.2.1)

104.3.7 Input identification of best suited training system alternatives from Task 206.4.2. (104.2.1)

104.4 TASK OUTPUT.

104.4.1 Training Equipment Requirements Document (See 6.3, DI-ILSS-81073).

104.4.2 The rationale to include equipment changes, and the capabilities of the training equipment. (104.2.1)

104.4.3 Scope of required training equipment. (104.2.4)

104.4.4 Initial budgetary estimate and justification for training equipment. (104.2.5)

104.4.5 Descriptions and listing of training equipment. (104.2.6)

TASK 105
TRAINING IMPLEMENTATION PLANNING

105.1 PURPOSE. The purpose of Task 105 is to develop the plan for how training will be implemented and managed at each training location.

105.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

105.2.1 Identify type and location of training, scope (overview) of training courses, resource requirements, data requirements, procedures, milestones, and time phasing of the conduct of training.

105.2.2 Identify the personnel roles and responsibilities relating to training, procedures and techniques, communication and coordination requirements.

105.2.3 Identify the overall management structure and organization, and the functions required to implement the training program.

105.2.4 Develop an implementation schedule and a contingency plan for the high risk milestones.

105.2.5 Develop a training system integration schedule.

105.2.6 Identify trainee prerequisites, scheduling, evaluation, and recording requirements.

105.2.7 Identify instructor training, utilization, and scheduling requirements.

105.2.8 Identify training materials management requirements.

105.2.9 Identify training equipment storage, maintenance, supply support, and utilization requirements.

105.2.10 Identify facilities utilization requirements.

105.2.11 Develop a resource requirements list in accordance with Service specific guidance.

105.3 TASK INPUT.

105.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

105.3.1.1 Identification of deliverable data items.

105.3.1.2 Identification of trainee throughput data.

105.3.1.3 Identification of approval procedures for plan updates.

105.3.1.4 Identification of course titles and identification numbers.

105.3.1.5 Identification of training locations.

105.3.1.6 Approved Training Program Development and Management Plan from Task 102.4.1.

105.3.1.7 Approved Instructional Media Design Report from Task 211.4.1.

105.3.2 Input integrated support plan training planning data from Task 103.4.7.

105.3.3 Input listing of existing training equipment/material applicable to the new requirements from Task 101.4.3. (105.2.1, 105.2.9)

105.3.4 Input justification for training program development and impact if not implemented from Task 101.4.5. (105.2.1)

105.3.5 Input training development milestones from Task 102.4.5. (105.2.4)

105.3.6 Input individual training strategies and long-range plans for training needs, resource requirements, resource acquisition system, and program changes from Task 102.4.6.

105.3.7 Input scope of required training equipment from Task 104.4.3. (105.2.1, 105.2.5, 105.2.8 through 105.2.10)

105.3.8 Input description and listing of training equipment from Task 104.4.5. (105.2.1)

105.3.9 Input instructional setting description for each training task from Task 203.4.8. (105.2.10)

105.3.10 Input sequential listing of learning objectives, events, and activities from Task 203.4.9. (105.2.1)

105.3.11 Input course mission statement(s) from Task 203.4.11. (105.2.1)

105.3.12 Input listing of course learning objectives, parts, sections, and topics from Task 203.4.12. (105.2.1)

105.3.13 Input listing of references and special tools from Task 203.4.14. (105.2.1)

105.3.14 Input course lengths and class size from Task 203.4.15. (105.2.1, 105.2.4, 105.2.6, 105.2.7)

105.3.15 Input instructional methodology for each learning objective from Task 203.4.17. (105.2.8)

105.3.16 Input a chart showing time sequencing of learning events and activities in relation to primary and alternate media delivery systems from Task 204.4.4. (105.2.8)

105.3.17 Input listing of selected media from Task 204.4.5. (105.2.8, 105.2.9)

105.3.18 Input listing of facilities required to support training from Task 209.4.5. (105.2.10)

105.3.19 Input listing of adjunctive materials required to support instruction media from Task 211.4.11 (105.2.5).

105.3.20 Input listing of irstructional media and support materials from Task 301.4.4. (105.2.1, 105.2.8, 105.2.9)

105.3.21 Input interactive courseware, software and hardware integration and installation procedures documentation from Task 301.4.8.

105.3.22 Input results of MIL-STD-1388-1, LSA Tasks 201 (Use Study), 303 (Evaluation of Alternatives and Tradeoff Analysis), and 401 (Task Analysis). (See 4.7.1).

105.4 TASK OUTPUT.

105.4.1 Training System Implementation Plan, (See 6.3, DI-ILSS-81074).

105.4.2 Listing of type and location of training, scope of training courses, resource requirements, data requirements, procedures, milestones, and time phasing of the conduct of training. (105.2.1)

105.4.3 Training system integration schedule. (105.2.5)

105.4.4 Resource requirements list. (105.2.11)

105.4.5 Integrated Support Plan training planning data.

TASK 106
TRAINING IMPLEMENTATION CONTROL

106.1 PURPOSE. The purpose of Task 106 is to develop training course control management information.

106.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

106.2.1 Develop course descriptive data in accordance with Service specific guidance.

106.2.2 Develop a training course resource requirements utilization schedule.

106.2.3 Develop a course presentation schedule chart.

106.2.4 Develop a description of the training content (subjects, topics and tasks), duration of instruction, and resources required to conduct both peacetime and mobilization training in an instructional setting.

106.3 TASK INPUT.

106.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

106.3.1.1 Identification of deliverable data items.

106.3.1.2 Service specific training control policies and procedures. (106.2.1, 106.2.4)

106.3.2 Input individual training strategies and long-range plans for training needs, resource requirements, resource acquisition system, and program changes from Task 102.4.6. (106.2.4)

106.3.3 Input resource requirements list from Task 105.4.4. (106.2.2)

106.3.4 Input individual training standards data from Task 201.4.14. (106.2.4)

106.3.5 Input target population prerequisite knowledge and skills from Task 203.4.2. (106.2.4)

106.3.6 Input learning objectives from Task 203.4.5. (106.2.1)

106.3.7 Input a sequential listing of learning objectives, events, and activities from Task 203.4.9. (106.2.3)

106.3.8 Input course mission statement from Task 203.4.11. (106.2.1)

106.3.9 Input profile item-to-learning objectives assignment cross reference chart from Task 203.4.13. (106.2.1)

106.3.10 Input instructional methodology for each learning objective from Task 203.4.17. (106.2.4)

106.3.11 Input instructional media course map from Task 211.4.3. (106.2.4)

106.3.12 Input interactive courseware software system manager design data from Task 211.4.4. (106.2.4)

106.3.13 Input instructional media course design strategies from Task 211.4.5. (106.2.4)

106.3.14 Input instructional media test design strategies from Task 211.4.9. (106.2.4)

106.3.15 Input interactive courseware lesson content, logic data files, and support software from Task 301.4.3. (106.2.4)

106.3.16 Input commands and interface mechanisms used that ensure interactive courseware portability from Task 301.4.6. (106.2.4)

106.3.17 Input applicable technical manuals, publications, engineering data, performance and design specification data, and software documentation. (See 4.1.1)

106.3.18 Input results of MIL-STD-1388-1, LSA Task 205 (Supportability and Supportability Related Design Factors). (See 4.7.1)

106.4 TASK OUTPUT.

106.4.1 Training Course Control Document (See 6.3, DI-ILSS-81075).

106.4.2 Course control data. (106.2.4)

TASK 107
TRAINING EVALUATION PLANNING

107.1 PURPOSE. The purpose of Task 107 is the development of a plan for independent evaluation of training effectiveness; training capabilities evaluations; and the related personnel, organization, functions, procedures, and schedule for the evaluation.

107.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

107.2.1 Identify the evaluation methodology (empirical, analytic, internal, or external), data to be collected, and procedures for analyzing the collected data.

107.2.2 Identify the resources required for testing (personnel, materials, and special equipment).

107.2.3 Identify the activities responsible for testing and evaluation.

107.2.4 Identify the roles of all personnel involved (command, instructors, trainees, evaluators, graduates, and supervisors of graduates).

107.2.5 Develop the schedule for conducting tests and performing the critical events in the evaluation.

107.2.6 Develop the data collection instruments (checklists, questionnaires, structured interviews, and job performance indicators for evaluation).

107.3 TASK INPUT.

107.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

107.3.1.1 Identification of deliverable data items.

107.3.1.2 Identification of target system to be evaluated.

107.3.1.3 Identification of type and purpose of evaluation to be conducted.

107.3.2 Input course control data from Task 106.4.2. (107.2.1, 107.2.2, 107.2.4)

107.3.3 Input listing of job performance measures from Task 201.4.10.

107.3.4 Input results from MIL-STD-1388-1, LSA Task 501 (Supportability Test, Evaluation and Verification). (see 4.7.1)

107.4 TASK OUTPUT.

107.4.1 Training Evaluation Plan (See 6.3, DI-ILSS-81076).

107.4.2 Training evaluation planning data.

TASK SECTION 200

TRAINING PROGRAM ANALYSIS AND DESIGN

Task section 200 provides the specific requirements for identification of all elements necessary for the analysis and design of training programs.

TASK 201
MISSION, COLLECTIVE, INDIVIDUAL, AND OCCUPATIONAL TRAINING TASK ANALYSIS

201.1 PURPOSE. The purpose of Task 201 is to conduct mission, collective, individual, and occupational training task analysis, and to identify collective and individual tasks that require training.

201.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

201.2.1 Conduct mission analysis in accordance with Service specific guidance.

201.2.2 Develop functional requirements and task statements that are related to functions not covered by Logistics Support Analysis. (Results of LSA Tasks 301 and 401 of MIL-STD-1388-1 or equivalent analysis will be used for materiel (weapon) systems/equipment operation and maintenance tasks.) (See 4.7.1).

201.2.3 Develop a collective job task list, conduct a collective training task selection and analysis in accordance with Service specific guidance, and develop a listing of collective training tasks.

201.2.4 Develop an individual job task list, conduct an individual training task selection and analysis in accordance with Service specific guidance, and develop listings of occupationally grouped individual training tasks.

201.2.5 Develop and validate job performance measures for training tasks.

201.2.6 Identify manpower required to operate and maintain the materiel (weapon) system under development.

201.2.7 Develop personnel performance profiles in accordance with Service specific guidance.

201.2.8 Develop training path system requirements in accordance with Service specific guidance.

201.2.9 Develop an individual training standards system in accordance with Service specific guidance.

201.2.10 Conduct occupational analyses in accordance with Service specific guidance.

201.2.11 Develop an individual to collective training task cross reference matrix.

201.2.12 Identify all performance elements and subelements for each training task.

201.2.13 Develop a listing of job tasks that can be satisfied by job aids.

201.3 TASK INPUT.

201.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

201.3.1.1 Identification of deliverable data items.

201.3.1.2 Service specific occupational skills data.

201.3.1.3 Service specific guidance or regulations.

201.3.1.4 Existing lists of skills and knowledge required to operate and maintain identified equipment, subsystems or systems, perform a task/function, or acquire prerequisite skills and knowledge applicable to training all categories of personnel. (201.2.7, 201.2.8)

201.3.1.5 Criteria to be used for training task selection.

201.3.2 Input training development milestones from Task 102.4.5.

201.3.3 Input results of MIL-STD-1388-1, LSA Tasks 201 (Use Study), 301 (Functional Requirements), 303 (Evaluation of Alternatives and Tradeoff Analysis) and 401 (Task Analysis). (201.2.1, 201.2.3, 201.2.4, 201.2.6, 201.2.7, 201.2.8) (See 4.7.1).

201.4 TASK OUTPUT.

201.4.1 Mission Performance Standards (201.2.1) (See 6.3, DI-ILSS-81077).

201.4.2 Mission, Collective, Individual, and Occupational Training Task Analysis Report (201.2.2 through 201.2.6, 201.2.10 through 201.2.13) (See 6.3, DI-ILSS-81078).

201.4.3 Personnel Performance Profile Tables (201.2.7) (See 6.3, DI-ILSS-81079).

201.4.4 Training Path System Report (201.2.8) (See 6.3, DI-ILSS-81080).

201.4.5 Individual Training Standards (201.2.9) (See 6.3, DI-ILSS-81081).

201.4.6 Job task list. (201.2.3, 201.2.4)

201.4.7 List of collective training tasks cross-referenced to individual tasks. (201.2.3, 201.2.4 and 201.2.11)

201.4.8 Training task list. (201.2.3, 201.2.4)

201.4.9 List of occupationally grouped individual training tasks. (201.2.4)

201.4.10 Listing of job performance measures. (201.2.5)

201.4.11 Manpower planning data. (201.2.6)

201.4.12 Personnel performance profiles data. (201.2.7)

201.4.13 Training path system data. (201.2.8)

201.4.14 Individual training standards data. (201.2.9)

201.4.15 Occupational analysis data. (201.2.10)

201.4.16 Training data for updates to MIL-STD-1388-1, LSA Tasks 301 and 402. (See 4.7.1 and 4.7.2)

201.4.17 Criteria used for training task selection. (201.2.3, 201.2.4)

201.4.18 List of job tasks that can be satisfied by job aids. (201.2.13)

201.4.19 Task skill level. (201.2.4)

201.4.20 Collective task standards. (201.2.3)

201.4.21 Individual task standards. (201.2.4)

TASK 202
TRAINING TECHNOLOGY ASSESSMENT

202.1 PURPOSE. The purpose of Task 202 is to identify training technology used in existing training systems, state-of-the-art and emerging technology to support training requirements.

202.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

202.2.1 Conduct a survey of existing training equipment, state-of-the-art, and emerging technology.

202.2.2 Conduct a survey of existing training, state-of-the-art and emerging technology.

202.2.3 Perform a comparative analysis of the survey results and identify technology applicable to the training program or training equipment identified.

202.2.4 Develop a summary of the comparative analysis results.

202.3 TASK INPUT.

202.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

202.3.1.1 Identification of deliverable data items.

202.3.1.2 Emerging training requirements.

202.3.2 Input individual training strategies and long-range plans for training needs, resource requirements, resource acquisition system, and program changes from Task 102.4.6.

202.3.3 Input results of MIL-STD-1388-1, LSA Tasks 201 (Use Study), 204 (Technology Opportunities), 205 (Supportability and Supportability Related Design Factors), 301 (Functional Requirements), 303 (Evaluation of Alternatives and Tradeoff Analysis) and 401 (Task Analysis). (See 4.7.1)

202.4 TASK OUTPUT.

202.4.1 Training Technology Assessment Report (See 6.3, DI-ILSS-81082).

202.4.2 Listing of existing training equipment, state-of-the-art and emerging technology to support training equipment. (202.2.1)

202.4.3 Listing of existing training, state-of-the-art and emerging technology to support training requirements. (202.2.2)

202.4.4 Training technology assessment results for update of logistic support analysis/logistic support analysis records.

TASK 203
LEARNING ANALYSIS

203.1 PURPOSE. The purpose of Task 203 is to analyze the tasks or personnel performance requirements or both, that have been selected for training and develop training design requirements.

203.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

203.2.1 Identify the target population prerequisite knowledge and skills.

203.2.2 Develop a listing of all required knowledge and skills for each collective training task.

203.2.3 Develop a listing of all required knowledge and skills for each individual training task.

203.2.4 Develop learning objectives.

203.2.5 Develop knowledge and skill requirements for learning objectives.

203.2.6 Group the learning objectives by occupational skill areas and skill level, then arrange the learning objectives in a hierarchal relationship.

203.2.7 Determine types of learning and associated learning principles for each objective.

203.2.8 Determine the instructional setting for training tasks.

203.2.9 Develop a sequential listing of learning objectives, activities and events.

203.2.10 Develop a cross reference of learning objectives to training tasks to job tasks.

203.2.11 Develop course mission statements.

203.2.12 Develop course learning objectives, parts, sections, and topics, sequence them in the order in which they are to be taught and provide a descriptive statement of the coverage and content for each topic in accordance with Service specific guidance.

203.2.13 Develop profile item-to-topic objective assignment charts in accordance with Service specific guidance.

203.2.14 Develop a listing of reference materials and special tools required to support the learning objectives.

203.2.15 Identify course lengths, and minimum, optimum, and maximum class sizes.

203.2.16 Develop a listing of learning objectives that can be satisfied by job aids.

203.2.17 Determine the instructional methodology for each learning objective.

203.3 TASK INPUT.

203.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

203.3.1.1 Identification of deliverable data items.

203.3.1.2 Identification of the parent system, equipment, or the military mission, or combination thereof, for which personnel will be trained. (203.2.1)

203.3.1.3 Identification of target population skill and knowledge capabilities. (203.2.3)

203.3.1.4 Service specific guidance and regulations. (203.2.12 through 203.2.15)

203.3.1.5 Approved Mission, Collective, Individual, and Occupational Training Task Analysis Report from Task 201.4.2.

203.3.2 Input job task list from Task 201.4.6. (203.2.10)

203.3.3 Input training task list from Task 201.4.8. (203.2.2, 203.2.4, 203.2.5, 203.2.9, 203.2.10)

203.3.4 Input manpower planning data from Task 201.4.11. (203.2.2)

203.3.5 Input personnel performance profiles data from Task 201.4.12. (203.2.13)

203.3.6 Input training path system data from Task 201.4.13. (203.2.13)

203.3.7 Input task skill level from Task 201.4.19. (203.2.6)

203.3.8 Input results of MIL-STD-1388-1, LSA Task 401 (Task Analysis) (See 4.7.1).

203.4 TASK OUTPUT.

203.4.1 Learning Analysis Report (See 6.3, DI-ILSS-81083).

203.4.2 Target population prerequisite knowledge and skills. (203.2.1)

203.4.3 Listing of knowledge and skills required to support each collective training task. (203.2.2)

203.4.4 Listing of knowledge and skills required to support each individual training task. (203.2.3)

203.4.5 Learning objectives. (203.2.4)

203.4.6 Listing of knowledge and skills required to support learning objectives. (203.2.5)

203.4.7 Types of learning and associated principles for each learning objective. (203.2.7)

203.4.8 Instructional setting description for each training task. (203.2.8)

203.4.9 A sequential listing of learning objectives, events and activities. (203.2.9)

203.4.10 Objectives to training tasks to job tasks cross- reference listing. (203.2.10)

203.4.11 Course mission statement(s). (203.2.11)

203.4.12 Listing of course learning objectives, parts, sections, and topics. (203.2.12)

203.4.13 Profile item-to-learning objective assignment cross- reference chart. (203.2.13)

203.4.14 Listing of references and special tools. (203.2.14)

203.4.15 Course lengths and class size. (203.2.15)

203.4.16 Listing of learning objectives that can be satisfied by job aids. (203.2.16)

203.4.17 Instructional methodology for each learning objective. (203.2.17)

203.4.18 Learning analysis results for update of LSA/LSARs. (See 4.7.1 and 4.7.2).

TASK 204
MEDIA SELECTION

204.1 PURPOSE. The purpose of Task 204 is to identify the media required to support the attainment of learning objectives and to provide the basis for development of training system functional specifications.

204.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

204.2.1 Identify media attributes required to support learning events and activities.

204.2.2 Identify media features required to support learning events and activities.

204.2.3 Identify the primary and alternate media delivery systems capable of supporting the media attributes.

204.2.4 Develop a chart showing time sequencing of learning events and activities in relation to primary and alternate media delivery systems.

204.2.5 Develop a cost analysis comparison with competitive alternatives and contractor recommended approach.

204.2.6 Develop a listing of selected media.

204.3 TASK INPUT.

204.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

204.3.1.1 Identification of deliverable data items.

204.3.1.2 Identification of program schedule and funding, and other key resource constraints that may impact support of selected media.

204.3.1.3 Approved Media Selection Model Report from Task 103.4.1.

204.3.1.4 Approved Learning Analysis Report from Task 203.4.1.

204.3.2 Input life cycle training cost data from task 101.4.6. (204.2.5)

204.3.3 Input manpower planning data from Task 201.4.11. (204.2.2)

204.3.4 Input criteria used for training task selection from Task 201.4.17. (204.2.1, 204.2.2, 204.2.3)

204.3.5 Input list of job tasks that can be satisfied by job aids from Task 201.4.18.

204.3.6 Input learning objectives from Task 203.4.5. (204.2.1, 204.2.2, 204.3.3)

204.3.7 Input types of learning and associated principles for each learning objective from Task 203.4.7. (204.2.1, 204.2.2)

204.3.8 Input instructional setting description for each training task from Task 203.4.8. (204.2.1 through 204.2.4)

204.3.9 Input a sequential listing of learning objectives, events and activities from Task 203.4.9.

204.3.10 Input course mission statement(s) from Task 203.4.11.

204.3.11 Input listing of references and special tools from Task 203.4.14. (204.2.3, 204.2.4)

204.4 TASK OUTPUT.

204.4.1 Media Selection Report (See 6.3, DI-ILSS-81084).

204.4.2 Listing of media attributes required to support learning events and activities. (204.2.1)

204.4.3 Listing of primary and alternate media delivery systems capable of supporting the media attributes. (204.2.3)

204.4.4 A chart showing time sequencing of learning events and activities in relation to primary and alternate media delivery systems. (204.2.4)

204.4.5 Listing of media selected. (204.2.6)

204.4.6 Interactive courseware media features required to support learning events and activities. (204.2.2)

TASK 205
TESTS FOR MEASUREMENT OF PERSONNEL ACHIEVEMENT

205.1 PURPOSE. The purpose of Task 205 is to develop instruments to measure personnel attainment of knowledge and skills.

205.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

205.2.1 Develop test items that evaluate personnel attainment of skill or knowledge. Test items shall have the following parameters:

205.2.1.1 Are based on the corresponding learning objectives or performance standards (individual or collective).

205.2.1.2 Are performance or performance based to evaluate knowledge elements necessary for skill performance.

205.2.1.3 Measure the ability of the trainee to perform explicitly defined procedures of a process.

205.2.1.4 Measure the ability of the trainee to produce an end product which meets predetermined standards.

205.2.1.5 Exercise the cognitive, psychomotor, and attitudinal domains.

205.2.1.6 Multiple-choice test items shall consist of a stem and alternatives as follows:

205.2.1.6.1 The multiple choice test item stem shall express the problem statement and contain all information necessary to define the test item's intent. The stem shall be a complete question (closed stem) or an incomplete statement (open stem) and contain a verb. Interrogatory test items shall be complete sentences punctuated with a question mark.

205.2.1.6.2 Multiple-choice test item alternatives shall present the possible answers. Only one alternative shall be correct and the remaining alternatives plausible but incorrect. Alternatives shall be expressed in positive language, be grammatically consistent with the stem, and placed below the stem preceded by lower case letters (a, b, c). Alternatives which delineate an order of magnitude (for example, microgram, kilogram, gram; 2.5, 2.0, 1.5, 1.0) shall be arranged in ascending or descending order.

205.2.1.7 Matching test items shall consist of directions, stimuli and responses. Each stimulus shall have only one correct response. Stimuli shall consist of a list of words or phrases. Stimulus shall be identified by arabic numbers. An answer slot shall be provided for each stimulus. The ratio of response to stimuli shall be 3 to 2. All stimuli and all responses shall appear on the same page and concise directions which specify how to match stimulus and

response shall be provided. Responses related to the stimulus shall be identified by lower case letters (a, b, c).

205.2.1.8 Completion test items shall consist of directions and stimulus. The directions shall explicitly define how to respond to the stimulus and the degree of accuracy and length of response expected. The stimulus shall provide the information necessary for the trainee to respond and require the trainee to: produce a key word or phrase which completes a statement; develop a listing; define a term; perform computational functions; answer a question; or express an opinion.

205.2.1.9 Test items which support discovery learning shall support testing by gaming, provide for simulation of job performance.

205.2.1.10 Identify supporting data (illustrations, figures, tables, or directions on where to find the necessary data) for test items and resources required to support the test item.

205.2.2 Develop written, performance and electronically administered tests which have the following parameters:

205.2.2.1 A combination of test items measuring process and product attainment.

205.2.2.2 Test items with multiple levels of difficulty.

205.2.2.3 Provide branching instructions based upon the trainee's responses.

205.2.2.4 Require the trainee to exercise multiple levels of the cognitive, psycho-motor, and attitudinal domains.

205.2.2.5 Replicate the actual job performance environment whenever possible.

205.2.2.6 Answer keys capable of electronic or manual scoring.

205.2.2.7 Test items with related figures, tables, or illustrations on the same, or facing page.

205.2.3 Validate each test item to ensure discrimination between the performer and non-performer.

205.2.4 Validate each test to ensure discrimination between the performer and non-performer.

205.2.5 Develop directions and definitions for use by the administrator in the conduct of testing and the trainee in execution of the test.

205.2.6 Develop job performance improvement program test item prescriptions in accordance with Service specific guidance or regulations.

205.2.7 Develop a cross reference matrix of test items to learning objectives to training tasks to job tasks.

205.2.8 Develop test answer keys capable of electronic or manual scoring.

205.2.9 Identify resources required to support test items.

205.3 TASK INPUT.

205.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

205.3.1.1 Identification of deliverable data items.

205.3.1.2 Service specific guidance and information

205.3.1.3 Approved Learning Analysis Report from Task 203.4.1.

205.3.2 Input training test design data from Task 102.4.4.

205.3.3 Input individual training standards data from Task 201.4.14.

205.3.4 Input job task list from Task 201.4.6.

205.3.5 Input training task list from Task 201.4.8.

205.3.6 Input listing of job performance measures from Task 201.4.10.

205.3.7 Input learning objectives from Task 203.4.5.

205.3.8 Input listing of knowledge and skills required to support learning objectives from Task 203.4.6.

205.3.9 Input listing of references and special tools from Task 203.4.14.

205.3.10 Input test items validation results data from Task 402.4.5.

205.4 TASK OUTPUT.

205.4.1 Test Package (See 6.3, DI-ILSS-81085).

205.4.2 Test items. (205.2.1)

205.4.3 Tests. (205.2.2)

205.4.4 Test item validation data. (205.2.3)

205.4.5 Test validation data. (205.2.4)

205.4.6 Test administrator guidance data. (205.2.5)

205.4.7 Job performance improvement program test item prescriptions. (205.2.6)

205.4.8 Test item to learning objective to training task to job task cross reference matrix. (205.2.7)

205.4.9 Test answer keys. (205.2.8)

TASK 206
TRAINING SYSTEM ALTERNATIVES IDENTIFICATION

206.1 PURPOSE. The purpose of Task 206 is to identify the various elements of alternative training systems to meet specific training requirements.

206.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

206.2.1 Identify the instructional staff organization, operational qualifications and experience, workload, manning level, turnover rate, and instructional qualifications for evaluation against training system alternatives.

206.2.2 Identify the projected class schedule, entry level, pipeline, attrition rate, and readiness deficiencies.

206.2.3 Develop a description of the relationship of the course to the operational mission or follow-on courses, or both, learning objectives, length of the course, structure of the course, and performance measurement methods.

206.2.4 Identify the alternate training equipment and facilities that could support training.

206.2.5 Evaluate each training system alternative in terms of its capability to meet the training constraints and requirements.

206.2.6 Evaluate each alternate, in terms of cost, relative to its capability to meet training constraints and requirements.

206.2.7 Identify the best suited alternate based on training requirements, constraints, capability, and cost, and develop justification for selection of the alternative.

206.3 TASK INPUT.

206.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

206.3.1.1 Identification of deliverable data items.

206.3.1.2 Identification of the specific training requirement.

206.3.1.3 Identification of related existing courses data.

206.3.1.4 Approved Learning Analysis Report from Task 203.4.1.

206.3.2 Input listing of existing training equipment, state-of-the-art and emerging technology to support training equipment from Task 202.4.2. (206.2.6)

206.3.3 Input listing of media selected from Task 204.4.5. (206.2.4)

206.3.4 Input interactive courseware media features required to support learning events and activities from Task 204.4.6. (206.2.4)

206.3.5 Input results of MIL-STD-1388-1, LSA Task 401 (Task Analysis). (See 4.7.1)

206.4 TASK OUTPUT.

206.4.1 Training System Alternatives Report (See 6.3, DI-ILSS-81086).

206.4.2 Identification of best suited training system alternatives. (206.2.7)

TASK 207
TRAINING SYSTEM MODIFICATION REQUIREMENTS

207.1 PURPOSE. The purpose of Task 207 is to define the training system modifications required to enhance training capability.

207.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

207.2.1 Define training system changes that can correct the identified training deficiencies.

207.2.2 Develop training system modifications required and identify the resulting impact on the training system.

207.2.3 Perform a comparative analysis of the training system emerging technologies against the materiel (weapon) system and training system life expectancy.

207.2.4 Define any anticipated training system savings, improvements in training effectiveness, and anticipated materiel (weapon) system readiness gains.

207.2.5 Project the logistics support requirements resulting from training system modifications.

207.2.6 Define the scope of the required training system modifications.

207.2.7 Develop a budgetary estimate and detailed justification for the required training system modifications.

207.2.8 Identify potential for inter-Service utilization.

207.3 TASK INPUT.

207.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

207.3.1.1 Identification of deliverable data items.

207.3.1.2 Identification of materiel (weapon) system/equipment's remaining life span, related training equipment, trainee pipeline and locations.

207.3.1.3 Identification of existing materiel (weapon) system/equipment lesson/trainee guides and training system specifications.

207.3.1.4 Identification of materiel (weapon) system/equipment change requirement.

207.3.2 Input training system deficiencies and alternative solutions from Task 101.4.2. (207.2.1)

207.3.3 Input identification of best suited training system alternatives from Task 206.4.2. (207.2.2)

207.3.4 Input results of MIL-STD-1388-1, LSA Tasks 203 (Comparative analysis) and 204 (Technological Opportunities). (207.2.3) (See 4.7.1).

207.4 TASK OUTPUT.

207.4.1 Training System Modification Report (See 6.3, DI-ILSS-81087).

207.4.2 Scope of required modifications to training system. (207.2.6)

207.4.3 Training system and emerging technologies comparative analysis results for update of logistic support analysis/logistic support analysis records. (207.2.3)

TASK 208
TRAINING SYSTEM FUNCTIONAL REQUIREMENTS

208.1 PURPOSE. The purpose of Task 208 is to develop the training functional characteristics requirements that are to be used as the baseline for developing training system specifications.

208.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

208.2.1 Identify training requirements, constraints, normal and abnormal scenarios, materiel (weapon) system mission and functions for the training system.

208.2.2 Develop training functional characteristics, elements, and modes of operation for the training system.

208.2.3 Identify the environmental, physical, and functional fidelity requirements of system components to be represented on the training system.

208.2.4 Identify the training equipment requirements and integration with the training system.

208.2.5 Define the reliability, availability, and maintainability parameters and project the logistics support and additional manning requirements.

208.2.6 Develop a budgetary estimate with detailed justification.

208.2.7 Develop a pre-planned product improvement program proposal.

208.3 TASK INPUT.

208.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

208.3.1.1 Identification of deliverable data items.

208.3.1.2 Identification of the expected mission and functional characteristics of the parent materiel (weapon) system, equipment, or the military mission which drives the training requirement, or any combination of these characteristics.

208.3.1.3 Identification of the number of trainees to be trained per year.

208.3.1.4 Approved Training Technology Assessment Report from Task 202.4.1.

208.3.1.5 Identification of existing training equipment.

208.3.2 Input training system deficiencies and alternative solutions from Task 101.4.2. (208.2.1)

208.3.3 Input rationale to include equipment changes and the capabilities of the training equipment from Task 104.4.2. (208.2.3)

208.3.4 Input scope of req training equipment from Task 104.4.3. (208.2.6)

208.3.5 Input initial budgetary estimate and justification for training equipment from Task 104.4.4. (208.2.6)

208.3.6 Input descriptions and listing of training equipment from Task 104.4.5.

208.3.7 Input listing of target population prerequisite knowledge and skills from Task 203.4.2. (208.2.2)

208.3.8 Input learning objectives from Task 203.4.5. (208.2.1)

208.3.9 Input instructional setting descrip[illegible]ch training task from Task 203.4.8. (208.2.1)

208.3.10 Input a sequential listing of learning [illegible]es, events and activities from Task 203.4.9. (208.2.1, 208.2.2)

208.3.11 Input interactive courseware media features required to support learning events and activities from Task 204.4.6.

208.3.12 Input scope of required modifications to training system from Task 207.4.2. (208.2.6)

208.4 TASK OUTPUT.

208.4.1 Training System Functional Characteristics Report (See 6.3, DI-ILSS-81088).

208.4.2 Training requirements, constraints, normal and abnormal scenarios, materiel (weapon) system mission and functions for the training system. (208.2.1)

208.4.3 Training functional characteristics, elements, and modes of operation for the training system. (208.2.2)

208.4.4 Environmental, physical, and functional fidelity requirements of system components to be represented on the training system. (208.2.3)

208.4.5 Training equipment requirements and integration with the training system. (208.2.4)

208.4.6 Reliability, availability, and maintainability parameters and project the logistics support and additional manning requirements. (208.2.5)

208.4.7 Budgetary estimate with detailed justification. (208.2.6)

TASK 209
TRAINING FACILITIES REQUIREMENTS IDENTIFICATION

209.1 PURPOSE. The purpose of Task 209 is to identify the specific requirements of training facilities.

209.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

209.2.1 Identify the type and size of training facility required.

209.2.2 Identify available contractor facilities that meet the training facilities requirement.

209.2.3 Identify available Services facilities that meet the training facilities requirement.

209.2.4 Identify any contractor construction or rehabilitation requirement.

209.2.5 Identify Services facilities rehabilitation requirements.

209.2.6 Identify Services Military Construction (MILCON) requirements.

209.2.7 Conduct a trade-off analysis for contractor versus Service facilities, and provide a budgetary estimate for selection.

209.2.8 Develop an initial budgetary estimate and detailed justification for Service rehabilitation or MILCON requirements.

209.2.9 Develop a project development brochure (PDB-1) for Service rehabilitation or MILCON requirements.

209.3 TASK INPUT.

209.3.1 Details to be specified in the appropriate contractual documents will include identification of deliverable data items.

209.3.2 Input MIL-STD-1388-2, LSAR F (Facilities Requirements). (See 4.7.1).

209.3.3 Input listing of projected facilities required to support training from Task 101.4.4.

209.3.4 Input individual training strategies and long range plans for training needs, resource requirements, resource acquisition system, and program changes from Task 102.4.6.

209.3.5 Input descriptions and listing of training equipment from Task 104.4.5. (209.2.1)

209.3.6 Input course length and class size from Task 203.4.15. (209.2.1)

209.3.7 Input training equipment requirements and integration with the training system from Task 208.4.5.

209.3.8 Input results of MIL-STD-1388-1, LSA Task 401 (Task Analysis). (See 4.7.1).

209.4 TASK OUTPUT.

209.4.1 Training Facilities Report (See 6.3, DI-ILSS-81089).

209.4.2 Rehabilitation estimates. (209.2.5)

209.4.3 Initial budgetary estimate and detailed justification for service rehabilitation or MILCON requirement. (209.2.8)

209.4.4 PDB-1. (209.2.9)

209.4.5 Listing of facilities required to support training. (209.2.1)

TASK 210
LESSON SPECIFICATIONS DEVELOPMENT

210.1 PURPOSE. The purpose of Task 210 is to identify requirements for the development of lesson specifications that identify subject matter content, training strategies, and learning activities.

210.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

210.2.1 Develop an overview of the lesson, including why the lesson is required and how it is related to the total training system.

210.2.2 Develop top level flow diagrams showing the sequence and relationships among topics within the sections and objectives within the lessons.

210.2.3 Develop a training support requirements matrix.

210.2.4 Define the course substance to support each learning objective, to include the type of behavior required, training strategy, common error analysis, and instance type.

210.2.5 Identify potential for inter-Service utilization of applicable lesson specifications.

210.3 TASK INPUT.

210.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

210.3.1.1 Identification of deliverable data items.

210.3.1.2 Approved Media Selection Report from Task 204.4.1.

210.3.1.3 Approved Learning Analysis Report from Task 203.4.1.

210.3.2 Input listing of existing training, state-of-the-art and emerging technology to support training requirements from Task 202.4.3. (210.2.4)

210.3.3 Input learning objectives from Task 203.4.5.

210.3.4 Input types of learning and associated principles for each learning objective from Task 203.4.7.

210.3.5 Input instructional setting description for each training task from Task 203.4.8.

210.3.6 Input a sequential listing of learning objectives, events and activities from Task 203.4.9.

210.3.7 Input instructional methodology for each learning objective from Task 203.4.17.

210.3.8 Input a chart showing time sequencing of learning events and activities in relation to primary and alternate media delivery systems from Task 204.4.4.

210.3.9 Input listing of media selected from Task 204.4.5.

210.3.10 Input interactive courseware media features required to support learning events and activities from Task 204.4.6. (201.2.3, 210.2.4)

210.4 TASK OUTPUT.

210.4.1 Lesson Specifications Report (See 6.3, DI-ILSS-81090).

210.4.2 Lesson specifications. (210.2.1 through 210.2.4)

210.4.3 Inter-Service utilization applicability. (210.2.5)

210.4.4 Top level flow diagrams showing the sequence and relationships among topics within the sections and objectives within the lessons. (210.2.2)

210.4.5 Course substance that supports each learning objective, to include the type of behavior required, training strategy, common error analysis, and instance type. (210.2.4)

TASK 211
INSTRUCTIONAL MEDIA DESIGN

211.1 PURPOSE. The purpose of Task 211 is to design the instructional media required to support the attainment of learning objectives.

211.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

211.2.1 Develop interactive courseware conventions.

211.2.2 Develop an instructional media course map.

211.2.3 Design an interactive courseware software system manager.

211.2.4 Develop instructional media course design strategies.

211.2.5 Develop instructional media lesson design strategies.

211.2.6 Develop instructional media tentative production specifications.

211.2.7 Develop interactive courseware detailed flow diagrams with branching alternatives.

211.2.8 Develop instructional media test design strategies.

211.2.9 Develop a listing of baseline reference materials used in lesson design strategies.

211.2.10 Develop a listing of adjunctive materials required to support instructional media.

211.2.11 Identify commands and interface mechanisms to be used that ensure interactive courseware portability.

211.2.12 Develop an abstract for interactive courseware.

211.3 TASK INPUT.

211.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

211.3.1.1 Identification of deliverable data items.

211.3.1.2 Identification of program schedule and funding, and other key resource constraints that may impact support of instructional media.

211.3.1.3 Approved Learning Analysis Report from Task 203.4.1.

211.3.2 Input descriptions and listing of training equipment from Task 104.4.5. (211.2.6)

211.3.3 Input individual training standards data from Task 201.4.14. (211.2.7)

211.3.4 Input criteria used for training task selection from Task 201.4.17. (211.2.2, 211.2.4, 211.2.7)

211.3.5 Input target population prerequisite knowledge and skills from Task 203.4.2. (211.2.7)

211.3.6 Input listing of knowledge and skills required to support each collective training task from Task 203.4.3. (211.2.7)

211.3.7 Input listing of knowledge and skills required to support each individual training task from Task 203.4.4. (211.2.7)

211.3.8 Input learning objectives from Task 203.4.5. (211.2.2, 211.2.4, 211.2.7)

211.3.9 Input listing of knowledge and skills required to support learning objectives from Task 203.4.6. (211.2.7)

211.3.10 Input types of learning and associated principles for each learning objective from Task 203.4.7. (211.2.2, 211.2.4, 211.2.7)

211.3.11 Input instructional setting description for each training task from Task 203.4.8. (211.2.2)

211.3.12 Input a sequential listing of learning objectives, events and activities from Task 203.4.9. (211.2.7)

211.3.13 Input course mission statements from Task 203.4.11. (211.2.2)

211.3.14 Input listing and references and special tools from Task 203.4.14. (211.2.7)

211.3.15 Input listing of media attributes required to support learning events and activities from Task 204.4.2. (211.2.5)

211.3.16 Input listing of primary and alternate media delivery systems capable of supporting the media attributes from Task 204.4.3. (211.2.1, 211.2.4, 211.2.6)

211.3.17 Input a chart showing time sequencing of learning events and activities in relation to primary and alternate media delivery systems from Task 204.4.4. (211.2.2)

211.3.18 Input listing of media selected from Task 204.4.5. (211.2.2)

211.3.19 Input interactive courseware media features required to support learning events and activities from Task 204.4.6. (211.2.7)

211.3.20 Input test item to learning objective to training task to task cross reference matrix from Task 205.4.8. (211.2.7, 211.2.8)

211.3.21 Input scope of required modifications to training system from Task 207.4.2.

211.3.22 Input training requirements, constraints, normal and abnormal scenarios, materiel weapon) system mission and functions for the training system from Task 208.4.2. (211.2.2, 211.2.4, 211.2.5, 211.2.7, 211.2.8)

211.3.23 Input training functional characteristics, elements, and modes of operation for the training system from Task 208.4.3. (211.2.2, 211.2.4, 211.2.5, 211.2.7, 211.2.8)

211.3.24 Input environmental, physical, and functional fidelity requirements of system components to be represented on the training system from Task 208.4.4. (211.2.2, 211.2.4, 211.2.5, 211.2.7, 211.2.8)

211.3.25 Input training equipment requirements and integration with the training system from Task 208.4.5. (211.2.2)

211.3.26 Input reliability, availability, and maintainability parameters and project the logistics support and additional manning requirements from Task 208.4.6. (211.2.6)

211.3.27 Input top level flow diagrams showing the sequence and relationships among topics within the sections and objectives within the lessons from Task 210.4.4. (211.2.7)

211.3.28 Input course substance that supports each learning objective, to include the type of behavior required, training strategy, common error analysis, and instance type from Task 210.4.5. (211.2.5, 211.2.7)

211.3.29 Input portability commands and interface mechanisms from Appendix D. (211.2.11)

211.4 TASK OUTPUT.

211.4.1 Instructional Media Design Report (See 6.3, DI-ILSS-81091).

211.4.2 Interactive courseware conventions. (211.2.1)

211.4.3 Instructional media course map. (211.2.2)

211.4.4 Interactive courseware software system manager design data. (211.2.3)

211.4.5 Instructional media course design strategies. (211.2.4)

211.4.6 Instructional media lesson design strategies. (211.2.5)

211.4.7 Instructional media tentative production specifications. (211.2.6)

211.4.8 Interactive courseware detailed flow diagrams with branching alternatives. (211.2.7)

211.4.9 Instructional media test design strategies. (211.2.8)

211.4.10 Listing of baseline reference materials used in lesson design strategies. (211.2.9)

211.4.11 Listing of adjunctive materials required to support the instructional media. (211.2.10)

211.4.12 Commands and interface mechanisms to be used that ensure interactive courseware portability. (211.2.11)

211.4.13 Interactive cou. ware abstract. (211.2.12)

TASK SECTION 300

TRAINING MATERIALS DEVELOPMENT

Task section 300 provides the specific requirement for systematically developing the training materials to be utilized in training courses.

TASK 301
INSTRUCTIONAL MEDIA PRODUCTION

301.1 PURPOSE. The purpose of Task 301 is to develop training instructional media packages.

301.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

301.2.1 Develop an instructional media video shot and production support plan.

301.2.2 Develop instructional media script.

301.2.3 Develop instructional media story boards to include video/audio/graphics as specified.

301.2.4 Develop an instructional media video shot list.

301.2.5 Develop visual instructional media to present the subject matter.

301.2.6 Develop audio instructional media to present the subject matter.

301.2.7 Develop an instructional media edit decision list.

301.2.8 Develop interactive courseware (ICW).

301.2.9 Develop and document interactive courseware lesson content, logic data files, and support software.

301.2.10 Develop a listing of instructional media and support materials.

301.2.11 Develop adjunctive materials required to support the instructional media.

301.2.12 Identify commands and interface mechanisms used that ensure interactive courseware portability.

301.2.13 Develop and document legal clearances.

301.2.14 Develop job aids.

301.2.15 Identify and document interactive courseware, software and hardware integration and installation procedures.

301.3 TASK INPUT.

301.3.1 Details to be specified in the appropriate contractual documents will include:

301.3.1.1 Identification of deliverable data items.

301.3.1.2 Approved Instructional Media Design Report from Task 211.4.1.

301.3.2 Input training development milestones from Task 102.4.5.

301.3.3 Input job task list from Task 201.4.6. (301.2.1 through 301.2.10)

301.3.4 Input training task list from Task 201.4.8. (301.2.1 through 301.2.10)

301.3.5 Input list of job tasks that can be satisfied by job aids from Task 201.4.18. (301.2.14)

301.3.6 Input listing of knowledge and skills required to support each individual training task from Task 203.4.4. (301.2.1 through 301.2.4)

301.3.7 Input learning objectives from Task 203.4.5. (301.2.1 through 301.2.10)

301.3.8 Input listing of knowledge and skills required to support learning objectives from Task 203.4.6. (301.2.1 through 301.2.10)

301.3.9 Input types of learning and associated principles for each learning objective from Task 203.4.7. (301.2.1 through 301.2.10)

301.3.10 Input instructional setting description for each training task from Task 203.4.8. (301.2.8)

301.3.11 Input a sequential listing of learning objectives, events and activities Task 203.4.9. (301.2.1 through 301.2.10)

301.3.12 Input course mission statement(s) from Task 203.4.11. (301.2.1 through 301.2.10)

301.3.13 Input course lengths and class size from Task 203.4.15. (301.2.10)

301.3.14 Input listing of learning objectives that can be supported by job aids from Task 203.4.16. (301.2.14)

301.3.15 Input listing of primary and alternate media delivery systems capable of supporting the media attributes from Task 204.4.3. (301.2.8)

301.3.16 Input listing of media selected from Task 204.4.5. (301.2.1 through 301.2.10)

301.3.17 Input interactive courseware media features required to support learning events and activities from Task 204.4.6. (301.2.1, 301.2.2, 301.2.3, 301.2.5, 301.2.6, 301.2.8)

301.3.18 Input test items from Task 205.4.2. (301.2.1 through 301.2.10)

301.3.19 Input training requirements, constraints, normal and abnormal scenarios, materiel (weapon) system mission and functions for the training system from Task 208.4.2. (301.2.1 through 301.2.10)

301.3.20 Input course substance that supports each learning objective, to include the type of behavior required, training strategy, common error analysis, and instance type from Task 210.4.5. (301.2.1 through 301.2.10)

301.3.21 Input interactive courseware conventions from Task 211.4.2. (301.2.8)

301.3.22 Input instructional media course map from Task 211.4.3. (301.2.8)

301.3.23 Input interactive courseware software system manager design data from Task 211.4.4. (301.2.8)

301.3.24 Input instructional media course design strategies from Task 211.4.5. (301.2.8)

301.3.25 Input instructional media lesson design strategies from Task 211.4.6. (301.2.8)

301.3.26 Input instructional media tentative production specifications from Task 211.4.7. (301.2.8)

301.3.27 Input interactive courseware detailed flow diagrams with branching alternatives from Task 211.4.8. (301.2.8)

301.3.28 Input instructional media test design strategies from Task 211.4.9. (301.2.8)

301.3.29 Input listing of baseline reference materials used in lesson design strategies from Task 211.4.10. (301.2.8, 301.2.10)

301.3.30 Input listing of adjunctive materials required to support instructional media from Task 211.4.11. (301.2.11)

301.3.31 Input commands and interface mechanisms to be used that ensure interactive courseware portability from Task 211.4.12. (301.2.8, 301.2.9, 301.2.12)

301.3.32 Input "Red-lined" copy of lesson plans, trainee guides and instructional media materials from Task 402.4.3. (301.2.8)

301.3.33 Input applicable technical manuals, publications, engineering data, performance and design specification data and software documentation. (301.2.8) (See 4.1.1).

301.4 **TASK OUTPUT.**

301.4.1 Instructional Media Package (301.2.1 through 301.2.8, 301.2.11, 301.2.14) (See 6.3, DI-ILSS-81092).

301.4.2 Instructional Media Data Files (301.2.9, 301.2.12) (See 6.3, DI-ILSS-81093).

301.4.3 Interactive courseware lesson content, logic data files, and support software. (301.2.9)

301.4.4 Listing of instructional media and support materials. (301.2.10)

301.4.5 Instructional media (301.2.5, 301.2.6, 301.2.7).

301.4.6 Commands and interface mechanisms used that ensure interactive courseware portability. (301.2.12)

301.4.7 Visual and audio resource footage. (301.2.5, 301.2.6)

301.4.8 Interactive courseware, software and hardware integration and installation procedures documentation. (301.2.15)

TASK 302
TRAINING SYSTEM SUPPORT MATERIALS

302.1 PURPOSE. The purpose of Task 302 is to provide complete procedures for training equipment software system operation, evaluation and testing; and to develop the elements of training material that will enhance skills and knowledge of training system instructors/operators.

302.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

302.2.1 Develop training equipment software utilization, evaluation, and testing instructions as follows:

302.2.1.1 Identify complete operating procedures for the training equipment including the computer and peripherals.

302.2.1.2 Identify complete procedures for loading, running, and analyzing all readiness and system test procedures.

302.2.1.3 Identify complete procedures for performing all utility programs.

302.2.1.4 Identify procedures and information on file generators.

302.2.1.5 Identify complete descriptions of software flow, and performance characteristics.

302.2.1.6 Provide essential supplementary information to include references to applicable documents and a glossary of abbreviations, mnemonics, and terms.

302.3 TASK INPUT.

302.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

302.3.1.1 Identification of deliverable data items.

302.3.1.2 Identification of approved tasks for computer software system operators.

302.3.2 Input listing of type and location of training, scope of training courses, resource requirements, data requirements, procedures, milestones and time phasing of the conduct of training from Task 105.4.2.

302.3.3 Input "Red-lined" copy of lesson plans, trainee guides and instructional media materials from Task 402.4.3.

302.3.4 Input course control data from Task 106.4.2.

302.3.5 Input results of MIL-STD-1388-1, LSA Task 303 (Evaluation of Alternatives and Tradeoff Analysis) (See 4.7.1).

302.4 TASK OUTPUT

302.4.1 Trainer Software Application Handbook, (302.2.1), (See 6.3, DI-ILSS-81094).

302.4.2 Trainer software application handbook data. (302.2.1)

TASK 303
TRAINING MATERIALS FOR INSTRUCTORS

303.1 PURPOSE. The purpose of Task 303 is to develop the elements of the training materials which provide specific guidance and direction to the instructors or administrators.

303.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

303.2.1 Develop instructions and guidelines for instructors' use in a formal training environment.

303.2.2 Develop instructions and guidelines for instructors' use for training in an operational or laboratory environment.

303.2.3 Develop instructions and guidelines for instructors' use in guiding trainees through training in an on-the-job environment.

303.2.4 Develop instructions and guidelines for instructors' use in guiding trainees in a self-paced environment on an individual level.

303.2.5 Develop instructions and guidelines for administrators' use in assisting the trainee in the performance of self study.

303.2.6 Develop individual training publication packages to support the training and evaluation of individual task performance in accordance with Service specific guidance.

303.2.7 Develop collective training publication packages to support the training and evaluation of collective task performance in accordance with Service specific guidance.

303.2.8 Develop procedures for performing all operational tasks on the equipment in accordance with the operational concept as follows:

303.2.8.1 Describe the equipment subsystems, the theory of operation, and the leading particulars necessary for the instructors to operate the equipment.

303.2.8.2 Develop a complete set of training exercises for use by the instructors in conducting trainee training on the equipment and arrange the exercises in a logical sequential learning order.

303.2.8.3 Develop a detailed description and instructions on how to modify existing and develop new training exercises.

303.2.9 Develop data that supports curriculum modification.

303.2.10 Develop instructions and guidelines for interactive courseware managers.

303.2.11 Develop instructions and guidelines for users of interactive courseware.

303.3 TASK INPUT.

303.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

303.3.1.1 Identification of deliverable data items.

303.3.1.2 Service specific guidance and information

303.3.1.3 Approved individual training standards data from Task 201.4.14.

303.3.1.4 Approved Mission, Collective, Individual, and Occupational Training Task Analysis Report from Task 201.4.2.

303.3.1.5 Approved Media Selection Report from Task 204.4.1.

303.3.1.6 Approved Learning Analysis Report from Task 203.4.1.

303.3.1.7 Approved Lesson Specifications Report from Task 210.4.1.

303.3.2 Input course control data from Task 106.4.2.

303.3.3 Input list of collective training tasks cross-referenced to individual tasks from Task 201.4.7. (303.2.6, 303.2.7)

303.3.4 Input list of occupationally grouped individual training tasks from Task 201.4.9.

303.3.5 Input occupational analysis data from Task 201.4.15.

303.3.6 Input collective task standards from Task 201.4.20.

303.3.7 Input individual task standards from Task 201.4.21.

303.3.8 Input listing of knowledge and skills required to support each collective training task from Task 203.4.3.

303.3.9 Input listing of knowledge and skills required to support each individual training task from Task 203.4.4.

303.3.10 Input learning objectives from Task 203.4.5.

303.3.11 Input listing of knowledge and skills required to support learning objectives from Task 203.4.6.

303.3.12 Input instructional setting description for each training task from Task 203.4.8.

303.3.13 Input a sequential listing of learning objectives, events and activities from Task 203.4.9.

303.3.14 Input objectives to training tasks to job tasks cross- reference listing from Task 203.4.10.

303.3.15 Input course mission statement(s) from Task 203.4.11.

303.3.16 Input listing of course learning objectives, parts, sections, and topics from Task 203.4.12. (303.2.1, 303.2.5)

303.3.17 Input instructional methodology for each learning objective from Task 203.4.17.

303.3.18 Input test items from Task 205.4.2.

303.3.19 Input test item to learning objective to training task to task cross reference matrix from Task 205.4.8.

303.3.20 Input lesson specifications from Task 210.4.2. (303.2.1)

303.3.21 Input interactive courseware conventions from Task 211.4.2. (303.2.10, 303.2.11)

303.3.22 Input instructional media course map from Task 211.4.3. (303.2.10, 303.2.11)

303.3.23 Input interactive courseware software system manager design data from Task 211.4.4. (303.2.11)

303.3.24 Input instructional media course design strategies from Task 211.4.5. (303.2.10)

303.3.25 Input instructional media lesson design strategies from Task 211.4.6. (303.2.10. 303.2.11)

303.3.26 Input instructional media test design strategies from Task 211.4.9. (303.2.10, 303.2.11)

303.3.27 Input listing of baseline reference materials used in lesson design strategies from Task 211.4.10. (303.2.10, 303.2.11)

303.3.28 Input listing of adjunctive materials required to support the instructional media from Task 211.4.11. (303.2.10, 303.2.11)

303.3.29 Input interactive courseware lesson content and logic data files from Task 301.4.3. (303.2.10, 303.2.11)

303.3.30 Input listing of instructional media and support materials from Task 301.4.4.

303.3.31 Input "Red-lined" copy of lesson plans, trainee guides and instructional materials from Task 402.4.3.

303.3.32 Input training materials validation data from Task 402.4.4.

303.4 TASK OUTPUT.

303.4.1 Lesson Plan (303.2.1 through 303.2.4) (See 6.3, DI-ILSS-81095).

303.4.2 Training System Utilization Handbook (303.2.8, 303.2.10, 303.2.11) (See 6.3, DI-ILSS-81096).

303.4.3 Individual Task Training Package (303.2.6) (See 6.3, DI-ILSS-81097).

303.4.4 Collective Task Training Package (303.2.7) (See 6.3, DI-ILSS-81098).

303.4.5 Training Information Package (303.2.9) (See 6.3, DI-ILSS-81099).

303.4.6 Instructions and guidelines for instructors. (303.2.1 through 303.2.5)

303.4.7 Instructions and guidelines for interactive courseware managers. (303.2.10)

303.4.8 Instructions and guidelines for users of interactive courseware. (303.2.11)

TASK 304
TRAINING MATERIALS FOR TRAINEES

304.1 PURPOSE. The purpose of Task 304 is to develop the elements of the training material for trainees use.

304.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

304.2.1 Develop training materials for the trainees' use in a formal instructional setting.

304.2.2 Develop self-study materials for the trainees' use in a self-study environment.

304.2.3 Develop directions, procedures, and information for trainees' use in on-the-job training.

304.3 TASK INPUT.

304.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

304.3.1.1 Identification of deliverable data items.

304.3.1.2 Service specific guidance and information

304.3.1.3 Approved Media Selection Report from Task 204.4.1.

304.3.1.4 Approved Learning Analysis Report from Task 203.4.1.

304.3.1.5 Approved Lesson Specifications Report from Task 210.4.1.

304.3.1.6 Approved Individual Training Standards from Task 201.4.5.

304.3.2 Input resource requirements list from Task 105.4.4.

304.3.3 Input list of collective training tasks cross-referenced to individual tasks from Task 201.4.7.

304.3.4 Input list of occupationally grouped individual training tasks from Task 201.4.9.

304.3.5 Input personnel performance profiles data from Task 201.4.12 (304.2.3).

304.3.6 Input training path system data from Task 201.4.13 (304.2.3).

304.3.7 Input occupational analysis data from Task 201.4.15.

304.3.8 Input learning objectives from Task 203.4.5.

304.3.9 Input listing of knowledge and skills required to support learning objectives from Task 203.4.6.

304.3.10 Input instructional setting description for each training task from Task 203.4.8.

304.3.11 Input a sequential listing of learning objectives, events and activities from Task 203.4.9.

304.3.12 Input objectives to training tasks to job tasks cross- reference listing from Task 203.4.10.

304.3.13 Input course mission statement(s) from Task 203.4.11.

304.3.14 Input listing of course learning objectives, parts, sections, and topics from Task 203.4.12.

304.3.15 Input instructional methodology for each learning objective from Task 203.4.17.

304.3.16 Input test items from Task 205.4.2.

304.3.17 Input tests from Task 205.4.3.

304.3.18 Input lesson specifications from Task 210.4.2.

304.3.19 Input listing of instructional media and support materials required from Task 301.4.4.

304.3.20 Input instructions and guidelines for instructors from Task 303.4.6.

304.3.21 Input "Red-lined" copy of lesson plans, trainee guides and instructional media materials from Task 402.4.3.

304.3.22 Input training materials validation data from Task 402.4.4.

304.4 TASK OUTPUT.

304.4.1 Trainee Guide (304.2.1) (See 6.3, DI-ILSS-81100).

304.4.2 On-the-Job Training Handbook (304.2.3) (See 6.3, DI-ILSS-81101).

304.4.3 Trainee Orientation Guide (See 6.3, DI-ILSS-81102).

304.4.4 Nonresident Training Materials (304.2.2) (See 6.3, DI-ILSS-81103).

304.4.5 Trainee Materials.

TASK SECTION 400

TRAINING SUPPORT, CONDUCT AND ADVISORY SERVICES

Task section 400 provides the specific requirements for the conduct and evaluations of training courses.

TASK 401
CONDUCT OF TRAINING

401.1 PURPOSE. The purpose of Task 401 is to present (teach) a curriculum to meet specified training requirements, and evaluate course effectiveness.

401.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

401.2.1 Conduct training as prescribed in the approved Training Implementation Plan using lecture, recitation, laboratory, examination, study period, and demonstration processes and training media as appropriate to the training requirement.

401.2.2 Provide counseling and remediation instruction to solve trainee deficiencies in achievement of learning objectives.

401.2.3 Provide recommendations for trainee drop or setback due to deficient academic progress.

401.2.4 Provide an evaluation sheet to be used by trainees in the evaluation of a course.

401.2.5 Identify the grade level attained and additional information concerning the trainee's performance and attitude throughout the course.

401.2.6 Prepare a course completion certificate for each trainee satisfactorily completing the contractor conducted course.

401.2.7 Identify changes required to correct the training program problems.

401.3 TASK INPUT.

401.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

401.3.1.1 Identification of deliverable data items.

401.3.1.2 Identification of trainees with prerequisite skills and knowledge.

401.3.1.3 Student evaluation forms.

401.3.1.4 Training course evaluation forms.

401.3.1.5 Input approved Training System Implementation Plan from Task 105.4.1.

401.3.1.6 Approved Instructional Media Package from Task 301.4.1.

401.3.1.7 Approved Lesson Plan(s) from Task 303.4.1.

401.3.1.8 Approved Training System Utilization Handbook from Task 303.4.2.

401.3.1.9 Approved Trainee Guide from Task 304.4.1.

401.3.1.10 Approved Test Package from Task 205.4.1.

401.3.1.11 Approved Trainer Software Application Handbook from Task 302.4.1.

401.3.2 Input listing of type and location of training, scope of training courses, resource requirements, data requirements, procedures, milestones and time phasing of the conduct of training from Task 105.4.2.

401.3.3 Input test items from Task 205.4.2.

401.3.4 Input tests from Task 205.4.3.

401.3.5 Input test administrator guidance data from Task 205.4.6.

401.3.6 Input test item to learning objective to training task to job task cross reference matrix from Task 205.4.8.

401.3.7 Input test answer keys from Task 205.4.9.

401.3.8 Input instructional media from Task 301.4.5.

401.3.9 Input instructions and guidelines for instructors from Task 303.4.6.

401.3.10 Input trainee materials from Task 304.4.5.

401.3.11 Input instructions and guidelines for interactive courseware managers from Task 303.4.7.

401.3.12 Input instructions and guidelines for users of interactive courseware from Task 303.4.8.

401.4 TASK OUTPUT.

401.4.1 Trainee and Training Course Completion Report (See 6.3, DI-ILSS-81104).

TASK 402
TRAINING EVALUATION

402.1 PURPOSE. The purpose of Task 402 is to conduct validation of training materials and evaluations of training effectiveness or capabilities or both.

402.2 TASK DESCRIPTION. When specified (see 1.2), the following subtasks shall be performed:

402.2.1 Execute the evaluation plan.

402.2.2 Describe how the training program was evaluated.

402.2.3 Identify who conducted the evaluation and the resources used for that evaluation (personnel, materials, and special equipment).

402.2.4 Describe the training deficiencies that were identified as a result of the evaluation.

402.2.5 Identify necessary changes to curricula materials during the Services' initial conduct of training courses.

402.2.6 Provide guidance and assistance to the Services instructor during course conduct.

402.2.7 Conduct training materials validation.

402.2.8 Conduct test items validation and reliability.

402.2.9 Develop and submit for approval change control procedures.

402.3 TASK INPUT.

402.3.1 Details to be specified in the appropriate contractual documents will include the following, as applicable:

402.3.1.1 Identification of deliverable data items.

402.3.1.2 Approved Training Evaluation Plan from Task 107.4.1.

402.3.1.3 Approved Trainee and Training Course Completion Report from Task 401.4.1.

402.3.2 Input planning data for test items, tests, and training materials validation from Task 102.4.7. (402.2.7, 402.2.8)

402.3.3 Input training evaluation planning data from Task 107.4.2. (402.2.1 through 402.2.4)

402.3.4 Input test items from Task 205.4.2.

402.3.5 Input tests from Task 205.4.3.

402.3.6 Input test item to learning objective to training task to job task cross reference matrix from Task 205.4.8.

402.3.7 Input listing of instructional media and support materials from Task 301.4.4.

402.3.8 Input trainer software application handbook data from Task 302.4.2.

402.3.9 Input instructions and guidelines for instructors from Task 303.4.6.

402.3.10 Input trainee materials from Task 304.4.5.

402.4 TASK OUTPUT.

402.4.1 Training Evaluation and Validation Report (402.2.1 through 402.2.4, 402.2.7, 402.2.8). (See 6.3, DI-ILSS-81105)

402.4.2 Training Material Change Package (402.2.5 and 402.2.9). (See 6.3, DI-ILSS-81106)

402.4.3 "Red-lined" copy of lesson plans, trainee guides, and instructional media materials. (402.2.5)

402.4.4 Training materials validation results data. (402.2.7)

402.4.5 Test items validation results data. (402.2.8)

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. This standard is intended to be used in the development of military training programs, related data, and training materials.

6.2 Issue of DODISS. When this standard is used in acquisition, the applicable issue of the DODISS must be cited in the solicitation (see 2.1.1 of this standard and 20.1.1 of Appendix C herein).

6.3 Data requirements. The following Data Item Descriptions (DIDs) must be listed, as applicable, on the Contract Data Requirement List (DD Form 1423) when this standard is applied in a contract, in order to obtain the data, except where DOD FAR Supplement 27.475-1 exempts the requirement for a DD Form 1423.

Reference Task No.	DID Number	DID Title	Suggested Tailoring
101.4.1	DI-ILSS-81069	Training Situation Analysis Report	----
102.4.1	DI-ILSS-81070	Training Program Development and Management Plan	----
102.4.2	DI-ILSS-81071	Individual Training Plan	----
103.4.1	DI-ILSS-81072	Media Selection Model Report	----
103.4.2	DI-A-7088	Conference Agenda	----
103.4.3	DI-A-7089	Conference Minutes	----
103.4.4	DI-MGMT-80555	Program Progress Report	----
104.4.1	DI-ILSS-81073	Training Equipment Requirements Document	----
105.4.1	DI-ILSS-81074	Training System Implementation Plan	----
106.4.1	DI-ILSS-81075	Training Course Control Document	----
107.4.1	DI-ILSS-81076	Training Evaluation Plan	----
201.4.1	DI-ILSS-81077	Mission Performance Standards	----
201.4.2	DI-ILSS-81078	Mission, Collective, Individual, and Occupational Training Task Analysis Report	----
201.4.3	DI-ILSS-81079	Personnel Performance Profile Tables	----
201.4.4	DI-ILSS-81080	Training Path System Report	----
201.4.5	DI-ILSS-81081	Individual Training Standards	----
202.4.1	DI-ILSS-81082	Training Technology Assessment Report	----
203.4.1	DI-ILSS-81083	Learning Analysis Report	----
204.4.1	DI-ILSS-81084	Media Selection Report	----
205.4.1	DI-ILSS-81085	Test Package	----
206.4.1	DI-ILSS-81086	Training System Alternatives Report	----

Task No.	DID Number	DID Title	Suggested Tailoring
207.4.1	DI-ILSS-81087	Trainer System Modification Report	---
208.4.1	DI-ILSS-81088	Training System Functional Characteristics Report	---
209.4.1	DI-ILSS-81089	Training Facilities Report	---
210.4.1	DI-ILSS-81090	Lesson Specifications Report	---
211.4.1	DI-ILSS-81091	Instructional Media Design Report	---
301.4.1	DI-ILSS-81092	Instructional Media Package	---
301.4.2	DI-ILSS-81093	Instructional Media Data Files	---
302.4.1	DI-ILSS-81094	Trainer Software Application Handbook	---
303.4.1	DI-ILSS-81095	Lesson Plan	---
303.4.2	DI-ILSS-81096	Training System Utilization Handbook	---
303.4.3	DI-ILSS-81097	Individual Task Training Package	---
303.4.4	DI-ILSS-81098	Collective Task Training Package	---
303.4.5	DI-ILSS-81099	Training Information Package	---
304.4.1	DI-ILSS-81100	Trainee Guide	---
304.4.2	DI-ILSS-81101	On-the-Job Training Handbook	---
304.4.3	DI-ILSS-81102	Trainee Orientation Guide	---
304.4.4	DI-ILSS-81103	Nonresident Training Materials	---
401.4.1	DI-ILSS-81104	Trainee and Training Course Completion Report	---
402.4.1	DI-ILSS-81105	Training Evaluation and Validation Report	---
402.4.2	DI-ILSS-81106	Training Material Change Package	---

The above DIDs were those cleared as of the date of this standard. The current issue of DOD 5010.12-L, Acquisition Management Systems and Data Requirements Control List (AMSDL), must be researched to ensure that only current, cleared DIDs are cited on the DD Form 1423.

6.4 Tailoring guidance. To ensure proper application of this standard, invitation for bids, requests for proposals, and contractual Statements of Work (SOW) should tailor the requirements in Sections 4 and 5 and Appendixes C and D of this standard to exclude any unnecessary requirements. For example, if the SOW only requires revision to an existing Lesson Plan, then all paragraphs/tasks not related to the revision should be deleted.

6.5 Subject term (key word) listing

Analysis and Design
Conduct of Training
Development Control
Development Planning
Evaluation
Evaluation Planning

Facilities Requirements Identification
Implementation Planning
Implementation Control
Interactive Courseware
Learning Analysis
Lesson Specifications Development
Materials for Instructors
Materials for Trainees
Media Selection
Mission, Collective, Individual, and Occupational Training Task Analyses
Personnel Performance Profile
Situation Analysis
Script-Storyboard
Technology Assessment
Tests for Measurement of Personnel Achievement
Training Devices
Training Equipment
Training Path System
Training Systems

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Army - AV
Navy - SH
Air Force - 11
NSA - NS

Review activities:
Army - TM
Navy - AS, EC, MC, TD
Air Force - 94

Preparing activity:
Navy - SH

Agent:
Navy - OS
(Project ILSS-0029)

APPENDIX A

GUIDANCE FOR IMPLEMENTATION OF THE MILITARY TRAINING PROGRAM STANDARD (MIL-STD-1379D)

10. SCOPE

10.1 Scope. This appendix provides rationale and guidance for the selection and tailoring of military training program tasks in this standard. The appendix is intended to encourage and facilitate the correct and economical application of this standard to meet program objectives. This appendix is not a mandatory part of the standard. The information contained herein is intended for guidance only. Users of this appendix may include the Department of Defense contracting activities, Government in-house activities, and prime contractors or subcontractors who intend to impose military training program tasks upon suppliers.

10.2 How to use this appendix. This appendix provides guidance for the systematic structuring of military training programs (section 40) and tailoring the individual task and subtask requirements (section 60). The user should first review the major considerations affecting the development of the military training program contained in section 40 and then refer to the appropriate parts of section 60 based on the tasks and subtasks selected. Section 50 provides general guidance on preparing a sample package that illustrates the products desired from performance of selected tasks in MIL-STD-1379D. Tables, figures, and easy-to-follow procedures are provided in this appendix to facilitate use of MIL-STD-1379D.

20. APPLICABLE DOCUMENTS

20.1 Government documents. The following documents form a part of this appendix to the extent specified herein:

HANDBOOK

MILITARY

MIL-HDBK-245 Preparation of Statement of Work (SOW)

MIL-HDBK-248 Acquisition Streamlining

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from: Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094).

APPENDIX A

20.1.1 Service-specific Guidance. Appropriate Service-specific guidance is essential to supplement the general guidance provided in this appendix. When a training activity has comprehensive printed guidance that a contractor must follow and when it is too lengthy to include in a statement of work, the governing document for the guidance should be attached as an exhibit to the contract and referenced in the Statement of Work (SOW). Examples of governing documents are regulations, instructions, orders, and pamphlets.

30. DEFINITIONS

30.1 Terms, abbreviations, and acronyms used in this appendix. Key terms, abbreviations, and acronyms used in this appendix are defined in Section 3 of the basic standard.

40. APPLICATION GUIDANCE

40.1 Systems approach. Within the Department of Defense (DOD), a systems approach to training will be used to guide the development of training. This process consists of five phases: analysis, design, development, implementation, and evaluation. Training contracts that require the delivery of training and training materials to the Government should be written referencing task statements and the supporting Data Item Descriptions (DIDs) cited in MIL-STD-1379D. Tailored DIDs are valuable tools for the training activity; they enforce content and format requirements of deliverable data on a contractor and they improve the accuracy of the contractor's products. Figure A-1 provides a flow diagram of task input/output relationships. Figure A-2 provides a process flow diagram of tasks and data item description titles. Figure A-3 provides a detailed flow chart of the training program process through all phases of the weapon system acquisition process (life cycle).

40.2 Requirements planning. Careful planning and effective communication are the keys to a successful training program. A systematic and orderly planning process must be followed to ensure that decisions are made in a timely and cost-effective manner. Effective communication between the contracting, developing, training and supporting elements is essential to the planning process and will result in effective tailoring of MIL-STD-1379D. The contracting and training activities must communicate effectively to clarify responsibilities, create a plan of action and established milestones for carrying out required actions. The plan of action and milestones will enable each organization to manage the appropriate "who", "what", "where", and "when" aspects of the training requirement and to assess progress in meeting required milestones. The steps listed below are provided as general guidance to assist in planning for, and performing, some of the functions associated with the purchase of training programs, materials, and support under MIL-STD-1379D.

40.2.1 Analyzing the training requirement. A training requirement may emerge from such sources as the introduction of new systems and equipment, product improvements, or the need to upgrade the knowledge and skill levels of personnel. An analysis will determine the products that must be developed, and the content of those products, to meet the training requirements.

The contracting activity, working in conjunction with the end user in the training activity, must decide what is needed (for example: a new course, modification of an existing course, or training support functions). Table A-1 contains a list of the kinds of questions that the contracting activity will need to discuss with the training activity during needs analysis. This review will help to determine the specific training products to be purchased using MIL-STD-1379D. Answers to the kinds of questions in Table A-1 will generally result in a training plan which meets, but does not exceed, the training requirement.

40.2.2 Impact and trade-off analysis. The impact of the training requirement on current resources such as manpower, time, materials, equipment, facilities, and funding must be considered. Trade-off analyses, which assess benefits and risks associated with alternative solutions, should be performed to determine the most cost-effective means of meeting the training requirement. Such analyses may have been performed using analytic techniques such as HARDMAN, LSA or other Service-specific analytic tools. Tasks exist within MIL-STD-1379D which provide for contractor-developed plans to make decisions related to training requirements analysis, when such decisions cannot be made in a timely manner by the Government because of resource constraints.

40.2.3 Identifying contract deliverables. Each contractor supported training requirement will result in the acquisition of specific deliverables (products). Deliverables may be planning documents, instructional materials, the presentation of a course by a contractor, or other activities or items. Analysis of the training requirement makes evident the need to acquire specific deliverables, identifies any associated constraints, and becomes the basis for writing a SOW.

40.2.3.1 Statement of work (SOW). All tasks and products which the Government requires a contractor to perform or develop must be identified in the SOW.

40.2.3.2 Contract Data Requirements List (CDRL), DD Form 1423. All data item deliverable requirements must be documented on DD Form 1423. For the contractor to be held responsible for delivery of the product in a specific format, the format must be specified on the CDRL. Table A-2 is an index of DIDs organized according to the section of this standard in which they are cited. DIDs are cross-referenced under the "output" section of each task description in section 5 of MIL-STD-1379D.

40.3 Documenting tasks. This edition of MIL-STD-1379 is systematically organized along the line of work tasks to be performed, task inputs, and task outputs. When MIL-STD-1379D is used in preparing a SOW, specific task descriptions, inputs, and outputs must be selected from the standard, tailored to meet the specific requirement, and identified in the SOW. "Task descriptions" list work tasks associated with the production of specific data or deliverables. Each task description is made up of detailed subtasks. (Because the task descriptions provide comprehensive coverage and reflect different Service requirements, it is imperative that they be tailored appropriately.) "Task inputs" describe the general information needed to accomplish a

task. "Task outputs" identify the data or products expected from the performance of tasks. Table A-3 lists a series of steps that can be used to locate required tasks, inputs, outputs, and DIDs cited in this standard.

40.3.1 Tailoring program task application during phases of the materiel (weapon) systems/acquisition process. Table A-4 and Figure A-3 depicts a systems approach to training development related to the phases of the materiel (weapons) systems acquisition process.

40.3.2 Task input/output relationships. Figure A-1 describes the flow of data from the task that produces the data to the task(s) requiring the data for task completion. This figure is useful in ensuring the contract SOW and CDRL delivery schedule are in consonance with the systems approach to training.

40.3.3 Data Item Description/task/related task cross reference matrix. Table A-5 identifies relationships between data item descriptions, primary supporting tasks that produce the data, and related tasks. This table is useful in developing contract SOW when data items are to be delivered and accepted.

50. INDIVIDUAL SERVICE REQUIREMENTS.

50.1 Data requirements. Tables A-6 through A-9 list core DIDs organized by individual Service requirements. These lists illustrate the Service-specific DID set to be considered when contracting for development of a new course. Even the selection of these core DIDs requires significant Service-specific tailoring and should never be done without consultation training activity end user representatives who are familiar with the use of MIL-STD-1379D and the training system requirements. Additionally, the requirements planning conducted in 40.2 above, may render Tables A-6 through A-9 inappropriate for a particular training requirement. For example, selection of DIDs for training requirements other than course development may indicate the need to cite DIDs not identified in these tables. Again, effective communication between the contracting and training activities is essential.

50.2 Format requirements. Individual Services have specific formats required for their training materials. MIL-STD-1379D has made allowances for each Service to obtain data in the format which best meets its needs. Format requirements for all MIL-STD-1379D DIDs have been consolidated into Appendix C which allows for individual Services to specify the format in which selected data will be displayed or delivered. To provide the contractor with the appropriate guidance, the contracting activity (in consonance with the training activity) must develop and provide a "sample package" of materials. The purpose of a sample package is to illustrate the content and format requirements of a required data item. A sample package consists of examples of training materials and documentation which meet the needs of the end user. The basis for the sample package is simply the idea that "a picture is worth a thousand words." The sample package may be provided as an exhibit to a SOW or as Government Furnished Information (GFI) after contract award. The sample package should be reviewed at

the post award conference or within 30 days thereafter to ensure mutual understanding of the requirement by all parties.

50.2.1 Sample package development guidance. Input for preparation of a sample package must be provided by the training activity. Each sample package for a contract will contain some unique elements. Use of the same sample package for more than one contract, without careful review and approval, is not recommended. The result could be inconsistency between the specifications of a tailored DID and the sample package. The steps below are recommended for preparation of a sample package:

a. Review the contract training requirement, applicable SOW, and CDRL.

b. Ensure that the data specifications on the CDRL are consistent with SOW guidance. If they are inconsistent, the contracting activity and training activity must work together to resolve the problem before the SOW is released.

c. Request examples of written training materials and documentation from the training activity which illustrate data item format and content requirements to include in the sample package. The best method is to request the training activity to develop the sample package.

d. Ensure that the subject matter of the sample package is consistent with the type of training to be purchased. For example, if the Government intends to acquire aviation maintenance training materials, then the Government should prepare a sample package with aviation maintenance training examples, not aircrew examples.

e. Ensure that the subject matter of the sample package is consistent throughout. Do not vary subject matter areas within a sample package.

f. Review the sample package carefully to ensure that it correctly and adequately illustrates the content and format requirements of data items that have been tailored to current, Service-specific regulatory guidance.

60. TAILORING GUIDANCE.

60.1 General. Tailoring is the process by which individual requirements (sections, paragraphs, or sentences) of specifications, standards, and related documents are evaluated to determine the extent to which they are suitable for a specific system and equipment acquisition and the modification of these requirements to ensure that each achieves an optimal balance between operational needs and cost (see MIL-HDBK-248). The tailoring of data product standards and DID's should be limited to the exclusion of information requirements provisions.

APPENDIX A

60.2 How to tailor task statements and DIDs. Each task description, task input, task output, and DID identified in this standard must be tailored, based on Service-specific guidance, to meet the specific training requirement.

60.3 Training activity role. The training activity should assist the contracting activity in all tailoring decisions and in development of contract requirements.

60.4 Tailoring down. Tailoring does not permit the addition of requirements that increase the scope of existing DIDs. Tailoring "by deletion" is the rule. Table A-10 provides examples of how to tailor task statements and DIDs.

60.4.1 Task tailoring. Task tailoring refers to the selection of task descriptions, subtasks, and inputs associated with a specific task output, and the deletion of any unnecessary words or phrases from these statements. This information should be documented in the SOW. Task statements can be expanded only in the SOW.

60.4.2 Tailoring data requirements. A contracting activity rarely needs to acquire all data elements specified in a DID. Each data requirement must be tailored to meet the needs of the specific program. Data requirements are tailored by selecting applicable paragraphs in the relevant DIDs and deleting unnecessary paragraphs, words, or phrases. A general rule of thumb for tailoring judgment is the following: If the end user and the major divisions of the training activity have no apparent use for any data element(s) that can be acquired with the DID, and if no regulatory requirement exists for the data as part of the audit trail for the Service-specific training development system, then the unnecessary data element(s) should be deleted by indication in block 16 of the CDRL. In short, if no one can tell you how the data will be used, then the data probably will not be used and should not be purchased. It may be necessary to consolidate data elements from a variety of DIDs to obtain an integrated product. In this manner identifying specific data elements and developing a sample package to establish format can result in the creation of specially designed documents for unique requirements. The requirements must be cross-identified on the DD-1423s to ensure delivery of the desired product.

APPENDIX A

TABLE A-1. Planning data for contract training requirements.

The following are examples of the kinds of data that need to be considered when contracting for training programs, materials, and support. This list is not all-inclusive; it is designed to start the thinking and planning process. The answers to the questions in Table A-1 will help to determine the kinds of task input and output data to select from section 5 of MIL-STD-1379D. Personnel from the contracting activity should consult with the appropriate personnel in the training activity to obtain answers to the following questions:

Scope of Training Requirement

What is the scope of the training requirement? Does the requirement indicate the need for training analyses, conduct of a course, development of curriculum and instructional materials, or other efforts?

If curriculum and materials must be developed, is a new course needed to fulfill the training requirement? Or, can an existing course be modified?

Can a curriculum development requirement be met through the purchase of one or more lessons or units of instruction, or does the requirement necessitate purchase of an entire course?

Are instructional materials and related courses available within the services or in the private sector that can be adopted or adapted for use?

Is there a requirement for transition training?

Have training resource and planning requirements been identified by the Government? Or, will the contractor be tasked to identify resource and planning data?

Course Control Data

What deficiency is met by the proposed instruction?

What are the resource requirements? Resources include manpower, personnel, facilities, fuel, ammunition, and other elements.

What are the characteristics of the target population to be trained?

- Occupational specialty
- Previous experience
- Rank/grade

TABLE A-1. Planning data for contract training requirements - Continued.

- Reading grade level - Previous training - Aptitude scores
Where will training be conducted? Will there be multiple sites?
How frequently will training be conducted?
What is the projected student load?
What protective measures are required for classified courses?
What safety factors must be considered?
Instructional Materials
Do instructional materials need to be purchased? If so:
Which instructional methods and media are most appropriate for a particular course? Have the content of training, resource constraints, and trainee requirements been considered when selecting instructional methods and media?
What instructor materials does the training activity need?
What trainee materials are required?
What testing materials are required?
Is there a requirement for audiovisual support materials such as slides, transparencies, videotapes, or other materials?
What course management materials does the training activity need?
Does a course control document need to be acquired from the contractor?
How many copies of management, instructor, trainee, testing, and audio-visual materials should be acquired?
How will the course or instructional materials be validated?
Does a validation plan need to be acquired?

TABLE A-1. Planning data for contract training requirements - Continued.

Training Support Devices and Equipment Is there a requirement for training devices and equipment? Is there a requirement for computer systems and software? Has a plan for maintenance of training hardware items been identified? Facilities and Environment What are the facilities and electrical requirements? Will the use of new or revised training delivery systems, simulators, task trainers, or actual equipment require upgrades to facilities and utilities? Are adequate storage facilities available for training materials and equipment? What environmental/psychological fidelity requirements must be accommodated to create a training environment that simulates the actual work environment? Instructors and Support Personnel Do instructor and support personnel requirements need to be evaluated? If so: What are the instructor requirements? - Number of instructors - Instructor qualifications What are the support personnel requirements? - Number of support personnel - Support personnel qualifications Is there a requirement for instructor and key personnel training? Will the contractor or the Government conduct training? If training is contractor-presented, will Government facilities, equipment, materials, or other resources be required?

TABLE A-1. Planning data for contract training requirements - Continued.

Contract Management

What Government-furnished information will be provided to the contractor?

- Training plans
- Logistics support analysis task data
- Technical manuals and publications
- Existing training materials and documentation
- Target population description
- Maintenance/operation concept
- Training development concept
- Training personnel requirements
- Facility/environmental requirements
- Evaluation data/other data

Will procedures and guidelines that the contractor must follow, and which are too lengthy to include in the Statement of Work (SOW), be attached as exhibits to Section J of the contract and referenced in the SOW?

Has a schedule been established for each milestone in the development of the training program, materials, and support?

Are the training program, materials, and support being purchased in conjunction with a major system or equipment? If so, when will the major end item be delivered to the fleet/field? What operator/maintenance training is needed to support the end item when delivered? What training development schedule must be met so that fully trained personnel will be available when the end item is delivered?

Does the curriculum and instructional materials development process require a building block approach? In other words, must certain training analysis or design documentation be reviewed and approved before work can begin on other training documentation and materials? If so, have development and review schedules been established for each training product which take into account the interdependence of each contract deliverable?

TABLE A-1. Planning data for contract training requirements - Continued.

Have Service-specific constraints been identified for current and projected manpower, personnel, training, and time resources? Which constraints need to be identified in the SOW for consideration by the contractor?
Have key points of contact been identified in the contracting activity and in the training activity?
What frequency and location of in-process reviews are recommended?
Is there a need for sample packages that illustrate format and content requirements of tailored Data Item Descriptions (DIDs)?
Has the contracting activity contacted the end users in the training activity to obtain their expertise in training requirements analysis and tailoring of task data and DIDs?

TABLE A-2. Index of Data Item Descriptions (DIDs).

Table A-2 lists DIDs by the task section of MIL-STD-1379D in which they are cited. This table also provides a crosswalk between the current list of DIDs and their status in relation to MIL-STD-1379B, MIL-STD-001379C, and MIL-T-29053B

DID TITLE	DID NUMBER	TASK OUTPUT NUMBER	STATUS
Training Situation Analysis Report	DI-ILSS-81069	101.4.1	Supersedes DI-H-25710B in MIL-T-29053B.
Training Program Development and Management Plan	DI-ILSS-81070	102.4.1	Supersedes DI-H-25711B, DI-H-25721B, DI-H-25725B, and DI-H-25731B in MIL-T-29053B, and DI-H-7066 and DI-H-7067 in MIL-STD-1379B, DI-ILSS-80076 in MIL-STD-001379C and DI-MGMT-80549 for SOW.
Individual Training Plan	DI-ILSS-81071	102.4.2	New DID.
Media Selection Model Report	DI-ILSS-81072	103.4.1	Supersedes DI-H-25717B in MIL-T-29053B.
Conference Agenda	DI-A-7088	103.4.2	Selected.
Conference Minutes	DI-A-7089	103.4.3	Selected.
Program Progress Report	DI-MGMT-80555	103.4.4	Selected.
Training Equipment Requirements Document	DI-ILSS-81073	104.4.1	New DID.
Training System Implementation Plan	DI-ILSS-81074	105.4.1	Supersedes DI-H-25727B in MIL-T-29053B, DI-H-7066 in MIL-STD-1379B, and DI-ILSS-80076 in MIL-STD-001379C.
Training Course Control Document	DI-ILSS-81075	106.4.1	Supersedes DI-H-7069 in MIL-STD-1379B, DI-ILSS-80080, 80081 and 80084 in MIL-STD-001379C, and DI-H-25714B in MIL-T-29053B.

TABLE A-2. Index of Data Item Descriptions (DIDs) - Continued.

DID TITLE	DID NUMBER	TASK OUTPUT NUMBER	STATUS
Training Evaluation Plan	DI-ILSS-81076	107.4.1	Supersedes DI-H-25726B in MIL-T-29053B and DI-MGMT-80799 for SOW.
Mission Performance Standards	DI-ILSS-81077	201.4.1	New DID.
Mission, Collective, Individual, and Occupational Training Task Analysis Report	DI-ILSS-81078	201.4.2	Supersedes DI-H-25713B in MIL-T-29053B, DI-H-7068 in MIL-STD-1379B, and DI-ILSS-80077 in MIL-STD-001379C.
Personnel Performance Profile Tables	DI-ILSS-81079	201.4.3	Supersedes DI-H-7091 in MIL-STD-1379B and DI-ILSS-80078 in MIL-STD-001379C.
Training Path System Report	DI-ILSS-81080	201.4.4	Supersedes DI-H-7090 in MIL-STD-1379B and DI-ILSS-80079 in MIL-STD-001379C.
Individual Training Standards	DI-ILSS-81081	201.4.5	New DID.
Training Technology Assessment Report	DI-ILSS-81082	202.4.1	Supersedes DI-H-25716B in MIL-T-29053B.
Learning Analysis Report	DI-ILSS-81083	203.4.1	Supersedes DI-H-25715B in MIL-T-29053B.
Media Selection Report	DI-ILSS-81084	204.4.1	Supersedes DI-H-25720B in MIL-T-29053B.
Test Package	DI-ILSS-81085	205.4.1	Supersedes DI-H-7074 in MIL-STD-1379B, DI-ILSS-80091 in MIL-STD-001379C and DI-H-25724B in MIL-T-29053B.
Training System Alternatives Report	DI-ILSS-81086	206.4.1	Supersedes DI-H-25710B in MIL-T-29053B.
Training System Modification Report	DI-ILSS-81087	207.4.1	Supersedes DI-H-25719B in MIL-T-29053B.

TABLE A-2. Index of Data Item Descriptions (DIDs) - Continued.

DID TITLE	DID NUMBER	TASK OUTPUT NUMBER	STATUS
Training System Functional Characteristics Report	DI-ILSS-81088	208.4.1	Supersedes DI-H-25718B in MIL-T-29053B.
Training Facilities Report	DI-ILSS-81089	209.4.1	New DID.
Lesson Specifications Report	DI-ILSS-81090	210.4.1	Supersedes DI-H-25722B and 25723B in MIL-T-29053B.
Instructional Media Design Report	DI-ILSS-81091	211.4.1	Supersedes DI-ILSS-80547, DI-ILSS-80548, and DI-ILSS-80551 for SOW.
Instructional Media Package	DI-ILSS-81092	301.4.1	Supersedes DI-H-7072 in MIL-STD-1379B, DI-ILSS-80088, 80089, and 80090 in MIL-STD-001379C, DI-H-25724B in MIL-T-29053B, and DI-ILSS-80546, DI-ILSS-80802, DI-ILSS-80803 and DI-ILSS-80804 for SOW.
Instructional Media Data Files	DI-ILSS-81093	301.4.2	Supersedes DI-ADMN-80550 for SOW.
Trainer Software Application Handbook	DI-ILSS-81094	302.4.1	Supersedes DI-ILSS-80092 in MIL-STD-001379C.
Lesson Plan	DI-ILSS-81095	303.4.1	Supersedes DI-H-7070 and DI-H-7073 in MIL-STD-1379B, DI-ILSS-80082 and DI-ILSS-80085 in MIL-STD-001379C, and DI-H-25712B and DI-H-25728B in MIL-T-29053B.
Training System Utilization Handbook	DI-ILSS-81096	303.4.2	Supersedes DI-H-7076 in MIL-STD-1379B and MIL-STD-001379C, DI-ILSS-80087 in MIL-STD-001379C, DI-H-25729B in MIL-T-29053B, DI-ILSS-80552 and DI-ILSS-80805 for SOW.

TABLE A-2. Index of Data Item Descriptions (DIDs) - Continued.

DID TITLE	DID NUMBER	TASK OUTPUT NUMBER	STATUS
Individual Task Training Package	DI-ILSS-81097	303.4.3	New DID.
Collective Task Training Package	DI-ILSS-81098	303.4.4	New DID.
Training Information Package	DI-ILSS-81099	303.4.5	Supersedes DI-H-3258A.
Trainee Guide	DI-ILSS-81100	304.4.1	Supersedes DI-H-7071 in MIL-STD-1379B, DI-ILSS-80083 in MIL-STD-001379C, and DI-H-25724B in MIL-T-29053B.
On-the-Job Training Handbook	DI-ILSS-81101	304.4.2	Supersedes DI-H-7077 and 7078 in MIL-STD-1379B and MIL-STD-001379C and DI-ILSS-80086 in MIL-STD-001379C.
Trainee Orientation Guide	DI-ILSS-81102	304.4.3	Supersedes DI-H-25730B in MIL-T-29053B.
Nonresident Training Materials	DI-ILSS-81103	304.4.4	New DID.
Trainee and Training Course Completion Report	DI-ILSS-81104	401.4.1	Supersedes DI-ILSS-80046 in in MIL-STD-1379B and MIL-STD-001379C.
Training Evaluation and Validation Report	DI-ILSS-81105	402.4.1	Supersedes DI-MGMT-80800 for SOW and DI-H-25773B for MIL-T-29053B.
Training Material Change Package	DI-ILSS-81106	402.4.2	New DID.

TABLE A-3. How to locate Data Item Descriptions and task data in MIL-STD-1379D.

There are many different approaches to locating DIDs and task data in MIL-STD-1379D. The following is one systematic approach.

Step 1. Analyze the training requirement. Table A-1 is a list of the kinds of questions that should be considered during requirements analysis.

Step 2. Determine which training products will fulfill the requirement. Answers to the questions in Table A-1 will help to identify the training products. The requirements of the Service-specific training development system will influence the choice of a specific product as well as its content and format.

Step 3. Locate the Data Item Description (DID) title that relates as closely as possible to each training product identified in Step 2. Table A-2 lists all DIDs cited in MIL-STD-1379D. Tables A-6 through A-9 list core DIDs for each of the Services. (See Note 1 if you do not have a requirement to take possession of data from a DID as a contract deliverable.)

Step 4. Obtain a copy of each DID selected. Tailor each DID in accordance with Service-specific guidance. "Tailoring" refers to the deletion of unnecessary words, phrases, or paragraphs from the DID. Requirements to be deleted from a DID must be noted in Block 16 of the Contract Data Requirements List (CDRL). Do not add content requirements that increase the scope of a DID.

Step 5. a. Select the task outputs that will yield each training product. Task output numbers for DIDs are listed on Table A-2. For nondeliverable data discrete outputs, you will have to locate the appropriate task outputs in Section 5 of MIL-STD-1379D. Nondeliverable task outputs do not have DID numbers listed after them. (See Note 1.)

b. Tailor each task output by deleting any unnecessary words or phrases.

Step 6. a. Determine which tasks/subtasks the contractor needs to perform to develop each training product. Locate the appropriate tasks/subtasks in MIL-STD-1379D. (See Note 2 if you are unfamiliar with contracts that are written in a task format.)

TABLE A-3. How to locate Data Item Descriptions and task data in MIL-STD-1379D -Continued.

	b. Tailor each task/subtask by deleting any unnecessary words or phrases.
Step 7.	a. Determine which inputs are needed to perform each task/subtask. (Inputs are data provided by the Government or data that result from the performance of a previous task.) Locate the appropriate inputs in MIL-STD-1379D. Remember that Section 5 of MIL-STD-1379D is set up as a system. The outputs of one task may become inputs to a subsequent task or tasks. b. Tailor each input by deleting any unnecessary words or phrases.
Step 8.	Document the results of Steps 5, 6, and 7 in the Statement of Work (SOW).
Step 9.	Repeat this process until all DIDs and task data have been identified, tailored, and cited in the SOW and on the CDRL, as appropriate.

Note 1. You do not always have a requirement to take possession of contractor-developed data as a deliverable. For example, if you have contracted for the revision of one lesson in a course, then you may decide to review and approve the learning objective of that lesson during an in-process review, rather than have the learning objectives provided to you as a contract deliverable. The approved learning objectives would then become inputs to later subtasks such as revising lesson plans or revising test items. Revised lesson plans and test items might be the data that you elect to have provided to you as a contract deliverable prepared in accordance with specific DIDs. To accommodate the preparation of deliverable and nondeliverable data, Section 5 of MIL-STD-1379D contains both DID outputs and "discrete" outputs. Discrete outputs do not have DID numbers listed after them in Section 5. Most discrete outputs are simply elements of DIDs. Discrete outputs represent data that the contractor must produce and that will be paid for by the Government. Discrete outputs will be specified in the SOW when they are required inputs to other tasks/subtasks. Because the discrete outputs are not deliverable products, they will not be listed on the CDRL.

Note 2. In contrast to previous editions of MIL-STD-1379, Section 5 of this edition is systematically organized along the line of tasks to be performed, task inputs, and task outputs. The "task descriptions" in Section 5 list work tasks associated with the production of specific data deliverables. Each of these task descriptions is made up of detailed subtasks. The "task inputs" describe the general information needed to

TABLE A-3. How to locate Data Item Descriptions and task data in MIL-STD-1379D - Continued.

accomplish a task or subtask. The "task outputs" identify the products expected from the performance of one or more tasks. These task data will be used as the basis for writing the SOW. All task data in Section 5, and the corresponding DIDs, must be tailored to meet a Service-specific training requirement. Because MIL-STD-1379D has been prepared for joint-Service use, accurate tailoring is critical. If in doubt about how to tailor this standard, contact an end user in the training activity who is knowledgeable about the training requirement and who fully understands how to use MIL- STD-1379D.

TABLE A-4. Training program task application during phases of the materiel system acquisition process.

TASK		APPLICABILITY BY PHASE					APPLICABLE DATA ITEM DESCRIPTIONS	REMARKS
NO.	TITLE	CON-CEPT	DEM VAL	FSD	PROD	DEPL		
101	TRAINING SITUATION ANALYSIS							
	Subtask 101.2.1	G	U	N/A	N/A	S	DI-ILSS-81069 Training	
	Subtask 101.2.2	G	U	N/A	N/A	S	Situation Analysis	
	Subtask 101.2.3	G	U	N/A	N/A	S	Report	
102	TRAINING PROGRAM DEVELOPMENT AND MANAGEMENT PLANNING							
	Subtask 102.2.1	N/A	G	U	U	S	DI-ILSS-81070 Train-	
	Subtask 102.2.2	N/A	G	N/A	N/A	N/A	ing Program Development	
	Subtasks 102.2.3 through 102.2.7 and 102.2.9 through 102.2.14	N/A	G	U	U	U	and Management Plan	
	Subtask 102.2.8	N/A	G	U	U	U	DI-ILSS-81071 Indivi-dual Training Plan	
103	TRAINING DEVELOPMENT CONTROL							
	Subtasks 103.2.1 through 103.2.7	N/A	G	N/A	N/A	N/A	DI-ILSS-81072 Media Selection Model Report	
	Subtask 103.2.8	N/A	G	G	G	G	DI-A-7088 Conference Agenda	
	Subtasks 103.2.9, 103.2.10	N/A	G	G	G	G	DI-A-7089 Conference Minutes	
	Subtask 103.2.11	N/A	G	G	G	G	DI-MGMT-80555 Program	
		N/A	G	G	G	G	Progress Report	
104	TRAINING EQUIPMENT REQUIREMENTS IDENTIFICATION							
	Subtasks 104.2.1 through 104.2.6	N/A	G	N/A	N/A	N/A	DI-ILSS-81073 Training Equipment Requirements Document	

TABLE A-4. Training program task application during phases of the materiel system acquisition process - Continued.

TASK		APPLICABILITY BY PHASE					APPLICABLE DATA ITEM DESCRIPTIONS	REMARKS
NO.	TITLE	CON-CEPT	DEM VAL	FSD	PROD	DEPL		
105	TRAINING IMPLEMENTATION PLANNING							
	Subtasks 105.2.1 through 105.2.11	N/A	N/A	G	U	U	DI-ILSS-81074 Training System Implementation Plan	
106	TRAINING IMPLEMENTATION CONTROL							
	Subtasks 106.2.1 through 106.2.4	N/A	N/A	G	U	U	DI-ILSS-81075 Training Course Control Document	
107	TRAINING EVALUATION PLANNING							
	Subtask 107.2.1 through 107.2.6	N/A	S	G	U	U	DI-ILSS-81076 Training Evaluation Plan	
201	MISSION, COLLECTIVE, INDIVIDUAL, AND OCCUPATIONAL TRAINING TASK ANALYSIS							
	Subtask 201.2.2 through 201.2.6, 201.2.10 through 201.2.13	N/A	G	U	U	U	DI-ILSS-81078 Mission, Collective, Individual, and Occupational Training Task Analysis Report	
	Subtask 201.2.1	N/A	G	U	U	U	DI-ILSS-81077 Mission Performance Standards	
	Subtask 201.2.7	N/A	G	U	U	U	DI-ILSS-81079 Personnel Performance Profile Tables	
	Subtask 201.2.8	N/A	G	U	U	U	DI-ILSS-81080 Training Path System Report	
	Subtask 201.2.9	N/A	G	U	U	U	DI-ILSS-81081 Individual Training Standards	

TABLE A-4. Training program task application during phases of the materiel system acquisition process - Continued.

TASK		APPLICABILITY BY PHASE					APPLICABLE DATA ITEM DESCRIPTIONS	REMARKS
NO.	TITLE	CON-CEPT	DEM VAL	FSD	PROD	DEPL		
202	TRAINING TECHNOLOGY ASSESSMENT Subtask 202.2.1 through 202.2.4	S	S	S	S	S	DI-ILSS-81082 Training Technology Assessment Report	
203	LEARNING ANALYSIS Subtask 203.2.1 through 203.2.17	N/A	G	U	U	U	DI-ILSS-81083 Learning Analysis Report	
204	MEDIA SELECTION Subtask 204.2.1 through 204.2.6	N/A	G	U	U	S	DI-ILSS-81084 Media Selection Report	
205	TESTS FOR MEASUREMENT OF PERSONNEL ACHIEVEMENT Subtask 205.2.1 through 205.2.9	N/A	S	G	U	U	DI-ILSS-81085 Test Package	
206	TRAINING SYSTEM ALTERNATIVES IDENTIFICATION Subtasks 206.2.1 through 206.2.7	S	G	U	U	S	DI-ILSS-81086 Training System Alternatives Report	
207	TRAINING SYSTEM MODIFICATION REQUIREMENTS Subtasks 207.2.1 through 207.2.8	N/A	G	U	U	S	DI-ILSS-81087 Training System Modification Report	

TABLE A-4. Training program task application during phases of the materiel system acquisition process - Continued.

TASK		APPLICABILITY BY PHASE					APPLICABLE DATA ITEM DESCRIPTIONS	REMARKS
NO.	TITLE	CON-CEPT	DEM VAL	FSD	PROD	DEPL		
208	TRAINING SYSTEM FUNCTIONAL REQUIREMENTS							
	Subtasks 208.2.1 through 208.2.7	N/A	G	U	U	S	DI-ILSS-81088 Training System Functional Charistics Report	
209	TRAINING FACILITIES REQUIREMENTS IDENTIFICATION							Milestones for POM submission may require early performance of this task.
	Subtasks 209.2.1 through 209.2.9	S	G	U	N/A	S	DI-ILSS-81089 Training Facilities Report	
210	LESSON SPECIFICATIONS DEVELOPMENT							
	Subtask 210.2.1 through 210.2.5	N/A	N/A	G	U	U	DI-ILSS-81090 Lesson Specifications Report	
211	INSTRUCTIONAL MEDIA DESIGN							
	Subtasks 211.2.1 through 211.2.12	N/A	S	G	U	S	DI-ILSS-81091 Instructional Media Design Report	
301	INSTRUCTIONAL MEDIA PRODUCTION							
	Subtasks 301.2.1 through 301.2.8, 301.2.11, 301.2.14	N/A	N/A	G	U	S	DI-ILSS-81092 Instructional Media Package	
	Subtasks 301.2.9, 301.2.12	N/A	N/A	G	U	S	DI-ILSS-81093 Instructional Media Data Files	

TABLE A-4. Training program task application during phases of the materiel system acquisition process - Continued.

TASK		APPLICABILITY BY PHASE					APPLICABLE DATA ITEM DESCRIPTIONS	REMARKS
NO.	TITLE	CON-CEPT	DEM VAL	FSD	PROD	DEPL		
302	TRAINING SYSTEM SUPPORT MATERIALS							
	Subtask 302.2.1	N/A	N/A	G	U	S	DI-ILSS-81094 Trainer Software Application Handbook	
303	TRAINING MATERIALS FOR INSTRUCTORS							
	Subtask 303.2.1 through 303.2.4	N/A	N/A	G	U	U	DI-ILSS-81095 Lesson Plan	
	Subtask 303.2.6	N/A	N/A	G	U	U	DI-ILSS-81097 Individual Task Training Package	
	Subtask 303.2.7	N/A	N/A	G	U	U	DI-ILSS-81098 Collective Task Training Package	
	Subtasks 303.2.8, 303.2.10, 303.2.11	N/A	N/A	G	U	U	DI-ILSS-81096 Training System Utilization Handbook	
	Subtask 303.2.9	N/A	N/A	N/A	S	S	DI-ILSS-81099 Training Information Package	
304	TRAINING MATERIALS FOR TRAINEES							
	Subtask 304.2.1	N/A	N/A	G	U	U	DI-ILSS-81100 Trainee Guide	
	Subtasks 304.2.1 through 304.2.3	N/A	N/A	G	U	U	DI-ILSS-81102 Trainee Orientation Guide	
	Subtask 304.2.2	N/A	N/A	G	U	U,S	DI-ILSS-81103 Non-resident Training Materials	
	Subtask 304.2.3	N/A	N/A	G	U	U,S	DI-ILSS-81101 On-the-Job Training Handbook	

TABLE A-4. Training program task application during phases of the materiel system acquisition process - Continued.

TASK		APPLICABILITY BY PHASE						
NO.	TITLE	CON-CEPT	DEM VAL	FSD	PROD	DEPL	APPLICABLE DATA ITEM DESCRIPTIONS	REMARKS
401	CONDUCT OF TRAINING							
	Subtask 401.2.1 through 401.2.7	N/A	N/A	S	S	S	DI-ILSS-81104 Trainee and Training Course Completion Report	
402	TRAINING EVALUATION							
	Subtasks 402.2.1 through 402.2.4, 402.2.7, 402.2.8	N/A	N/A	S	S	G	DI-ILSS-81105 Training Evaluation and Validation Report	
	Subtasks 402.2.5, 402.2.9	N/A	N/A	N/A	S	S	DI-ILSS-81106 Training Material Change Package	

Code Definitions

Acquisition Phase
- CONCEPT - Concept Exploration
- DEMVAL - Demonstration & Validation
- FSD - Full-Scale Development
- PROD - Production
- DEPL - Deployment

Applicability
- G - Generally
- S - Selectively
- U - Update
- N/A - Not Applicable

TABLE A-5. Data Item Description (DID)/task matrix.

DATA ITEM DESCRIPTION	SUPPORTING TASK	RELATED TASKS
Training Situation Analysis Report, DI-ILSS-81069	101.2.1, 101.2.2, 101.2.3	MIL-STD-1388-1 LSA Tasks 201 and 203
Training Program Development and Management Plan, DI-ILSS-81070	102.2 through 102.2.7, 102.2.9 through 102.2.14	101.2.1 through 101.2.3 and MIL-STD-1388-1 LSA Tasks 102, 201, 205, 303 and 401
Individual Training Plan, DI-ILSS-81071	102.2.8	101.2.1 through 101.2.3 and MIL-STD-1388-1 LSA Tasks 102, 201, 205, 303 and 401
Media Selection Model Report, DI-ILSS-81072	103.2.1 through 103.2.7	202.2.1, 202.2.2, and MIL-STD-1388-1 Tasks 201, 205, 303 and 401
Conference Agenda, DI-A-7088	103.2.8	None
Conference Minutes, DI-A-7089	103.2.9, 103.2.10	None
Program Progress Report, DI-MGMT-80555	103.2.11	None
Training Equipment Requirements Document, DI-ILSS-81073	104.2.1 through 104.2.6	101.2.1, 102.2.8, 103.2.5, 204.2.2, 204.2.6, and 206.2.7
Training System Implementation Plan, DI-ILSS-81074	105.2.1 through 105.2.11	101.2.1, 101.2.2, 102.2.7, 102.2.8, 103.2.7, 104.2.4, 104.2.6, 203.2.8, 203.2.9, 203.2.11, 203.2.12, 203.2.14, 203.2.15, 203.2.17, 204.2.4, 204.2.6, 209.2.1, 211.2.10, 301.2.10, 301.2.15, and MIL-STD-1388-1 LSA Tasks 201, 303 and 401
Training Course Control Document, DI-ILSS-81075	106.2.1 through 106.2.4	102.2.8, 105.2.11, 201.2.9, 203.2.1, 203.2.4, 203.2.9, 203.2.11, 203.2.13, 203.17, 211.2.2, 211.2.3, 211.2.4, 211.2.8, 301.2.9, 301.2.12 and MIL-STD-1388-1 LSA Task 205

TABLE A-5. Data Item Description (DID)/task matrix - Continued.

DATA ITEM DESCRIPTION	SUPPORTING TASK	RELATED TASKS
Training Evaluation Plan, DI-ILSS-81076	107.2.1 through 107.2.6	106.2.4, 201.2.5 and MIL-STD-1388-1 LSA Task 501
Mission Performance Standards, DI-ILS 1077	201.2.1	102.2.7 and MIL-STD-1388-1 Logistic Support Analysis Tasks 201, 301, 303 and 401
Mission, Collective, Individual, and Occupational Training Task Analysis Report, DI-ILSS-81078	201.2.2 through 201.2.6, 201.2.10 through 201.2.13	MIL-STD-1388-1 LSA Tasks 201, 301, 303, and 401
Personnel Performance Profile Tables, DI-ILSS-81079	201.2.7	MIL-STD-1388-1 LSA Tasks 201, 301, 303 and 401
Training Path System Report, DI-ILSS-81080	201.2.8	MIL-STD-1388-1 LSA Tasks 201, 301, 303 and 401
Individual Training Standards, DI-ILSS-81081	201.2.9	None
Training Technology Assessment Report, DI-ILSS-81082	202.2.1 through 202.2.4	102.2.8 and MIL-STD-1388-1 LSA Tasks 201, 204, 205, 301, 303 and 401
Learning Analysis Report, DI-ILSS-81083	203.2.1 through 203.2.17	201.2.3, 201.2.4, 201.2.6, 201.2.7, 201.2.8 and MIL-STD-1388-1 Task 401
Media Selection Report, DI-ILSS-81084	204.2.1 through 204.2.6	101.2.3, 201.2.3, 201.2.4, 201.2.6, 203.2.4, 203.2.7, 203.2.8, 203.2.9, 203.2.11 and 203.2.14
Test Package, DI-ILSS-81085	205.2.1 through 205.2.9	102.2.5, 201.2.3, 201.2.4, 201.2.5, 201.2.9, 203.2.4, 203.2.5, 203.2.14, and 402.2.8
Training System Alternatives Report, DI-ILSS-81086	206.2.1 through 206.2.7	202.2.1, 204.2.2, 204.2.6, and MIL-STD-1388-1 LSA Task 401

TABLE A-5. Data Item Description (DID)/task matrix - Continued.

DATA ITEM DESCRIPTION	SUPPORTING TASK	RELATED TASKS
Training System Modification Report, DI-ILSS-81087	207.2.1 through 207.2.8	101.2.1, 206.2.7 and MIL-STD-1388-1 Tasks 203 and 204
Training System Functional Characteristics Report, DI-ILSS-81088	208.2.1 through 208.2.7	101.2.1, 104.2.1, 104.2.4, 104.2.5, 104.2.6, 203.2.1, 203.2.4, 203.2.8, 203.2.9, 204.2.2, and 207.2.6
Training Facilities Report, DI-ILSS-81089	209.2.1 through 209.2.9	101.2.1, 102.2.8, 104.2.6, 203.2.15, 208.2.4 and MIL-STD-1388-1 LSA Task 401 and MIL-STD-1388-2 LSAR F
Lesson Specifications Report, DI-ILSS-81090	210.2.1 through 210.2.5	202.2.2, 203.2.4, 203.2.7, 203.2.8, 203.2.9, 203.2.17 204.2.3, 204.2.4 and 204.2.6
Instructional Media Design Report, DI-ILSS-81091	211.2.1 through 211.2.12	104.2.6, 201.2.3, 201.2.4, 201.2.9, 203.2.1 through 203.2.5, 203.2.7, 203.2.8, 203.2.9, 203.2.11, 203.2.14, 204.2.1 through 204.2.4, 204.2.6, 205.2.7, 207.2.6, 208.2.1 through 208.2.5, 210.2.2 and 210.2.4
Instructional Media Package, DI-ILSS-81092	301.2.1 through 301.2.8, 301.2.11, 301.2.14	102.2.7, 201.2.3, 201.2.4, 201.2.13, 203.2.3, 203.2.4, 203.2.5, 203.2.7 through 203.2.9, 203.2.11, 203.2.16, 204.2.2, 204.2.3, 204.2.6, 205.2.1, 208.2.1, 210.2.4, 211.2.1 through 211.2.11 and 402.2.5
Instructional Media Data Files, DI-ILSS-81093	301.2.9 and 301.2.12	102.2.7, 201.2.3, 201.2.4, 203.2.4, 203.2.5, 203.2.7, 203.2.9, 203.2.11, 204.2.6, 205.2.11, 208.2.1, 210.2.1, 210.2.4, 211.2.1, 211.2.2, 211.2.7 and 211.2.11

TABLE A-5. Data Item Description (DID)/task matrix - Continued.

DATA ITEM DESCRIPTION	SUPPORTING TASK	RELATED TASKS
Trainer Software Application Handbook, DI-ILSS-81094	302.2.1	105.2.1, 106.2.4, 402.2.5 and MIL-STD-1388-1 LSA Task 303
Lesson Plan, DI-ILSS-81095	303.2.1 through 303.2.4	106.2.4, 201.2.3, 201.2.4, 201.2.10, 201.2.11, 203.2.2, 203.2.3, 203.2.4, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.7, 210.2.1 through 210.2.4, 301.2.10, 402.2.5 and 402.2.7
Training System Utilization Handbook, DI-ILSS-81096	303.2.8, 303.2.10, 303.2.11	106.2.4, 201.2.3, 201.2.4, 201.2.10, 203.2.2, 203.2.3, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.7, 211.2.1, through 211.2.5, 211.2.8, 211.2.9, 211.2.10, 301.2.9, 301.2.10, 402.2.5 and 402.27
Individual Task Training Package, DI-ILSS-81097	303.2.6	106.2.4, 201.2.3, 201.2.4, 201.2.10, 201.2.11, 203.2.2, 203.2.3, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.7, 301.2.10, 402.2.5, and 402.2.7
Collective Task Training Package, DI-ILSS-81098	303.2.7	106.2.4, 201.2.3, 201.2.4, 201.2.10, 201.2.11, 203.2.2, 203.2.3, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.7, 301.2.10, 402.2.5, and 402.2.7

TABLE A-5. Data Item Description (DID)/task matrix - Continued.

DATA ITEM DESCRIPTION	SUPPORTING TASK	RELATED TASKS
Training Information Package, DI-ILSS-81099	303.2.9	106.2.4, 201.2.3, 201.2.4, 203.2.2, 203.2.3, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.17, 205.2.1, 205.2.7, 301.2.10, 402.2.5 and 402.2.7
Trainee Guide, DI-ILSS-81100	304.2.1	105.2.11, 201.2.3, 201.2.4, 201.2.9, 201.2.10, 201.2.11, 203.2.2, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.2, 210.2.4, 301.2.10, 303.2.1 through 303.2.5, 402.2.5 and 402.2.7
On-the-Job Training Handbook, DI-ILSS-81101	304.2.3	105.2.11, 201.2.3, 201.2.4, 201.2.7, 201.2.8, 201.2.9, 201.2.10, 301.2.11, 203.2.2, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.2, 210.2.4, 301.2.10, 303.2.1 through 303.2.5, 402.2.5 and 402.2.7
Trainee Orientation Guide DI-ILSS-81102	304.2.1, 304.2.2, 304.2.3	105.2.11, 201.2.3, 201.2.4, 201.2.7, 201.2.8, 201.2.9, 201.2.10, 201.2.11, 203.2.2, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.2, 210.2.4, 301.2.10, 303.2.1 through 303.2.5, 402.2.5 and 402.2.7

TABLE A-5. Data Item Description (DID)/task matrix - Continued.

DATA ITEM DESCRIPTION	SUPPORTING TASK	RELATED TASKS
Nonresident Training Materials, DI-ILSS-81103	304.2.2	105.2.11, 201.2.3, 201.2.4, 201.2.9, 201.2.10, 201.2.11, 203.2.2, 203.2.4, 203.2.5, 203.2.8, 203.2.9, 203.2.10, 203.2.11, 203.2.12, 203.2.17, 205.2.1, 205.2.2, 210.2.4, 301.2.10, 303.2.1 through 303.2.5, 402.2.5 and 402.2.7
Trainee and Training Course Completion Report, DI-ILSS-81104	401.2.1 through 401.2.7	105.2.1, 205.2.1, 205.2.2, 205.2.5, 205.2.7, 205.2.8, 301.2.5, 301.2.6, 301.2.7, 301.2.8, 301.2.12, 303.2.1 through 303.2.5, 303.2.10 and 303.2.11
Training Evaluation and Validation Report, DI-ILSS-81105	402.2.1 through 402.2.4, 402.2.7, 402.2.8	102.2.9, 107.2.1 through 107.2.6, 205.2.1, 205.2.2, 205.2.7, 301.2.10, 302.2.1, 303.2.1 through 303.2.5, 304.2.1 through 304.2.3
Training Material Change Package, DI-ILSS-81106	402.2.5, 402.2.9	205.2.1, 205.2.2, 205.2.7, 301.2.10, 302.2.1, 303.2.1 through 303.2.5 and 304.2.1 through 304.2.3

APPENDIX A

TABLE A-6. Navy core Data Item Descriptions.

Table A-6-1 identifies those DIDs which represent the minimum data to be considered when a new Navy course will be developed under contract for formal schoolhouse training. Table A-6-2 identifies other DIDs which may be selectively applied in addition to, or occasionally in place of, those listed in Table A-6-1. DIDs from Table A-6-2 should be selected only after consultation with the organization that has the training requirement. Table A-6-3 provides a cross-walk from MIL-STD-001379C to MIL-STD-1379D.

On-board-training, on-the-job-training, practical job training, mobile training, fleet training, team training, and so forth, are examples of training situations which differ from formal schoolhouse training. Data from DIDs identified in Tables A-6-1 and A-6-2 will usually be required in some combination to satisfy such training. DIDs for these training situations should be selected only after consultation with the organization that has the training requirement.

The first column of each table lists the DIDs by their titles. This column is further subdivided according to the Instructional Systems Development phases of "Analyze," "Design," "Develop," "Implement," and "Evaluate," with the DIDs being listed under each phase where appropriate. The second column identifies the corresponding DID number.

This listing of DIDs may not be all-inclusive: Other DIDs which were originally developed to support other Services' requirements may also support unique Navy training requirements, even though they are not listed below. MIL-STD-1379D DIDs are for use by all Services. Consequently, each DID contains Service-specific data as well as requirements standard for all Services.

Each DID must be tailored by the Navy to eliminate unwanted other Services'-peculiar data. Tailoring is the process of deletion of unnecessary paragraphs, sentences, phrases and words. This Appendix contain general guidance for tailoring DIDs. Reference should also made to Navy-specific tailoring guidance to ensure that each DID is tailored to describe effectively the Navy requirements for the required product.

TABLE A-6. Navy core Data Item Descriptions - Continued.

TABLE A-6-1. NEW PROGRAMS	
DIDs will be specified by the Warfare Sponsor as coordinated with the end user	
DID TITLE	DID NUMBER
PLANNING	
Training Program Development and Management Plan	DI-ILSS-81070
Training System Implementation Plan	DI-ILSS-81074
ANALYSIS	
Learning Analysis Report	DI-ILSS-81083
Mission, Collective, Individual, and Occupational Training Task Analysis Report	DI-ILSS-81078
OR	
Personnel Performance Profile Tables (as applicable)	DI-ILSS-81079
Training Path System Report (as applicable)	DI-ILSS-81080
DESIGN	
Training Course Control Document	DI-ILSS-81075
Test Package	DI-ILSS-81085
DEVELOP	
Lesson Plan	DI-ILSS-81095
Trainee Guide	DI-ILSS-81100
Instructional Media Package	DI-ILSS-81092
IMPLEMENT	
Trainee and Training Course Completion Report	DI-ILSS-81104
EVALUATE	
Conference Agenda	DI-A-7088
Conference Minutes	DI-A-7089
Program Progress Reports	DI-MGMT-80555

TABLE A-6. Navy core Data Item Descriptions - Continued.

TABLE A-6-2. SELECTIVE ADDITIONAL DATA ITEM DESCRIPTIONS	
DID TITLE	DID NUMBER
ANALYZE	
Training Situation Analysis Report	DI-ILSS-81069
Media Selection Model Report	DI-ILSS-81072
Training Information Package	DI-ILSS-81099
DESIGN	
Media Selection Report	DI-ILSS-81084
Lesson Specifications Report	DI-ILSS-81090
Training Technology Assessment Report	DI-ILSS-81082
Training System Alternatives Report	DI-ILSS-81086
Training Equipment Requirements Document	DI-ILSS-81073
Training System Modification Report	DI-ILSS-81087
Training System Functional Characteristics Report	DI-ILSS-81088
Training Facilities Report	DI-ILSS-81089
DEVELOP	
Trainer Software Application Handbook	DI-ILSS-81094
Training System Utilization Handbook	DI-ILSS-81096
On-the-Job Training Handbook	DI-ILSS-81101
Training Information Package	DI-ILSS-81099
Trainee Orientation Guide	DI-ILSS-81102
Nonresident Training Materials	DI-ILSS-81103
Training Material Change Package	DI-ILSS-81106
IMPLEMENT	
No DIDs specified	
EVALUATE	
Training Evaluation Plan	DI-ILSS-81076
Training Evaluation and Validation Report	DI-ILSS-81105

TABLE A-6. Navy core Data Item Descriptions - Continued.

TABLE A-6-3. MIL-STD-001379C to MIL-STD-1379D CROSSWALK			
MIL-STD-001379C DID TITLE	DID NUMBER	MIL-STD-1379D DID TITLE	DID NUMBER
Conference Agenda	DI-A-7088	Conference Agenda	DI-A-7088
Conference Minutes	DI-A-7089	Conference Minutes	DI-A-7089
Training Program and Training Equipment Plan	DI-ILSS-80076	Training Program Development and Management Plan	DI-ILSS-81070 DI-ILSS-81074
		Training System Implementation Plan	DI-ILSS-81074
Manpower, Personnel, and Training Analysis Report	DI-ILSS-80077	Mission, Collective, Individual, and Occupational Training Task Analysis Report	DI-ILSS-81078
		Learning Analysis Report	DI-ILSS-81083
Personnel Performance Profiles	DI-ILSS-80078	Personnel Performance Profile Tables	DI-ILSS-81079
Training Path System	DI-ILSS-80079	Training Path System Report	DI-ILSS-81080
Topical Outline	DI-ILSS-80080	Training Course Control Document	DI-ILSS-81075
Topic Learning Objectives	DI-ILSS-80081	Training Course Control Document	DI-ILSS-81075
Instructor Guide	DI-ILSS-80082	Lesson Plan	DI-ILSS-81095
Trainee Guide	DI-ILSS-80083	Trainee Guide	DI-ILSS-81100
Training Material Outline	DI-ILSS-80084	Training Course Control Document	DI-ILSS-81075

TABLE A-6. Navy core Data Item Descriptions - Continued.

TABLE A-6-3. MIL-STD-001379C to MIL-STD-1379D CROSSWALK - Continued			
MIL-STD-001379C DID TITLE	DID NUMBER	MIL-STD-1379D DID TITLE	DID NUMBER
Lecture Guide	DI-ILSS-80085	Lesson Plan	DI-ILSS-81095
Self-Study Workbook	DI-ILSS-80086	On-the-Job Training Handbook	DI-ILSS-81101
Exercise Controller Guide	DI-ILSS-80087	Training System Utilization Handbook	DI-ILSS-81096
Slides/Transparencies	DI-ILSS-80088	Instructional Media Package	DI-ILSS-81092
Wall Chart	DI-ILSS-80089	Instructional Media Package	DI-ILSS-81092
Video Tape Presentation	DI-ILSS-80090	Instructional Media Package	DI-ILSS-81092
Tests for Measurement of Student Achievement	DI-ILSS-80091	Test Package	DI-ILSS-81085
Simulator Software Utilization Handbook	DI-ILSS-80092	Trainer Software Application Handbook	DI-ILSS-81094
		Training System Utilization Handbook	DI-ILSS-81096
Student and Training Course Evaluation Forms	DI-ILSS-80046	Trainee and Training Course Completion Report	DI-ILSS-81104
Instructor's Utilization Handbook for Simulation Equipment	DI-H-7076	Training System Utilization Handbook	DI-ILSS-81096
On-the-Job Training Handbook	DI-H-7077	On-the-Job Training Handbook	DI-ILSS-81101
Technical Hands-On Training Systems Packets	DI-H-7078	On-the-Job Training Handbook	DI-ILSS-81101

TABLE A-7. Marine Corps core Data Item Descriptions.

The following DIDs represent the minimum data to be considered when a new course will be developed under contract for the Marine Corps.	
DID TITLE	DID NUMBER
Training Course Control Document	DI-ILSS-81075
Mission Performance Standards	DI-ILSS-81077
Mission, Collective, Individual, and Occupational Training Task Analysis Report	DI-ILSS-81078
Individual Training Standards	DI-ILSS-81081
Learning Analysis Report	DI-ILSS-81083
Instructional Media Package	DI-ILSS-81092
Lesson Plan	DI-ILSS-81095
Trainee Guide	DI-ILSS-81100

TABLE A-8. Army core Data Item Descriptions.

This table identifies the DIDs which correspond to major, recurring Army training development and product requirements. The first column lists the Army requirement. The second column identifies the DID or DIDs which must be cited in the Contract Data Requirements List (CDRL) to meet that requirement. This listing is not all-inclusive. Other DIDs which were originally developed to support Navy, Air Force, or Marine Corps training may support unique training requirements, although these DIDs are not cited below. The DIDs for MIL-STD 1379D were developed for use by all Services. Consequently, each DID contains Service-specific data requirements as well as requirements standard for all Services. The Army must tailor each DID to eliminate unwanted Navy, Marine Corps, and Air Force peculiar data. Tailoring is the process of deleting unnecessary paragraphs, sentences, phrases, and words. Paragraph 50 of this appendix contains general guidance for tailoring DIDs. Personnel who are preparing contracts for Army training development and products should also refer to Army-specific tailoring guidance to ensure that they tailor each DID to describe effectively the Army requirements for the specified product. DIDs can be related to other DIDs in several different ways. DIDs may serve as input for other DIDs; DIDs may serve in a support capacity for other DIDs; or DIDs may need to be combined to satisfy fully an Army requirement for a single training product.

Input. Some DIDs describe training products which serve as a basis for development of other products (for instance, task analysis is the basis for learning analysis; learning analysis the basis for development of lesson plans). In such cases, the data from one DID serve as necessary input for the development of another DID. If the necessary input data does not exist in a form available to the present product contractor (either in contractor-controlled or Government furnished materials), then the contract which calls out the DID for the end training product must also call out the DID for the required input.

Support. Other DIDs describe training products which never occur by themselves, but are required to ensure the successful development of another product, (for instance, validation is conducted to ensure the quality of the lesson plan, test, and course). The contract which calls out the DID for the end training product must always call out the DID which supports its development.

Combination. Some DIDs must be combined to result in a recognizable Army product, (for instance, the MQS training support package requires the DIDs for lesson plan, instructional media package, test package, and trainee guide). If an Army contract is for a training product that consists of several DIDs, that contract must call out all applicable DIDs.

TABLE A-8. Army core Data Item Descriptions - Continued.

ARMY TRAINING REQUIREMENT	DID TITLE	DID NUMBER
Analysis (task, job, individual, collective)	Mission, Collective, Individual, and Occupational Training Task Analysis Report	DI-ILSS-81078
	Mission Performance Standards	DI-ILSS-81077
	Learning Analysis Report	DI-ILSS-81083
Army Correspondence Course Program (ACCP) subcourses	Nonresident Training Materials	DI-ILSS-81103
Audiovisual media development (slides, video, paper copies of slides for MQS training support packages, and other material)	Instructional Media Package	DI-ILSS-81092
Comparative analysis of existing training system to existing or projected training requirements	Training Situation Analysis Report	DI-ILSS-81069
Cost and Operational Effectiveness Analysis (COEA)	Training System Alternatives Report	DI-ILSS-81086
Course administrative data (course outline; list of required ammunition, references, equipment, and other data).	Training Course Control Document	DI-ILSS-81075
Course design data (subject matter content; training strategies; learning activities, and other data)	Lesson Specifications Report	DI-ILSS-81090
Course Management Plan	Training Course Control Document	DI-ILSS-81075
Drill books	Collective Task Training Package	DI-ILSS-81098
End of course test	Test Package	DI-ILSS-81085
Evaluation of training courses, programs, and other activities	Training Evaluation Plan	DI-ILSS-81076
	Training Evaluation and Validation Report	DI-ILSS-81105

TABLE A-8. Army core Data Item Descriptions - Continued.

ARMY TRAINING REQUIREMENT	DID TITLE	DID NUMBER
Extension training materials, (for instance, TEC-type lessons, RC3, and other material).	On-the-Job Training Handbook Nonresident Training Materials	DI-ILSS-81101 DI-ILSS-81103
Facilities requirements	Training Facilities Report	DI-ILSS-81089
General training contract management (for instance, IPR's, and other activities)	Conference Agenda Conference Minutes	DI-A-7088 DI-A-7089
Individual Training Plan (ITP)	Individual Training Plan	DI-ILSS-81071
Learning analysis data	Learning Analysis Report	DI-ILSS-81083
Lesson plans (resident courses, RC courses, and other courses)	Lesson Plan	DI-ILSS-81095
Media selection	Media Selection Report	DI-ILSS-81084
Mission Training Plans (MTP'S)	Collective Task Training Package	DI-ILSS-81098
Models for media selection	Media Selection Model Report	DI-ILSS-81072
Monitoring instruction	Training Evaluation and Validation Report	DI-ILSS-81105
Orientation to courses (administrative information)	Trainee Orientation Guide	DI-ILSS-81102
Plans for implementing and managing training	Training System Implementation Plan	DI-ILSS-81074
Presentation of instruction	Trainee and Training Course Completion Report	DI-ILSS-81104
Program of instruction (POI)	Training Course Control Document	DI-ILSS-81075
Quality control/assurance plans	Training Program Development and Management Plan	DI-ILSS-81070
Skill Qualification Tests (SQT)	Test Package	DI-ILSS-81085

TABLE A-8. Army core Data Item Descriptions - Continued.

ARMY TRAINING REQUIREMENT	DID TITLE	DID NUMBER
Soldier Training Publications (STP's) for officers and enlisted soldiers	Individual Task Training Package	DI-ILSS-81097
Student Handouts (for instance, resident courses and MQS training support packages, and other purposes)	Trainee Guide	DI-ILSS-81100
Systems Training Plan (STRAP) (Resourcing, milestones, and timephasing for training development tasks)	Training Program Development and Management Plan	DI-ILSS-81070
Training devices, simulations, and simulators (for instance, Training Device Need Statement (TDNS) Training Device Requirement (TDR), and other similar items)	Training Equipment Requirements Document	DI-ILSS-81073
	Training System Functional Characteristics Report	DI-ILSS-81088
	Training System Modification Report	DI-ILSS-81087
	Training Technology Assessment Report	DI-ILSS-81082
	Training Systems Alternatives Report	DI-ILSS-81086
Training Effectiveness Analysis (developmental and post-fielding). Cost-effectiveness Analysis (CEA); Cost and Training Effectiveness Analysis (CTEA)	Training Evaluation Plan	DI-ILSS-81076
	Training Evaluation and Validation Report	DI-ILSS-81105
	Training Situation Analysis Report	DI-ILSS-81069
	Training Technology Assessment Report	DI-ILSS-81082
	Training Systems Alternatives Report	DI-ILSS-81086
Training Support Packages (TSP's) for MQS	Lesson Plan	DI-ILSS-81095
	Instructional Media Package (Paper slides)	DI-ILSS-81092
	Trainee Guide (student handout)	DI-ILSS-81100
	Test Package (tests)	DI-ILSS-81085
Validation of all training materials and tests during development	Training Program Development and Management Plan	DI-ILSS-81070
	Training Evaluation and Validation Report	DI-ILSS-81105

APPENDIX A

TABLE A-9. Air Force core Data Item Descriptions.

The following tables list Data Item Descriptions to be considered when a new Air Force training program or course is to be developed under contract. These efforts generally fall into three categories: (1) Total Contract Training Programs (Table A-9-1) or some similar variant such as Aircrew Training Systems (ATS) which are contractor developed and operated and the contractor provides some or all of the instruction; (2) Turn-Key Training Programs (Table A-9-2) which are developed to some level of performance and then turned over to the Air Force for operation; or (3) Training-related Product Development (Table A-9-3) which varies widely depending on the specific need. In all cases, DIDs are selected and tailored according to the tasks to be performed in meeting the unique requirements of the program.

TABLE A-9-1. TOTAL CONTRACT TRAINING PROGRAMS

DID TITLE	DID NUMBER
Training Program Development and Management Plan	DI-ILSS-81070
Media Selection Model Report	DI-ILSS-81072
Conference Agenda	DI-A-7088
Conference Minutes	DI-A-7089
Training System Implementation Plan	DI-ILSS-81074
Training Course Control Document	DI-ILSS-81075
Training Evaluation Plan	DI-ILSS-81076
Learning Analysis Report	DI-ILSS-81083
Media Selection Report	DI-ILSS-81084
Trainee Guide	DI-ILSS-81100
Training Information Package	DI-ILSS-81099
Test Package	DI-ILSS-81085
Trainee and Training Course Completion Report	DI-ILSS-81104
Training Evaluation and Validation Report	DI-ILSS 81105

TABLE A-9. Air Force Core Data Item Descriptions. - Continued.

TABLE A-9-2. TURN-KEY TRAINING PROGRAMS	
DID TITLE	DID NUMBER
Training Program Development and Management Plan	DI-ILSS-81070
Media Selection Model Report	DI-ILSS-81072
Conference Agenda	DI-A-7088
Conference Minutes	DI-A-7089
Training System Implementation Plan	DI-ILSS-81074
Training Course Control Document	DI-ILSS-81075
Training Evaluation Plan	DI-ILSS-81076
Mission, Collective, Individual, and Occupational Training Task Analysis Report	DI-ILSS-81078
Learning Analysis Report	DI-ILSS-81083
Media Selection Report	DI-ILSS-81084
Training Equipment Requirements Document	DI-ILSS-81073
Lesson Plan	DI-ILSS-81095
Trainee Guide	DI-ILSS-81100
Training Information Package	DI-ILSS-81099
Test Package	DI-ILSS-81085
Instructional Media Package	DI-ILSS-81092
Trainee and Training Course Completion Report	DI-ILSS-81104
Training Facilities Report	DI-ILSS-81089
Training Evaluation and Validation Report	DI-ILSS-81105
*Training System Utilization Handbook	DI-ILSS-81096
*On-the-Job Training Handbook	DI-ILSS-81101

TABLE A-9. Air Force core Data Item Descriptions - Continued.

TABLE A-9-3. TRAINING-RELATED PRODUCT DEVELOPMENT	
DID TITLE	DID NUMBER
*Nonresident Training Materials	DI-ILSS-81103
*Trainee Orientation Guide	DI-ILSS-81102
*Trainer Software Application Handbook	DI-ILSS-81094
NOTE: DIDs marked with an asterisk (*) are to be SELECTIVELY APPLIED based on the actual training requirement.	

TABLE A-10. Tailoring guidance.

The task statements and Data Item Descriptions cited in MIL-STD-1379D must be tailored to meet a service-specific, contract training requirement. "Tailoring" refers to the selection of applicable task statements and DIDs and the deletion of any paragraphs, phrases, or words that are unnecessary or do not apply. Table A-10-1, paragraph 4, is one example of how task statements may be documented and tailored in the requirements section of a Statement of Work (SOW). The SOW should be prepared in accordance with MIL-HDBK-245 and Service-specific guidance. Table A-10-2 is one example of how a DID may be tailored. In each case, tailoring by deletion is the rule. Requirements cannot be added that increase the scope of DIDs.

TABLE A-10-1. Example of tailored task statements in a Statement of Work (SOW).

1. Background. (Description in general terms of the overall project in which the Government is engaged or the overall goal it is attempting to achieve.)

2. Scope. (Brief description in general terms of the work that the contractor shall accomplish.)

3. Applicable documents. (List of all documents, standards and guidance, required by SOW.)

4. Requirements. (Arrangement of tasks and subtasks logically organized based on program requirements.)

Example. The contractor shall perform the following tasks from MIL-STD-1379D:

4.1 Task 201: MISSION, COLLECTIVE, INDIVIDUAL, AND OCCUPATIONAL TRAINING TASK ANALYSES.

4.1.1 Inputs: Format shall be in accordance with Attachment A (Sample Package). NAMTRAGRUINST P1540.2H will be provided for use as a guidance document. The following courseware will be made available for review at Government's training facility: C-XXX-XXXX, USM-XXX INTERMEDIATE MAINTENANCE COURSE. LSA data will be provided if available. Training task selection shall be based upon safety factors (all tasks with a critical safety factor shall be trained), failure rates of the equipment, frequency of performance, and the relationship of the task to overall system performance.

4.1.2 Specific tasks to be performed: Subtasks 201.2.2, 201.2.4 (delete ", and develop listings of occupationally grouped individual training tasks), 201.2.5, 201.2.6, 201.2.12, and 201.2.13.

TABLE A-10. Tailoring guidance - Continued.

TABLE A-10-1. Example of tailored task statements in a Statement of Work (SOW) - Continued.

4.1.3 Output (deliverable). The deliverable output shall be Task Output 201.4.2, Individual Task Analysis Report, DI-ILSS-81078, prepared as specified on the Contract Data Requirements List (CDRL). Delete "Mission, Collective" and "and Occupational" from Task Output 201.4.2.

4.1.4 Schedule. A draft Individual Task Analysis Report shall be delivered 28 calendar days after contract award. The Government will have 7 calendar days for review. A final Individual Task Analysis Report shall be delivered 42 calendar days after contract award.

4.2 Task 203: LEARNING ANALYSIS.

4.2.1 Inputs: Government approved Individual Task Analysis Report from Task 201.

4.2.2 Specific tasks to be performed: Subtasks 203.2.1, 203.2.3, 203.2.4, 203.2.5, 206.2.6, 203.2.7, 203.2.8, 203.2.9 (delete "activities and events"), 203.2.10, 203.2.11, 203.2.14, 203.2.15, and 203.2.17.

4.2.3 Output (non-deliverable). The output shall be subtasks 203.4.2, 203.4.4, 203.4.5, 203.4.6, 203.4.7, 203.4.8, 203.4.9 (delete "events, activities"), 203.4.10, 203.4.11, 203.4.14, 203.4.15, 203.4.16, 203.4.17, and 203.4.18. These outputs shall be used in the performance of Task 4.3.

4.2.4 Schedule. The outputs shall be reviewed and approved by the Government during an in-process review not later than 49 days after delivery order issue.

4.3 SOW REQUIREMENTS CONTINUE TO BE IDENTIFIED.

5. Progress reports. (Description of what is needed to monitor progress of the contract.)

6. Attachments. (Exhibits to SOW, for instance, sample package illustrating the content and format requirements of tailored DIDs. See paragraph 50.2 of this appendix for guidance on how to prepare a sample package.

TABLE A-10. Tailoring guidance - Continued.

TABLE A-10-2. Example of a tailored data item description.

Sample Situation: The sample portion of a Statement of Work (SOW) in Table A-10-1 requires individual task analysis data as a deliverable. This deliverable will be purchased under DID DI-ILSS-81078, Mission, Collective, Individual, and Occupational Training Task Analysis Report. The end user in the Government has requested that this DID be tailored to produce a gross task list; a list of conditions, standards, and performance steps; and a list of tasks selected for training. The format of the DID will be in accordance with Appendix C of MIL-STD-1379D. Tailoring guidance must be provided in Block 16 of the Contract Data Requirements List (CDRL), DD Form 1423.

Block 16.

Para 10.2: Format, with the exception of Front Matter, shall be in accordance with Attachment 6.1 of the Statement of Work.

Para 10.3.1: Front matter shall consist of a Cover, Table of Contents, List of Tables, List of Tables, and How to Use the Training Document. Format and content shall be in accordance with Appendix C of MIL-STD-1379D. Paragraphs 10.3.2, 10.3.3, 10.3.3.3 (delete h,i,m,n,p, and t) apply to this effort.

APPENDIX A

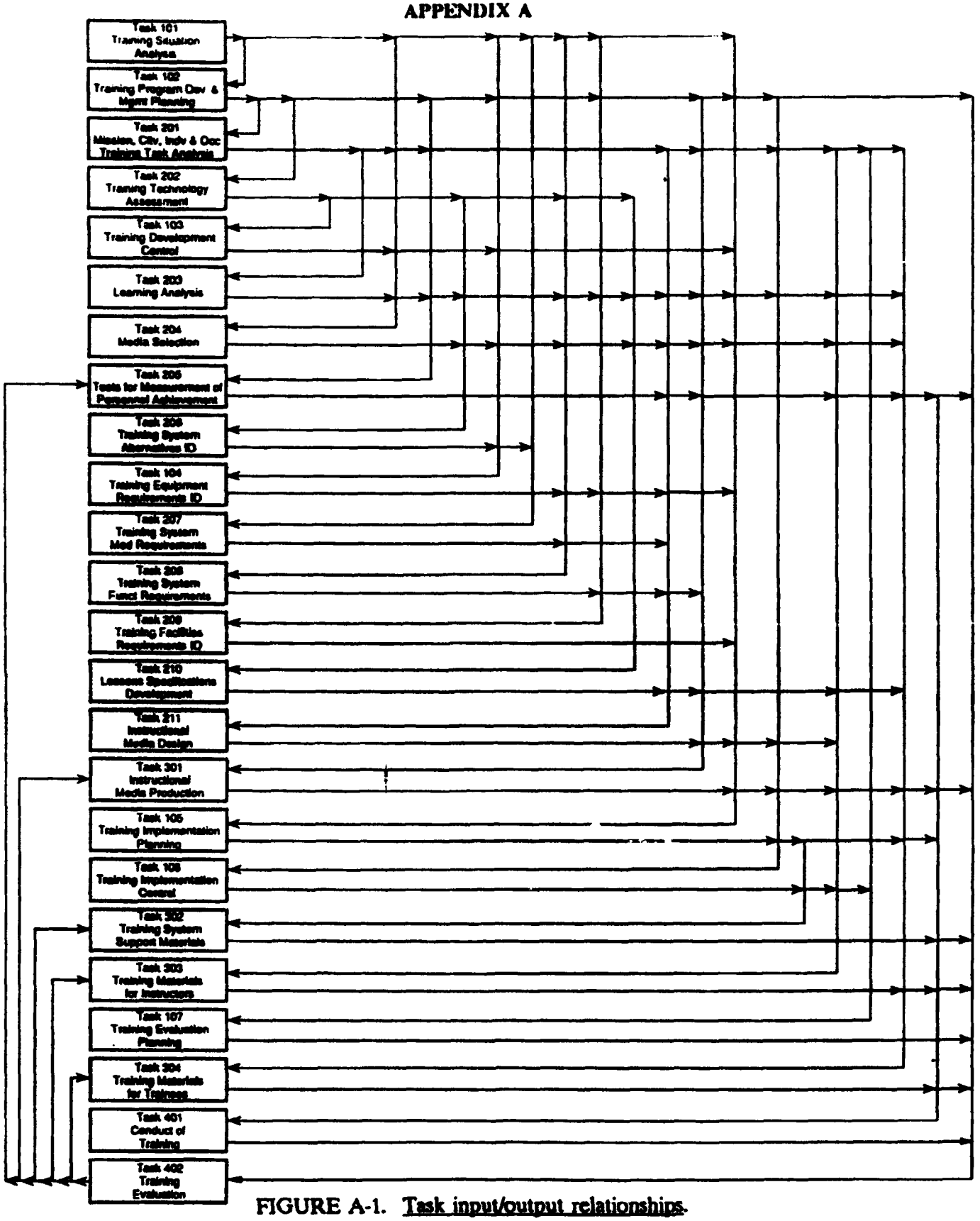


FIGURE A-1. Task input/output relationships.

APPENDIX A

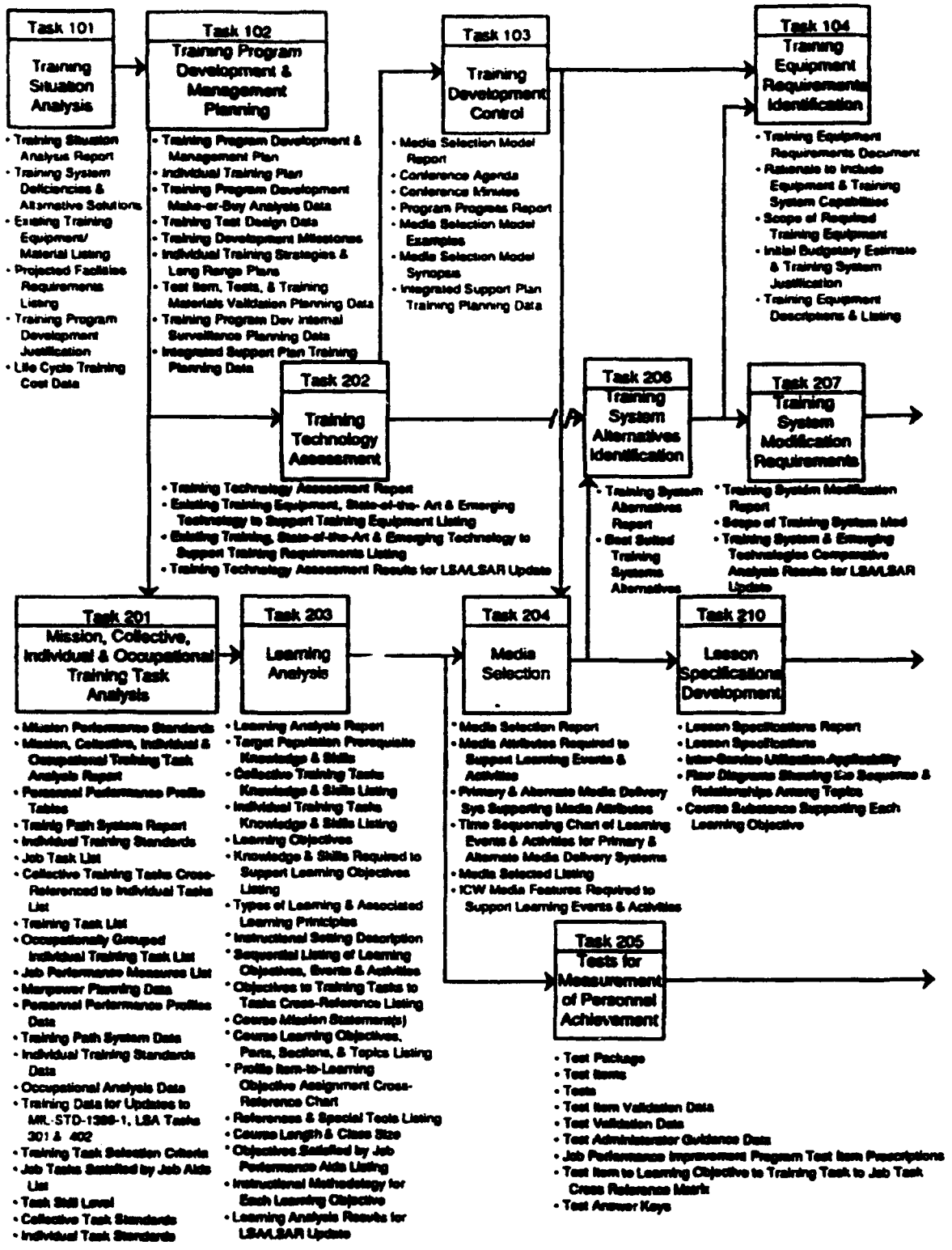


FIGURE A-2. Task flow to systems approach to training.

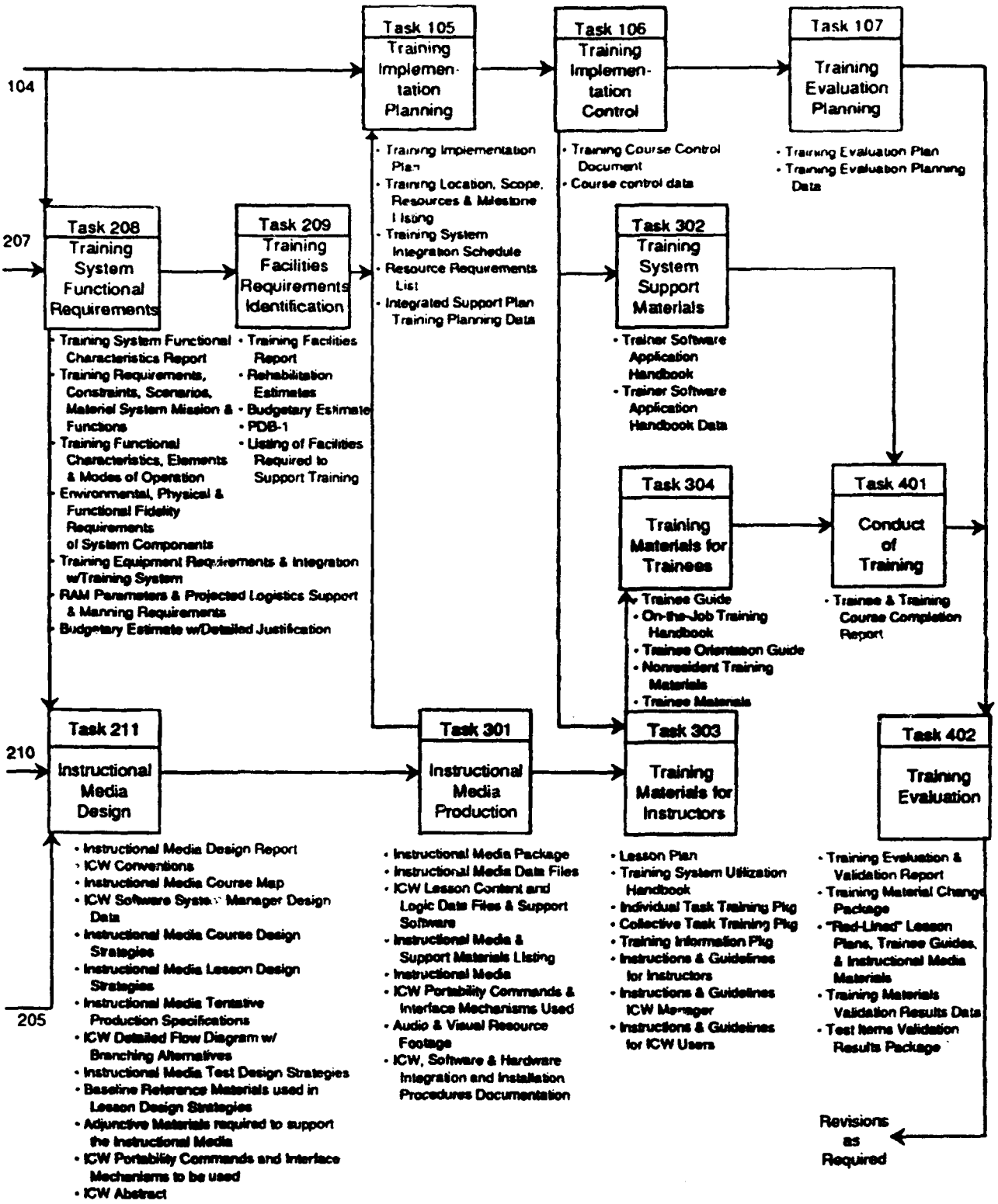


FIGURE A-2. Task flow to systems approach to training - Continued.

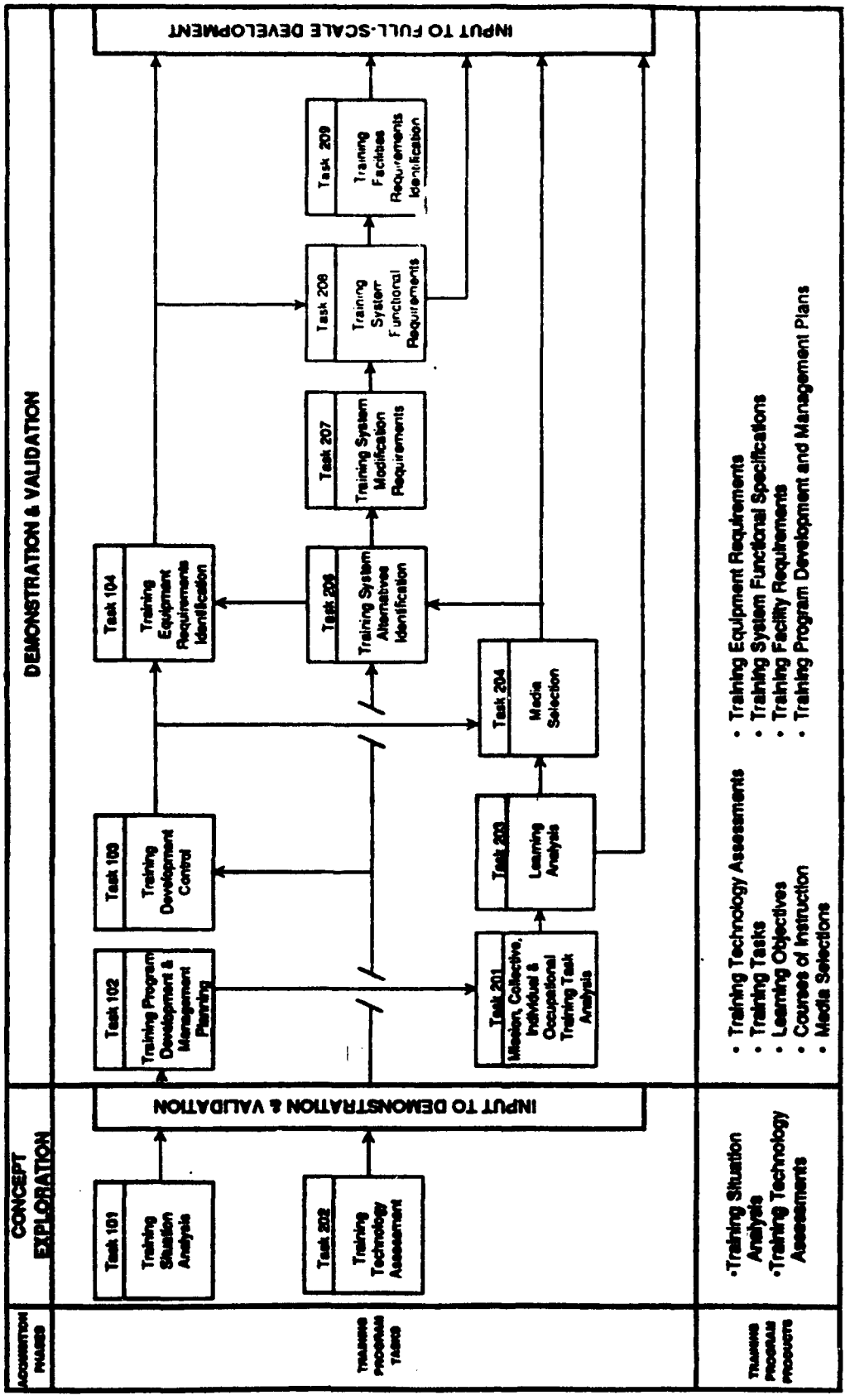
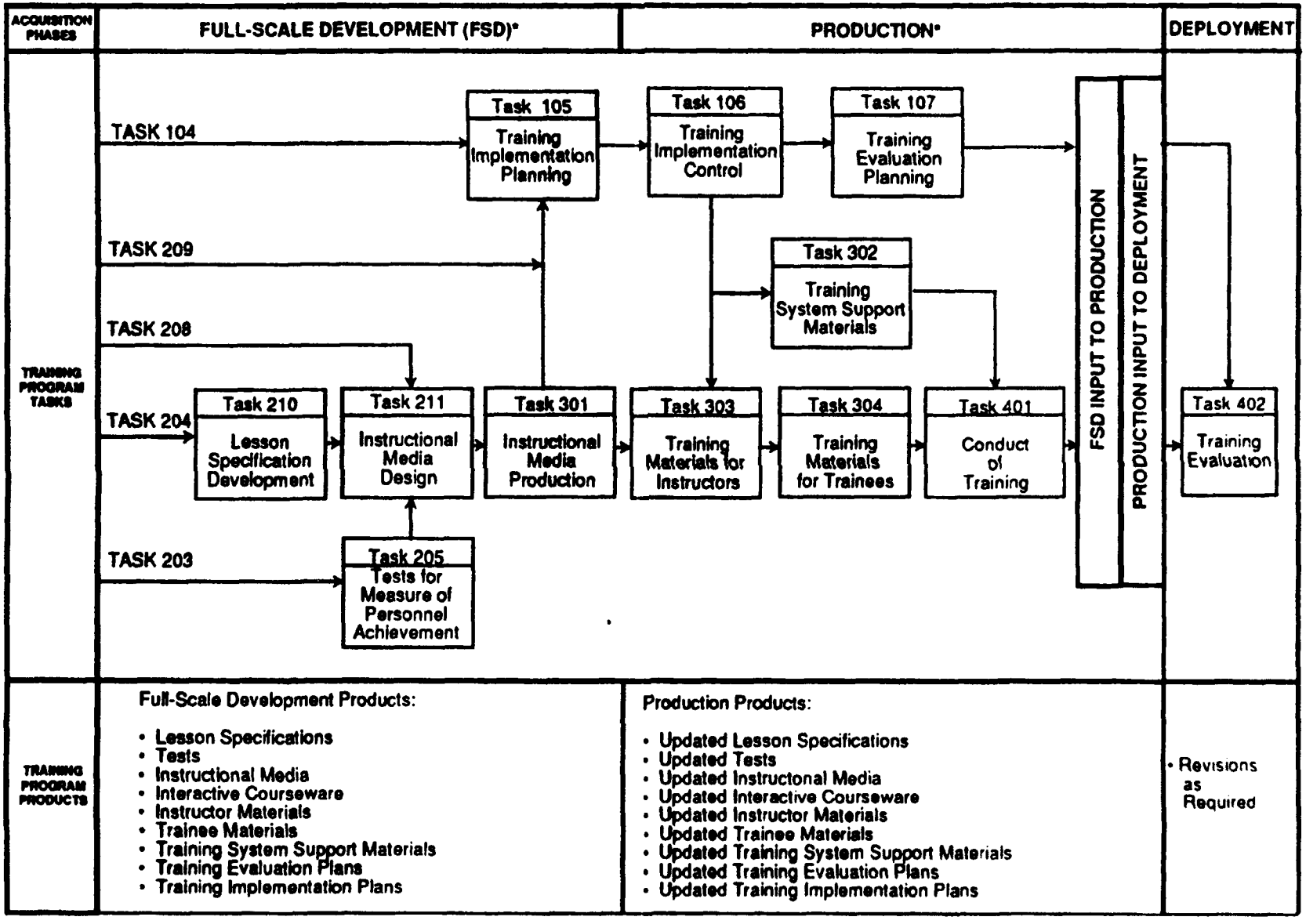


FIGURE A-3. Training program process flow chart.



* The Full-Scale Development Phase and the Production Phase are performed as separate phases. The sequence of tasks shown in the block below the headings applies separately to each phase. Inputs and products for the respective phases are as shown herein.

FIGURE A-3. Training program process flow chart - Continued.

APPENDIX B

SYSTEMS APPROACH TO THE INTERACTIVE COURSEWARE (ICW) DEVELOPMENTAL PROCESS

10 SCOPE

10.1. Scope. This appendix provides an overview of the ICW developmental process (Section 40) and a matrix of ICW development products, deliverables and supporting task descriptions (Section 50). This appendix is intended to facilitate the correct application of this standard to meet ICW developmental requirements. This appendix is not a mandatory part of the standard. The information contained herein is intended for guidance only. Users of this appendix may include the Department of Defense contracting activities, Government in-house activities, and prime contractors or subcontractors who intend to impose the ICW developmental requirements upon suppliers.

20 APPLICABLE DOCUMENTS

(This section is not applicable to this appendix)

30 DEFINITIONS

30.1 Terms, abbreviations, and acronyms used in this appendix. Key terms, abbreviations, and acronyms used in this appendix are defined in Section 3 of the basic standard.

40 ICW DEVELOPMENTAL PROCESS OVERVIEW

40.1 Figure B-1 illustrates the ICW developmental process using MIL-STD-1379D task descriptions for analyzing, designing, developing and implementing ICW training programs.

50 ICW DEVELOPMENTAL PRODUCTS AND SUPPORTING TASKS

50.1 Table B-1 illustrates the developmental products. supporting task description(s) and associated Data Item Descriptions (DIDs) provided by the MIL-STD-1379D process.

TABLE B-1. ICW Developmental products and supporting tasks.

Table B-1 lists products used in the design, development, implementation and maintenance of Interactive Courseware (ICW), the MIL-STD-1379D task descriptions which produce the product and the associated Data Item Description(s) and applicable paragraph(s) therein that must be cited to receive the product. Discrete task outputs are also identified when applicable.

ICW DEVELOPMENTAL PRODUCT	TASK DESCRIPTION(S)	DID(S) AND DISCRETE TASK OUTPUTS
MANAGEMENT PLANS		
Training Development and Management Plan	102.2.1, 102.2.2, 102.2.5 through 102.2.14	DI-ILSS-81070, Training Program Development and Management Plan, except paragraphs 10.3.2.15 and 10.3.2.16
Evaluation Plan	107.2.1 through 107.2.6	DI-ILSS-81076, Training Evaluation Plan
Installation and Integration Plan	301.2.15	DI-ILSS-81074, Training System Implementation Plan Discrete task output: 105.4.5
Implementation Plan	105.2.1 through 105.2.11	DI-ILSS-81074, Training System Implementation Plan
Configuration Management Plan	102.2.3	DI-ILSS-81070, Training Program Development and Management Plan, paragraph 10.3.2.15
Courseware Maintenance	102.2.4	DI-ILSS-81070, Training Program Development and Management Plan, paragraph 10.3.2.16

TABLE B-1. ICW Developmental products and supporting tasks - Continued.

ICW DEVELOPMENTAL PRODUCT	TASK DESCRIPTION(S)	DID(S) AND DISCRETE TASK OUTPUTS
DESIGN PRODUCTS		
Media Selection and ICW Features	204.2.1 through 204.2.6	DI-ILSS-81084, Media Selection Report Discrete task outputs: 204.4.2, 204.4.6
Tests, Test Items	205.2.1, 205.2.2, 205.2.5, 205.2.7, 205.2.8	Discrete task outputs: 205.4.2, 205.4.3, 205.4.7, 205.4.8 and 205.4.9
Lesson Specifications	210.2.1 through 210.2.5	DI-ILSS-81090, Lesson Specifications Report
Abstract of Training	211.2.12	DI-ILSS-81091, Instructional Media Design Report, paragraph, 10.3.2
ICW Design Strategies	211.2.1 through 211.2.6, 211.2.7, 211.2.10	DI-ILSS-81091, Instructional Media Design Report, paragraph 10.3.3
ICW Test Design Strategy	211.2.8	Discrete task output: 211.4.9
ICW Portability Protocols	211.2.11	Discrete task output: 211.4.12
Flow Diagrams	211.2.7	DI-ILSS-81091, Instructional Media Design Report, paragraph 10.3.4

TABLE B-1. ICW Developmental products and supporting tasks - Continued.

ICW DEVELOPMENTAL PRODUCT	TASK DESCRIPTION(S)	DID(S) AND DISCRETE TASK OUTPUTS
DEVELOPMENT PRODUCTS		
Video Production Plan	301.2.1	DI-ILSS-81092, Instructional Media Package, paragraph 10.3.5
ICW Script-Storyboard	301.2.2, 301.2.3	DI-ILSS-81092, Instructional Media Package, paragraphs 10.3.2.4, 10.3.3
Video Shot List	301.2.4	DI-ILSS-81092, Instructional Media Package, paragraph 10.3.4
Video/Audio Materials	301.2.5, 301.2.6, 301.2.8	DI-ILSS-81092, Instructional Media Package, paragraphs 10.3.7, 10.3.8, 10.3.9
Edit Decision List	301.2.7	DI-ILSS-81092, Instructional Media Package, paragraph 10.3.6
ICW Lesson Data Files	301.2.8, 301.2.9	DI-ILSS-81093, Instructional Media Data Files
ICW Tests	205.2, 211.2.8, 301.2	DI-ILSS-81092, Instructional Media Package, paragraphs 10.3.7, 10.3.8, 10.3.9
		DI-ILSS-81093, Instructional Media Data Files
ICW Test Validation	205.2.3, 205.2.4	DI-ILSS-81105, Training Evaluation and Validation Report

TABLE B-1. ICW Developmental products and supporting tasks - Continued.

ICW DEVELOPMENTAL PRODUCT	TASK DESCRIPTION(S)	DID(S) AND DISCRETE TASK OUTPUTS
ICW Manager's Guide	303.2.8, 303.2.9, 303.2.11	DI-ILSS-81096, Training System Utilization Handbook, paragraph 10.3.12
ICW User's Guide	303.2.8, 303.2.10	DI-ILSS-81096, Training System Utilization Handbook, paragraph 10.3.13
IMPLEMENTATION PRODUCTS		
Install, Integrate and Implement ICW	401.2.1, 401.2.4, 401.2.7	DI-ILSS-81104, Trainee and Training Course Completion Report, paragraphs 10.3.2, 10.3.3 and 10.3.5
Evaluate ICW	402.2.1 through 402.2.7	DI-ILSS-81105, Training Evaluation and Validation Report
MAINTENANCE PRODUCTS		
Training Effectiveness	402.2.1 through 402.2.4, 402.2.7, 402.2.8	DI-ILSS-81105, Training Evaluation and Validation Report
Maintenance Assessment	207.2.1 through 207.2.7	DI-ILSS-81087, Training System Modification Report
Change Materials	402.2.5, 402.2.9	DI-ILSS-81106, Training Material Change Package

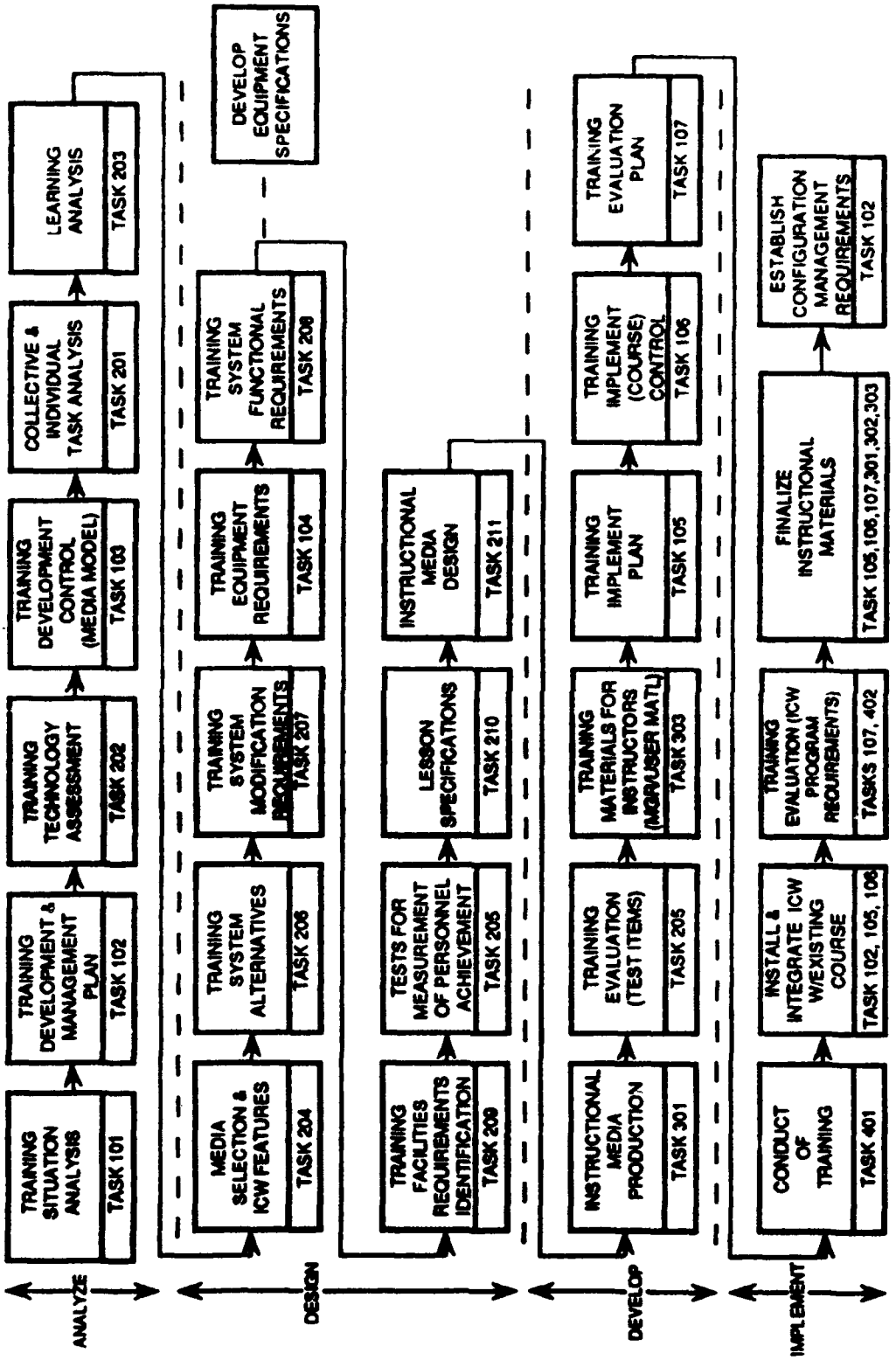


FIGURE B-1. ICW Developmental process overview.

APPENDIX C

MILITARY TRAINING PROGRAM

REQUIREMENTS FOR DATA ITEM DESCRIPTION PRODUCTS

10. SCOPE

10.1 Scope. This appendix contains the style and format, electronic media, and front matter requirements for all Military Training Program (MTP) Data Item Description (DID) products, referred to herein as "training data" or "training document(s)". This appendix is a mandatory part of the standard. The requirements contained herein are intended for compliance as specified in the applicable DIDs and as tailored/specified in the contract.

10.2 Application of this appendix. The style and format and front matter requirements for training data are included in this appendix to eliminate the need to repeat these requirements in each applicable MTP DID. The electronic media requirements are included herein to facilitate implementation of the Computer-aided Acquisition and Logistic Support (CALS) requirements in the acquisition/delivery of training data. All of the requirements herein are subject to deletion tailoring and to the application of Service-specific requirements or guidance. The electronic media requirements for preparation and delivery of training data will apply only when specified in the contract.

20. APPLICABLE DOCUMENTS

20.1 Government documents.

20.1.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this appendix to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

MIL-D-28000	Digital Representation for Communication of Product Data; IGES Application Subsets
MIL-M-28001	Markup Requirements and Generic Style Specification for Electronic Printed Output and Exchange of Text
MIL-R-28002	Raster Graphics Representation in Binary Format, Requirements for

MIL-D-28003	Digital Representation for Communication of Illustration Data: CGM Application Profile
MIL-M-38784	Manual, Technical, General Style and Format Requirements

STANDARDS

MILITARY

MIL-STD-1806	Marking Technical Data Prepared by or for the Department of Defense
MIL-STD-1840	Automated Interchange of Technical Information

HANDBOOK

MILITARY

MIL-HDBK-59	Department of Defense Computer Aided Acquisition and Logistic Support (CALS) Program Implementation Guide

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from: Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.)

30. DEFINITIONS

30.1 Terms, abbreviations, and acronyms used in appendix. Key terms, abbreviations, and acronyms used in this appendix are defined in section 3 of the basic standard.

40. GENERAL REQUIREMENTS

40.1 Style and format. Unless otherwise specified in the contract or herein, the style and format of the training data shall be in accordance with MIL-M-38784.

40.2 Electronic media. When specified (see 4.7.3), the training data shall be prepared and delivered in the form of electronic media. Except as otherwise specified in the contract, the electronic media shall be in accordance with the requirements specified herein (see MIL-HDBK-59 for guidance).

40.2.1 Structure and format. The media shall be labeled, structured, and formatted in accordance with MIL-STD-1840.

40.2.2 Text files. Text files shall be Standard Generalized Markup Language (SGML) tagged as specified in MIL-M-28001. Computer Aided Design (CAD) shall be in accordance with MIL-D-28000 (IGES) and MIL-R-28002 (Raster), respectively.

40.2.3 Initial graphics exchange specification (IGES) files. Drawings, schematics, illustrations and similar data normally generated on CAD equipment shall be stored in files in accordance with MIL-D-28000.

40.2.4 Computer generated illustration data. Computer generated illustration data shall be in accordance with MIL-D-28003.

40.2.5 Raster files. Training data inappropriate for storage as text or IGES files shall be stored as raster data in accordance with MIL-R-28002.

40.2.6 Review copies. Paper copies of training data submitted for review shall be produced from the files to be delivered on electronic media.

50. DETAILED REQUIREMENTS

50.1 Front matter. Unless otherwise specified in the contract, front matter in training documents shall consist of the following content, (see figures C-1 through C-11) in the order listed, and prepared as specified herein:

a. Cover

b. List of effective pages

c. Letter of promulgation

d. Change record

e. Hazard awareness notice

f. Foreword

g. Preface

h. Definitions

i. Table of contents

j. List of illustrations

k. List of tables

l. How to use training document

m. Executive summary

50.1.1 Cover. The cover shall be prepared in accordance with figure C-1 and the following requirements:

a. The type of training document shall be identified by the title in accordance with the applicable Data Item Description (DID) and Service- specific requirements, (for example, Lesson Plan or Trainee Guide).

b. The training title shall identify the specific training program, course, or section. The specific training device, weapons system or equipment that relates to the training document may also be included in the training title.

c. The training control number shall identify any specific course control numbers, training device, weapons system or equipment.

d. The prepared for block shall identify the using activity.

e. The prepared by block shall identify the company/agency that developed the training document.

f. The contract number shall identify the contract under which the training document was acquired.

g. The distribution statement shall be in accordance with MIL-STD-1806.

h. The export control warning notice shall be in accordance with MIL-STD-1806.

i. The publication by direction statement shall identify the authority (cognizant Service command) under which the training document is acquired and promulgated.

j. Logos shall be in accordance with Service-specific requirements.

50.1.2 List of effective pages. The list of effective pages shall be prepared in accordance with figure C-2 and shall be included in each separate volume. Volume I shall include the listing of pages provided in all volumes.

50.1.3 Letter of promulgation. The letter of promulgation shall be included in the front matter as furnished by the contracting activity.

50.1.4 Change record. A permanent change record shall be prepared in accordance with figure C-3 and shall be included in each separate volume. Volume I shall include the listing of pages provided in all volumes.

50.1.5 Hazard awareness notice. The hazard awareness notice shall provide safety precautions for the protection of personnel and equipment and instructions for the reporting of hazards and safety violations (see figures C-4 through C-6). The hazard awareness notice shall be as follows:

a. Hazard awareness statements shall cover relevant documentation references, general and specific precautions, and hazard reporting criteria as well as any other data as specified in the contract.

b. The documentation statement shall identify relevant documentation containing specific safety precautions and preventive measures that are applicable to the particular equipment.

c. The general information statement shall identify hazards to personnel or equipment.

d. The specific precautions statement shall identify specific direction to personnel concerning safety. Statements shall remind personnel that death, personal injury, and equipment damage can result from carelessness, failure to comply with approved procedures, or violations of WARNINGS, CAUTIONS, and safety regulations.

e. The hazard reporting statement shall identify the requirement of personnel to report all hazards, safety violations and the activity to whom such reports should be sent.

50.1.6 Foreword. A foreword shall appear before the preface. It may (usually) consist of a signed statement by a person other than the author. Such an individual, often eminent in the Field, associates with the publication and adds his name to help ensure the publication is successful (see figure C-7).

50.1.7 Preface. The preface shall contain the scope, purpose and applicability of the training document and any other information the reader requires before beginning the publication (see figure C-8).

50.1.8 Definitions. The definitions shall include those words that are unique to the training document or are required to clarify the training document.

50.1.9 Table of contents. The table of contents shall list all content of the training document. Layout shall conform to figure C-9.

50.1.10 List of illustrations. Training documents shall have a list of illustrations showing the figure number, title and page number of each figure. Layout shall conform to figure C-10. Each volume in a set of documents shall contain its own list of illustrations. In addition, volume I shall contain a list of illustrations for all volumes in the set.

50.1.11 List of tables. Training documents shall have a list of tables showing the table number, title, and page number of each table. Layout shall conform to figure C-11. Each volume in a set of documents shall contain its own list of tables. In addition, volume I shall contain a list of tables for all volumes in the set.

50.1.12 How to use training document. The how to use the training document shall consist of:

a. Composition

b. Function

c. Use

d. Assignments

e. Equipment requirements

f. Instruction sheets

g. Test requirements

h. Division of materials into functional parts

50.1.13 Executive summary. The executive summary shall be developed using clear, concise narrative statements describing the methodology for data accumulation and analysis, the target population, the results of the analysis and recommendations as required.

APPENDIX C

(CLASSIFICATION)

Document Control Number
(Revision Letter)

TYPE OF TRAINING DOCUMENT

TRAINING TITLE

CONTROL NUMBER

PREPARED FOR

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

PREPARED BY

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

CONTRACT NUMBER

DISTRIBUTION STATEMENT (applicable letter). XXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

WARNING - This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Sec 2751, et set.) or the Export Administration Act of 1979, as amended, Title 50, U.S.C., App 2401 et seq. Voilations of these export laws are subject to severe criminal penalties. Disseminate in accordance with the provisions of DOD Directive 5230.25.

PUBLISHED BY DIRECTION OF

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-1. Example of cover.

(CLASSIFICATION)

Document Control Number
(Revision Letter)

List of Effective Pages

Page No.	Change in Effect	Page No.	Change in Effect	Page No.	Change in Effect

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-2. Example of list of effective pages.

APPENDIX C

(CLASSIFICATION)

Document Control Number
(Revision Letter)

Record of Changes

Change No.	Date	Title or Brief Description	Entered by

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-3. Example of change record.

(CLASSIFICATION)

Document Control Number
(Revision Letter)

HAZARD AWARENESS NOTICE

All personnel involved in operation or maintenance of electronic equipment must be thoroughly familiar with the electronic equipment safety precautions contained in Electronic Installation and Maintenance Book 0967-LP-000-0100, section 3, and NSTM, Electronics, chapter 400, 89086-HD-STM-999/ch. 400, section 2. In addition, attention is directed to the Accident Prevention Manual, OPNAVINST 5101.2 Series.

This device employs voltages which are dangerous and may be fatal if contacted by operating personnel. Extreme caution must be exercised when operating with this device. Hazard awareness dictates that this device must always be viewed as an Integral Part of a system and not as a component. While every practical precaution has been incorporated into this device, it is not possible or practical to try to list every condition or hazard that can be encountered.

Don't service or adjust this device alone. Under no circumstances will a person operate, maintain, or reach into or enter the device without the presence or assistance of another person capable of giving aid. Unless under direct supervision of a qualified person, no person shall operate or maintain a device for which he is not qualified.

Don't tamper with interlocks. Reliance on interlock circuits to remove power from the equipment is never to be assumed. Until operation of the interlock is verified, equipment is assumed to be in the hazardous mode of operation. Under no circumstances will any access gate, door, or interlock switch be removed, bypassed or modified in any way by other than authorized maintenance personnel and then only after observing proper tag-out procedures.

Resuscitation personnel working with or near high voltages shall be familiar with the latest Cardio Pulmonary Resuscitation (CPR) techniques. This type of information is available and shall be obtained through an appropriate qualification program.

Report all hazards. If at any time you detect a hazard, it is your responsibility to report the hazard to ensure that it is corrected. If you detect a "new" or "suspected new" hazard, particularly due to equipment installation, modification, or repair, it is your responsibility to report it through your chain-of-command to ensure that a SAFETYGRAM is submitted to the Naval Safety Center, Norfolk, VA. This will ensure that this hazard will be investigated, publicized, or corrected, as required.

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-4. Example of hazard awareness notice.

(CLASSIFICATION)

Document Control Number
(Revision Letter)

WARNING

RADIATION HAZARD

Co 60

Tube types OA2 and 6530/PL-35 (TR tube) used in this equipment contain radioactive material (para 0-0). These tubes are potentially hazardous when broken; see qualified medical personnel and the Safety Director if you are exposed to or cut by broken tubes. For first aid instructions see TB 750-237 and AR 755-15. Use extreme care in replacing these tubes (para 0-0) and follow safe procedures in their handling, storage, and disposal (para 0-0). Refer to paragraph 0-0 and to TB 750-237 and AR 755-15 for instructions on handling, storage, and disposal of radioactive material.

Never place radioactive tubes in your pocket.

Use extreme care not to break radioactive tubes while handling them.

Never remove radioactive tubes from cartons until ready to use them.

EXAMPLE A

ELECTROMAGNETIC RADIATION

DO NOT STAND IN THE DIRECT PATH OF THE ANTENNA WHEN THE POWDER IS ON! DO NOT WORK ON THE WAVE GUIDES WHILE THE POWER IS ON!

High frequency electromagnetic radiation can cause fatal internal burns. It can literally "cook" internal organs and flesh. If you feel the slightest warming effect while near the equipment MOVE AWAY QUICKLY!

EXAMPLE B

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-5. Example of hazard awareness notice.

(CLASSIFICATION)

Document Control Number
(Revision Letter)

WARNING
RADIATION HAZARD

This equipment contains the following radioactive tubes: (List applicable tubes and equipment locations). Radiation may be present at unsealed or broken waveguide elements.

EXAMPLE C

WARNING
DANGEROUS CHEMICALS

are used in this equipment
DEATH
or severe burns may result if personnel fail to observe safety precautions.

EXAMPLE D

WARNING
HIGH VOLTAGE

is used in the operation of this equipment
DEATH ON CONTACT
may result if personnel fail to observe safety precautions. Learn the areas containing the high voltage in each piece of equipment. Be careful not to contact high-voltage connections when installing or operating this equipment. Before working inside this equipment, turn power off and ground points of high potential before touching them.

EXAMPLE E

WARNING
GASES OF AIR UNDER PRESSURE
3000 PSI AIR PRESSURE

is used in the operation of this equipment
DEATH
or severe injury may result if personnel fail to observe safety precautions.

EXAMPLE F

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-6. Example of hazard awareness notice.

(CLASSIFICATION)

Document Control Number
(Revision Letter)

FOREWORD

As TRADOC service school instructors, you are the subject matter experts (SMEs) in your areas of expertise. What you are teaching from the platform should be provided to the entire Army. Therefore, in School Model 83 (TRADOC Regulation 10.1), I directed you to be the principal writers of doctrinal and training publications. I recognize that some of you may write more than you teach and vice/versa. However, neither duty must be performed exclusively as this would prohibit the interaction with the students which is crucial to the development of these important publications.

As the SME, you have the opportunity to have a great influence on the Army. To project this influence, you must be conversant with the development and publication process described in this pamphlet. It gives the what, when, and how for preparing a doctrinal or training publication. It also acquaints you with the roles and responsibilities of those individuals who will assist you in getting the job done - the editor and the visual information specialist. I urge you to use it to help get your thoughts on paper and, ultimately, to produce a quality publication in the allotted time.

WILLIAM R. RICHARDSON
General, United States Army
Commanding

Original Document Date
Change Number & Date

(CLASSIFICATION)

FIGURE C-7. Example of foreword.

(CLASSIFICATION)

Document Control Number
(Revision Letter)

PREFACE

The Training System Utilization Handbook for the AN/CDE-22(V) Underwater Sensor System, Basic Sonar Operation/Basic Diagnostic (BSOT/BD) Trainer, Device 2B222 is designed to aid instructors in the effective use of the BSOT/BD Trainer, Device 2B222. The handbook is bound in two volumes. Volume 1 is unclassified, and describes the BSOT/BD Trainer, Device 2B222 hardware, capabilities, limitations, and operating procedures, as well as the training exercise inserted into the BSOT/BD Trainer, Device 2B222. It also presents the method used to develop these training exercises or to update existing ones. Volume 2 is a Classified supplement, supporting Volume 1, and includes the exercise objectives, training outline, and introductions to all of the exercises inserted into the BSOT/BD Trainer, Device 2B222, Unit 1.

Original Document Date
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(CLASSIFICATION)

FIGURE C-8. Example of preface.

(CLASSIFICATION)

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I-2..... 1-2

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(CLASSIFICATION)

FIGURE C-9. Example of table of contents.

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LIST OF ILLUSTRATIONS

Figure	Title	Page
2.1	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX.....	2-3
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(CLASSIFICATION)

FIGURE C-10. Example of list of illustrations.

(CLASSIFICATION)

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LIST OF TABLES

Number	Title	Page
2-1	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX.....	2-1
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(CLASSIFICATION)

FIGURE C-11. Example of list of tables.

APPENDIX D

SOFTWARE INTERFACE AND COMMAND REQUIREMENTS FOR INTERACTIVE COURSEWARE AND AUTHORING SYSTEMS

10. SCOPE

10.1 Scope. This appendix contains detailed requirements for software interfaces and related commands to ensure interactive courseware (ICW) and authoring system portability on interactive video delivery systems. The requirements in this appendix do not address device interoperability (plug-an-play). The requirements apply only to ICW training systems (ICWTS) delivery systems based on the Microsoft Disk Operating System (MS-DOS) version 2.0 or higher or functionally equivalent operating systems, and on Intel 80x86 microprocessor architectures. This appendix is a mandatory part of the standard. The requirements contained herein are intended for compliance.

10.2 Application of this appendix. This appendix contains mandatory software interface and command requirements. These requirements are intended to be implemented in interactive courseware and authoring systems when military training programs are acquired using this standard.

20. APPLICABLE DOCUMENTS

20.1 Non-Government publications. The following document forms a part of this appendix to the extent specified herein:

INTERACTIVE MULTIMEDIA ASSOCIATION (IMA)

Recommended Practices for Multimedia Portability (MS-DOS Based Systems), Release R 1.1

(Application for copies should be addressed to the Multimedia Association, Compatibility Committee, Techworld Plaza, Suite 440, 800 K Street NW, Washington, DC 20001.)

APPENDIX D

30. DEFINITIONS

30.1 Terms, acronyms and abbreviations used in this appendix. Key terms, acronyms, and abbreviations used in this appendix are defined in Section 3 of the basic standard.

30.2 Conventions used in this appendix. This appendix uses the following notational conventions.

30.2.1 Numbers. Numbers are given either in hexadecimal, binary, or decimal format. Hexadecimal numbers have an "H" suffix, for example 006FH. Binary numbers have a "B" suffix, for example 00001011B. Decimal numbers are written without a suffix but may be followed by the word "decimal" for clarity.

30.2.2 Command names and parameters. Command names and parameters in the text are in bold face. Parameters consist of parameter labels and parameter values (see 40.5.2). In the example **vdPlay from=1000**, **vdPlay** is a command, **from** is a parameter label, and **1000** is a parameter value. Command names use mixed lower and upper case for clarity, while parameters use lower case only. However, case is not significant.

30.2.3 Memory addresses. Memory addresses are based on the Intel 80x86 microprocessor ES and DI registers. These registers are used for the addresses of parameter packets that contain one or more structures each consisting of a parameter token number and its associated value. The addresses of individual parameters and values within parameter packets are given as hexadecimal offsets in bytes from the base address in ES:DI. For example, ES:DI[10] is the area of memory 10H (16 decimal) bytes after the memory location pointed to by the combined segment and offset address in ES:DI.

APPENDIX D

40. GENERAL REQUIREMENTS

40.1 Hardware and operating system. Hardware and operating systems for ICW and authoring system delivery platforms shall be as specified in the following paragraphs.

40.1.1 Microprocessor. The computer shall be based on a microprocessor as defined in 3.95 of the basic standard.

40.1.2 Read Only Memory (ROM) Basic Input/Output System (BIOS). The computer shall use an International Business Machines Personal Computer-Advance Technology (IBM PC-AT)-compatible ROM BIOS.

40.1.3 Bus. The computer shall use an IBM PC-XT bus, IBM PC-AT bus, an IBM Microchannel bus, or an Enhanced Industry-standard Architecture (EISA) bus.

40.1.4 Graphics adapter. The computer shall have a graphics/video overlay capability using Color Graphics Adapter (CGA), Enhanced Graphics Adapter (EGA), or Video Graphics Array (VGA) graphics, or shall use two monitors, one with video and the other with graphics.

40.1.5 XY-input devices. One or more of several XY-input devices may be present (touch screen, mouse, light pen, bit pad, or other input devices).

40.1.6 Videodisc players. One or more videodisc players or functionally equivalent video sources may be present.

40.1.7 Operating system. The operating system shall be MS-DOS version 2.0 or later, or a functionally equivalent operating system, such as IBM PC DOS version 2.0 or later. Developers may provide Virtual Device Interface (VDI) Management Software that requires a specific version of MS-DOS. These shall be described as either "Compliant only when used with MS-DOS version N.nn" or, more often, "Compliant only when used with MS-DOS version N.nn or later" where "N.nn" is the version number. Similarly, ICW and authoring systems may require a specific version of MS-DOS and shall be described in the same manner.

40.2 General VDI Management architecture. Figure D-1 shows the general software architecture of a compliant system. The architecture is based on sets of high-level commands organized functionally by service group. These commands shall be issued by ICW and authoring systems and passed via an ASCII or binary application interface to the VDI Management Software. VDI Management shall, in turn, execute the commands by calling appropriate low-level services and shall pass responses back to the application via the application interface. VDI Management shall be responsible for making different delivery platforms functionally compatible at the application interface level. The internal architecture of VDI Management shall be the responsibility of VDI Management developers.

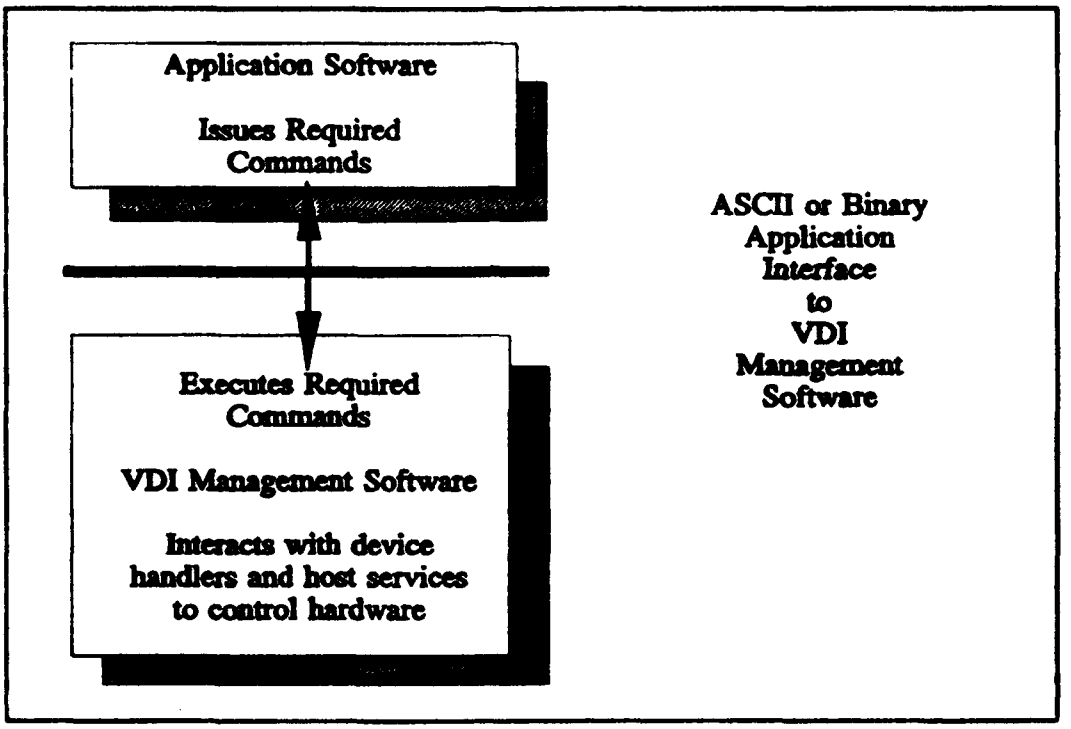

FIGURE D-1. The general software architecture of a compliant system.

40.3 Service groups and command organization. The VDI Management Software shall include four service groups: system (sy) (see Section 70), visual management (vm) (see Section 80), videodisc (vd) (see Section 90), and XY-input (xy) (see Section 100). The sy service group shall contain commands for doing system-level hardware and software initialization, furnishing information about the availability of other service groups, implementing a command queue, and helping with error handling. The other groups shall address the functional areas for which they are named. The sy service group shall be included in all compliant implementations. VDI Management, and ICW and authoring system developers may use only those service groups that include functions required for a given application.

40.4 Installation and logical device mapping. Installation, logical device numbering, and logical device mapping shall be as specified in the following paragraphs.

40.4.1 Installation methods. Specific methods of installing VDI Management shall be the responsibility of VDI developers. However, VDI developers shall ensure correct installation of system hardware and software, and shall make a list of installed service groups available to ICW and authoring systems through the sy commands. VDI Management developers shall also include a way for users to assign logical numbers using an appropriate setup facility when more than one device is present for a service group that supports multiple devices. Logical device numbers shall

be contiguous and start at zero for each service group. VDI Management shall not make any other assumptions about logical-to-physical device mapping.

40.4.2 Vendor statement of device mapping requirements. ICW and authoring systems shall clearly state any requirements for a particular device number mapping so that users can set up VDI Management appropriately. ICW and authoring systems shall not change logical device numbers at run time.

40.4.3 Obtaining information about device mapping. If ICW or authoring systems need information about device mapping, they shall provide a mechanism for the user to provide that information. If necessary, ICW and authoring systems shall use an installation program that asks which logical device number to use for each peripheral.

40.5 General interface requirements.

40.5.1 Required interfaces. VDI Management implementations shall include two interfaces for MS-DOS; the ASCII interface and the binary interface.

40.5.1.1 ASCII interface. ICW and authoring systems that use the ASCII interface shall communicate with VDI Management through a device driver using standard MS-DOS file input/output (I/O) and ASCII strings by writing command strings to and reading response strings from the device driver. The ASCII interface shall be in accordance with Section 50.

40.5.1.2 Binary interface. ICW and authoring systems that use the binary interface shall communicate with VDI Management by passing and receiving binary values across a software interrupt. The binary interface shall use an assignable software interrupt in the range 60H through 66H to request VDI Management software services. ICW and authoring systems shall load the microprocessor's registers with a command code requesting a specific service, and a pointer to a parameter packet allocated in application memory and containing parameter codes and values. The binary interface shall be in accordance with Section 60.

40.5.2 Parameters and values. Both interfaces shall use labeled parameters and associated values. Parameters may have associated calling values, return values, or both. Every parameter value shall be associated with a parameter identifier. Therefore, only those parameters that are actually required by the command shall be specified, and parameters may be listed in any order. Supplying a parameter more than once in a command string or parameter block shall cause an error.

40.5.2.1 ASCII interface. With the ASCII interface each parameter value shall be preceded by a parameter name. However, each parameter name does not necessarily require an associated value. Command strings shall be variable in length with the length determined by the number of parameters and values. Case and parameter order shall not be significant, and equals signs and commas shall be optional.

40.5.2.2 Binary interface. With the binary interface the parameter packet shall be a variable-length array of parameter structures. Each structure shall contain a parameter's numeric identifier and the parameter's value or, for parameters without associated calling values, space for a return value.

40.5.3 Coexistence of interfaces. A VDI Management implementation shall furnish both the ASCII and binary interfaces, although both do not have to be installed simultaneously. If both interfaces are loaded, VDI Management shall behave correctly when ICW or authoring systems mix ASCII and binary commands. An ASCII command and its binary counterpart shall behave identically assuming both commands have the same parameters available.

40.5.4 Vendor statements of interface and memory requirements. ICW and authoring systems that use one interface only shall clearly state whether the ASCII or binary interface should be installed. ICW vendors shall state the amount of memory required by the application after VDI Management has been loaded.

40.6 Error handling. Error handling and error message shall be as specified in Section 110, and shall be indicated in accordance with the requirements of Sections 70, 80, 90 and 100.

40.7 IMA Recommended practices for multimedia portability. The IMA Recommended Practices for Multimedia Portability (MS-DOS Based Systems), Release R 1.1 (hereinafter referred to as the IMA Recommended Practices or recommended practices) (see 20.1) may be used for guidance in implementing the requirements of this appendix.

APPENDIX D

50. ASCII INTERFACE REQUIREMENTS

50.1 Command string format. ASCII command strings shall be in the format as follows.

50.1.1 Tokens. A command string shall consist of a series of tokens, separated by delimiters, and ending with a carriage return (CR, ASCII 0D). Tokens shall be strings of one or more printable characters. They shall include command names, parameter labels, and parameter values. The command name shall be the first token in the command string. Parameter labels shall precede corresponding parameter values and shall be separated by parameter values by one or more delimiters. Command names shall consist of characters in the ranges "A" to "Z" and "a" to "z". Parameter labels shall consist of the same plus the digits "0" to "9". Parameter values shall consist of characters in the ranges "a" to "z", "A" to "Z", and "0" to "9", plus "+" and "-". Case shall not be significant.

50.1.2 Delimiters. Delimiters shall be limited to the characters: equals sign (ASCII 3DH), space (ASCII 20H), horizontal tab (HT, ASCII 09H), line feed (LF, ASCII 0AH) and comma (ASCII 2CH). Redundant delimiters shall be ignored and shall not count toward length limits. Redundant delimiters shall include all leading delimiters, all trailing delimiters between the last token and the CR, all trailing delimiters after the CR, and any instance of two or more adjacent delimiters.

50.1.3 Length. Command strings shall be limited to 255 characters including the CR. Redundant delimiters shall not count towards the 255-character limit.

50.1.4 Multiple commands. The ASCII interface shall support multiple commands separated by CRs or CR/LFs in a single string and sent to the ASCII interface with a single write operation. The 255-character limit, not counting redundant delimiters, shall apply to the write operation as a whole. If a string contains multiple commands, they shall fit within the 255-character limit. The response string for a multiple-command string shall contain the response to the last command only.

50.2 Response string format. The ASCII response string format shall be as follows.

50.2.1 Terminator. Response strings shall end with CR followed by LF (hereafter CR/LF).

50.2.2 Delimiters. If a string contains multiple values, each value shall be separated from the next by one comma with no spaces. Response strings shall contain no delimiters before the first value or between the last value and the CR.

50.2.3 Case. All alphabetic characters returned by the ASCII interface shall be upper case.

50.2.4 Contents. If the command was correct and did not ask for information, the response string shall be "OK". If the command asked for information, the ASCII interface shall return a series of comma-separated parameter values. If an error occurred, the response string shall

consist of "ERROR" followed by a space, followed by the applicable error number as ASCII digits.

50.2.5 Length. Response strings shall be limited to 255 characters including the terminal CR/LF pair.

50.3 Parameter value formats. The formats of parameter values for the ASCII interface shall be as follows.

50.3.1 Numbers. Numeric parameters shall be passed in decimal integer format, which is defined as an optional sign ("+" or "-") immediately followed by a string of decimal digits.

50.3.2 Bit fields. A bit field shall be represented as an unsigned decimal integer that is the sum of the bit values in the field.

50.3.3 Text. Some return strings for query parameters include values other than numbers. These strings shall consist of at most upper-case alphabetic characters, decimal digits, commas, and a sign (+ or -).

50.4 Formal string syntax. ASCII command and response strings shall use the formal syntax description in Table D-1. The syntax shall use the following rules:

a. Angle brackets (<>) shall enclose items that are defined by the formal descriptions.

b. Vertical bars (|) shall separate sets of alternatives in deriving a valid command string: only one of the alternatives shall be chosen.

c. Square brackets ([ ]) shall enclose optional items or sets of items. Their presence or absence shall not affect a string's validity.

d. Spaces shall separate sets of required items that shall occur in the given order.

e. The ":=" sign shall mean "consists of". The item on the left of ":=" shall consist of the definition on the right.

f. The strings "equals", "space", "HT", "LF", and "comma" are delimiters and shall stand for the indicated characters.

g. The string "CR" is a terminator and shall stand for the indicated character.

h. "CR/LF" indicates the two characters carriage return and line feed.

i. Items in quotes (") are string literals and shall stand for themselves.

j. The formal description shall omit the 255-character limit for <command string>s and <response string>s, and the equivalency of lower and upper case.

50.5 Behavior of device driver buffers. The behavior of the ASCII interface device driver buffers shall be as follows.

50.5.1 Operating system compatibility. The way in which the device driver buffers character strings shall be compatible across different versions of MS-DOS.

50.5.2 Allocation and initial contents. When the driver loads, it shall allocate a command buffer and a response buffer of 255 bytes each. At startup, the command buffer shall be empty and the response buffer shall contain the string "ERROR 19" (device driver read before write). This response buffer content shall apply only to the first time an ICW application accesses the driver after boot time. The response buffer shall not automatically reset to "ERROR 19" after an ICW application exits.

50.5.3 Write Behavior. When the device driver receives a character, it shall add the character to the command buffer and check to see if it is a redundant delimiter, a LF, or a CR. If it is neither, the device driver shall simply return. If it is a redundant delimiter or a LF, the device driver shall discard the character and return. If it is CR, the device driver and VDI Management shall process the contents of the command buffer, execute the command, and generate a response string before returning. The response string shall replace any existing contents of the response buffer.

50.5.4 Read Behavior. When MS-DOS tries to read a character from the device driver, the device driver shall check the response buffer. If the buffer contains characters, the device driver shall return the first character and delete it from the buffer. If the buffer is empty, the device driver shall return end of file (EOF, ASCII 1AH under MS-DOS).

50.5.5 Close and Reopen Behavior. Closing and reopening the device driver shall empty the command buffer but shall not change the contents of the response buffer.

50.5.6 Behavior between applications. If one ICW application ends and a new ICW application starts, the device driver shall not flush the response buffer until it receives a CR.

50.5.7 Behavior when a command exceeds 255 characters. If an ICW application or authoring system writes a command longer than 255 characters, the device driver shall discard the command by clearing the buffer and ignoring additional characters up to the next CR. The device driver shall then issue "ERROR 17" (command too long).

50.6 Device driver function and mode options. The device driver shall work properly using either ASCII ("cooked") or binary ("raw") mode because ICW applications and authoring systems may choose either and be compliant. Applications shall not use input/output control (IOCTL) functions except interrupt (Int) 21H function 44H, which forces a file handle opened in cooked

mode to raw mode. ICW applications and authoring systems shall not use MS-DOS Int 21H functions 0F, 10-17, 1A, 21-24, 27, and 29H, which work with file control blocks.

50.6.1 Device driver specific functions. The version of MS-DOS and the driver type (character) shall determine which device driver functions shall be supported without implementation, which functions shall be implemented, and which functions are optional. Device driver functions shall be supported, implemented, or optional as specified in the following paragraphs.

50.6.1.1 MS-DOS Version 2.0 and higher. Device driver functions 00H to 0CH shall be supported. Functions 00H, 04H to 08H, 0AH, and 0BH shall be implemented. Implementation of functions 03H and 0CH is optional. Functions 01H, 02H, and 09H apply only to block device drivers: these shall be supported, but shall not implemented.

50.6.1.2 MS-DOS versions 3.0 and 3.1. Support and implementation requirements shall be as stated for version 2.0 and higher. Implementation of functions 0DH, 0EH, and 10H is optional for versions 3.0 and 3.1. Function 0FH applies only to block device drivers: they shall be supported, but shall not be implemented.

50.6.1.3 MS-DOS version 3.2 and higher. Support and implementation requirements shall be as stated for version 2.0 and higher. Implementation of functions 0DH, 0EH, 10H, and 13H is optional. Functions 0FH, 17H, and 18H only apply to block device drivers: these shall be supported, but shall not be implemented.

50.6.2 Driver compliance. Any device driver that meets the criteria listed in 50.6.1 shall be compliant. Device driver functions listed as optional shall not be required. However, if a device driver uses device driver functions that are supported only by MS-DOS version 3.0 or higher, or MS-DOS version 3.2 and higher, the implementation shall clearly state the version of MS-DOS required.

50.6.3 Optional device driver functions. Device driver functions that may be optionally implemented shall include: IOCTL read (03H), IOCTL write (0CH), device open (0DH), device close (0EH), output until busy (10H), and generic IOCTL (13H). Device drivers may use these functions and be compliant. However, applications that use these facilities directly shall be non-compliant because these facilities are not compliance requirements and may not be supported.

APPENDIX D

60. BINARY INTERFACE REQUIREMENTS

60.1 Intel 80x86 Register Contents. Intel 80x86 microprocessor register contents shall be as follows:

a. The AX register shall contain the token number for the command before issuing the software interrupt to call the binary interface.

b. The BX register shall contain the number of parameters contained in the parameter packet allocated in application memory before issuing the software interrupt to call the binary interface.

c. The ES register shall contain the segment address; the DI register shall contain the offset relative to the segment before issuing the software interrupt to call the binary interface; and the ES:DI register pair shall contain the segment and offset address of the parameter packet allocated in application memory.

d. On return, all register contents shall remain unchanged except the AX register. The AX register shall contain either zero, if no error occurred, or an error code, if the command did not execute properly.

60.2 Software interrupt. The software interrupt used by the binary interface shall be as follows.

60.2.1 Range and default. The binary interface shall use a software interrupt in the range of 60H through 66H. The default shall be interrupt 60H.

60.2.2 Determination by VDI Management. When VDI Management loads, it shall check the MS-DOS environment space for the variable IVINT. The variable value is a two-digit string representing a value from 60H through 66H ("60" through "66"). If the variable is set, VDI Management shall load its interrupt handler at the specified vector. If the variable is not set, the handler shall be loaded at vector 60H. If the variable value is invalid, VDI Management shall decline to execute and display "ERROR 165" (invalid interrupt number).

60.2.3 Determination by ICW and authoring systems. When an ICW application or authoring system starts, it shall check for the environment variable IVINT. If the variable is set, the ICW application or authoring system shall use the specified software interrupt. If IVINT is not set, the ICW application or authoring system shall use the default, 60H. The ICW application or authoring system need not verify the validity of the interrupt number. If the number is invalid, VDI management shall not load.

60.3 Signature. The binary interface shall include a 16-byte signature of the form "IVPRACTICES" followed by five NULL characters to let applications verify that it is installed.

The signature shall reside at the address pointed to by the IVINT interrupt vector minus 10H, or if IVINT is not set, at the address pointed to by the default interrupt vector, 60H, minus 10H.

60.4 Parameter packet structure. The structure of parameter packets used by the binary interface shall be as follows.

60.4.1 Memory requirements per parameter. A parameter packet shall contain 8 bytes of memory for each parameter. The 8-bytes shall be divided into two 32-bit blocks. The first 32-bits shall contain the parameter token number. The second 32-bits shall contain the parameter value or, if the parameter does not have an associated value, it shall contain any value to act as a place holder for return information.

60.4.2 Tokens and values. Parameter token numbers shall be constants as defined in the individual command descriptions in the service group sections and in 60.7. Parameter values may take different types depending on the information being passed. Valid types shall include signed 32-bit integers, pointers consisting of a 16-bit segment and a 16-bit offset, and 32-bit unsigned bit fields.

60.4.3 Memory allocation. Memory for parameter packets shall be allocated by ICW applications and authoring systems in the application data segment.

60.4.4 Layout and length. Parameter packet layout shall be as specified in Table D-2. The length of the parameter packet shall vary with the number of parameters. Addresses of parameter tokens and values within a packet are described as hexadecimal offsets in bytes from the base address, which shall be loaded into ES:DI registers by the application prior to the binary interface interrupt call. For example, ES:DI[18] is the area of memory 18H bytes after the location pointed to by ES:DI.

60.5 Returning information in parameter packets. The contents of parameter packets before and after queries, and after rounding shall be as follows.

60.5.1 Memory allocation and packet contents for queries. If a command requests information, the ICW or authoring system shall pass a parameter packet with sufficient space for the requested information. The space is allocated using the format specified in 60.4. A parameter/value structure shall define the requested information and furnish a return location.

60.5.2 Values before and after queries. On entry into VDI Management, the parameter value for a query parameter is insignificant and can be any value. When VDI Management has derived the requested value, either by self inspection, calculation, or interrogating the hardware, it shall put the value into the appropriate parameter value block.

60.5.3 Values after errors. ICW and authoring systems shall check register AX and assume that if an error has occurred ($AX \neq 0$), any values returned in the packet are meaningless.

60.5.4 Effects of rounding. VDI Management may round parameters, such as play speeds and fade levels. If so, VDI Management shall automatically change the values in the parameter packet to the actual values used after rounding. Subsequent parameter queries shall return actual values instead of requested values.

60.6 Parameter value formats. The formats of parameter values for the binary interface shall be as follows.

60.6.1 Integers. Integer quantities shall be passed as 32-bit, 2's complement, signed numbers, in the range from -2,147,483,648 through +2,147,483,647. This is consistent with most high-level programming languages.

60.6.2 Bit fields. Bit fields shall consist of 32-bit, unsigned values.

60.6.3 Pointers. For MS-DOS, pointers follow standard far-pointer format. The most significant 16 bits of the pointer contain the segment address: the least significant 16 bits contain the offset within the segment. Note that this is the format used by the majority of MS-DOS compilers, such as Microsoft C and JPI Top Speed Modula-2.

60.6.4 Strings. Strings returned via the binary interface shall be passed by reference via far pointers. The return value shall be a long pointer to an ASCII string of up to 255 printable characters followed by a NUL character (00H). Alphabetical characters in the return string shall be upper case. VDI Management shall allocate memory to hold return strings.

60.6.5 Color arrays. Color arrays shall be passed by reference via far pointers. The parameter packet shall contain three parameters, a logical color parameter, a length parameter, and an array address parameter.

60.6.5.1 The array parameter value. The array parameter value shall be a far pointer to a memory block allocated by the application and containing an array of palette colors.

60.6.5.2 Array contents. Each palette color value in the color array shall be a 32-bit structure containing four 1-byte values as follows:

a. Byte 0, the least significant byte, shall represent B(lue);

b. Byte 1 shall represent G(reen);

c. Byte 2 shall represent R(ed); and

d. Byte 3, the most significant byte, shall be reserved and shall be set to zero. VDI Management shall return error 51 (parameter value invalid or out of range) if Byte 3, the reserved byte, is not set to zero.

60.6.5.3 Length parameter. The **length** parameter value shall be the number of 32-bit structures in the color array.

60.6.5.4 The color parameter value. The **color** parameter value shall be the logical color number to which the first palette color structure in the array is assigned. The second palette color structure shall be assigned to the next contiguous logical-color number, and so on up to **length** logical colors.

60.7 Command token numbers. ASCII commands and their equivalent binary token numbers organized by service group shall be as specified in Table D-3. The table also indicates whether the commands are core or extended. Core commands shall be implemented for a given service group to be compliant. Extended commands are optional and shall be considered non-portable unless an ICW application or authoring system is written to use them if present and also handle program execution in their absence.

60.8 Parameter token numbers. Parameter names and their binary token numbers that shall be used by the binary interface shall be as specified in Table D-4. The table footnote indicates which parameters are extended. Extended parameters are optional and shall be considered non-portable unless an ICW application or authoring system is written to use them if present and handle program execution in their absence.

70. SYSTEM (sy) SERVICE GROUP

70.1 Introduction. This section provides a full description of system commands, identifies command parameters, and defines associated command return values. Command names and token numbers shall be as specified in Table D-3.

70.2 Command Return Values. Unless otherwise specified in this section, return values shall be as follows.

70.2.1 ASCII Return Values. The ASCII return values shall be "OK" on success and "ERROR n" on failure.

70.2.2 Binary Return Values. Binary return values shall be "AX=0 on success and "AX=error number" on failure.

70.3 syCheckError Command. syCheckError shall return the number of the last error detected by VDI Management, if present, and the command and logical device number that caused the error. syCheckError shall then clear this error information. If an ASCII command string contains multiple commands and a command other than the last command in the string causes an error, syCheckError is the only way to detect that error. Additionally:

a. syCheckError shall not queue errors. It shall return the most recent detected error.

b. Only syCheckError and syInit shall be able to clear the check errno, check command, and check device buffers. Since syInit also reinitializes VDI Management, clearing the queue, canceling all pending commands, and setting up interrupts, syInit shall not be used simply to clear an error state.

c. If syCheckError itself causes an error, it shall not clear the check buffers. Instead, VDI Management shall load the check buffers with the same error information it would load for any other command. A subsequent call to syCheckError shall return and clear this information.

d. Trying to queue syCheckError shall cause error 177 (command cannot be queued) at the time of attempt.

70.3.1 Error buffers. VDI Management shall maintain four buffers for returning error information; the response buffer, the check errno buffer, the check command buffer, and the check device buffer. Actual implementations may vary in the way they store and translate the information required by syCheckError. The contents of these buffers, or translations thereof, depend upon which interface is used.

70.3.1.1 Buffer contents using the ASCII interface. The ASCII interface buffer contents shall be as follows:

a. The response buffer shall contain the return string for the most recent command, either "ERROR n..." where "n..." is an error number, "OK", or requested information.

b. The check errno buffer shall contain the error number as "n..." of the most recent error caused by any command, or "0" (zero) if no error has occurred or the buffer has been cleared.

c. The check command buffer shall contain the name of the command that caused the error, or "OK" if no error has occurred or the buffer has been cleared.

d. The check device buffer shall contain the logical device number of the device that caused the last error, or "-1" (negative one) if no error has occurred or the buffer has been cleared. A "-1" is used to indicate a no error condition because zero (0) is a valid device number.

70.3.1.2 Buffer contents using the binary interface. Buffer contents using the binary interface shall be as follows:

a. The response buffer shall contain the value to be returned in the AX register for the most recent command, either an error number or zero if no error has occurred.

b. The check errno buffer shall contain the error number of the most recent error caused by any command or zero if no error has occurred or the buffer has been cleared.

c. The check command buffer shall contain the token number of the command that caused the error or zero if no error occurred or the buffer has been cleared.

d. The check device buffer shall contain the logical device number of the device that caused the last error or negative one (-1) if no error has occurred or the buffer has been cleared. A "-1" is used to indicate a no error condition because zero (0) is a valid device number.

70.3.2 Command parameters. The ASCII and binary interface parameters for syCheckError shall be as specified in Table D-5.

70.3.2.1 Command parameter. The command parameter shall request the command that caused the last error, if present. Issuing syCheckError with command shall clear the error number in the check errno buffer, and the logical device number in the check device buffer. It shall also clear the command name or token in the check command buffer.

70.3.2.2 Device parameter. The **device** parameter shall request the logical device number of the device associated with the command that caused the last error detected. Issuing **syCheck-Error** with **device** shall clear the error number in the check errno buffer, clear the command name or token in the check command buffer, and clear the device number in the check device buffer.

70.3.2.3 Errno parameter. The **errno** parameter shall request the error number of the last error detected. Issuing **syCheckError** with **errno** shall clear the command name or token in the check command buffer. It shall also clear the logical device number from the check device buffer and the error number in the check errno buffer.

70.3.3 Return values. Return values shall be as follows.

70.3.3.1 ASCII return values.

a. On success. For the **command** parameter, it shall return the name of the command causing the last error as an upper-case alpha string, or "OK" if no error. For the **device** parameter, it shall return the logical device number, 0 through 15, that caused the error, or "-1" if no error was detected. For the **errno** parameter, the return shall be the last error number as "n..." or "0" (zero) if no error.

b. On failure. Return "ERROR n...".

70.3.3.2 Binary return values.

a. On success. Return AX = 0. Value associated with the **command** parameter shall be the token number of the command that caused the error, or 0 if no error. Value associated with the **device** parameter shall be the logical device number of the device that caused the error, or "-1" if no error is detected. Value associated with the **errno** parameter shall be the last error number as a 32-bit integer, or 0 if no error.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

70.4 **syErrorMsg** Command. **syErrorMsg** shall return an ASCII string of up to 255 characters that describes the specified error number. **syErrorMsg** is an extended command. Implementation of this command shall be optional. Error handling and error message strings shall be as specified in Section 110. **syErrorMsg** is an unqueueable command. Trying to queue **syErrorMsg** shall return error 177 (command cannot be queued) at the first attempt.

70.4.1 Command parameters. The ASCII and binary interface parameters for **syErrorMsg** shall be as specified in Table D-6.

70.4.1.1 Errno parameter. The errno parameter shall specify the error number for which a descriptive string will be returned.

70.4.1.2 Pmsg parameter. The pmsg parameter for the binary interface shall have an associated return value that points to the location of the descriptive string.

70.4.2 Return values. Return values shall be as follows.

70.4.2.1 ASCII return values.

a. On success. Return error description string.

b. On failure. Return "ERROR n...".

70.4.2.2 Binary return values.

a. On success. Return AX = 0. Value associated with the pmsg parameter shall be a 32-bit pointer to a null-terminated error description string.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI shall be undefined and shall be ignored.

70.5 syGetState Command. syGetState shall return supported service groups for which VDI Management was configured at installation, the version of the ICW portability/IMA recommended practices supported, and manufacturer name and version information. syGetState is an unqueueable command. Trying to queue this command shall return error 177 (command cannot be queued) at the time of the attempt.

70.5.1 Command parameters. The ASCII and binary interface parameters for syGetState shall be as specified in Table D-7. If a parameter causes an error, syGetState shall return immediately with an error message. The command shall not return partial responses for other parameters that do not cause errors.

70.5.1.1 Ivver parameter. The ivver parameter shall return the version number of the ICW portability/IMA recommended practices with which the VDI Management software complies. This number shall be the same as the document release number times 1000.

70.5.1.2 Mfgname and mfgver parameters. The mfgname and mfgver parameters shall return the VDI Management manufacturer's name and software version number respectively. This information shall confirm compliance with the recommended practices and, for software maintenance purposes, to obtain the manufacturer and version number for technical support. An application may also use this information to determine if a particular implementation that provides extended commands is present. Additionally:

a. Because typical version numbers often contain decimal fractions, **mfgver** shall return an integer representation of the actual version number times 1000. For example, version 1.1 is returned as 1100.

b. **Mfgname** shall return a string of up to eight (8) printable characters. The string shall not include white space (ASCII 20H, 09H), backspace (ASCII 08H), comma (ASCII 2CH), CR (ASCII 0DH), or LF (ASCII 0AH). The binary interface shall return a null-terminated string. Therefore, the total length may be nine (9) characters including the null termination.

70.5.1.3 Support parameter. The **support** parameter shall return a bit field or an ASCII representation thereof that specifies service groups that are supported and for which VDI Management was configured during software installation. An application should typically issue **syGetState support** immediately after **syInit** to find out if software support exists for required service groups.

70.5.2 Return values. The return values for each service group after a **syGetState support** shall be as specified in Table D-8. The actual value returned shall be the sum of the listed values for all installed service groups. For example, a binary status return of 00000111B shall mean that system, visual management, and videodisc are supported, but XY input is not. An ASCII return value of "7" shall mean the same. Return values shall be as follows.

70.5.2.1 ASCII return values.

a. On success. Return a comma-separated string with response for each specified parameter as specified in 70.5.1 through 70.5.1.3.

b. On failure. Return "ERROR n...".

70.5.2.2 Binary return values.

a. On success. Return AX = 0. Return value associated with **ivver** parameter shall be a 32-bit integer as specified in 70.5.1.1. Values associated with **mfgname** parameter shall be a 32-bit pointer to a null-terminated string as specified in 70.5.1.2. Value associated with the **mfgver** parameter shall be a 32-bit integer as specified in 70.5.1.2. Return value associated with **support** parameter shall be a 32-bit field as specified in 70.5.1.3.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

70.6 **syInit** command. **syInit** shall initialize VDI Management and the **sy** service group, and shall confirm communications between VDI Management and the application. **syInit** shall prepare the system for other VDI Management commands, although specific actions taken by **syInit** are implementation dependent. **syInit** is an unqueueable command. Trying to queue this

command shall result in error 177 (command cannot be queued) at the time of the attempt. Additionally:

a. Execution of **syInit** shall not replace initialization commands for the other service groups. It may, however, attach proper interrupts to proper ports, set proper software interrupts, disable non-ICW operating modes, and do other basic start-up actions.

b. **syInit** shall set the default logical device or logical source for all service groups to zero.

c. **syInit** shall clear the error buffers used by **syCheckError**.

d. **syInit** shall issue **syQueue clear,state=0** to clear the command queue and turn it off.

e. Applications shall make no assumptions about the state of the ICW system or the presence of service groups after execution of **syInit**. Applications shall use **syGetState** to determine which services are present and issue initialization commands for the individual service groups that are required.

70.6.1 Command parameters. **syInit** shall have no parameters.

70.6.2 Return values. Return values shall be as specified in 70.2.

70.7 **syQueue** Command. **syQueue** shall manage a fixed-length internal queue with exactly 10 slots for storing 10 commands. The queue shall be capable of being turned on and off, cleared, and executed. **syQueue** shall execute queued commands in the order in which they are queued and, if possible, execute adjacent commands in the same vertical interval.

70.7.1 Command parameters. The ASCII and binary interface parameters for **syQueue** shall be as specified in Table D-9.

70.7.1.1 Clear parameter. The clear parameter shall clear the queue of all commands without executing them. Clear shall not change the queue's state (on or off). If the queue is on when cleared, subsequent commands shall be accumulated until the queue is explicitly turned off. Clearing an empty queue shall have no effect and shall not be an error.

70.7.1.2 Execute parameter. The execute parameter shall instruct VDI Management to execute all commands in the queue as quickly as possible. **syQueue execute** shall not clear the queue or affect the queue's on or off state. A queue that has been turned off shall remain executable. Executing an empty queue shall have no effect and shall not be an error.

70.7.1.3 State parameter. The state parameter shall turn the queue on and off. State=1 shall instruct VDI Management to store at most 10 commands for later execution. If more than 10 commands are issued while the queue is on, the extra commands shall return error 176 (queue full), and the commands in the queue shall be left intact. State=0 shall instruct VDI Manage-

ment to resume immediate execution of the commands without storing them in the queue. Commands already in the queue shall remain unchanged and unexecuted. Turning a queue on that is already on, or off that is already off shall have no effect and shall not be an error.

70.7.1.4 Combining parameters. The **execute** parameter shall always take precedence. Either **syQueue clear execute** or **syQueue execute clear** may be used to execute commands and clear the queue. Because **execute** has the higher priority, **syQueue** acts on **execute** first in both examples. Similarly, **syQueue state=1 execute** and **syQueue state=0 execute** work as expected, executing the queue then turning it on or off, respectively.

70.7.2 Command limitations.

70.7.2.1 Unqueueable commands. Unqueueable commands shall be as specified in Table D-10. This table lists commands that shall not be queued either because requested information would be lost after **syQueue execute**, or because their behavior could disrupt the queue or the execution of subsequent queued commands. If an application tries to queue an unqueueable command except **syQueue**, which executes immediately, the illegal command shall immediately return error 177 (command cannot be queued). This error and error 176 (queue full) shall be the only errors that can be returned while the queue is on. **syQueue** shall ignore illegal commands. An unqueueable command shall not be queued and shall not affect the status of the queue. Similarly, if the queue is full, **syQueue** shall ignore all attempts to queue additional commands.

70.7.2.2 Queued commands resulting in errors. If a queued command results in an error, the error shall not be detected until **syQueue execute**. When the error is detected, **syQueue** shall return immediately without executing any remaining commands in the queue. However, **syQueue** does not return an error. Therefore, it is good practice to issue **syCheckError** immediately after **syQueue execute** to determine if an error occurred during queue execution. This is the only systematic way to detect such errors.

70.7.3 Return values. Return values shall be as specified in 70.2.

70.8 syStop Command. **syStop** shall free all possible resources used by the interfaces and VDI Management to make the resources available for non-ICW use. An attempt to queue **syStop** shall cause error 177 (command cannot be queued) at the time of the attempt.

70.8.1 Command parameters. **syStop** shall have no parameters.

70.8.2 Return values. Return values shall be as specified in 70.2.

APPENDIX D

80. VISUAL-MANAGEMENT (vm) SERVICE GROUP

80.1 Introduction. This section provides a full description of visual-management (vm) commands, identifies command parameters, and defines associated command return values. Command names and token numbers shall be as specified in Table D-3.

80.2 Command return values. Unless otherwise specified in this section, return values shall be as follows.

80.2.1 ASCII return values. The ASCII return values shall be "OK" on success and "ERROR n..." where "n... is an error number on failure.

80.2.2 Binary return values. Binary return values shall be "AX=0" on success and "AX=error number" on failure.

80.3 General requirements. The vm service group shall be in accordance with the following general requirements. Individual command descriptions shall be in accordance with these requirements.

80.3.1 Overlayable graphics modes. Standard graphics modes returned by BIOS Int 10H, service 0FH, for IBM and compatible personal computers shall be as specified in Table D-11. Compliant systems need not support all listed modes. A system that claims support for a listed mode shall implement the mode as listed (except as specified in 80.3.1.1). ICW and authoring systems may support but shall not require unlisted, nonstandard graphics modes.

80.3.1.1 Special considerations for Modes 0-3. Modes 0 through 3 are overlay modes for all adapter types. Therefore, when the video mode is not set to "native", they shall be restricted to 200 lines regardless of how many lines the adapter would normally use (see 80.8 and 80.11).

80.3.1.2 Portability between different graphics adapters. ICW and authoring systems written for a compliant platform based on one graphics adapter may not be portable to a compliant platform based on a different adapter. For example, a compliant application that uses mode 19 would not be portable to a compliant platform that is limited to EGA modes.

80.3.2 Mode trapping. VDI Management implementations on MS-DOS based systems shall not be required to implement mode trapping of Int 10H. However, VDI developers may implement mode trapping to protect against disruption of the graphics and background video by applications that change modes using direct Int 10H calls instead of the vm commands.

80.3.3 Genlock control. Control of genlocking shall be the responsibility of the VDI Management developer and shall not be included in the vm service group.

80.3.4 Graphics registration to background video. To ensure the compatibility of hardware, VDI Management software, and ICW applications, the active graphics screen for a given application should always have the same position relative to the active video and be of the same size. However,

the proper position of graphics can vary with the video standard (NTSC versus PAL), the graphics mode, and the adapter type (VGA versus CGA and EGA). Consequently, applications that require exact registration and graphics screen size -- within one or two pixels or lines -- may require user calibration at run time.

80.3.4.1 Graphics positioning. No absolute specification exists for the size and position of the background video and the position can vary in post-production generation of videodiscs. However, proper graphics registration to a nominal video image can be calculated with reasonable accuracy. The IMA Recommended Practices, Appendix A, explains how to determine horizontal and vertical graphics positions for both NTSC and PAL video. If exact positioning is critical, application developers shall provide a position reference frame on the videodisc to allow dynamic positioning of the graphics plane each time the application is initialized. VDI Management shall implement the vm command set for varying the graphics origin, both horizontally and vertically.

80.3.4.2 Graphics width. Proper graphics registration requires accurately setting the graphics width as well as the origin. Correctly setting the origin but using an incorrect width results in improper registration on the right side of the video. Generating the graphics clock so that exactly 912 clock cycles equal one horizontal period assures proper width. If an overlay method does not guarantee this relationship, VDI Management shall provide a way to adjust the graphics width; an extended parameter in the vm command set supports setting the total width of the active graphics. In addition, videodisc application developers shall provide a reference frame that contains both left and right registration information.

80.3.5 VGA emulation of CGA and EGA. VDI Management implementations for VGA overlay systems shall support both graphics that map to the left and right edges of active video (standard VGA) and, for those overlay modes that are CGA/EGA-compatible, emulations of true CGA and EGA systems that leave a border around all edges of active graphics.

80.3.6 Fade and dissolve levels and rounding. Ranges for fade and dissolve levels and rounding methods shall be as specified in the following paragraphs. As a minimum, video and graphics on/off capabilities, and video only versus hard keying shall be supported.

80.3.6.1 Fade levels. Applications shall pass video and graphics fade levels to VDI Management as integers in the range 0-255, the extremes of which shall represent full off and full on, respectively. Intermediate values shall represent linear transitions of intensity from full off to full on.

80.3.6.2 Dissolve levels. Applications shall pass dissolve levels as integers in the range 0-255, where 0 shall represent display of video only and 255 shall represent hard keying (transparent colors are full video, opaque colors are full graphics).

80.3.6.3 Rounding. VDI Management shall allocate each available hardware setting a level in the range 0-255 and round passed values to the nearest possible level. If a fader is uneven, rounding ranges shall be adjusted accordingly. On a system with no fade or dissolve circuitry, VDI Management shall switch to full off for levels 0-127 and full on for levels 128-255.

80.3.6.4 Fades and dissolves with nonzero times. For fades and dissolves that use nonzero time periods, the fade or dissolve levels shall be calculated as:

$$\text{Current Level} = \text{Start Level} + \frac{\text{Time Since Start}}{\text{Fade or Dissolve Duration}} \times (\text{End Level} - \text{Start Level})$$

The fade and dissolve levels shall then be rounded (see 80.2.6.3).

80.4 vmFade Command. vmFade shall set the absolute levels of the graphics plane (glevel) and the video plane (vlevel), and the relative levels of video to graphics (dlevel) displayed on the screen. The specified level parameter shall change to the specified level value over the specified time. The command shall return immediately, or after the specified level is reached if wait is specified.

80.4.1 Command parameters. The ASCII and binary interface parameters for vmFade shall be as specified in Table D-12. Additionally:

80.4.1.1 Dlevel parameter. The dlevel parameter shall create transitions or dissolves between video only and hard keying (transparent colors are full video, opaque colors are full graphics). If a system cannot do dissolves, it shall switch to all video when dlevel is 0-127 and to hard keying when dlevel is 128-255.

80.4.1.2 Glevel parameter. The glevel parameter shall set the absolute intensity of the graphics plane in the range 0-255 (full off to full on). If a system supports graphics on and off only, it shall switch graphics on if glevel is 128-255 and off if glevel is 0-127.

80.4.1.3 Vlevel parameter. The vlevel parameter shall set the absolute intensity of the video plane in the range 0-255 (full off to full on). If a system supports video on and off only, it shall switch video on if vlevel is 128-255 and off if vlevel is 0-127.

80.4.1.4 Time parameter. The time parameter shall specify the number of milliseconds over which the fade or dissolve occurs. If necessary, VDI Management shall round time to the nearest value the system supports. The time parameter shall function the same even if the hardware or system software does not support fades or dissolves.

80.4.1.5 Wait parameter. If the wait parameter is specified, vmFade shall not return until the fade or dissolve has reached the specified level value at the end of the specified time. If wait is not used, vmFade shall return immediately and the fade or dissolve shall execute as a background task. The wait parameter shall function the same even if the system does not support fades or dissolves.

80.4.2 Return values. Return values shall be as follows.

80.4.2.1 ASCII return values. Return values shall be as specified in 80.2.

80.4.2.2 Binary return values.

a. On success. Return AX = 0. Value associated with the dlevel, glevel, or vlevel parameter shall be a 32-bit integer that gives the actual level that will be set after rounding, if rounding is required.

b. On failure. Return AX = error number.

80.5 vmGetPalette Command. vmGetPalette shall return the amounts of red, green, and blue components in a specified logical color via the ASCII interface, or one or more sets of component values for contiguous logical colors via the binary interface. Trying to queue vmGetPalette shall result in error 117 (command cannot be queued) at the time of the attempt.

80.5.1 Command parameters. The ASCII and binary interface parameters for vmGetPalette shall be as specified in Table D-13. Additionally:

a. Values returned by vmGetPalette may not exactly match values set with vmSetPalette because of rounding when vmSetPalette component values do not match the component levels available on a specific system. For example, a system with four levels per component (0, 85, 170, and 255) will return a component value of 85 even though the value specified by vmSetPalette was 50.

b. VDI Management shall not maintain palette arrays that are directly accessible by applications. Palette arrays for vmGetPalette shall be allocated by the application. To allocate memory in bytes for a palette array, use length x 4.

c. If a parameter causes an error, vmGetPalette shall return immediately with an error message. The command shall not return partial responses for other parameters that do not cause errors.

80.5.1.1 Color + r, g, and b parameters. These parameters shall apply to both the ASCII and binary interfaces. The color parameter shall define the logical color number for which r, g, and b component values are returned. Logical color numbers shall range from zero to the value returned by vmGetState logcolors minus one. Exactly one color parameter shall be listed. Specifying color twice shall cause error 54 (parameter used more than once). Omitting color or failing to include at least one of r, g, and b shall cause error 49 (insufficient parameters). Any or all of r, g, and b can be listed with a color. vmGetPalette shall return a comma-separated list of the requested integer values via the ASCII interface, or a 32-bit integer for each requested component via the binary interface.

80.5.1.2 Color + length and array parameters. The length and array parameters shall only be available with the binary interface. They shall furnish a way to pass a pointer to an array for storing a set of palette values in application memory. Additionally:

a. The value associated with **array** shall be a 32-bit pointer to a memory block containing one or more 4-byte structures. **Array** shall point to memory allocated by the application. The contents of each structure in the palette array shall be:

(1) Byte 0, the least significant byte, shall represent blue,

(2) Byte 1 shall represent green,

(3) Byte 2 shall represent red, and

(4) Byte 3 is reserved and shall always set to zero.

b. The **length** parameter shall specify the number of 4-byte structures in the array. The values in the first structure of the array shall be the logical color number specified by the **color** parameter. The second structure shall relate to **color**+1, the third to **color**+2, an so on up to the number of structures specified by **length**.

c. Using the **length** and **array** parameter with any of **r**, **g**, or **b** shall cause error 50 (parameters cannot be used together). Specifying a **length** of less than one, or a color number of less than zero or greater than **logcolors** minus one shall return error 51 (parameter value invalid or out of range). Error 51 shall also be returned if the sum of **color** + **length** is greater than **logcolors**.

80.5.2 Return values. Return values for **vmGetPalette** shall be as follows.

80.5.2.1 ASCII return values.

a. On success. Return comma-separated list of requested **r**, **g**, and **b** component values in the range "0" to "255" for **color**.

b. On Failure. Return "ERROR n...".

80.5.2.2 Binary return values.

a. On success. Return AX = 0. Values associated with **r**, **g**, and **b** parameters shall be 32-bit integers in the range 0-255 for **color**. Value associated with **length** parameter shall be a 32-bit integer giving the number of 4-byte structures in a palette array allocated by the application. Value associated with **array** parameter shall be a 32-bit pointer to the palette array. With **length** and **array**, the value associated with **color** shall be the first logical color in a contiguous series in the palette array.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

80.6 vmGetState Command. **vmGetState shall return information about the state of the visual-management service group including the current settings of variable parameters and available resources such as palette size and number of video sources. Trying to queue vmGetState shall cause error 177 (command cannot be queued) at the time of the attempt.**

80.6.1 Command parameters. The ASCII and binary interface parameters for **vmGetState shall be as specified in Tables D-14 and D-15, respectively. If a parameter causes an error, vmGetState shall immediately return with an error message. The command shall not return partial responses for other parameters that do not cause errors. Trying to queue vmGetState shall cause error 177 (command cannot be queued) at the time of the attempt.**

80.6.1.1 Color parameter. **The color parameter shall request the transparency setting for a specified logical color number. A return value of one shall mean that the specified color is set to transparent: zero shall mean the specified color is opaque (see 80.6.1.2).**

80.6.1.2 Enable parameter. **The enable parameter shall return one if logically transparent colors are currently physically transparent to the video plane. Transparent colors shall be those set to transparent with vmSetTrans color=(logical color number), state=1. After vmSetTrans enable=1, these colors shall reveal the video plane. After vmSetTrans enable=0, all graphics colors including transparent colors shall be visible and entirely cover the video plane.**

80.6.1.3 Defsource parameter. **The defsource parameter shall return the default logical video source in the range 0-15. A video source shall always be selected, but the source number does not necessarily equal the default device number. This mapping shall be determined at VDI installation/configuration time. The default video source shall be defined as source zero unless vmSetVideo defsource is used to change it.**

80.6.1.4 Dlevel, glevel, and vlevel parameters. **The dlevel, glevel, and vlevel parameters shall return current levels in the range 0-255 for the dissolve level, graphics plane, and the video plane, respectively. The return values shall be the actual values existing at the time of request and may differ from the values requested by vmFade because of rounding.**

80.6.1.5 Emulation parameter. **The emulation parameter shall return the state of VGA emulation of CGA and EGA graphics versus VGA native mode. Implementations that support CGA or EGA graphics only shall always return a value of one (on).**

80.6.1.6 Gmode parameter. **The gmode parameter shall return the current graphics mode. For MS-DOS, Intel 80X86 Architecture systems, the mode returned shall be the same value that would be returned by a request to BIOS interrupt 10H, service OFH (see 80.3).**

80.6.1.7 Horzpix and vertpix parameters. **The horzpix and vertpix parameters shall return the current pixel resolution.**

80.6.1.8 Logcolors and physcolors parameters. **The logcolors parameter shall return the number of logical colors (simultaneously displayable colors) that are available. The physcolors**

parameter shall return the range of colors (palette size) that can be assigned to logical colors. Both return values are determined by the capabilities of the graphics hardware and mode.

80.6.1.9 Transcolors parameter. The transcolors parameter shall return the total number of logical colors that can be made transparent with vmSetTrans.

80.6.1.10 Tsources parameter. The tsources parameter shall return the total number of video sources for which VDI Management was installed.

80.6.1.11 Vmode parameter. The vmode parameter shall return the video mode as set by vmSetVideo. The vmode shall be either 0 (native), 1 (National Television Standards Committee -- NTSC), or 2 (Phase Alternation by Line -- PAL). Native mode shall be a nonoverlay mode, but shall not change overlay parameters. NTSC and PAL indicate the system is configured for the indicated video standard.

80.6.1.12 Width parameter. The width parameter shall return the total graphics width in nanoseconds. This parameter shall allow applications to accurately establish the right edge of the active graphics area relative to background video. Width shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

80.6.1.13 Xoffset and yoffset parameters. The xoffset and yoffset shall provide the offset of the graphics plane relative to the video plane in pixels as set by vmSetGraphics. The origin of the graphics plane shall be the upper left corner of the graphics display area.

80.6.2 Return values. Return values shall be as follows.

80.6.2.1 ASCII return values.

a. On success. Return a comma-separated list of values for requested parameters as specified in 80.6.1 through 80.6.1.13.

b. On failure. Return "ERROR n..."

80.6.2.2 Binary return values.

a. On success. Return AX = 0. Values associated with requested parameters shall be 32-bit values of the types specified in Table D-15.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

80.7 vmInit Command. vmInit shall initialize the visual management hardware and software, placing both in a known state. Trying to queue vmInit shall cause error 177 (command cannot be queued) at the time of the attempt.

80.7.1 Command parameters. **vmInit** shall have no command parameters.

80.7.2 Conditions set by **vmInit**. The parameters and values that shall be set by **vmInit** shall be as specified in Table D-16.

80.7.3 Return values. Return values shall be as specified in 80.2.

80.8 **vmSetGraphics** Command. **vmSetGraphics** shall set the graphics mode and the position of the graphics plane relative to the video plane.

80.8.1 Command parameters. The ASCII and binary interface parameters for **vmSet-Graphics** shall be as specified in Table D-17.

80.8.1.1 **Emulation parameter**. The **emulation** parameter shall control VGA emulation of CGA and EGA horizontal graphics positioning in overlay modes. If **emulation=1**, the default set by **vmInit**, a VGA adapter shall leave the same borders on the right and left edges of active graphics as a true CGA or EGA adapter. If **emulation=0**, the graphics from a VGA adapter shall cover the entire width of the background video. Issuing **vmSetGraphics emulation=0** on a true CGA or EGA-based system shall return error 194 (unsupported graphics mode).

80.8.1.2 **Gmode parameter**. The **gmode** parameter shall set the graphics display mode. This parameter shall place mode changes under VDI Management control to minimize screen disruption, as opposed to using mode functions furnished separately with development systems. For MS-DOS, Intel 80X86 architecture systems, the **gmode** value passed shall be in accordance with IBM graphics mode numbers as returned by BIOS interrupt 10H, service 0FH.

80.8.1.3 **Width parameter**. The **width** parameter shall set the total graphics width in nanoseconds. This parameter shall allow applications to accurately establish the right-hand edge of the active graphics area relative to background video. **Width** shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

80.8.1.4 **Xoffset and yoffset parameters**. The **xoffset** and **yoffset** parameters shall set the offset of the upper left corner of the graphics display area relative to video. These parameters shall shift the entire graphics display area up, down, left, and right within the video raster in one-pixel increments. Positive values shall shift down and right; negative values shall shift up and left. Additionally:

a. Systems which are unable to set these parameters in one-pixel increments shall round to the nearest possible offset. For example, a system that can only offset by four pixels would result in no offset for **vmSetGraphics xoffset=2**, while **vmSetGraphics xoffset=3** would result in an actual offset of four.

b. Offset values shall be absolute, not cumulative. Issuing **vmSetGraphics yoffset=4** twice shall result in an offset of four, not eight. Values that exceed the maximum that a system can shift the graphics plane shall result in the maximum possible shift.

c. The offset values set by **vmSetGraphics** shall remain in effect until explicitly reset by **vmSetGraphics** or **vmInit**. They shall not change for graphics mode changes because of differences in pixel sizes among modes.

d. The **xoffset** and **yoffset** parameters shall be used for correcting graphics registration to video. Applications shall not use them for special effects, such as scrolling the screen, which may cause screen disturbances.

e. **vmGetState** shall return actual X and Y offsets rather than the values requested by **vmSetGraphics**. These values may not agree with the values set by **vmSetGraphics** if the specified values exceed the maximum amount the system can shift the graphics plane or the system has rounded the values to compensate for a lack of resolution.

80.8.2 Return values. Return values shall be as specified in 80.2.

80.9 **vmSetPalette** Command. **vmSetPalette** shall set the proportions of the red, green, and blue components in a specified logical color as real numbers in the range 0-255, where 255 is fully saturated. Component values shall be set for single colors via the ASCII interface, and for single or contiguous multiple colors via the binary interface depending on the calling parameters.

80.9.1 Command parameters. The ASCII and binary interface parameters for **vmSetPalette** shall be as specified in Table D-18.

80.9.1.1 **Color + r, g, and b parameters**. These parameters shall apply to both the ASCII and binary interfaces. The **color** parameter shall define the logical color number for which **r**, **g**, and **b** component values are set. Logical color numbers shall range from zero to the value returned by **vmGetState logcolors** minus one. VDI Management shall map the specified component levels to the color as closely as possible given the size of the available palette. Exactly one **color** parameter shall be listed. Specifying **color** twice shall cause error 54 (parameter used more than once), while omitting **color** entirely or failing to include at least one of **r**, **g**, and **b** shall cause error 49 (insufficient parameters) (see 80.5.1.1).

80.9.1.2 **Color + length and array parameters**. The **length** and **array** parameters shall only be available with the binary interface. They shall provide a way to pass a pointer to an array for storing a set of palette values in application memory (see 80.5.1.2).

80.9.2 Return values. Return values shall be as specified in paragraph 80.2.

80.10 **vmSetTrans** Command. **vmSetTrans** shall set logical colors to transparent or opaque and shall turn physical transparency on and off.

80.10.1 Command parameters. The ASCII and binary interface parameters for **vmSetTrans** shall be as specified in Table D-19.

80.10.1.1 Clear parameter. The **clear** parameter shall set the transparency **state** (see paragraph 80.9.1.2)) of all logical colors to zero (off). (Note that this not only turns transparency off but also changes the values of color attributes). The clear parameter shall not affect any parameters other than the **state** parameters for all logical colors. Using **clear** with any other parameter shall return error 50 (parameters cannot be used together).

80.10.1.2 Color and state parameters. The **color** and **state** parameters shall collectively set logical colors to opaque or transparent. **vmSetTrans color=(logical color number), state=1** shall make colors transparent: **vmSetTrans color=(logical color number), state=0** shall make colors opaque. Use the **enable** parameter to temporarily override transparent colors.

80.10.1.3 Enable parameter. The **enable** parameter shall control physical transparency on the display screen. **vmSetTrans enable=1** shall make all designated transparent colors actually become transparent to the video plane. **vmSetTrans enable=0** shall make all colors physically opaque regardless of their transparency settings. The default for **enable** after a **vmInit** shall be zero (transparency off).

80.10.2 Return values. Return values shall be as specified in 80.2.

80.11 vmSetVideo Command. **vmSetVideo** shall set the video mode and select the video input source if more than one source is available. A video source shall be selected. However, the source number may not equal the current default player number. For example, logical player zero may be logical video source one. This mapping shall be done during VDI Management installation/ configuration.

80.11.1 Command parameters. The ASCII and binary interface parameters for **vmSetVideo** shall be as specified in Table D-20.

80.11.1.1 Defsource parameter. The **defsource** parameter shall select a video input source in the range 0-15 when more than one video source is available. The default at start-up shall be source zero. After a player is selected with **vdSet defdevice** (see Section 90), it shall be activated as a video source by **vmsetvideo defsource**.

80.11.1.2 Vmode parameter. The **vmode** parameter shall indicate to the visual-management system which video standard incoming video and the monitor are using. This lets VDI Management use the appropriate timing values for the standard. **Vmode=1** shall set NTSC-U.S., and **vmode=2** shall set PAL-European. **vmsetvideo vmode=0** (native) shall set the system to the functionality and appearance that the computer would use if it were not an ICW system. This setting shall also turn overlay off without affecting any other overlay parameters. **vmsetvideo vmode** may cause screen disturbances because of the asynchronous rates of the graphics and video signals.

80.11.2 Return values. Return values shall be as specified in 80.2.

APPENDIX D

90. VIDEODISC (vd) SERVICE GROUP

90.1 Introduction. This section provides a full description of videodisc (vd) commands, identifies command parameters, and defines associated command return values. Command names and token numbers shall be as specified in Table D-3.

90.2 Command return values. Unless otherwise specified in this section, return values shall be as follows.

90.2.1 ASCII return values. The ASCII return values shall be "OK" on success and "ERROR n..." where "n..." is an error number on failure.

90.2.2 Binary return values. Binary return values shall be "AX=0 on success and "AX=error number" on failure.

90.3 General requirements. The vd service group shall be in accordance with the following general requirements. Individual command descriptions shall be in accordance with these requirements.

90.3.1 Constant angular velocity (CAV) and constant linear velocity (CLV) videodisc support. Compliant players shall support both constant angular velocity (CAV) and constant linear velocity (CLV) videodiscs. The individual command descriptions indicate commands and parameters that shall only apply to CLV videodiscs.

90.3.2 Searches and instant jumps. When searching for a specific frame or chapter, players shall use instant jumps if possible. If not, the search shall be at the fastest possible speed. Blanking during searches is automatic and, therefore, shall not be under VDI Management control.

90.3.3 Fields, frames, and chapters. Videodisc commands shall assume that all frame numbers use two fields per frame. The command set shall assume that frame numbers are always available from CAV and never from CLV, and that chapter numbers may be available from either.

90.3.4 Player speeds. Play speeds shall be expressed as integer ratios of 1000, which shall be defined as the normal speed of either 25 frames per second (fps) for PAL, or 30 fps for NTSC. Values less than 1000 shall represent speeds below normal. Values greater than 1000 shall represent speeds above normal. Speeds in fps shall be calculated as the product of the speed value and the default number of frames per second divided by 1000. For example, on an NTSC system, a speed of 500 specifies a rate of (500 x 30 fps) divided by 1000, or 15 fps.

90.3.4.1 Permissible assumptions. For players in CAV mode, ICW and authoring systems shall assume that speed 1000, at least one speed slower than 1000, and at least one speed faster than 1000 are available. For players in CLV mode, ICW and authoring systems shall not assume

play speeds other than 1000 are available. Because scan speeds vary among players, ICW and authoring systems shall make no assumptions about scan speeds other than that they are faster than speed 1000.

90.3.4.2 Rounding. If a requested speed is not 1000, VDI Management shall round from the specified speed to the nearest supported speed, except that values shall never be rounded to 0 or 1000 except for players in CLV mode that support normal speed only. For CLV players that support normal speed only, all non-zero speeds other than 1000 shall be rounded to 1000. Speed requests of zero shall result in an error.

90.3.4.3 Boundary speeds. Boundary speed parameter values shall be as specified in Table D-21. These values shall be used for specifying several boundary speeds without knowing the exact speeds available from a given player.

90.4 vdGetState command. vdGetState shall return information about the videodisc player specified by device parameter, or the default player if no device number is specified. Trying to queue vdgetstate shall cause error 177 (command cannot be queued) at the time of the attempt.

90.4.1 Command parameters. The ASCII and binary interface parameters for vdgetstate shall be as specified in Tables D-22 and D-23, respectively. If a parameter causes an error, vdGetState shall return immediately with the error message. The command shall not return partial responses for other parameters that did not cause errors.

90.4.1.1 Audio1 and Audio2 parameters. The audio1 and audio2 parameters shall return one if the respective audio channel is on, and zero if it is off.

90.4.1.2 Cdisplay parameter. The cdisplay parameter shall return one if the player's chapter number display is on, and zero if it is not. Using cdisplay with videodiscs that do not have chapter numbers shall return error 88 (unable to return requested information). Cdisplay shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

90.4.1.3 Chapter parameter. The chapter parameter shall return the current videodisc chapter number. vdGetState chapter shall return error 86 (device not ready) if the videodisc is not spinning normally, and error 88 (unable to return requested information) if the videodisc does not have chapter numbers. Chapter shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

90.4.1.4 Defdevice parameter. The defdevice parameter shall return the default logical player number as set by vdSet defdevice or vdInit. VDI Management shall direct all videodisc commands to this player unless a command contains a device parameter directing it to a different player (see 90.4.1.5).

90.4.1.5 Device parameter. The device parameter shall direct vdGetState to the specified logical player number regardless of the current player number as set by vdSet defdevice. Because, in general, device only affects the command with which it is associated, the parameter shall not affect the return value for defdevice (see 90.4.1.4) when the two parameters are used together. Additionally:

a. Specifying device with no other parameter shall return error 49 (insufficient parameters).

b. Specifying a nonexistent or uninstalled player shall return error 160 (invalid device number).

c. Specifying an uninitialized player shall return error 81 (device not initialized).

90.4.1.6 Disctype parameter. The disctype parameter shall return one if the videodisc is a CLV disc, and zero if it is a CAV disc.

90.4.1.7 Door parameter. The door parameter shall return one if the player door is open, and zero if it is closed. If an implementation supports the door parameter but a player does not support reporting its status, VDI Management shall return error 88 (unable to return requested information). Door shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

90.4.1.8 Frame parameter. The frame parameter shall return the current frame number of the videodisc player. vdGetState frame n... shall return error 86 (device not ready) if the videodisc is not spinning normally. Frame shall return error 88 (unable to return requested information) for CLV discs.

90.4.1.9 Idxdisplay parameter. The idxdisplay parameter shall return one if player's frame number (CAV) or time (CLV) display is on, and zero if it is not.

90.4.1.10 Motion parameter. The motion parameter shall return the state of a background play or scan. If the laser is reading the videodisc during a play or scan sequence either backward or forward, motion shall return one. Otherwise, it shall return zero.

90.4.1.11 Remote parameter. The remote parameter shall return one if the player's remote control unit is on, and zero if it is off or not supported. Remote shall be an extended parameter: using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

90.4.1.12 Speed parameter. The speed parameter shall return the actual player speed multiplied by 1000 or 999999 if the player is in scan mode. A return of zero shall indicate the player is parked or on a still frame.

90.4.1.13 Spin parameter. The spin parameter shall return zero if the player is parked, or one if the videodisc is spinning and the player is ready to accept motion commands.

90.4.1.14 Tdevices parameter. The tdevices parameter shall return the total number of logical players for which VDI Management was configured when it was installed. If only one player is connected, it shall be numbered zero, and tdevices returns one.

90.4.1.15 Video parameter. The video parameter shall return one if the player's video channel is on and zero if it is not.

90.4.2 Return values. Return values shall be as follows.

90.4.2.1 ASCII return values.

a. On success. Return a comma-separated list of values for requested parameters as specified in 90.4.1 through 90.4.1.5.

b. On failure. Return "ERROR n...".

90.4.2.2 Binary return values.

a. On success. Return AX = 0. Values associated with requested parameters shall be 32-bit values of the types specified in the binary parameters of Table D-23.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

90.5 vdInit Command. vdInit shall initialize videodisc hardware and the vd software service group, placing both in a known state. vdInit shall be used for each attached player that will be used by the application. Trying to queue vdInit shall cause error 177 (command cannot be queued) at the time of the attempt. Additionally:

a. This command shall interrupt any other player motion command that did not include a wait parameter, in which case, the application shall not be able to issue vdInit until the motion command is complete. vdInit shall be a synchronous command. It shall not return control to the application until it has succeeded or detected an error condition.

b. To keep disturbances to a minimum, VDI Management shall turn video and audio off at the player, spin up the videodisc, then turn video and audio back on. The resulting display after vdInit varies with videodisc type. With CAV videodiscs, video remains visible with the player frozen on the first available frame. With most CLV videodiscs, the player automatically blanks video.

90.5.1 Command parameters. The ASCII and binary interface parameters for **vdInit** shall be as specified in Table D-24. This command may be issued with no parameters. Specifying a nonexistent or uninstalled device shall cause error 160 (invalid device number).

90.5.1.1 Device parameter. The **device** parameter shall specify the logical device number of the player to be initialized. If **device** is omitted, **vdInit** shall either initialize logical device zero or reinitialize the default device as set by **vdSet defdevice**.

90.5.2 Conditions set by vdInit. The parameters and parameter values that shall be set by **vdInit** shall be as specified in Table D-25. **vdInit** shall return an error if any parameter specified in Table D-25 has an undefined value. Additionally:

a. If the videodisc player supports a character generator, **vdInit** shall turn that function off.

b. With systems that do not support the **door** parameter, VDI Management shall return error 80 (initialization error) if an application issues **vdInit** with the player door open. Therefore, the application should prompt the used to insert the videodisc and close the player door before issuing **vdInit**.

90.5.3 Return values. Return values shall be as specified in 90.2.

90.6 Multisided and Multidisc application. Many applications use both sides of a videodisc or multiple discs. Such applications need a way to ensure that the proper side of a disc or the proper disc is inserted in the player. There are at least three ways to do this.

a. The first and simplest method is to display a reference frame that contains a key characteristic and ask the user if the characteristic is present. If not, the application asks the user to change sides or discs and tries again.

b. The second method involves picture stops at unique frame numbers, which can be requested when a disc is pressed. All compliant players shall support the detection of picture stops in unbounded plays. Assume that the desired side or disc contains a unique picture stop at frame 125. Also assume that the vd service group has been initialized and the user has been instructed to insert the proper disc. The application can:

(1) Issue **vdSet audio1=0, audio2=0, video=0** to protect the user from the following steps (see 90.11, **vdSet**).

(2) Issue **vdPlay from=115** to start as open ended play at a frame before the picture stop (see 90.8, **vdPlay**).

(3) Wait for a second or so to be sure the player will pass frame 125 if no picture stop is present.

(4) Issue vdStill to stop the player (see 90.13, vdStill).

(5) Issue vdGetState frame to retrieve the frame number at which the player stopped (see 90.4, vdGetState).

(6) Examine the returned frame number to check whether the player stopped at frame 125 or at a higher frame number.

(7) If the player stopped at frame 125, the application knows that the side or disc containing the unique picture stop is inserted. If the player stopped at a higher frame number, the application knows the wrong side or disc is inserted. The application should prompt the user to insert the proper side or disc and try again.

The picture stops method is portable under the portability practices because support for all involved commands and parameters is required, and all unbounded players support picture stops. Note, however, that the procedure above did not use a bounded play sequence such as vdPlay from=120, to =130 to determine whether the player stopped at frame 125 or 130. Some players do not detect picture stops during the execution of a bounded play.

c. The third method involves searching for a unique chapter number with a known, unique frame number. The application issues a vdSearch chapter command, then examines the return to see if error 216 (invalid chapter number) occurred (see 90.10, vdSearch) If no error is returned, the application shall query for the frame number with vdGetState frame to verify that the chapter starts at the unique frame number. However, the use of this method alone shall be avoided because chapter is an extended parameter. Therefore, this method is portable only between VDI Management implementations that support the optional chapter parameter.

90.7 vdPassThru Command. vdPassThru shall communicate directly with a player, bypassing the standard videodisc service group commands and parameters. It shall be furnished to allow access to specific player features that are not supported by other VDI Management videodisc commands. vdPassThru shall pass a string of bytes to the player and wait for the player's response for a specified or default time. VDI Management shall return this response, if issued, to the application. Additionally:

a. Some videodisc players may have more than one command set that can be used to transmit commands to the player. The application shall set the appropriate command mode when using vdPassThru.

b. When an application issues **vdPassThru**, VDI Management shall stop normal communications using preset parameters to let the application change player communications parameters as necessary. VDI Management shall not resume normal communications until it receives a command from the vd service group other than **vdPassThru**. VDI Management shall then reset the command mode and communications parameters for the player to the normal settings.

CAUTION

vdPassThru allows non-portable access to special features of videodisc players. It is included as a convenience to developers who want to use the standard command set for portable applications, and do not want to switch to a different environment for applications that require access to non-portable player functions not furnished by other commands in the vd service group. Therefore, although the command shall be required, it is supplied for convenience only. It shall not be used for portable applications. An application that uses **vdPassThru** shall not be compliant except that it properly handles a failure of the player to act properly on the passed-through command string.

90.7.1 Command parameters. The ASCII and binary interface parameters for **vdPassThru** shall be as specified in Table D-26. This command shall issue the **pmsg** parameter or an error is returned.

90.7.1.1 Device parameter. The **device** parameter shall direct **vdPassThru** to the specified logical player number regardless of the default player number set by **vdSet defdevice**. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized).

90.7.1.2 Pmsg parameter. The **pmsg** parameter value shall be a command string to be passed through to the player without modification by VDI Management. Additionally:

a. The binary interface shall pass a pointer to a null-terminated player message string. Each byte in the string can take the values 1 through 255.

b. The binary interface data block for command and response strings allocated by the application and pointed to by the **pmsg** parameter shall be a minimum of 33 bytes. VDI Management shall use this memory for the player response as well as the player command. This response may be up to 32 bytes plus NULL: allocating less than 33 bytes may cause the binary interface response string to overwrite application memory.

c. For the ASCII interface, the digit string consists of pairs of hexadecimal digits. The string shall not contain any delimiters, which shall include space characters (ASCII 20H). Because the space character is a delimiter, it would denote the end of the string.

d. Any non-delimiter characters other than the digits "0" through "9", and the letters "A" through "F" and "a" through "f" shall cause error 51 (parameter value invalid or out of range). A string containing an odd number of digits shall also cause this error. The inadvertent insertion of a delimiter such as a space is likely to cause error 52 (parameter invalid for this command) because VDI Management will interpret following characters as the start of a new parameter name, which is highly unlikely to be a valid name.

90.7.1.3 Time parameter. The time parameter shall specify a timeout value in milliseconds. VDI Management shall wait for time for a player response. If the player does not respond in time milliseconds, VDI Management shall return control to the application. Additionally:

a. If no time is specified, the default timeout value shall be implementation dependent. An application may specify a time of zero milliseconds for players that typically do not issue responses to a command.

b. A failure by the player to respond within the specified or default timeout period shall result in a null response string. A timeout shall not cause an error.

90.7.2 Return values. Return values shall be as follows.

90.7.2.1 ASCII return values.

a. On success. Return the player response as a string of up to 64 upper-case hexadecimal digits (0-9, A-F, 32 bytes of data) terminated by CR/LF, or an empty string (CR/LF only) if timeout occurs.

b. On failure. Return "ERROR n...".

90.7.2.2 Binary return values.

a. On success. Return AX = 0. Value associated with the pmsg parameter shall be a 32-bit pointer to the player response string of up to 32 bytes + NULL. This value shall not be changed by vdPassThru. The response string may be an empty string (NULL only) if a timeout occurs.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

90.8 vdPlay command. vdPlay shall execute videodisc play sequences. The sequences may include starting frames, ending frames, chapters, directions, and speeds in various combinations. The application may instruct VDI Management to return control immediately, or when the play sequence is complete. This command shall interrupt any other player motion command that did not include a wait parameter. In this case, the application shall not be able to issue vdPlay until the motion command is complete.

90.8.1 Command parameters. The ASCII and binary interface parameters for vdPlay shall be as specified in Table D-27. This command may be issued with no parameters. vdPlay issued with no parameters shall cause the player to start playing forward from the current frame at a speed of 1000. Play shall continue until interrupted by a subsequent vdInit, vdScan, vdSearch, vdSet spin-down, vdStep, or vdStill command, or until the player reaches the end of the videodisc. The text describes incorrect usage.

90.8.1.1 Chapter parameter. The chapter parameter shall specify a chapter number to play from beginning to end. When used with a speed parameter, the chapter shall play at the specified speed. Adding wait shall cause VDI Management to wait until the chapter has been played to return application control. Additionally:

a. Chapter is an extended parameter. Using an unimplemented extended parameter shall cause an error 52 (parameter invalid for this command).

b. Specifying a chapter for a videodisc without chapter numbers shall cause error 208, (action not supported by disc). Specifying an incorrect or invalid chapter number shall cause error 216 (invalid chapter number).

c. Compatible parameters are device, speed, and wait. Using chapter with other parameters shall cause error 50 (parameters cannot be used together).

90.8.1.2 Device parameter. The device parameter shall direct vdPlay to the specified logical player number regardless of the default player number set by vdSet defdevice. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized). All parameters are compatible with device, assuming those parameters are compatible with each other.

90.8.1.3 Direction parameter. The direction parameter shall set the direction of motion (1 = forward, 0 = backward) for play sequences that do not include to frames. Specifying a direction with no from frame or chapter shall start a play sequence in the specified direction from the current frame at an optional speed. If a from frame is specified, the player shall search to the specified frame, then begin play in the specified direction. For specifying a direction with a chapter, see 90.8.1.1. Specifying a direction with a to frame shall cause error 50 (parameters cannot be used together) because the direction required to reach the to frame is predetermined either by the relative position of the current frame or, if specified, the relative position of the

from frame. Compatible parameters are **from**, **device**, **speed**, and **wait**: other parameters used with **direction** shall cause error 50 (parameters cannot be used together).

90.8.1.4 From parameter. The **from** parameter shall specify the starting frame number for a play sequence. A **from** parameter with no **to** parameter shall start an unbounded play until interrupted by another command, or until the player reaches the edge of the videodisc. Specifying a **from** frame for a CLV videodisc shall cause error 208, (action not supported by disc). Specifying an invalid frame number shall cause error 215 (invalid frame number). Compatible parameters are **device**, **direction** or **to**, **speed**, and **wait**. Using other parameters or invalid combinations of compatible parameters shall cause error 50 (parameters cannot be used together).

90.8.1.5 Speed parameter. The **speed** parameter shall specify the speed of play with 1000 equaling normal. VDI Management shall map requested speeds as closely as possible to available player speeds. The binary interface shall change the speed value passed in the parameter block to the actual speed set by VDI Management, and **vdGetState speed** shall return the actual speed after any necessary rounding. For CAV mode, speeds shall never be rounded to 0 or 1000. Specifying a speed less than or equal to zero shall cause error 51 (parameter value invalid or out of range). Compatible parameters are **device**, **direction** or **to**, **from**, **chapter** but not with **from** or **to**, and **wait**. Other parameters or invalid combinations of compatible parameters shall cause error 50 (parameters cannot be used together).

90.8.1.6 To parameter. The **to** parameter shall specify the ending frame number for a play sequence. When the player reaches the **to** frame, the player shall automatically enter still mode and display the frame. The **to** parameter shall have a lower priority than the **from** parameter. Specifying a **to** frame for a CLV videodisc shall cause error 208, (action not supported by disc). Specifying an invalid frame number shall cause error 215 (invalid frame number). For specifying a **to** frame with a **direction**, see 90.8.1.3. Compatible parameters are: **device**, **from**, **speed**, and **wait**. Other parameters used with the **to** parameter shall cause error 50 (parameters cannot be used together).

90.8.1.7 Wait parameter. The effects of the **wait** parameter on **vdPlay** shall be as specified in Table D-28. The effect of the **wait** parameter depends on the parameters that accompany it. Table D-28 identifies when **vdPlay wait** returns application control to the system based on accompanying parameters. If the player returns an error, the command shall return when the error state is detected instead of at the time given in the table. Without **wait**, VDI Management shall return control as soon as it determines that the command is valid: no error checking is done to determine if the player actually accepts the command or acts on it properly. Therefore, **syCheckError** shall be used to determine if the player entered an error state while either accepting or trying to execute the command. **syCheckError** may also be needed to detect certain error states that occur after **vdPlay wait**. All parameters are compatible assuming other parameters are compatible with each other.

90.8.2 Return values. Return values shall be as follows.

90.8.2.1 ASCII return values. Return values shall be as specified in 90.2.

90.8.2.2 Binary return values.

a. On success. Return AX = 0. The value associated with the **speed** parameter shall be a 32-bit real that gives the actual speed that shall be set after rounding, if rounding is required.

b. On failure. Return AX = error number.

90.9 **vdScan** Command. **vdScan** shall place the default or specified player in scan mode in an optional direction. The player shall play at the maximum possible speed. The command shall continue until interrupted by a subsequent **vdPlay, vdInit, vdScan, vdSearch, vdSet spin=0, vdStep,** or **vdStill** command, or until the player reaches the edge of the videodisc. This command shall interrupt any other player motion command that did not include a **wait** parameter.

90.9.1 Command parameters. The ASCII and binary interface parameters for **vdScan** shall be as specified in Table D-29. This command may be issued with no parameters. **vdScan** issued with no parameters shall start scanning forward from the current frame.

90.9.1.1 Device parameter. The **device** parameter shall direct **vdScan** to the specified logical player number regardless of the default player number set by **vdSet defdevice**. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized).

90.9.1.2 Direction parameter. The **direction** parameter shall set the direction of motion for the scan, either one (forward) or zero (backward).

90.9.1.3 Wait parameter. The **wait** parameter shall cause VDI Management to wait until it has confirmed that the player is in scan mode to return application control. Without **wait**, VDI Management shall return control as soon as it determines that the command is valid: no error checking is done to determine if the player actually accepts the command or acts on it properly. Therefore, **syCheckError** shall be used to determine if the player entered an error state while either accepting or trying to execute the command.

90.9.2 Return values. Return values shall be as specified in 90.2.

90.10 **vdSearch** Command. **vdSearch** shall cause the player to turn video off, immediately search for the specified frame number or the first frame of the specified chapter number, and freeze. This command shall interrupt any other player motion command that did not include a **wait** parameter. The application shall not issue **vdSearch** until other motion commands with the **wait** parameter are completed.

90.10.1 Command parameters. The ASCII and binary interface for **vdSearch** shall be as specified in Table D-30. This command shall include a **chapter** or **frame** parameter, or an error shall be returned. If **device** or **wait** is specified, at least one other parameter shall be specified.

90.10.1.1 **Chapter parameter**. The **chapter** parameter shall specify a chapter number to search to. Additionally:

a. **Chapter** shall be an extended parameter: using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

b. Specifying a **chapter** for a videodisc without chapter numbers shall cause error 208, (action not supported by disc). Specifying an invalid chapter number shall cause error 216 (invalid chapter number).

90.10.1.2 **Device parameter**. The **device** parameter shall direct **vdSearch** to the specified logical player number regardless of the default player number set by **vdSet defdevice**. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized).

90.10.1.3 **Frame parameter**. The **frame** parameter shall specify a frame number to search to. Specifying a **frame** for a CLV videodisc shall cause error 208, (action not supported by disc). Specifying an invalid frame number shall cause error 215 (invalid frame number).

90.10.1.4 **Wait parameter**. The **wait** parameter shall cause VDI Management to wait until the specified **chapter** or **frame** has been reached to return application control. Without **wait**, VDI Management shall return control as soon as it determines that the command is valid. Therefore, **syCheckError** shall be used to determine if the player entered an error state while either accepting or trying to execute the command.

90.10.2 Return values. Return values shall be as specified in 90.2.

90.11 **vdSet Command**. **vdSet** shall set the default logical player number and other player conditions including the state of the audio and video channels, the index and chapter number displays, the disc spin/park status, whether the door is open or closed, and whether the user remote control is on or off.

90.11.1 Command parameters. The ASCII and binary interface parameters for **vdSet** shall be as specified in Table D-31. At least one parameter shall be required or an error shall be returned. If **device** or **wait** is specified, at least one other parameter shall be specified.

90.11.1.1 **Audio1 and audio2 parameters**. The **audio1** and **audio2** parameters shall enable and disable the player's audio channel outputs. Setting both **audio1** and **audio2** to zero shall turn off all player audio.

90.11.1.2 Cdisplay parameter. The cdisplay parameter shall enable and disable the player's chapter-number display. Cdisplay shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command). Simultaneous display of chapter numbers, if implemented, and the position index (see 90.11.1.6) shall not be a compliance requirement. The positions and formats of these displays is typically player dependent, and therefore shall be avoided in finished applications.

90.11.1.3 Defdevice parameter. The defdevice parameter shall set the default logical player number. VDI Management shall direct all videodisc commands to this player number until another command which contains a device parameter directs it to a different player number.

90.11.1.4 Device parameter. The device parameter shall direct vdSet to the specified logical player number regardless of the default player number set by vdSet defdevice. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized).

90.11.1.5 Door parameter. The door parameter shall open and close the videodisc player door. If the player does not support this function, the parameter shall return error 87 (action not supported by device). Door shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

90.11.1.6 Idxdisplay parameter. The idxdisplay parameter shall enable and disable the player's position index display. The resulting display shall be in frame numbers for CAV videodiscs and time for CLV videodiscs. Simultaneous display of chapter numbers and the position index shall not be a compliance requirement (see 90.11.1.2).

90.11.1.7 Remote parameter. The remote parameter shall turn the hand held remote on and off. Remote=0 (off) shall give the application software complete control over the videodisc player. If the player does not support this function, Remote shall return error 87 (action not supported by device). Remote shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

90.11.1.8 Spin parameter. The spin parameter shall cause the player to spin the disc up and down. Spin=1 (up) shall cause the player to spin up and still on frame 1 (or the first available frame). Spinning the videodisc up shall also update the disctype parameter, and set cdisplay to undefined for videodiscs that do not support chapter numbers. Spin=0 (down) shall cause the player to spin down immediately, interrupting any player motion command not accompanied by the wait parameter.

90.11.1.9 Video parameter. The video parameter shall enable and disable the player's video output channel.

90.11.1.10 Wait parameter. With the **wait** parameter, **vdSet** shall not return application control until the specified settings have been acknowledged or a player error state is detected. Without **wait**, VDI Management shall return control as soon as it determines that the command is legal. **syCheckError** shall be used to determine if the player entered an error state while either accepting or trying to execute the command. Specifying **wait** with no other parameter shall result in error 49 (insufficient parameters).

90.11.2 Return values. Return values shall be as specified in 90.2.

90.12 vdStep Command. **vdStep** shall cause the videodisc player to move forward or backward one frame in a specified **direction** without blanking the screen. The command shall not return application control until the step is complete. This command shall interrupt any other player motion command that did not include a **wait** parameter. With no parameters, **vdStep** shall step forward one frame and freeze.

90.12.1 Command parameters. The ASCII and binary interface parameters for **vdStep** shall be as specified in Table D-32. This command can be issued with no parameters.

90.12.1.1 Device parameter. The **device** parameter shall direct **vdStep** to the specified logical player number regardless of the default player number set by **vdSet defdevice**. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized).

90.12.1.2 Direction parameter. The **direction** parameter shall set the direction of motion for the step, either one (forward) or zero (backward).

90.12.2 Return values. Return values shall be as specified in 90.2.

90.13 vdStill Command. **vdStill** shall cause the videodisc player to immediately stop on the current frame and shall set the **motion** parameter returned by **vdGetState** to zero. This command shall interrupt any other player motion command that did not include a **wait** parameter. In this case, the application shall not be able to issue **vdStill** until the motion command is complete. The resulting display after **vdStill** varies with videodisc type. With CAV videodiscs, video shall remain visible. With most CLV videodiscs, **vdStill** shall be equivalent to a pause command and the player shall automatically blank the video.

90.13.1 Command parameters. The ASCII and binary interface parameters for **vdStill** shall be as specified in Table D-33. This command may be issued with no parameters.

90.13.1.1 Device parameter. The **device** parameter shall direct **vdStill** to the specified logical player number regardless of the default player number set by **vdSet defdevice**. Specifying a nonexistent or uninstalled player shall cause error 160 (invalid device number). Specifying an uninitialized player shall cause error 81 (device not initialized).

90.13.2 Return values. Return values shall be as specified in 90.2.

APPENDIX D

100. XY-INPUT (xy) SERVICE GROUP

100.1 Introduction. This section provides a full description of XY-input (xy) commands, identifies command parameters, and defines associated command return values. Command names and token numbers shall be as specified in Table D-3.

100.2 Command return values. Unless otherwise specified in this section, return values shall be as follows.

100.2.1 ASCII return values. The ASCII return values shall be "OK" on success and "ERROR n..." where "n..." is an error number on failure.

100.2.2 Binary return values. Binary return values shall be "AX=0" on success and "AX=error number" on failure.

100.3 General requirements. The xy service group shall be in accordance with the following general requirements. Individual command descriptions shall be in accordance with these requirements.

100.3.1 Device mapping. Each physical XY-input device is treated independently and mapped to a unique logical device number. However, VDI Management developers may opt to support multiple physical devices as a single logical device by mapping the devices to a single logical device number. If so, VDI Management shall correct raw values returned by the physical devices so that all devices return the same value for the same screen position to the application based on the application-coordinate space (see 100.7). Additionally:

a. All mapping shall be done when VDI Management is installed. Devices shall not be remapped at run-time and mapping shall not be under ICW or authoring system control.

b. Mapping the keyboard or cursor keypad to an XY-input device shall be optional. How such support is provided shall be an implementation issue and is not considered in the ICW portability practices.

100.3.2 Handling the graphics plane and cursor. ICW applications and authoring systems shall not turn off the graphics plane when they need selection and coordinate input. The plane shall be active for a device such as a mouse to display a cursor for making menu selections and similar tasks. Although some XY-input devices such as touch screens allow input beyond the limits of active graphics, ICW and authoring systems shall limit active XY-input areas to the active graphics plane.

100.3.3 Coordinate space mapping. The alignment of specific XY-coordinate values versus graphics shall be a VDI Management implementation issue. However, the minimum and maximum values for X and Y shall map to the edges of the active graphics (see 100.5 and 100.7).

100.3.3.1 Coordinate values. Coordinates shall not be restricted to the largest X value always mapping to the right side of the screen, and the largest Y value always mapping to the bottom of the screen. For example, xySet **xmin=100, xmax=0** shall result in the left edge of the screen mapping to 100 and the right edge to 0 (see 100.7).

100.3.3.2 Clipping values. The clipping values for X and Y shall not lie outside of the minimum and maximum values. Trying to set clipping values outside of the minimum and maximum values shall cause an error. Additionally:

a. For relative positioning devices such as mice, VDI Management shall ignore changes in position that take the cursor outside of the clipping area.

b. For absolute positioning devices such as touch screens, VDI Management shall ignore button presses outside of the clipping area.

c. Application authors shall address the behavioral differences between these two device classes and test application consistency against both.

100.3.3.3 Calibration. Calibrating the XY-coordinate space to the active graphics area shall be a VDI Management implementation issue. Typically, if a device such as a touchscreen requires calibration, the device comes with software to do this during installation (see 40.4).

100.3.4 Buttons. In the context of the XY-command set, a button shall be defined as any device that allows signaling the ICW or authoring system that a choice has been made. Although the XY-Input commands support devices with multiple buttons, ICW and authoring systems shall assume single-button devices for maximum portability. The XY commands shall only support reporting of whether or not a button has been pressed (X and Y dimensions). They shall not distinguish touchdown, liftoff, or intensity (Z dimension).

100.3.5 Stream-mode and point-mode devices. VDI management shall treat both true stream-mode devices and point-mode devices as stream-mode devices. Reported coordinates shall be either:

a. The current coordinates from a true stream-mode device;

b. The coordinates at the time the button was last pressed for a point-mode device; or

c. The minimum X and Y values (typically 0,0) for a point-mode device for which no button has been pressed since the device was initialized.

100.4 xyGetInput Command. **xyGetInput** shall return the current position and button status of the XY-input device. Trying to queue **xyGetInput** shall cause error 177 (command cannot be queued) at the time of the attempt. Additionally:

a. If multiple physical XY-input devices are mapped to the same logical device and two or more generate absolute coordinates, **xyGetInput xpos,ypos** shall return the coordinates for the most recently active device -- the last device that was moved or clicked.

b. If multiple physical XY-input devices are mapped to the same logical device, **xyGetInput buttons** shall perform a logical "or" of the button states for all physical devices. VDI Developers should note that **xyGetInput buttons** cannot distinguish the situation where the same button numbers on two or more devices are simultaneously closed.

100.4.1 Command parameters. The ASCII and binary interface parameters for **xyGetInput** shall be as specified in Table D-34. At least one parameter shall be required or an error is returned. If **device** is specified, at least one other parameter shall be specified.

100.4.1.1 Button parameter. The **button** parameter shall return the state of all buttons as a bit field. Each bit in the bit field can have two states; zero (open) or one (closed). A device may have up to 32 buttons numbered 0-31. Additionally:

a. The binary interface shall return a 4-byte bit field. The least significant bit (bit 0) of the least significant byte (byte 0) shall correspond to button zero, the next bit to button one, and so on. For example, if an input device has three buttons with states of closed, open, and closed; the binary interface would return 00000101B in the low byte.

b. The ASCII interface shall return an integer value that represents the sum of the bits in the bit field as it would be returned by the binary interface. For the example above, the ASCII interfaces would return "5" (4 + 0 + 1).

c. **xyGetState tbuttons** shall return the number of buttons available on a device.

100.4.1.2 Device parameter. The **device** parameter shall direct **xyGetInput** to the specified logical XY-input device regardless of the default device number set by **xySet defdevice**. Specifying **device** with no other parameter shall return error 49 (insufficient parameters). Specifying a nonexistent or uninstalled device shall return error 160 (invalid device number). Specifying an uninitialized device shall cause error 81 (device not initialized).

100.4.1.3 Xpos and ypos parameters. The **xpos** and **ypos** parameters shall return the current XY coordinates of the input device according to the scale set by **xySet**. Additionally:

a. If the coordinate system is changed by any combination of **xySet, xmin, ymin, xmax, ymax**, VDI Management shall automatically convert **xpos** and **ypos** values so that the cursor stays at the same position on the screen. **xyGetInput, xpos, ypos** shall return the new parameter values.

b. If the clipping area is changed by any combination of **xySet xminclip, yminclip, xmaxclip, ymaxclip** and the cursor lies outside the new clipping region, VDI Management shall automatically convert xpos and ypos values to move the cursor to the edge of the clipping area nearest to the previous cursor position. **xyGetInput xpos, ypos** shall return the new parameter values.

100.4.2 Return values. Return values shall be as follows.

100.4.2.1 ASCII return values.

a. On success. Return a comma-separated list of values for the requested parameters as specified in 100.4.1 through 100.4.1.3.

b. On failure. Return "ERROR n...".

100.4.2.2 Binary return values.

a. On success. Return AX = 0. Values associated with requested parameters shall be 32-bit values of the types specified in the binary parameters of Table D-34.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by *ES:DI are undefined and shall be ignored.*

100.5 **xyGetState Command. xyGetState** shall return information about the current values of the coordinate space, and available devices and capabilities. VDI Management shall maintain a copy of device-specific parameters including coordinates for each logical device. Trying to queue **xyGetState** shall cause error 177 (command cannot be queued) at the time of the attempt.

100.5.1 Command parameters. The ASCII and binary interface parameters for **xyGetState** shall be as specified in Tables D-35 and D-36, respectively. At least one parameter shall be required or an error shall be returned. If **device** is specified, at least one other parameter shall be specified. If a parameter causes an error, **xyGetState** shall return immediately with the error message. The command shall not return partial responses for other parameters that did not cause error.

100.5.1.1 Cursor parameter. The **cursor** parameter shall return one if the graphics cursor is visible. **Cursor** shall return zero if the input device supports a cursor that is not visible or the device does not support a cursor. In this case, the cursor shall always be off. **Cursor** shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

100.5.1.2 Defdevice parameter. The **defdevice** parameter shall return the logical number of the default XY-input device set by **xySet defdevice**. VDI management shall direct all XY commands to this device unless a command contains a **device** parameter directing it to a different input device.

100.5.1.3 Device parameter. The **device** parameter shall direct **xyGetState** to the specified logical device number regardless of the default device number set by **xySet defdevice**. Because, in general, **device** only affects its associated command, the parameter shall not affect the return value for **defdevice** (see 100.5.1.2) when the two parameters are used together. Specifying **device** with no other parameter shall return error 49 (insufficient parameters). Specifying a nonexistent or uninstalled device shall return error 160 (invalid device number). Specifying an uninitialized device shall cause error 81 (device not initialized).

100.5.1.4 Tbuttons parameter. The **tbuttons** parameter shall return the total number of buttons available for the default or specified XY-input device.

100.5.1.5 Tdevices parameter. The **tdevices** parameter shall return the total number of logical XY-input devices for which VDI Management was configured at installation. If only one device is installed, it shall be numbered zero and **tdevices** shall return a value of one.

100.5.1.6 Xmin, ymin, xmax, and ymax parameters. The **xmin, ymin, xmax, ymax** parameters shall return the current scaling of the XY-coordinate system. The **xmin** and **ymin** values shall be the coordinates corresponding to the physical location of the upper left corner of the active graphics area. The **xmax** and **ymax** values shall correspond to the lower right corner of the active graphics area. VDI Management shall scale absolute positioning information to the space defined by these parameters.

100.5.1.7 Xminclip, yminclip, xmaxclip, and ymaxclip parameters. The **xminclip, yminclip, xmaxclip, and ymaxclip** parameters shall return the area within the XY-coordinate space within which changes of position are reported.

100.5.2 Return values. Return values shall be as follows.

100.5.2.1 ASCII return values.

a. On success. Return a comma-separated list of values for requested parameters as specified in 100.5.1 through 100.5.1.7.

b. On failure. Return "ERROR n...".

100.5.2.2 Binary return values.

a. On success. Return AX = 0. Values associated with requested parameters shall be 32-bit values of the types specified in the binary parameters of Table D-36.

b. On failure. Return AX = error number. Any return values in the parameter block addressed by ES:DI are undefined and shall be ignored.

100.6 xyInit command. **xyInit** shall initialize XY-input hardware and the xy service group, placing both in a known state. **xyInit** shall be issued for each logical XY-input device that will be

used by the application. Trying to queue xyInit shall cause error 177 (command cannot be queued) at the time of the attempt.

100.6.1 Command parameters. The ASCII and binary interface parameters for xyInit shall be as specified in Table D-37. This command may be issued with no parameters.

100.6.1.1 Device parameter. The device parameter shall specify the logical device number of the XY-input device to be initialized. If device is omitted, xyInit shall either initialize logical device zero or reinitialize the default device set by xySet defdevice. Additionally:

a. A device shall have been previously initialized with xyInit for xySet defdevice to set it to the default. If xySet has not been used to set a previously initialized default and the device parameter is omitted, the default device shall be defined to be logical device zero. xyInit shall not change the default device on subsequent calls that include a device parameter, if a device other than the default is specified.

b. If on the first call to xyInit, a device other than zero is specified, xySet shall be used if that device is the desired default.

c. xyInit device=n shall be used to change the default to a device that has not yet been initialized, where n is the desired logical device number. This shall be followed by xySet defdevice=n. After a device has been initialized, xySet defdevice shall be necessary to change the default.

d. Specifying a nonexistent or uninstalled device shall return error 160 (invalid device number).

100.6.1.2 Values set by xyInit. The parameters and values set by xyInit shall be as specified in Table D-38.

100.6.2 Return values. Return values shall be as specified in 100.2.

100.7 xySet Command. xySet shall define the XY-coordinate space, set the default input device, turn the cursor on and off, and set the current XY coordinates. Each parameter shall stay in effect for either the current or specified device regardless of the graphics mode until reset with xySet or xyInit.

100.7.1 Command parameters. The ASCII and binary interface parameters for xySet shall be as specified in Tables D-39 and D-40, respectively. At least one parameter shall be required or an error shall be returned. If device is specified, at least one other parameter shall be specified.

100.7.1.1 Cursor parameter. The cursor parameter shall enable and disable a graphics cursor if one is available. If the input device does not support a cursor, turning the cursor on

shall return error 87 (action not supported by device). Cursor shall be an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

100.7.1.2 Defdevice parameter. The defdevice parameter shall specify the default input device to be used when more than one input device is available. Specifying a nonexistent or uninstalled device shall return error 160 (invalid device number). Specifying an uninitialized device shall return error 81 (device not initialized).

100.7.1.3 Device parameter. The device parameter shall direct xySet to the specified logical device number regardless of the default input device set by xySet defdevice. Specifying device with no other parameter shall return error 49 (insufficient parameters). Specifying a nonexistent or uninstalled device shall return error 160 (invalid device number). Specifying an uninitialized device shall cause error 81 (device not initialized).

100.7.1.4 Xmin, ymin, xmax, and ymax parameters. The xmin, ymin, xmax, and ymax parameters shall set the scaling of the XY-coordinate space to the physical screen. The values shall correspond to the upper left and lower right corners of the active graphics display area. Legal values shall range from -32768 to +32767. Regardless of the values, xmin and xmax shall always map to the left and right edges of the screen, respectively: ymin and ymax shall always map to the top and bottom edges, respectively. Additionally:

a. Specifying a minimum or maximum coordinate value that would force the current corresponding clipping value to lie outside the coordinate system shall return error 51 (parameter value invalid or out of range). Clipping values shall not automatically adjust to minimum and maximum coordinate values in this situation.

b. xmin values greater than xmax values, and ymin values greater than ymax values shall be compliant. For example, xySet xmin=100, xmax=0 shall result in the left edge of the screen mapping to 100 and the right edge to 0.

100.7.1.5 Xminclip, yminclip, xmaxclip, and ymaxclip parameters. The xminclip, yminclip, xmaxclip, and ymaxclip parameters shall define a constrained area within the coordinate space for reporting coordinate movement. Coordinates values shall be returned only within the defined clip area. The clipping area shall initially be defined to be the same as xmin, ymin, xmax, and ymax. Specifying a clipping value outside the scaling of the XY-coordinate system shall return error 51 (parameter value invalid or out of range).

100.7.1.6 Xpos and ypos parameters. The xpos and ypos parameters shall set the XY coordinates to a specific location. These parameters are especially useful for initially positioning the XY-input device. An xpos or ypos value outside the clipping values shall set the coordinate to the limit of the respective clipping range. Additionally:

a. If the coordinate system is changed by any combination of xySet xmin, ymin, xmax, ymax, VDI Management shall automatically convert the xpos and ypos

values so that the cursor stays at the same position on the screen. Issuing **xyGetInput xpos, ypos** shall return the new parameter values.

b. If the clipping area is changed by any combination of **xySet xminclip, yminclip, xmaxclip, ymaxclip** and the cursor lies outside the new clipping region, VDI Management shall automatically convert the **xpos** and **ypos** values to move the cursor to the edge of the clipping area nearest to the previous cursor position. Issuing **xyGetInput xpos, ypos** shall return the new parameter values.

100.7.2 Return values. Return values shall be as specified in 100.2.

110. ERROR HANDLING

110.1 General information.

110.1.1 Optional use of error codes. Some VDI Management implementations may not use all the error codes. However, VDI developers shall not omit error codes simply for convenience.

110.1.2 Textual error messages. VDI Management implementations may supply textual error messages (see the **syErrorMsg** command). Although this is not a compliance requirement, if an implementation does support textual error messages, it shall use the summary messages as specified in this appendix.

110.1.3 Error listings. Error numbers, summary messages, and explanations shall be as specified herein. Note that error numbers and summary messages are underlined as paragraph titles and do not end with periods. Periods are omitted to avoid confusion because **syErrorMsg** does not include a period at the end of the summary message. Summary text is given in all upper case to reflect the form in which it is returned by **syErrorMsg**.

110.3 Command problems.

110.3.1 1 SERVICE GROUP NOT INSTALLED The VDI Management implementation supports the service group that contains the command, but the service group is not installed. For example, an application issued an xy command on a system that is not configured for XY-input - devices.

110.3.2 2 UNKNOWN COMMAND The command does not exist. Compliant VDI implementations shall not return this error in response to any core command for a supported service group.

110.3.3 3 SYSTEM NOT INITIALIZED The command was issued before the application issued **syInit**, or **syStop** was followed by a command other than **syInit**.

110.3.4 15 GENERAL COMMAND ERROR A command error occurred that is not listed above or about which no information is available.

110.4 ASCII interface problems.

110.4.1 16 BAD COMMAND SYNTAX The parser encountered a fatal syntax error that could not be further diagnosed. For example, a command string contained a control code. Error 16 shall not be used in place of parameter-problems errors.

110.4.2 17 COMMAND TOO LONG The command was longer than 255 characters and shall be ignored in its entirety. (The terminal carriage return counts but redundant delimiters do not.)

110.4.3 18 RESPONSE TOO LONG The response to an information request including the terminal CR/LF would be longer than 255 characters. VDI Management does not return partially filled information requests. For example, the application used an xyGetState command to request too much information.

110.4.4 19 DEVICE DRIVER READ BEFORE WRITE The application tried to read a response from the device driver before it had written at least one command to it. This is illegal and indicates a problem with the application's initialization code. This error can occur only immediately after VDI Management has been installed or after a well-behaved application has issued an syStop before exiting.

110.4.5 31 GENERAL ASCII INTERFACE ERROR An ASCII interface error has occurred that is not listed above or about which no information is available.

110.5 Binary interface problems.

110.5.1 32 INVALID PARAMETER COUNT On Intel 80x86-based systems, the BX register contains an invalid or out of range parameter count. For example, the application passed a negative value in BX.

110.5.2 33 INVALID PARAMETER PACKET ADDRESS On Intel 80x86-based systems, the ES:DI register pair contains an invalid address for a parameter packet.

110.5.3 34 INVALID POINTER IN PARAMETER PACKET The parameter packet contains a null or invalid pointer.

110.5.4 47 GENERAL BINARY INTERFACE ERROR A binary interface error occurred that is not listed above or about which no information is available.

110.6 Parameter problems.

110.6.1 48 RESERVED This error number is reserved for future use. The original error, Unknown parameter, has been deleted as requiring too much overhead to merit its availability. Error 52 should be used in its place.

110.6.2 49 INSUFFICIENT PARAMETERS The command required: a specific parameter that was missing; at least one parameter from a specific group of parameters and was issued without the parameter; or at least one parameter that could have been any parameter in its list and was issued with no parameters.

110.6.3 50 PARAMETERS CANNOT BE USED TOGETHER The command included two or more parameters that cannot be used together. For example, a vdPlay command included both a direction and a to parameter.

110.6.4 51 PARAMETER VALUE INVALID OR OUT OF RANGE The command included an incorrect parameter value. For example, a parameter value that must be in the range 0-255 was negative or greater than 255. This error can result from the combined effects of two or more parameters and from exceeding limits set by another parameter. For example, with the **vmSetPalette** command the sum of the **color** and **length** parameters must be less than or equal to **logcolors**. (**Logcolors** is the maximum number of available logical colors, which can be retrieved with the **vmGetState** command.)

110.6.5 52 PARAMETER INVALID FOR THIS COMMAND The command included an invalid parameter label. For example, the application issued **sylnit** with a **color** parameter. This label could be also be an unknown parameter, for example **xyz**, or a value supplied for a parameter that does not take a value and, therefore, was interpreted as a label. Compliant VDI implementations shall not return this error in response to any core parameter that is valid for a core command.

110.6.6 53 MISSING PARAMETER VALUE The command failed to include a value for a parameter that requires one. The parser reached either the end of the command string or another parameter label when a parameter value was expected. This is an ASCII interface error only.

110.6.7 54 PARAMETER USED MORE THAN ONCE The command included the same parameter more than once. This is never allowed.

110.6.8 79 GENERAL PARAMETER ERROR A parameter error occurred that is not listed above or about which no information is available.

110.7 Hardware problems.

110.7.1 80 INITIALIZATION ERROR The system could not initialize an attached device. The application can find out which device by examining the failed command.

110.7.2 81 DEVICE NOT INITIALIZED The application tried to use either an uninitialized device or an uninitialized service group.

110.7.3 82 COMMUNICATIONS TIMEOUT A timeout occurred while VDI Management was communicating with a peripheral device. Either the device did not produce an expected message within a predetermined timeout period, or the computer was unable to send a message to the device because signal control lines were in an appropriate state. For example, this error would result from a cable being unplugged after a device has been initialized.

110.7.4 83 COMMUNICATIONS ERROR An error occurred during communications. For example, repeated parity errors that cannot be cleared during asynchronous serial communications cause this error.

110.7.5 84 DEVICE REPORTS ERROR A peripheral device sent a message indicating that an error occurred that it cannot clear.

110.7.6 85 DEVICE CANCELLED REQUEST A peripheral device sent a message indicating that it has unilaterally canceled a requested service.

110.7.7 86 DEVICE NOT READY A peripheral device sent a message indicating that it cannot be made operational.

110.7.8 87 ACTION NOT SUPPORTED BY DEVICE A peripheral device sent a message indicating that it cannot do a requested action. This error indicates either an installation problem or the inappropriate use of the **vdPassThru** command. Compliant systems should not normally generate this error.

110.7.9 88 UNABLE TO RETURN REQUESTED INFORMATION A hardware device could not generate information requested by a command. For example, a CLV videodisc could not report a frame number.

110.7.10 111 GENERAL HARDWARE ERROR A hardware error occurred that is not listed above or about which no information is available.

110.8 System resources. (Some systems may not be able to return some errors in this group).

110.8.1 112 INSUFFICIENT MEMORY VDI Management could not access enough memory to perform the requested service.

110.8.2 113 NEEDED HARDWARE INTERRUPT IN USE VDI Management requires the use of a specific hardware interrupt that is already in use, or one of a range of interrupts and all are in use.

110.8.3 114 NEEDED SOFTWARE INTERRUPT IN USE VDI Management requires the use of a specific software interrupt that is already in use, or one of a range of interrupts and all are in use.

110.8.4 115 NEEDED DMA CHANNEL NOT AVAILABLE VDI Management requires the use of a specific Direct Memory Access (DMA) channel that is already in use, or requires the use of any DMA channel and all are in use.

110.8.5 116 NEEDED TIMER NOT AVAILABLE VDI Management requires the use of a timer resource that is not available.

110.8.6 127 GENERAL RESOURCES ERROR VDI Management requires additional system resources that are not listed above or about which no information is available.

110.9 Filing system problems.

110.9.1 128 INVALID FILENAME The command used a filename that was invalid for the operating system. (A legal filename that cannot be opened should return error 132.)

110.9.2 129 INVALID PATH The command used a path name that was invalid for the operating system.

110.9.3 130 INVALID DRIVE The command specified a drive that is not recognized by the operating system.

110.9.4 131 INVALID FILE NUMBER The command used a file number that was not recognized by the operating system.

110.9.5 132 CANNOT OPEN OR CREATE FILE The operating system could not open or create a requested file.

110.9.6 133 CANNOT CLOSE FILE The operating system could not close a requested file.

110.9.7 134 FILE ALREADY OPEN The command tried to open a file that was already open.

110.9.8 135 FILE ALREADY EXISTS The command tried to create a file that already exists.

110.9.9 136 FILE DOES NOT EXIST The command tried to access a file that does not exist.

110.9.10 137 FILE ACCESS DENIED The command was denied access to a requested file. For example, a file with a locked status on a network file server would cause this error.

110.9.11 138 FILE SEEK ERROR The command tried to use a nonexistent piece of a file. For example, a command tried to access byte 9000 of a 5 kilobytes (KB) file.

110.9.12 139 TOO MANY OPEN FILES The operating system has run out of file handles because too many files are open. Either the application should open fewer files or the user should change the operating system installation to allow more files to be open simultaneously.

110.9.13 140 DISK FULL The command tried to write to a full disk. The user should delete some files or change to a different disk before trying to run the application again.

110.9.14 141 DISK READ ERROR A data error occurred while reading the disk.

110.9.15 142 DISK WRITE ERROR A data error occurred while writing to the disk.

110.9.16 159 GENERAL FILING-SYSTEM ERROR A filing-system error occurred that is not listed above or about which no information is available.

110.10 Miscellaneous problems.

110.10.1 160 INVALID DEVICE NUMBER The command specified an invalid device or source number. This error results from using an invalid number for a device or source parameter or from trying to change the default device or source to an invalid number.

110.10.2 161 BUFFER OVERFLOW An internal VDI Management buffer overflowed. This indicates an internal VDI Mana ure and should be brought to the attention of the VDI Management developer.

110.10.3 162 INTERNAL CALCULATION ERROR An error such as divide by zero occurred during a numeric calculation within VDI Management. This indicates an internal VDI Management failure and should be brought to the attention of the VDI developer.

110.10.4 163 COPY PROTECTION ERROR A copy protected version of VDI Management has declined to run because its protection scheme has been violated. Legitimate users should discuss this problem with the VDI Management developer.

110.10.5 164 INTERFACE BUSY The ASCII or binary interface was busy and could not accept the command, and the application should reissue the command. This error is returned only when an application calls VDI Management and a previous call to VDI Management has not yet returned. This error is possible only if an application issues VDI Management calls from within an interrupt routine.

110.10.6 165 INVALID INTERRUPT NUMBER The environment variable IVINT was set to an interrupt number outside the range 60H-66H.

110.10.7 173 GENERAL INTERNAL ERROR An internal VDI Management error occurred that is not listed above or about which no information is available. This indicates an internal VDI Management failure and should be brought to the attention of the VDI developer.

110.10.8 174 GENERAL OPERATING SYSTEM ERROR The operating system reported an error unrelated to the filing system and not specific to any particular aspect of VDI Management. (VDI Management should try to recover from this error before returning it to the application.)

110.10.9 175 GENERAL ERROR An error occurred that is not listed elsewhere and about which no information at all is available. This error differs from error 111 (general hardware error) in that error 111 guarantees that a hardware error has occurred while this error can be caused by any unknown failure including unknown hardware, VDI Management, and application failures. VDI developers should not use this error number before carefully considering whether a more informative error code could be used. This is an error of last resort.

110.11 System group problems.

110.11.1 176 QUEUE FULL The application tried to queue more than 10 commands. This indicates an application problem such as failing to turn **syQueue** off at the appropriate time.

110.11.2 177 COMMAND CANNOT BE QUEUED The application tried to queue a command that cannot be queued. This indicates an application problem such as failing to turn **syQueue** off at the appropriate time.

110.11.3 191 GENERAL SYSTEM ERROR A problem occurred within the system group that is not listed above or about which no further information is available.

110.12 Visual-management problems.

110.12.1 192 SYNCHRONIZATION ERROR The video signal could not be genlocked to the computer's graphics because the signal has an inappropriate scan rate. Overlay is not possible.

110.12.2 193 GRAPHICS MODE PROBLEM The system could not do a requested action because the graphics mode does not support it. For example, the application tried to turn on transparency in a graphics mode that does not support overlays.

110.12.3 194 UNSUPPORTED GRAPHICS MODE The system could not switch to a requested graphics mode or emulation state because the hardware does not support the mode. For example, issuing **vmSetGraphics emulation=0**, which requires a VGA adapter, on a CGA or EGA system, or issuing **vmSetGraphics mode=14**, which requires an EGA graphics adapter, on a CGA system would cause this error.

110.12.4 207 GENERAL VISUAL-MANAGEMENT ERROR A problem occurred with the visual management functions that is not listed above or about which no further information is available.

110.13 Videodisc problems.

110.13.1 208 ACTION NOT SUPPORTED BY DISC The command requested an action that is not supported by the videodisc. For example the application tried to do a frame search on a CLV videodisc or a chapter search on a videodisc that without chapter stops.

110.13.2 209 DISC NOT SPUN UP The application issued a command such as **vdPlay** that requires the videodisc to be spun up when it has not been spun up.

110.13.3 210 DISC NOT SPUN DOWN The application issued a command such as **vdSet door=1** that requires the videodisc to be spun down when it has not been spun down.

110.13.4 211 DOOR OPEN The application issued a videodisc motion command other than **vdSet door=0** with the player door open. Typically, this is a user error that can be corrected without exiting the application.

110.13.5 212 NO DISC IN TRAY The application issued a videodisc motion command other than **vdSet door=1** with the player door closed but without a videodisc in the tray. Typically, this is a user error that can be corrected without exiting the application.

110.13.6 213 BAD DISC SECTION It was impossible to seek to the required frame because of a physical problem with the videodisc.

110.13.7 214 FELL OFF DISC An attempt was made to play backward past the beginning or forward past the end of the videodisc. This normally indicates improper use of a videodisc motion command.

110.13.8 215 INVALID FRAME NUMBER The command specified a frame that is not present on the videodisc.

110.13.9 216 INVALID CHAPTER NUMBER The command specified a chapter that is not present on the videodisc.

110.13.10 217 INVALID TIME CODE The command specified a time code that is not present on the videodisc.

110.13.11 239 GENERAL VIDEODISC PLAYER ERROR A videodisc error occurred that is not listed above or about which no information is available.

110.14 XY-input device problems.

110.14.1 240 DEVICE NOT CALIBRATED A required, implementation-specific, calibration process has not been done. The user should verify that the XY-input device is installed correctly.

110.14.2 241 INVALID COORDINATE A coordinate was specified that is outside the acceptable range. This normally indicates an application problem.

110.14.3 242 CURSOR PROBLEM A problem with the graphics device caused a cursor display problem. This indicates that the application requires a facility that VDI Management does not furnish.

110.14.4 255 GENERAL XY-INPUT ERROR An XY-input error occurred that is not listed above or about which no information is available.

TABLE D-1. Formal syntax for ASCII command and response strings.

<command string>	:=	[<delimiter string>] <command name> [<parameter string>] [<delimiter string>] CR[1]
<response string>	:=	"OK"CR/LF | "ERROR" space <digit string> CR/LF | <result string>CR/LF
<parameter string>	:=	<parameter> | <parameter> <parameter string>
<parameter>	:=	<delimiter string> <parameter id> [<delimiter string> <parameter value>][1]
<parameter id>	:=	<letter string> | <letter string> <digit string>[2]
<command name>	:=	<letter string>[2]
<result string>[3]	:=	<parameter value> | <parameter value> comma <result string>
<parameter value>	:=	<letter string> | <number> | <filename> | <hex string> | <word string> | <printable string>
<delimiter string>	:=	<delimiter> | <delimiter> <delimiter string>[1]
<word string>	:=	<letter string> | <letter string> space <word string>
<printable string>	:=	<printable> | <printable> <printable string>
<letter string>	:=	<letter> | <letter> <letter string>
<number>	:=	[<sign>] <digit string>
<digit string>	:=	<digit> |<digit> <digit string>
<hex string>	:=	<hex digit> | <hex digit> <hex string>
<file name>	:=	<legal file name string for operating system>
<delimiter>	:=	equals | space | HT | comma | LF
<printable>	:=	<printable character on computer used to implement VDI Management, but may not be space, backspace, comma, CR, LF, or HT>
<letter>	:=	"A"|"B"|"C"|"D"|"E"|"F"|"G"|"H"|"I"|"J"|"K"|"L"|"M"|"N"|"O"|"P"|"Q"|"R"|"S"|"T"|"U"|"V"|"W"|"X"|"Y"|"Z"|"a"|"b"|"c"|"d"|"e"|"f"|"g"|"h"|"i"|"j"|"k"|"l"|"m"|"n"|"o"|"p"|q"|"r"|"s"|"t"|"u"|"v"|"w"|"x"|"y"|"z"|
<digit>	:=	"0"|"1"|"2"|"3"|"4"|"5"|"6"|"7"|"8"|"9"
<hex digit>	:=	"0"|"1"|"2"|"3"|"4"|"5"|"6"|"7"|"8"|"9"|"A"|"B"|"C"|"D"|"E"|"F"|"a"|"b"|"c"|"d"|"e"|"f"
<sign>	:=	"+"|"-"

[1] Redundant delimiters in a <delimiter string> shall be ignored and shall not count toward length limits for <command string>s.

[2] This is not a complete definition. The items on the left can take only a limited range of values.

[3] Alpha characters, if present, in <result string>s shall be limited to upper case.

TABLE D-2. Parameter block layout.

Address	Contents
ES:DI[0]	Parameter 1 token number
ES:DI[4]	Parameter 1 value
ES:DI[8]	Parameter 2 token number
ES:DI[C]	Parameter 2 value
ES:DI[10]	Parameter 3 token number
ES:DI[14]	Parameter 3 value
ES:DI[n]	Parameter n token number
ES:DI[n+4]	Parameter n value

TABLE D-3. A summary of command names including binary token numbers and types.

ASCII name	Token number (decimal)	Token number (hexadecimal)	Type
sy service group			
syCheckError	1025	0401	Core
syErrorMsg	1026	0402	Extended
syGetState	1030	0406	Core
syInit	1031	0407	Core
syQueue	1034	040A	Core
syStop	1044	0414	Core
vm service group			
vmFade	2051	0803	Core
vmGetPalette	2053	0805	Core
vmGetState	2054	0806	Core
vmInit	2055	0807	Core
vmSetGraphics	2062	080E	Core
vmSetPalette	2063	080F	Core
vmSetTrans	2064	0810	Core
vmSetVideo	2065	0811	Core
vd service group			
vdGetState	3078	0C06	Core
vdInit	3079	0C07	Core
vdPassThru	3080	0C08	Core
vdPlay	3081	0C09	Core
vdScn	3083	0C0B	Core
vdSearch	3084	0C0C	Core
vdSet	3085	0C0D	Core
vdStep	3090	0C12	Core
vdStill	3091	0C13	Core
xy service group			
xyGetInput	4100	1004	Core
xyGetState	4102	1006	Core
xyInit	4103	1007	Core
xySet	4109	100D	Core

TABLE D-4. A summary of parameter labels including binary token numbers.

Parameter name	Token number (decimal)	Token number (hex)	Parameter name	Token number (decimal)	Token number (hex)	Parameter name	Token number (decimal)	Token number (hex)
array	1	01	from	24	18	tsources	46	2E
audio1	2	02	g	25	19	time	47	2F
audio2	3	03	glevel	26	1A	to	48	30
b	4	04	gmode	27	1B	transcolors	49	31
buttons	5	05	horzpix	28	1C	vertpix	50	32
cdisplay[1]	6	06	idxdisplay	29	1D	video	51	33
chapter[1]	7	07	ivver	30	1E	vlevel	52	34
clear	8	08	length	31	1F	vmode	53	35
color	9	09	logcolors	32	20	wait	54	36
command	10	0A	mfgname	33	21	width[2]	55	37
cursor[3]	11	0B	mfgver	34	22	xmax	56	38
defdevice	12	0C	motion	35	23	xmaxclip	57	39
defsource	13	0D	physcolors	36	24	xmin	58	3A
device	14	0E	pmag	37	25	xminclip	59	3B
direction	15	0F	r	38	26	xoffset	60	3C
disctype	16	10	remote[1]	39	27	xpos	61	3D
dlevel	17	11	speed	40	28	ymax	62	3E
door[1]	18	12	spin	41	29	ymaxclip	63	3F
emulation	19	13	state	42	2A	ymin	64	40
enable	20	14	support	43	2B	yminclip	65	41
errno	21	15	tbuttons	44	2C	yoffset	66	42
execute	22	16	tdevices	45	2D	ypos	67	43
frame	23	17						

1 Currently used only as an extended parameter in the vd service group.

2 Currently used only as an extended parameter in the vm service group.

3 Currently used only as an extended parameter in the xy service group.

TABLE D-5. svCheckError parameters.

ASCII Parameters						
Parameter [1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
command	Core	None	N/A	Command name that caused error or "OK" if no error	Text	No action
device	Core	None	N/A	Logical device number, 0-15, that caused error, or -1 if no error	Integer	No action
errno	Core	None	N/A	Last detected error number or 0 if no error number	Integer	No action
Binary Parameters						
Parameter [1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
command	Core	10	Integer	Any value	Command token that caused error, or zero if no error	No action
device	Core	14	Integer	Any value	Logical device number, 0-15, that caused error, or -1 if no error	No action
errno	Core	21	Integer	Any value	Last detected error number, or zero if no error	No action

[1] At least one parameter shall be specified or an error shall be returned.

TABLE D-6. svErrorMsg parameters.

ASCII Parameters						
Parameter	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
errno[1]	Core	Error number	Integer	Error description string	Text	Causes error
Binary Parameters						
Parameter	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
errno[2]	Core	21	Integer	Error number	None	Causes error
pmsg[2]	Core	37	Pointer	Any value	Pointer to error description string	Causes error

[1] Errno shall be specified or an error shall be returned.

[2] Both parameters shall be specified or an error shall be returned.

TABLE D-7. syGetState parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
ivver	Core	None	N/A	Recommended practices version number x 1000	Integer	No action
mfgname	Core	None	N/A	Manufacturer's name[2]	Text	No action
mfgver	Core	None	N/A	Manufacturer's version number x 1000	Integer	No action
support	Core	None	N/A	Value of bit field for installed service groups	Integer	No action
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
ivver	Core	30	Integer	Any value	Recommended practices version number x 1000	No action
mfgname	Core	33	Pointer	Any value	Pointer to MFG name string[3]	No action
mfgver	Core	34	Integer	Any value	Manufacturer's version number x 1000	No action
support	Core	43	Bit field	Any value	Bit field of installed service groups	No action

1 At least one parameter shall be specified or an error shall be returned.

2 Eight characters max. Restricted to printable characters and shall not include white space (ASCII 20H, 09H), backspace (ASCII 08H), comma (ASCII 2CH), CR (ASCII 0DH), or LF (ASCII 0AH).

3 Eight characters max. plus terminal NULL. Restricted to printable characters and shall not include white space (ASCII 20H, 09H), backspace (ASCII 08H), comma (ASCII 2CH), CR (ASCII 0DH), or LF (ASCII 0AH).

TABLE D-8. syGetState support return values.

Service Group	Binary interface return value (low byte)	ASCII interface return value
System (sy)	00000001	01
Visual management (vm)	00000010	02
Videodisc (vd)	00000100	04
XY input (xy)	00001000	08
Digital audio (da)[1]	00010000	16
Audio management (am)[1]	00100000	32

1 These service groups are currently not defined. They are included for future compatibility.

TABLE D-9. syQueue parameters.

ASCII Parameters						
Parameter[1]	**Core or extended**	**Associated calling value**	**Type as ASCII**	**Associated return value**	**Type as ASCII**	**Default if parameter not used**
clear	Core	None	N/A	None	N/A	No action
execute	Core	None	N/A	None	N/A	No action
state	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
Binary Parameters						
Parameter[1]	**Core or extended**	**Token number (decimal)**	**Type**	**Associated calling value**	**Associated return value**	**Default if parameter not used**
clear	Core	8	N/A	Any value	None	No action
execute	Core	22	N/A	Any value	None	No action
state	Core	42	Integer	1 (on) | 0 (off)	None	No action

1 At least one parameter shall be specified or an error shall be returned.

TABLE D-10. Unqueueable commands.

syCheckError	syStop	vmInit
syErrorMsg	vdGetState	xyGetInput
syGetState	vdInit	xyGetState
syInit	vmGetPalette	xyInit
syQueue	vmGetState	

TABLE D-11. IBM-compatible graphics modes.

Mode[1] (decimal)	Type	Resolution	Colors	Overlay mode	Adapter[2]
0,1	Text	40 x 25	16	Yes	CGA, EGA, VGA
2,3	Text	80 x 25	16	Yes	CGA, EGA, VGA
4,5	Graphics	320 x 200	4	Yes	CGA, EGA, VGA
6	Graphics	640 x 200	2	Yes	CGA, EGA, VGA
7	Text	80 x 25	Mono	No	EGA, VGA
13	Graphics	320 x 200	16	Yes	EGA, VGA
14	Graphics	640 x 200	16	Yes	EGA, VGA
15	Graphics	640 x 350	Mono	No	EGA, VGA
16	Graphics	640 x 350	16	No	EGA, VGA
17	Graphics	640 x 480	2	Yes	VGA
18	Graphics	640 x 480	16	Yes	VGA
19	Graphics	320 x 200	256	Yes	VGA

1 Does not include modes exclusive to the IBM PCjr and internal BIOS modes.

2 CGA = Color Graphics Adapter, EGA = Enhanced Graphics Adapter, VGA = Video Graphics Array.

TABLE D-12. vmFade parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
dlevel	Core	Dissolve level, 0-255	Integer	None	N/A	No action
glevel	Core	Graphics level, 0-255	Integer	None	N/A	No action
vlevel	Core	Video level, 0-255	Integer	None	N/A	No action
time	Core	Milliseconds for fade or dissolve	Integer	None	N/A	0
wait	Core	None	N/A	None	N/A	No wait
Binary Parameters						
Parameter [1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
dlevel	Core	17	Integer	Dissolve level, 0-255	Actual level after rounding if required	No action
glevel	Core	26	Integer	Graphics level, 0-255	Actual level after rounding if required	No action
vlevel	Core	52	Integer	Video level, 0-255	Actual level after rounding if required	No action
time	Core	47	Integer	Milliseconds for fade or dissolve	None	0
wait	Core	54	N/A	None	None	No wait

[1] Exactly one of dlevel, glevel, or vlevel shall be specified or an error shall be returned.

TABLE D-13. vmGetPalette parameters.

ASCII Parameters						
Parameter	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
color[1]	Core	Logical color number	Integer	None	N/A	Causes error
r	Core	None	N/A	Red value, 0-255	Integer	No action
g	Core	None	N/A	Green value, 0-255	Integer	No action
b	Core	None	N/A	Blue value, 0-255	Integer	No action
Binary Parameters						
Parameter	**Core or extended**	**Token number (decimal)**	**Type**	**Associated calling value**	**Associated return value**	**Default if parameter not used**
color[2]	Core	9	Integer	Logical color number	None	Causes error
r	Core	38	Integer	Any value	Red value, 0-255	No action
g	Core	25	Integer	Any value	Green value, 0-255	No action
b	Core	4	Integer	Any value	Blue value, 0-255	No action
length	Core	31	Integer	Number of color array entries[3]	Number of color array entries[3]	No action
array	Core	1	Pointer	Pointer to color array	Pointer to color array	No action

1 Exactly one color and at least one of r, g, and b shall be specified or an error shall be returned.

2 Either exactly one color and at least one of r, g, and b shall be specified; or color, length and array shall be used together otherwise, an error shall be returned.

3 color array entry = 4 bytes comprised of 3 components + reserved byte set to NUL.

TABLE D-14. vmGetState ASCII parameters.

Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
color	Core	Logical color number	Integer	1 (transparent) | 0 (opaque)	Integer	No action
defsource	Core	None	N/A	Default video source, 0-15	Integer	No action
dlevel	Core	None	N/A	Current level, 0-255	Integer	No action
emulation	Core	None	N/A	1 (on) | 0 (off)	Integer	No action
enable	Core	None	N/A	1 (on) | 0 (off)	Integer	No action
horzpix	Core	None	N/A	Total horizontal pixels in current gmode	Integer	No action
glevel	Core	None	N/A	Current level, 0-255	Integer	No action
gmode	Core	None	N/A	Current graphics mode	Integer	No action
logcolors	Core	None	N/A	Total available	Integer	No action
physcolors	Core	None	N/A	Total available	Integer	No action
transcolors	Core	None	N/A	Total available	Integer	No action
tsources	Core	None	N/A	Total video sources installed, 0-15	Integer	No action
vertpix	Core	None	N/A	Total vertical pixels in current gmode	Integer	No action
vlevel	Core	None	N/A	Current level, 0-255	Integer	No action
vmode	Core	None	N/A	0 (native) | 1 (NTSC) | 2 (PAL)	Integer	No action
width[2]	Extended	None	N/A	Graphics width in nanoseconds	Integer	No action
xoffset	Core	None	N/A	Graphics offset in pixels	Integer	No action
yoffset	Core	None	N/A	Graphics offset in pixels	Integer	No action

1 At least one parameter shall be specified or an error shall be returned.

2 Width is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command.

TABLE D-15. vmGetState binary parameters.

Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
color	Core	9	Integer	Logical color number	1 (transparent) | 0 (opaque)	No action
defsource	Core	13	Integer	Any value	Default video source, 0-15	No action
dlevel	Core	17	Integer	Any value	Current level, 0-255	No action
emulation	Core	19	Integer	Any value	1 (on) | 0 (off)	No action
enable	Core	20	Integer	Any value	1 (on) | 0 (off)	No action
glevel	Core	26	Integer	Any value	Current level, 0-255	No action
gmode	Core	27	Integer	Any value	Current graphics mode	No action
horzpix	Core	28	Integer	Any value	Total horizontal pixels in current gmode	No action
logcolors	Core	32	Integer	Any value	Total available	No action
physcolors	Core	36	Integer	Any value	Total available	No action
transcolors	Core	49	Integer	Any value	Total available	No action
tsources	Core	46	Integer	Any value	Total video sources installed, 0-15	No action
vertpix	Core	50	Integer	Any value	Total vertical pixels in current gmode	No action
vlevel	Core	52	Integer	Any value	Current level, 0-255	No action
vmode	Core	53	Integer	Any value	0 (native) | 1 (NTSC) | 2 (PAL)	No action
width[2]	Extended	55	Integer	Any value	Graphics width in nanoseconds	No action
xoffset	Core	60	Integer	Any value	Graphics offset in pixels	No action
yoffset	Core	66	Integer	Any value	Graphics offset in pixels	No action

1 At least one parameter shall be specified or an error shall be returned.

2 Width is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

TABLE D-16. Parameters set by vmInit.

Parameter	Value	Command reference
dlevel	255 (hard keying)	vmFade
emulation	1 (on)	vmSetGraphics
enable	0 (off)	vmSetTrans
glevel	255 (full intensity)	vmFade
gmode	Current value	vmSetGraphics
horzpix	Current value	None
logcolors	System limit for gmode	None
physcolors	System default for gmode	None
state	0 (transparency off)	vmSetTrans
transcolors	System limit for gmode	None
width[1]	System default for gmode	vmSetGraphics
vertpix	Current value	None
vlevel	0 (off)	vmFade
vmode	0 (native)	vmSetVideo
xoffset	0	vmSetGraphics
yoffset	0	vmSetGraphics

[1] If supported. Width is an extended parameter.

TABLE D-17. vmSetGraphics parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
emulation	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
gmode	Core	Mode number[2]	Integer	None	N/A	No action
width[3]	Extended	Width in nanoseconds	Integer	None	N/A	No action
xoffset	Core	Pixels	Integer	None	N/A	No action
yoffset	Core	Pixels	Integer	None	N/A	No action
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
emulation	Core	19	Integer	1 (on) | 0 (off)	None	No action
gmode	Core	27	Integer	Mode number [2]	None	No action
width[3]	Extended	55	Integer	Width in nanoseconds	None	No action
xoffset	Core	60	Integer	Pixels	None	No action
yoffset	Core	66	Integer	Pixels	None	No action

1 At least one parameter shall be required or an error shall be returned.

2 In decimal, for MS-DOS as returned by BIOS interrupt 10H, service OFH.

3 Width is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command.

TABLE D-18. vmSetPalette parameters.

ASCII Parameters						
Parameter	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
color[1]	Core	Logical color number	Integer	None	N/A	Causes error
r	Core	Red value, 0-255	Integer	None	N/A	No action
g	Core	Green value, 0-255	Integer	None	N/A	No action
b	Core	Blue value, 0-255	Integer	None	N/A	No action
Binary Parameters						
Parameter	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
color[2]	Core	9	Integer	Logical color number	None	Causes error
r	Core	38	Integer	Red value, 0-255	None	No action
g	Core	25	Integer	Green value, 0-255	None	No action
b	Core	4	Integer	Blue value, 0-255	None	No action
length	Core	31	Integer	Number of color array entries[3]	None	No action
array	Core	1	Pointer	Pointer to color array	None	No action

1 Exactly one color and at least one of r, g, and b shall be specified or an error shall be returned.

2 Either exactly one color and at least one of r, g, and b shall be specified; or color, length, and array shall be used together without r, g, or b; or an error shall be returned.

3 color array entry = 4 bytes comprised of 3 components + reserved byte set to NUL.

TABLE D-19. vmSetTrans parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
clear	Core	None	N/A	None	N/A	No action
color	Core	Logical color number	Integer	None	N/A	No action
enable	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
state	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
clear	Core	8	N/A	None	None	No action
color	Core	9	Integer	Logical color number	None	No action
enable	Core	20	Integer	1 (on) | 0 (off)	None	No action
state	Core	42	Integer	1 (on) | 0 (off)	None	No action

[1] Either both color and state, or clear only shall be used or an error shall be returned. Enable shall be used alone or with color + state.

TABLE D-20. vmSetVideo parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
defsource	Core	Input source, 0-15	Integer	None	N/A	No action
vmode	Core	0 (native) | 1 (NTSC) | 2 (PAL)	Integer	None	N/A	No action
Binary Parameters						
Parameter [1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
defsource	Core	13	Integer	Input source, 0-15	None	No action
vmode	Core	53	Integer	0 (native) | 1 (NTSC) | 2 (PAL)	None	No action

[1] At least one parameter shall be specified or an error shall be returned.

TABLE D-21. Boundary speed parameter values.

Speed parameter value	Resulting player speed
0	Error
1	Slowest available speed
999	Fastest speed that is slower than normal
1001	Slowest speed that is faster than normal
999999	Fastest available speed

TABLE D-22. vdGetState ASCII parameters.

Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
audio1	Core	None	N/A	1 (on) | 0 (off)	Integer	No action
audio2	Core	None	N/A	1 (on) | 0 (off)	Integer	No action
cdisplay[2]	Extended	None	N/A	1 (on) | 0 (off)	Integer	No action
chapter[2]	Extended	None	N/A	Current chapter number	Integer	No action
defdevice	Core	None	N/A	Default player, 0-15	Integer	No action
device[3]	Core	Logical player, 0-15	Integer	None	N/A	Default player
disctype	Core	None	N/A	1 (CLV) | 0 (CAV)	Integer	No action
door[2]	Extended	None	N/A	1 (open) | 0 (closed)	Integer	No action
frame[4]	Core	None	N/A	Current frame number	Integer	No action
idisplay	Core	None	N/A	1 (on) | 0 (off)	Integer	No action
motion	Core	None	N/A	1 (on) | 0 (off)	Integer	No action
remote[2]	Extended	None	N/A	1 (on) | 0 (off)	Integer	No action
speed	Core	None	N/A	Current player speed or 999999 if scanning	Integer	No action
spin	Core	None	N/A	1 (up) | 0 (down)	Integer	No action
tdevices	Core	None	N/A	Total installed for, 0-15	Integer	No action
video	Core	None	N/A	1 (on) | 0 (off)	Integer	No action

1 At least one parameter shall be specified or an error shall occur.

2 If supported. These are extended parameters. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 If device is specified, at least one other parameter shall also be specified.

4 Supported for CAV videodisc only. All other parameters shall apply to both CAV and CLV videodisc player.

TABLE D-23. vdGetState binary parameters.

Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
audio1	Core	2	Integer	Any value	1 (on) | 0 (off)	No action
audio2	Core	3	Integer	Any value	1 (on) | 0 (off)	No action
cdisplay[2]	Extended	6	Integer	Any value	1 (on) | 0 (off)	No action
chapter[2]	Extended	7	Integer	Any value	Current chapter number	No action
defdevice	Core	12	Integer	Any value	Default player, 0-15	No action
device[3]	Core	14	Integer	Logical player, 0-15	None	Default player
disctype	Core	16	Integer	Any value	1 (CLV) | 0 (CAV)	
door[2]	Extended	18	Integer	Any value	1 (open) | 0 (closed)	No action
frame[4]	Core	23	Integer	Any value	Current frame number	No action
idxdisplay	Core	29	Integer	Any value	1 (on) | 0 (off)	No action
motion	Core	35	Integer	Any value	1 (on) | 0 (off)	No action
remote[2]	Extended	39	Integer	Any value	1 (on) | 0 (off)	No action
speed	Core	40	Integer	Any value	Current player speed or 999999 if scanning	No action
spin	Core	41	Integer	Any value	1 (up) | 0 (down)	No action
tdevices	Core	45	Integer	Any value	Total installed for, 0-15	No action
video	Core	51	Integer	Any value	1 (on) | 0 (off)	No action

1 At least one parameter shall be specified or an error shall occur.

2 If supported. These are extended parameters. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command.

3 If device is specified, at least one other parameter shall also be specified.

4 Supported for CAV videodisc players only. All other parameters shall apply to both CAV and CLV videodisc players.

APPENDIX D

TABLE D-24. vdInit parameters.

ASCII Parameters						
Parameter	**Core or extended**	**Associated calling value**	**Type as ASCII**	**Associated return value**	**Type as ASCII**	**Default if parameter not used**
device[1]	Core	Logical player, 0-15	Integer	None	N/A	Default player
Binary Parameters						
Parameter	**Core or extended**	**Token number @ (decimal)**	**Type**	**Associated calling value**	**Associated return value**	**Default if parameter not used**
device[1]	Core	14	Integer	Logical player, 0-15	None	Default player

[1] This parameter shall apply to both CAV and CLV videodisc players, as does vdInit without parameters.

TABLE D-25. Parameter values set by vdInit.

Parameter	Value	Command reference
audio1	1 (on)	vdSet
audio2	1 (on)	vdSet
cdisplay [1]	0 (off) or undefined	vdSet
door [1]	0 (closed)	vdSet
frame	First available on disc	vdPlay, vdSet
idxdisplay	0 (off)	vdSet
motion	0 (off)	vdGetState
remote [1]	0 (off)	vdSet
spin	1 (up)	vdSet
tdevices	Total installed, 0-15	none
video	1 (on)	vdSet

[1] If supported by the implementation. This is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

TABLE D-26. vdPassThru parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
device	Core	Logical player, 0-15	Integer	None	N/A	Default player
pmsg	Core	Unquoted string of hexadecimal digits	Text	None	N/A	Causes error
time	Core	Timeout value in milliseconds	Integer	None	N/A	Default time
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
device	Core	14	Integer	Logical player, 0-15	None	Default player
pmsg [2]	Core	37	Pointer	Pointer to player command string	Pointer to player response string	Causes error
time	Core	47	Integer	Timeout value in milliseconds	None	Default time

[1] All parameters shall apply to both CAV and CLV videodisc players.

[2] The memory pointed to by pmsg shall be at least 33 bytes.

TABLE D-27. vdPlay parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
chapter[2]	Extended	Chapter number	Integer	None	N/A	No action
device	Core	Logical player, 0-15	Integer	None	N/A	Default player
direction[3]	Core	1 (fwd) | 0 (back)	Integer	None	N/A	1
from[3]	Core	Starting frame number	Integer	None	N/A	Current frame
speed	Core	Play speed, >0	Integer	None	N/A	1000
to[3]	Core	Ending frame	Integer	None	N/A	Disc limit
wait	Core	None	N/A	None	N/A	No wait
Binary Parameters						
Parameter	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
chapter[2]	Extended	7	Integer	Chapter number	None	No action
device	Core	14	Integer	Logical player, 0-15	None	Default player
direction[3]	Core	15	Integer	1(fwd)| 0(back)	None	1
from[3]	Core	24	Integer	Starting frame number	None	Current frame
speed	Core	40	Integer	Play speed, >0	Actual speed after rounding if required	1000
to[3]	Core	48	Integer	Ending frame number	None	Disc limit
wait	Core	54	N/A	None	None	No wait

1 The vdPlay command may be issued with no parameters. The text describes incorrect usage.

2 Chapter is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 Support shall be required only for CAV videodisc. All other parameters shall apply to both CAV and CLV videodiscs, as does the vdPlay command without parameters.

TABLE D-28. Effects of the wait parameter on vdPlay.

Additional parameter	Returns control when?
none	After the default player is playing normally
chapter	After the player has played the specified chapter
device only	After the specified player is playing normally
from with any other legal parameters except to	After the player has searched to the specified from frame
speed only	After the player is playing normally at the specified speed
to with any other legal parameters	After the player reached the specified to frame

TABLE D-29. vdScan parameters.

ASCII Parameters						
Parameter	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
device	Core	Logical player, 0-15	Integer	None	N/A	Default player
direction [1]	Core	1 (fwd) | 0 (back)	Integer	None	N/A	1
wait	Core	None	N/A	None	N/A	No wait
Binary Parameters						
Parameter	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
device	Core	14	Integer	Logical player, 0-15	None	Default player
direction [1]	Core	15	Integer	1 (fwd) | 0 (back)	None	1
wait	Core	54	N/A	None	None	No wait

[1] Shall be supported for CAV videodisc only. All other parameters shall apply to both CAV and CLV videodiscs, as does vdScan without any parameters.

TABLE D-30. vdSearch parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
chapter[2]	Extended	Chapter number	Integer	None	N/A	No action
device	Core	Logical player, 0-15	Integer	None	N/A	Default player
frame[3]	Core	Frame number	Integer	None	N/A	No action
wait	Core	None	N/A	None	N/A	No wait
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
chapter[2]	Extended	7	Integer	Chapter number	None	No action
device	Core	14	Integer	Logical player, 0-15	None	Default player
frame[3]	Core	3	Integer	Frame number	None	No action
wait	Core	54	N/A	None	None	No wait

1 This command shall include a chapter or frame, or an error shall be returned. If device or wait is specified, at least one other parameter shall be specified.

2 Chapter is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 Shall only be supported for CAV videodiscs. All other parameters shall apply to both CAV and CLV videodiscs.

TABLE D-31. vdSet parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
audio1	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
audio2	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
cdisplay	Extended	1 (on) | 0 (off)	Integer	None	N/A	No action
defdevice	Core	Logical player, 0-15	Integer	None	N/A	No action
device	Core	Logical player, 0-15	Integer	None	N/A	Default player
door	Extended	1 (open) | 0 (closed)	Integer	None	N/A	No action
idxdisplay	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
remote	Extended	1 (on) | 0 (off)	Integer	None	N/A	No action
spin	Core	1 (up) | 0 (down)	Integer	None	N/A	No action
video	Core	1 (on) | 0 (off)	Integer	None	N/A	No action
wait	Core	None	N/A	None	N/A	No wait
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
audio1	Core	2	Integer	1 (on) | 0 (off)	None	No action
audio2	Core	3	Integer	1 (on) | 0 (off)	None	No action
cdisplay	Extended	6	Integer	1 (on) | 0 (off)	None	No action
defdevice	Core	12	Integer	Logical player, 0-15	None	No action
device	Core	14	Integer	Logical player, 0-15	None	Default player
door	Extended	18	Integer	1 (open) | 0 (closed)	None	No action
idxdisplay	Core	29	Integer	1 (on) | 0 (off)	None	No action
remote	Extended	39	Integer	1 (on) | 0 (off)	None	No action
spin	Core	41	Integer	1 (up) | 0 (down)	None	No action
video	Core	51	Integer	1 (on) | 0 (off)	None	No action
wait	Core	54	N/A	None	None	No wait

1 All parameters shall apply to both CAV and CLV videodisc players. At least one parameter is required or an error shall be returned.

TABLE D-32. vdStep parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
device	Core	Logical player, 0-15	Integer	None	N/A	Default player
direction	Core	1 (fwd) | 0 (back)	Integer	None	N/A	1
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
device	Core	14	Integer	Logical player, 0-15	None	Default player
direction	Core	15	Integer	1 (fwd) | 0 (back)	None	1

1 The vdStep command nor any of the parameters shall not apply to CLV videodiscs. This command may be issued with no parameter.

TABLE D-33. vdStill parameters.

ASCII Parameters						
Parameter	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
device[1]	Core	Logical player, 0-15	Integer	None	N/A	Default player
Binary Parameters						
Parameter	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
device[1]	Core	14	Integer	Logical player, 0-15	None	Default player

1 This parameter shall apply to both CAV and CLV videodiscs, as does the vdStill command without parameters.

TABLE D-34. xyGetInput parameters.

ASCII Parameters						
Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
buttons	Core	None	N/A	Integer sum of bit field, 1 (closed) | 0 (open)	Integer	No action
device[2]	Core	Logical input device, 0-15	Integer	None	N/A	default device
xpos	Core	None	N/A	Current X value	Integer	No action
ypos	Core	None	N/A	Current Y value	Integer	No action
Binary Parameters						
Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
buttons	Core	5	Integer	Any value	Bit field, 1 (closed) | 0 (open)	No action
device[2]	Core	14	Integer	Logical input device, 0-15	None	Default device
xpos	Core	61	Integer	Any value	Current X value	No action
ypos	Core	67	Integer	Any value	Current Y value	No action

1 At least one parameter is required or an error shall be returned.

2 If device is specified, at least one other parameter shall also be specified.

TABLE D-35. xyGetState ASCII parameters.

Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
cursor[2]	Extended	None	N/A	1 (on) | 0 (off)	Integer	No action
defdevice	Core	None	N/A	Default input device, 0-15	Integer	No action
device[3]	Core	Logical input device, 0-15	Integer	None	N/A	Default device
tbuttons	Core	None	N/A	Total available for device	Integer	No action
tdevices	Core	None	N/A	Total installed for, 0-15	Integer	No action
xmax	Core	None	N/A	Maximum possible X value	Integer	No action
xmaxclip	Core	None	N/A	Current maximum X value	Integer	No action
xmin	Core	None	N/A	Minimum possible X value	Integer	No action
xminclip	Core	None	N/A	Current minimum X value	Integer	No action
ymax	Core	None	N/A	Maximum possible Y value	Integer	No action
ymaxclip	Core	None	N/A	Current maximum Y value	Integer	No action
ymin	Core	None	N/A	Minimum possible Y value	Integer	No action
yminclip	Core	None	N/A	Current minimum Y value	Integer	No action

1 At least one parameter is required or an error shall be returned.

2 Cursor is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 If device is specified, at least one other parameter shall also be required.

TABLE D-36. xyGetState binary parameters.

Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
cursor[2]	Extended	11	Integer	Any value	1 (on) | 0 (off)	No action
defdevice	Core	12	Integer	Any value	Default input device, 0-15	No action
device[3]	Core	14	Integer	Logical input device, 0-15	None	Default device
tbuttons	Core	44	Integer	Any value	Total available for device	No action
tdevices	Core	45	Integer	Any value	Total installed for, 0-15	No action
xmax	Core	56	Integer	Any value	Maximum possible X value	No action
xmaxclip	Core	57	Integer	Any value	Current maximum X value	No action
xmin	Core	58	Integer	Any value	Minimum possible X value	No action
xminclip	Core	59	Integer	Any value	Current minimum X value	No action
ymax	Core	62	Integer	Any value	Maximum possible Y value	No action
ymaxclip	Core	63	Integer	Any value	Current maximum Y value	No action
ymin	Core	64	Integer	Any value	Minimum possible Y value	No action
yminclip	Core	65	Integer	Any value	Current minimum Y value	No action

1 At least one parameter is required or an error shall be returned.

2 Cursor is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 If device is specified, at least one other parameter shall also be required.

TABLE D-37. xyInit parameters.

ASCII Parameters						
Parameter	**Core or extended**	**Associated calling value**	**Type as ASCII**	**Associated return value**	**Type as ASCII**	**Default if parameter not used**
device	Core	Logical input device, 0-15	Integer	None	N/A	Default device
Binary Parameters						
Parameter	**Core or extended**	**Token number (decimal)**	**Type**	**Associated calling value**	**Associated return value**	**Default if parameter not used**
device	Core	14	Integer	Logical input device, 0-15	None	Default device

TABLE D-38. Parameter values set by xyInit.

Parameter	Value	Command reference
tbuttons	Total available for device being initialized	none
tdevices	Total installed, 1-16	none
xmax	639	xySet
xmaxclip	639	xySet
xmin	0	xySet
xminclip	0	xySet
xpos	0	xySet
ymax	199	xySet
ymaxclip	199	xySet
ymin	0	xySet
yminclip	0	xySet
ypos	0	xySet

TABLE D-39. xySet ASCII parameters.

Parameter[1]	Core or extended	Associated calling value	Type as ASCII	Associated return value	Type as ASCII	Default if parameter not used
cursor[2]	Extended	1 (on) | 0 (off)	Integer	None	N/A	No action
defdevice	Core	Logical input device, 0-15	Integer	None	N/A	No action
device[3]	Core	Logical input device, 0-15	Integer	None	N/A	Default device
xmax	Core	Maximum possible X value	Integer	None	N/A	No action
xmaxclip	Core	Current maximum X value	Integer	None	N/A	No action
xmin	Core	Minimum possible X value	Integer	None	N/A	No action
xminclip	Core	Current minimum X value	Integer	None	N/A	No action
xpos	Core	X position	Integer	None	N/A	No action
ymax	Core	Maximum possible Y value	Integer	None	N/A	No action
ymaxclip	Core	Current maximum Y value	Integer	None	N/A	No action
ymin	Core	Minimum possible Y value	Integer	None	N/A	No action
yminclip	Core	Current minimum Y value	Integer	None	N/A	No action
ypos	Core	Y position	Integer	None	N/A	No action

1 At least one parameter is required or an error shall be returned.

2 Cursor is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 If device is specified, at least one other parameter shall also be required.

TABLE D-40. xySet Binary parameters.

Parameter[1]	Core or extended	Token number (decimal)	Type	Associated calling value	Associated return value	Default if parameter not used
cursor[2]	Extended	11	Integer	1 (on) | 0 (off)	None	No action
defdevice	Core	12	Integer	Logical input device, 0-15	None	No action
device[3]	Core	14	Integer	Logical input device, 0-15	None	Default device
xmax	Core	56	Integer	Maximum possible X value	None	No action
xmaxclip	Core	57	Integer	Current maximum X value	None	No action
xmin	Core	58	Integer	Minimum possible X value	None	No action
xminclip	Core	59	Integer	Current minimum X value	None	No action
xpos	Core	61	Integer	X position	None	No action
ymax	Core	62	Integer	Maximum possible Y value	None	No action
ymaxclip	Core	63	Integer	Current maximum Y value	None	No action
ymin	Core	64	Integer	Minimum possible Y value	None	No action
yminclip	Core	65	Integer	Current minimum Y value	None	No action
ypos	Core	67	Integer	Y position	None	No action

1 At least one parameter is required or an error shall be returned.

2 Cursor is an extended parameter. Using an unimplemented extended parameter shall cause error 52 (parameter invalid for this command).

3 If device is specified, at least one other parameter shall also be required.

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