UNITED STATES NAVY

| Naval Education and Training Command | NAVEDTRA 130B September 2009 | Support Manual for MIL-HDBK-29612-2A |

TASK BASED
CURRICULUM DEVELOPMENT MANUAL

DEPARTMENT OF THE NAVY
NAVAL EDUCATION AND TRAINING COMMAND
250 DALLAS STREET
PENSACOLA, FL 32508

1500
Ser N00/ 337
AUG 13 2009

LETTER OF PROMULGATION FOR NAVEDTRA 130B

1. This guidance manual has been extensively revised. Most of the revisions are in response to user comments and reflect a continuing effort to increase the manual's utility to the training field. NAVEDTRA 130B, Volumes I-III, supersedes and replaces NAVEDTRA 130A, dated July 1997.

2. The procedures in this manual follow a Task Based Curriculum Development method. This manual is intended for use by military, civil service, and contractor personnel engaged in Navy training materials development and modification.

3. Procedural guidance for development of training materials following a Personnel Performance Profile based method is published in NAVEDTRA 131 (Series).

4. This publication is available electronically at: Navy Knowledge Online (NKO) - NETC N74 Learning Standards Homepage; and Navy Marine Corps Intranet's (NMCI) Total Records and Information Management (TRIM).

5. Corrections and comments concerning this manual are invited and should be addressed to the Naval Education and Training Command, attention: N7.

6. Reviewed and approved.

G. R. JONES

NAVEDTRA 130B

TASK BASED CURRICULUM DEVELOPMENT MANUAL

PUBLISHED BY DIRECTION OF COMMANDER NAVAL EDUCATION AND TRAINING

FOREWORD

POLICY: New content development, revision, or maintenance within the Naval Education and Training Command (NETC) training domain, and training systems developed for NETC shall use the Authoring Instructional Materials (AIM) Content Planning Module (CPM), and Learning Object Module (LOM), unless waived by NETC N7 in formal correspondence. NAVEDTRA 136 is the reference document for content development, revision, or maintenance using AIM CPM/LOM.

NAVEDTRA SERIES MANUALS: The following is a current listing of NAVEDTRA series of manuals:

- NAVEDTRA 130: Task Based Curriculum Development Manual
- NAVEDTRA 131: Personnel Performance Profile Based Curriculum Development Manual
- NAVEDTRA 132: Navy School House Testing Management Manual
- NAVEDTRA 133: Navy Human Performance Requirements Review Management Manual
- NAVEDTRA 134: Navy Instructor Manual
- NAVEDTRA 135: Navy School Management Manual
- NAVEDTRA 136: Naval Education and Training Command Integrated Learning Environment Course Development and Life-Cycle Maintenance Manual
- NAVEDTRA 137: Job Duty Task Analysis Management Manual
- NAVEDTRA 138: Front End Analysis Management Manual
- NAVEDTRA 140: Training Support Management Manual

The NAVEDTRA series of manuals provide fundamental direction within the NETC training domain for the development of curricula, the delivery of instruction, and the management and evaluation of training programs.

These manuals do not supersede the directive policy established by Commander, NETC Instructions (NETCINSTs) in these subject areas. Rather, they supplement the NETCINSTs in two important ways. First, they reflect the philosophical principles underlying NETC policy for curriculum, instruction, and evaluation and second, they provide procedures for carrying out that policy.

Each of the NAVEDTRA series of manuals is designed as a stand-alone document to serve a specific user group such as curriculum

developers, instructors, training managers, or evaluators of training. The manual are, however interrelated and cross-referenced to one another.

SCOPE: The NAVEDTRA 130 (series), Task Based Curriculum Development Manual, provides guidance for developing training materials. This manual is a revision of the July 1997 issue. While the overall process of curriculum development remains unchanged, this revision incorporates changes and updates based on the experiences and feedback from NETC training activities. The processes and illustrations found in NAVEDTRA 130 (series) reflect the experience of Subject Matter Experts (SMEs), curriculum developers, and decision makers who approve Navy training material developed by Navy curriculum developers and civilian contractors. NAVEDTRA 130 (series) describes and illustrates all facets of planning, analysis, design, and development of curricula. NAVEDTRA 130 (series) provides step-by-step guidance to curriculum developers for developing job efficient and effective training material. NAVEDTRA 130 (series) consists of three volumes. The revisions comprising NAVEDTRA 130B include:

- Revised and updated references and instructions.
- Revised Volume II Sample Products.
- Revised development information for Visual Information and Instructional Media Materials.
- Revised Training Materials Modification Information.

Volume I is a Developer's Guide that contains procedural guidelines for the development of training programs. It is designed for use by the individual actually revising or developing training materials. Task based curriculum development, referencing this document, is performed in the AIM II curriculum authoring tool.

Volume II contains Sample Products of each of the management and curriculum documents in a format that is consistent with the standards and conventions discussed in Volume I.

Volume III is a Manager's Guide designed for the individual charged with the management of a course revision or development. The guide describes approval points, approval authorities, and the manager's responsibilities in each of the six phases of Task Based Curriculum Development.

iii

RELATIONSHIP TO DEPARTMENT OF DEFENSE (DOD) STANDARDS/ SPECIFICATIONS AND AIM: Chapter titles in these manuals were derived from various DoD Standards and Specifications documents, which these manuals support. The name assigned to individual documents developed in accordance with these manuals must correspond with the document name used herein. Exceptions to this rule shall not be granted. AIM is a computer based training materials authoring tool developed by the Navy. Training materials developed using AIM may be different in appearance than examples shown in these manuals. However, all training material developed using AIM is compatible with the concepts of these manuals. If any instance exists where the information in these manuals is in conflict or is not supported by the constraints of the AIM software, the information in these manuals takes precedence and must still be supported.

CONTRACTUAL USE OF MANUAL: NAVEDTRA 130 (series) sample documents may also be used as an exhibit in a contract as service-specific guidance for use by civilian contractors developing Navy training material.

HOW TO USE NAVEDTRA 130 (SERIES): NAVEDTRA 130 (series) provides guidance and illustrations for use in the planning, analysis, design, development, implementation, and evaluation of curricula.

Volume I: Contains step-by-step guidance for developing effective training materials. All chapters in Volume I were written so you can follow along with the corresponding sample document presented in Volume II. Open Volume I to the subject you wish to learn about. Open Volume II to the related sample document referenced in Volume I.

Volume II: Contains examples of all curriculum material that make up a Course of Instruction (COI) developed under the task based method. When you have located the sample document in Volume II that corresponds to the chapter you have selected in Volume I, follow along in Volume II as you read Volume I. For example, if you are developing a Course Training Task List (CTTL), turn to the sample CTTL in Volume II.

Volume III: Contains management information important to planning, analysis, design, development, implementation, and evaluation of curricula. The chapters in Volume III establish the requirements for the submission and review of the various products developed during the curriculum development process.

CHANGE RECORD

Number and Description of Change	Entered By	Date

v

Naval Education and Training Command	NAVEDTRA 130B August 2009	Support Manual for MIL-HDBK-29612-2A

TASK BASED
CURRICULUM DEVELOPMENT MANUAL
VOLUME I DEVELOPERS GUIDE

NAVEDTRA 130B

TASK BASED CURRICULUM DEVELOPMENT MANUAL

PROCEDURAL GUIDANCE

NAVEDTRA 130B - TASK BASED CURRICULUM DEVLOPMENT MANUAL
VOLUME I - PROCEDURAL GUIDANCE
TABLE OF CONTENTS

FIGURES (CON'T)

TABLES

DIAGRAM

Introduction

Chapter 1

Training Materials Development Plan Phase

INTRODUCTION

The procedures for developing training materials following the Task Based Curriculum Development method are divided into six interrelated Phases — Plan, Analyze, Design, Develop, Implement and Evaluate (PADDIE).

- *P*LAN PHASE identifies resource requirements and the sequence of events in the development process.
- *A*NALYZE PHASE produces the job tasks, task sequence, level of performance, and the skills and knowledge which must be taught.
- *D*ESIGN PHASE produces the course learning objectives and an instructional sequence.
- *D*EVELOP PHASE produces the instructional materials for the instructor and the trainee.
- *I*MPLEMENT PHASE begins when the Curriculum Control Authority (CCA) has approved a course for use and the Learning Center or Functional Commander authorizes the course to be taught.
- *E*VALUATE PHASE consists of the evaluation and revision of the training materials based on assessment of the training materials and the performance of the graduates in the Fleet.

This manual covers the PADDIE phases. In the volumes composing this manual the steps required and approval points for products developed in each of these phases are discussed. The Implement Phase is introduced as part of Chapter 10 of this volume. Implementation and Evaluation are also addressed in NAVEDTRA 135(Series): Navy School Management Manual. The overall process is illustrated in Figure 1-1.

NAVEDTRA 130B: Task Based Curriculum Development Manual is designed to guide Navy training activity personnel (curriculum developers) in the development of accurate and effective training materials. This manual:

- Specifies the tasks necessary to develop and support training materials.
- Establishes the sequence of task performance.
- Assigns task performance responsibilities.

Plan

Training Project Plan

⟶ CCA/Functional Commander, NETC, or OPNAV Approval

Analyze

Course Training Task List

Design

Curriculum Outline of Instruction

Training Course Control Document ⟶ CCA Approval

Develop

Lesson Plan
Trainee Guide
Tests/Administrative Materials
Support Materials
Course Pilot

Pilot Course Monitoring Report ⟶ CCA Approval

Implement

Conduct Instruction

Evaluate

Internal Evaluation/Feedback
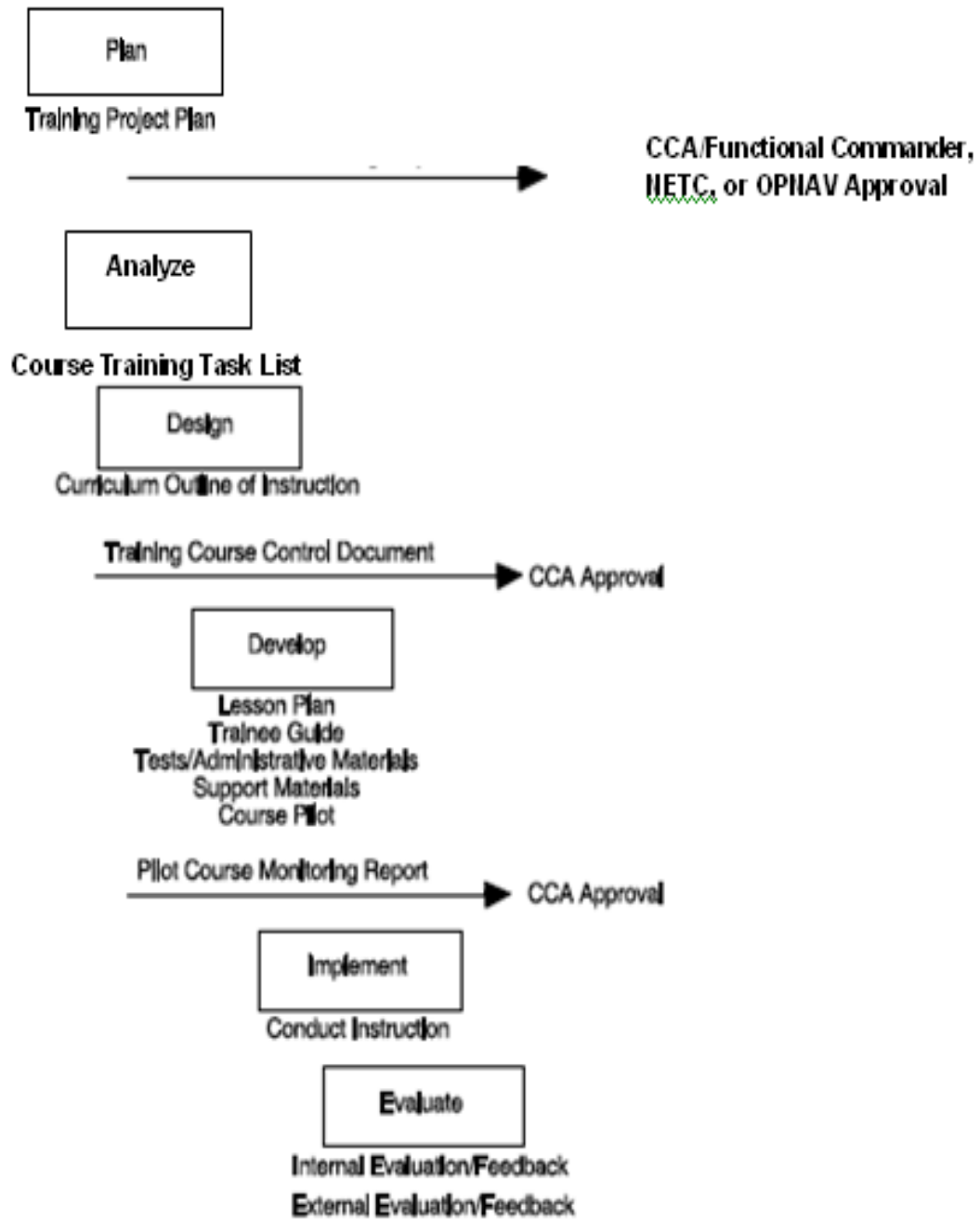
External Evaluation/Feedback

Figure 1-1: CURRICULUM DEVELOPMENT PROCESS

1-3

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SECTION 1 - TRAINING MATERIALS

1. Training materials include management materials, curriculum materials, and support materials. The training materials produced by Navy in-house and contract developers follow the guidelines of this manual.

Recognizing the complexity of training materials development and the external factors which influence curriculum development projects. Waivers from the standard development standard may be authorized by the Curriculum Control Authority (CCA) ONLY.

AUTHORING INSTRUCTIONAL MATERIALS (AIM)

AIM is a computer based training materials authoring tool developed by the Navy. Training materials developed using AIM may be different in appearance than examples shown in this manual. However, all training materials developed using AIM is compatible with the concepts of this manual and is deemed to be correctly formatted. NETC Learning Centers or as designated shall use the AIM II application for the plan, analyze and design phases of curriculum development. The develop phase may also be used if applicable and achievable. AIM II is for Task Based development and AIM I for Personnel Performance Profile (PPP) Based Development which is discussed in detail in NAVEDTRA 131 Series.

1.1. Management Materials: Management materials define training requirements and provide an overall plan for the accomplishment of these requirements. The chapters of this manual provide guidelines for the development of management materials. Management materials for training materials development include:

- **Training Project Plan** (**TPP**) — Discussed in Chapter 2.
- **Course Training Task List** (**CTTL**) — Discussed in Chapter 3.
- **Training Course Control Document** (**TCCD**) — Discussed in Chapter 5.
- **Test/Administrative Materials** — Discussed in Chapter 8 and NAVEDTRA 135(Series): Navy School Management Manual.
- **Pilot Course Monitoring Report** — Discussed in Chapter 10.
- **Documentation required or appropriate for audit trail** — Discussed in NAVEDTRA 135(Series): Navy School Management Manual.

1.2. Curriculum Materials: Curriculum materials include all materials required for the presentation of information and the development of skills in formal school training. Chapters in this manual contain development guidelines for curriculum materials. Under this definition, curriculum materials include:

- Lesson Plan (LP) — Discussed in Chapter 6.
- Trainee Guide (TG) (or Instruction Sheets) — Discussed in Chapter 7.
- Test/Administrative Materials — Discussed in Chapter 8 and in NAVEDTRA 135(Series): Navy School Management Manual.
- Other material used for instruction (such as an Exercise Controller Guide).

1.3. Support Materials: Support materials are instructional materials and other devices used in support of formal instruction, informal instruction, or for independent study. Chapter 9 of this manual provides more detail on Visual Information (VI) and Instructional Media Materials (IMM). The following are the most common support materials:

- VI includes:

  - Wall Charts (WC).
  - Films.
  - Digital and Video Tapes.
  - Transparencies.
  - Graphic Media Presentations.

- IMM includes: On-the-Job Training (OJT) Handbook.

- Textbooks:

  - Technical Manuals to include Interactive Electronic Technical Manuals (IETM).
  - Training Devices.
  - Other materials helpful in the preparation and presentation of Lesson Topics, such as a Fault Insertion Guide, or Instructor Utilization Handbook.

SECTION 2 - TRAINING MATERIALS SUPPORT

2. Training Materials Support: All training materials are maintained current and accurate by surveillance and change efforts.

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2.1..Surveillance: Constant surveillance is required to detect changes in documentation, equipment, or procedures that impact training materials. Procedures for identifying training material deficiencies, for recommending changes, and for coordinating recommended changes are given in Volume III of this manual. Some triggers that may direct a surveillance action be taken are:

- Updated Occupational Standards.
- Job Duty Task Analysis.
- Rating Mergers / Consolidations.
- Rating Disestablishments.
- Requirements Sponsor Changes.
- Naval Training System Plan Revisions.
- Change to existing operating procedure or policy.
- Change in Technical Directives.
- Change in NMETLS.

2.2. Training Materials Modifications: There are four categories of training materials modifications: Interim Change, Change, Technical Change, and Revision. The definition for each category is found in NAVEDTRA 135(Series) Chapter 4 Section 1.3 Procedures for incorporating training materials modifications are described in the sections for those materials in Volume III, Chapter 7 Section 5.0 of this manual.

<p style="text-align:center;">**SECTION 3 - PROGRAM PARTICIPANTS**</p>

3.1 Program Participants: The following participants have vital roles in the development and support of training materials. Specific command assignments are addressed in Volume III, Chapter 1 of this manual.

3.2. Training Agency (TA): A TA is an office, bureau, command, or headquarters exercising command of and providing support to some major increment of the Department of the Navy's formal training effort. The Commander NETC is a TA.

3.3. Training Support Agency (TSA): An office, command, or headquarters responsible for providing material and other forms of support to the TA. The TSA is normally a Systems Command (SYSCOM) responsible for providing training support to the TA for a piece of equipment, a subsystem, or a system.

<p style="text-align:center;">**1-6**</p>

3.4.   Learning Centers (LS)/Functional Commander (FC): NETC has designated LCs/FC to plan, manage, and budget for training courses across broad functional areas.

3.5.   Curriculum Control Authority (CCA): The CCA controls the course content and instructional methods by acting as approval authority for the curriculum. The CCA is also responsible for maintaining the curriculum through new development or revision of training materials. For courses conducted at schools under other FCs, the CCA will advise the other FC of curriculum development/revision efforts which result in additional resource requirements, new course lengths, and/or course convening schedule requirements. Volume I of NAVEDTRA 10500, Catalog of Navy Training Courses (CANTRAC) in the Corporate Enterprise Training Activity Resource System (CeTARS) identifies the CCA for existing courses. NETC LC Commanding Officers are designated as the CCA. Additionally, TYCOMs, Joint Weapons Training Command, and Operational units which develop, deliver and maintain training can also be designated as the CCA. The original intended functional control identification of the CIN's single letter for the most part may not always be the case due to changes in the Navy Training organization by the Revolution in Training (RIT) and or LC stand-up, merge, and disestablishments. NAVEDTRA 135 Chapter 1 delineates the CCA duties and responsibilities that NETC has retained and is further amplified in NETC Chief Operating Officer (COO) Memorandum for distribution NETCNOTE 1500/N7 dated 23 Mar 09 concerning CCA duties retained by NETC.

3.6.   Course Curriculum Model Manager (CCMM): A CCMM is assigned by the CCA with the responsibility for conducting and maintaining a specific course. The CCMM initiates curriculum development and training materials modification, conducts curriculum reviews and analysis of feedback, maintains course audit trail documentation, and develops and approves changes. The CCMM normally functions as the developer for Navy in-house-developed courses. However, the CCA can also designate personnel, other than the assigned CCMM as required, to perform these functions. CCMM functions as the developer and 1st line of approval authority for in-house and contract developed curriculum.

3.7.   Learning Site (LS): A Navy command which has a primary mission of conducting or supporting training. A school or institutions that offer's Navy courses. The LS has

responsibility for maintaining selected audit trail documents, annually reviewing training materials in the form of a Formal Course review, making recommendations to CCMM for changes/revisions, and maintaining training equipment and facilities.

SECTION 4 - APPLICABLE DOCUMENTS

The documents listed in Sections 5 and 6 are the primary resources to be used by activity developers in the design and development of training materials. Use of documents and manuals in effect on the date stated in the project plan is assumed. Later issues of these specifications, standards, documents, and publications, or new specifications, standards, documents, and publications, may be used subject to joint agreement of the CCA and activity curriculum developers.

SECTION 5 - STANDARDS, GENERAL

5. In June 1994 the Secretary of Defense (SECDEF) directed that "Performance specifications will be used when purchasing new systems, major modifications, upgrades to current systems, and non-developmental and commercial items for programs in any acquisition category (in lieu of Military Specifications and Standards)." Source: SECDEF Memo, Subject: Specifications and standards - A New Way of Doing Business, dated 29 June 1994. Consequently, references to Military Standards (MIL-STDS) have been deleted.

5.1. **Department of Defense:** DODDIR 5000.01 MIL-HDBK 502

SECTION 6 - PUBLICATIONS

6.1 Secretary of the Navy:

- SECNAVINST 5870.4(Series) Permission to Copy Material Subject to Copyright
- SECNAVINST 5510.30(Series) Department of the Navy Personnel Security Program Instruction

6.2 Chief of Naval Operations:

- OPNAVINST 1500.27(Series) Inter-service Training
- OPNAVINST 1500.47(Series) Navy Training Quota Management

1-8

- OPNAVINST 1500.74(Series) Utilization of Enlisted Occupational Standards for Training and Career Development
- OPNAVINST 1500.75(Series) Safety Policy and Procedures for Conducting High Risk Training
- OPNAVINST 1500.76(Series) Navy Training System Requirements, Acquisition, and Management
- OPNAVINST 3500.34(Series) Personnel Qualification Standards (PQS) Program
- OPNAVINST 3500.39(Series) Operational Risk Management
- OPNAVINST 5100.19(Series) Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat
- OPNAVINST 5100.23(Series) Navy Occupational Safety and Health (NAVOSH) Program Manual
- OPNAVINST 3104.1(Series) Navy Visual Information (VI) Production, Replication, distribution and Management Information System Policy, Responsibilities, and Procedures
- OPNAVINST 5513.1(Series) Department of the Navy Security Classification Guide
- OPNAVINST 5510.10(Series) Corporate enterprise Training Activity Resource System (CeTARS) Catalog of Navy Training Courses and Training Reporting Requirements
- OPNAVINST 11102.2(Series) Training System Installation and Transfer
- NAVPERS 18068(Series) VOL I and VOL II Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards (NEOCS)

6.3. Commander, Naval Education and Training

- NETCINST 5100.1 Occupational Safety and Health, Training Safety and Firefighting Training Certification Programs
- NAVEDTRA 130(Series) Task Based Curriculum Development Manual
- NAVEDTRA 131(Series) Personnel Performance Profile Based Curriculum Development Manual
- NAVEDTRA 134(Series) Navy Instructor Manual
- NAVEDTRA 135(Series) Navy School Management Manual
- NAVEDTRA 10052-AJ Bibliography for Advancement Study
- NAVEDTRA 10500 Catalog of Navy Courses (CANTRAC)
- NAVTRASYSCEN P-530 Naval Training Systems Center Guide
- NETCINST 1500.1 Catalog of Navy Training Courses (CANTRAC) NAVEDTRA 10500)
- NETCINST 1500.3 Institutional Accreditation
- NETCINST 1500.4 Inter-service Training Review Organization (ITRO)

1-9

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- NETCINST 1510.1 Navy Training Management
- NETCINST 1543.4 Technical Training Equipment (TTE)
- NETCINST 3104.1 Visual Information (VI) Program Management
- NETCINST 7500.2 Technical Training Audit Program (TTAP)
- Training Requirements Data Base Annual Report - Naval Education and Training Program Management Support Activity

6.4 OTHER

- MPT&E CIOSWIT-ILE-STD-1B Navy ILE Presentation Standards
- MPT&E CIOSWIT-ILE-GUID-3B Navy ILE Instructional Content Style guide, Interactive Multimedia Instruction & Instructor Led Training
- DOD MILHDBK 29612.3A DOD HDBK Development of Interactive Multimedia Instruction (IMI) (Part 3 of 5)
- MIL-PRF-29612B Training Data Products
- MIL-HDBK 29612-1A Guidance for Acquisition of Training Data Products and Services (Part 1 of 5)
- MIL-HDBK 29612-2A Instructional Systems Development/Systems Approach to Training and Education (Part 5 of 5)
- MIL-HDBK 29612-4 Glossary for Training (Part 4 of 5)
- MIL-HDBK 29612-5 Advanced Distributed Learning (ADL) Products and Systems (Part 5 of 5)
- NAVSEAINST 4790.8 (Series) Ships Maintenance and Material Management (3-M) Manual (VOL 1-3)

SECTION 7 - SECURITY REQUIREMENTS

Classified information will be handled in accordance with the Department of the Navy Supplement to the DOD Information Security Program Regulation (OPNAVINST 5510.1 Series).

SECTION 8 - SAFETY REQUIREMENTS

Safety, occupational health, and hazard awareness information must be incorporated into the curricula of all appropriate training courses, as prescribed by NETCINST 5100.1 Series and in NAVEDTRA 135(Series).

SECTION 9 - SUMMARY

This chapter presented an overview of the Task Based Curriculum Development method. The Task Based method involves six interrelated phases - PADDIE. In the following chapters are development guidelines for the PADDIE phases.

1-10

PLAN PHASE

CHAPTER 2

TRAINING PROJECT PLAN

INTRODUCTION

A curriculum development project is a complex undertaking, bringing together a wide range of human and material resources for the goal of creating quality training. Curriculum development consists of six phases, beginning with the Plan Phase. This phase consists of gathering information and building the plan for training material revision or development. The output product of this phase is a Training Project Plan (TPP). When approved, the TPP becomes the authorization to undertake a course revision or a new course development project and initiate resource requisitions.

SCOPE:

- Describe the factors to be considered when developing a TPP for new course development or course revision.
- Provide guidelines for the content and format of the TPP.

SECTION 1 - PLANNING FOR COURSE REVISION OR NEW COURSE DEVELOPMENT

1 **Planning For Course Revision Or New Course Development:**
Most TPPs for in-house development will be for revisions to existing courses — reflecting the constant introduction of new equipment, processes, and technologies into the Fleet. Although fewer in number, new course development projects respond to new requirements that cannot be met by revising an existing course.

- The Plan Phase is the first of the six phases of training materials development process. The output, the TPP, provides the blueprint for revising an existing course or developing a new course.
- A TPP is required to document any of the six triggers. The triggers are a New Training Course, a Modified Training Course (Revision), a Change in Course Instructional Strategy or Delivery Method, a Change in Course Length, a Training Course Deletion, or a Training Course Transfer between CCAs.
- Other applications for the TPP are discussed in NETCINST 1510.1 (Series), NAVEDTRA 135(Series) COURSE REVISION: Prior to starting the revision to an existing course or development of a new course, a TPP will be developed and approved in accordance with NETCINST 1510.1 (Series).

2-2

COURSE REVISION: A TPP will be developed and approved in accordance with NAVEDTRAs 135, 130 and 131 as well as supplemental guidance provided by as specified in NETCNOTE 1500/N7 dated 23 Mar.

NEW COURSE DEVELOPMENT: Completing a TPP for new course development requires establishing a Course Identification Number (CIN), CDP, initiating entries for the CANTRAC and CeTARS, identifying preliminary resource requirements, and possibly planning for facilities requirements. This entails careful research and documentation. See NAVEDTRA 135(Series) for specific guidance of establishing a new course.

COURSE DEACTIVATION: NETCINST 1510.1 (Series), NECTNOTE 1500/N7 Dated March 2009, and NAVEDTRA 135B contain procedures for initiating and documenting the deactivation of an existing course or training program. A TPP is required.

SECTION 2 - JUSTIFICATION FOR COURSE DEVELOPMENT OR REVISION, AND DEACTIVATION

2. There must be a reason(s) to undertake the development of a new course, the revision of an existing course or the deactivation of a course. The justification may come from:

- Navy Training System Plan (NTSP), OPNAVINST 1500.76.
- Tasking by higher authority (Requirements Sponsor.)
- Internal course reviews and local command initiatives.
- External course reviews.
- Surveillance and external feedback.
- Training appraisal.
- Updated Occupational Standards.
- Enlisted Rating Mergers.
- Human Performance Requirement Review (HPRR).

2.1. TPP:

- The TPP presents a blueprint for curriculum development which contains course data, justification(s) for the course revision or new course development, or course deactivation, impact statements, milestones, and resource requirements.

- The TPP is generally viewed as a management document. You will find detailed TPP content descriptions in Volume III, Chapter 2.

> Each TPP will be as unique as the project it describes. The CCA, working with the FC and the TPP developer, shall designate mandatory TPP elements, and possibly call for additional data which will reinforce the project plan. All data should be researched, referenced, and as accurate as possible. However, the TPP is recognized as a planning document, subject to revision.

2.2. Purpose and Use of a TPP: The TPP describes all training and training support elements required to provide trained personnel to operate and maintain systems or equipment, or to perform tasks and functions.

- It provides a Plan of Action and Milestones (POA&M) to achieve a predetermined implementation date.
- It describes all the factors necessary to prepare and conduct a successful training program and attain optimum use of personnel, hardware, and funds.
- It should meet, and not exceed, the training requirement.

2.3. Categories of Resources: Course development and, often, course revisions require resources to develop or implement the proposed course. Resources fall into four broad categories: (1) facilities, (2) funding, (3) personnel, and (4) equipment. All four categories require long lead-time planning. An approved TPP is the authority to submit requests for resources. Whenever resources are affected (by unfunded requirement) OPNAV requirement per Memorandum for Distribution 7000 N1 127189 of 15 September 2008, requires that a TPP be routed to OPNAV N15 via NETC N7 for approval and resource allocation. In the case of a course deactivation, the TPP provides justification for the action and a blueprint for reallocation of resources.

2.4. Initiating a TPP: The decision to prepare a TPP can come from the commanding officer or officer in charge of the training activity or from higher authority.

- The CCMM will develop and submit the TPP for a course revision or deactivation.
- The CCA can designate an activity to be the CCMM for a new course and direct them to develop the TPP, or it may be developed by the CCA.

2.5. TPP Outline:

- The TPP shall contain all the data and information necessary to identify and justify resources required for the training course under consideration.

> Volume II contains a sample TPP with typical entries. It must be emphasized that the entries selected, and the data presented, for your TPP will be determined by the requirements of the project. Volume III, Chapter 2 provides information on completing TPP entries.

- Specific elements of data and information shall include the following items where applicable:

  - Cover Page.
  - Table of Contents.
  - Justification.
  - Impact if the course development, revision, or deactivation is not undertaken.
  - Course Data Page.
  - Safety Risks and Hazardous Materials exposure.
  - Curriculum development method recommended.
  - Resource Requirements.
  - Milestones.

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SECTION 3 - SUMMARY

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The TPP is often developed by senior course supervisors in conjunction with the learning standards functional area. Since it describes the scope and intent of the curriculum revision or development and describes the Fleet need which generated the training requirement, the curriculum developer should review the document before developing any other management or curriculum materials.

ANALYZE PHASE

CHAPTER 3

COURSE TRAINING TASK LIST

3-1

INTRODUCTION

In the previous chapter you were told how to develop a plan to revise an existing course or develop a new one. The output of the chapter was a TPP. The TPP is the blueprint for the entire project. When the TPP is approved, you are authorized to begin work on the next step in the project, the Analyze Phase. Prior to a TPP input, a Front End Analysis (FEA) and a Business Case Analysis (BCA) will be accomplished. In developing a TPP, Learning Centers are directed to complete FEA and BCA prior or in conjunction with the TPP development and reference when reviewing submitted TPP for approval.

The purpose of the Analyze Phase is to determine what will be taught in the new or revised course. The analysis you will conduct is a continuation of the preliminary analysis completed during the Plan Phase. You will examine and analyze all available documents/data in order to determine what is necessary to do a job. The duties, tasks, and/or skills that you select for training will be organized in a Course Training Task List (CTTL). The CTTL is the output of the Analyze Phase and is the building block of the new/revised course. When developing the CTTL refer to OPNAVINST 1500.74 (Series).

In this chapter you will be given information and procedures that will help you develop a CTTL. Please read the following pages carefully before you begin.

SCOPE

- Provide an understanding of the Analyze Phase of curriculum development (or revision).
- Explain the terms which apply to the Analyze Phase.
- Describe the step-by-step procedures for developing a CTTL.
- Describe the guidelines for building the CTTL.

SECTION 1 - INFORMATION

1. With an approved TPP, you are now ready to begin the Analyze Phase of curriculum development. A CTTL is the output of this phase. Once developed, the CTTL is the building block of the course and will be used to develop the learning objectives and all other course materials.

1.1. A CTTL is: A list of Duties and Tasks to be trained in a course.

1.2. A CTTL describes:

- Duties/tasks that support the course mission.
- Job-related duties and tasks that will be performed by the end of the course.
- CTTL sample in VOLUME II, Tab A-2.

1.3. A CTTL is developed by analysis of the:

- Course Mission.
- Technical Documentation.

1.4. CTTL development requires:

- Subject Matter Experts (SMEs).
- Technical Documentation.
- Job Analysis Data/Courseware, if available.

> Job analysis data/information, in electronic media format, compatible with your system, is the preferred source for development of a CTTL.

1.5. CTTLs are used to develop:

- Learning objectives.
- Instructional strategies (Delivery Method. Pre-instructional Activities, Presentation, Participation, Testing).
- Techniques.
- Methodologies.

1.6. Basic terms: Before proceeding any further, please review the following terms.

- A Job: Is made up of duties/tasks and can be determined from either a top down approach or a bottom up approach where the tasks and duties are analyzed to determine what the job is. A listing of Enlisted Occupational jobs are contained within NAVPERS 18068(Series) which may provide some insight in your job selection criteria.

3-3

- A Duty:

  - Is a major part of a job
  - Collection of duties make up a job
  - Occupies a major part of the work time
  - Occurs often in the work cycle
  - Clusters of tasks constitute a duty
  - Must be observable and measurable
  - Involves a group of closely-related tasks

- A Task:

  - Is a major part of a duty (clusters of tasks make up a duty).
  - Is performed in a relatively short period of time.
  - Must be observable and measurable.
  - Each task is an independent part of the job; it is independent of other tasks. Tasks are NOT components of a procedure. The above relationship between the job, duty, and task is outlined in Figure 3-1.
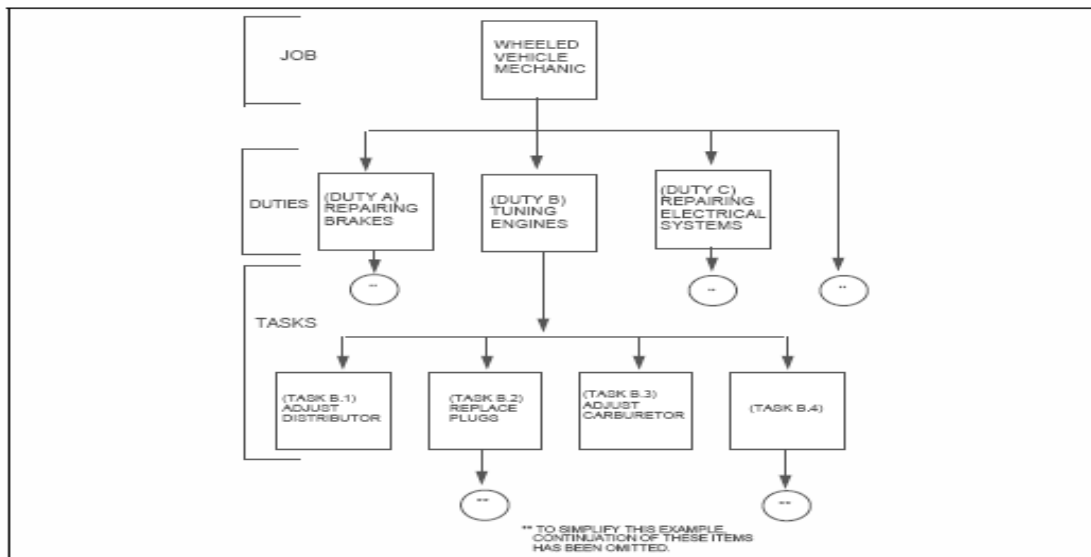
FIGURE 3-1: WHEELED VEHICLE MECHANIC

SECTION 2 PROCEDURES FOR DEVELOPING A CTTL

2. In-house development of a CTTL involves going through several steps and ending up with the finished CTTL. This CTTL will contain the duties/tasks necessary to perform the job in the area you have defined. There are several ways to identify

3-4

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and record this information. The most direct way is to gather
documents related to the job. Other methods include jury of
experts, questionnaires, and on-site interviews. Each of these
methods will help you identify most of the job data/information
you will need to develop your course. These documents/data are
then analyzed and the duties and tasks extracted and recorded.
This list is then organized into a smooth CTTL. A sample is
found in Volume II, Tab A-2.

2.1. Developing your CTTL: You will be involved with revising
existing courses or developing new ones. Find out what is
available and use it. If part or all of the analysis has been
completed, your job will be a lot easier and considerable time
and money will be saved.

2.2. Be aware of a change that takes place as the CTTL is
developed. You start by analyzing a job and end with selecting
duties and tasks that will be taught in a course. This change
is shown in Figure 3-2.

2.3 CTTL development depends on the SME. For this reason it is
important to select the most qualified SMEs available to do this
development.   You are now ready to begin. Many sources have
been identified for your use. Be sure to follow the steps
outlined on the following pages.
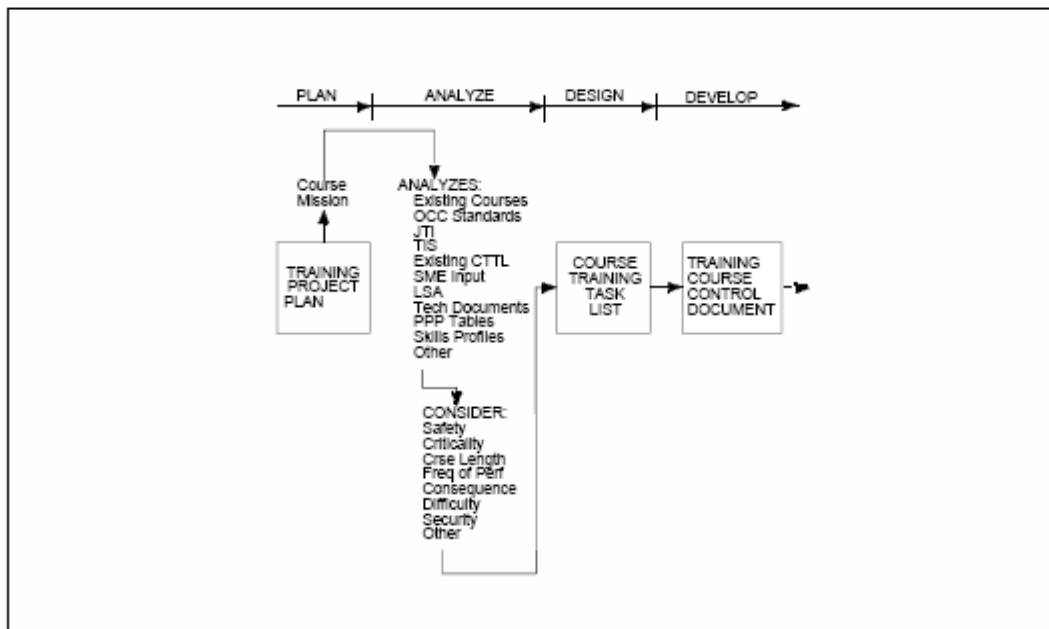
FIGURE 3-2: ANALYSIS PROCESS

3-5

STEP 1:   READ THE COURSE MISSION STATEMENT

- Located in the TPP.
- Provides the "who", "what job", "degree of qualification", the "where", and "conditions" for training.

STEP 2:   GATHER JOB ANALYSIS DATA THAT SUPPORTS THE COURSE MISSION STATEMENT

- Every job in the Navy has documents describing what to do and how to do it. The purpose of this step is to describe how to identify and obtain these documents. You will not necessarily need all of the types of documents listed. Other methods of gathering job-related data/information are presented. Obtain/use only those documents/methods that support the course mission.

- Whenever possible, gather the job-related data/information in electronic media format. This will facilitate your CTTL development. Examples of job information available in electronic media include Logistics Support Analysis Reports. These are explained in the following paragraphs.

- **CTTLs.** CTTLs for existing courses provide duties and support for a variety of jobs. In addition, the references listed provide an excellent source of job analysis information. If the specific equipment, system, subsystem, procedure, operation, function, etc., is not available, you may be able to use the line items as generic statements and modify each to meet your needs.

- **FEA Reports**. Conduct FEAs in accordance with NETC tasking. Skill and knowledge inventories are available for many Navy courses and ratings. These reports should be considered a primary source because they are based on many of the documents you will identify for analysis.

- **Logistics Support Analysis Record (LSAR) Nos. 014, 015, 023, and 024**. These documents provide very detailed sequential task descriptions for the operation and/or maintenance of equipment developed under contract. Specific duties and tasks are listed along with supporting data and information. Most courses developed by a contractor should have these reports available for your analysis.

3-6

- **Job Task Inventories (JTI).** These documents list duties and tasks for a specific job or rating. Supporting data and information are also provided. Your CCA will help you obtain these documents.

- **General Documentation**. One of the primary source documents used to identify documentation is the Bibliography for Advancement Study (NAVEDTRA 10052-AJ). This document lists publications that support military requirements for all ratings and apprenticeship and technical requirements for all Navy ratings by paygrade. SMEs should review this document for all applicable Navy Ratings and begin a list of publications that apply.

- **Formal Navy Course Curriculum Outlines/Training Course Control Document (TCCD).** Another source to identify documentation is those references that list formal Navy courses. Formal Navy courses which teach skills and knowledge pertinent to your area should be a part of your documentation. If an Navy Enlisted Classification (NEC) is involved, consult NAVPERS 18068(Series) dated July 2008, Manual of Navy Enlisted Manpower and Personnel Classification and Occupational Standards, Section II, which lists Navy courses supporting NECs. Also consult NAVEDTRA 10500 CANTRAC, Volume II, Course Descriptions and Convening Schedules, which is in CeTARS. "Key word" searches for course titles can be performed.

- **Training Manuals and Non-Resident Training Courses**. Consult https://www.advancement.cnet.navy.mil for a listing of Training Manuals and Non-Resident Training Courses. This lists all NAVEDTRA Training Manuals and Nonresident Training Courses, including training publications from additional Navy training agencies and other military services.

- **Standards**. Naval and Occupational Standards (OCCSTD), NEC descriptions and Navy Officer Billet Classification (NOBC) all list skills and knowledge and should be included on your documentation list, as appropriate. Consult NAVPERS 18068(Series) and NAVPERS 15839, Manual of Navy Officer Manpower and Personnel Classification. Personnel Qualification Standards (PQS) list skills and knowledge appropriate to your area. These PQS may be found in NAVEDTRA 43100-6.

3-7

- **On-site Observation or Job Interview**. Both are conducted by SMEs at the work site. SMEs observe personnel on the job and list duties and tasks required to complete the job. Additional amplifying information, as required, should also be listed that includes duration, frequency, types of working conditions, tools required, etc. Prepare a list of questions in advance for the job interview to help standardize your job information.

> Both the observation and interview methods involve considerable effort. Because of the massive amounts of data/information that must be tabulated and summarized, you may not have the resources to implement these methods.

- **Jury of Experts**. With this method, SMEs from various commands are assembled to record and organize the required job information/data. The SMEs are selected for their experience and knowledge of the job. This method is particularly useful in collecting job data in the following situations:

  - New jobs.
  - Managerial and supervisory jobs where some behaviors are not directly observable.
  - When time does not allow analysis by other methods.
  - To supplement other methods, (questionnaire, interview, written survey, etc.).

> Because of the personnel and travel funds involved, the jury-of-experts method can be very expensive, use of web meetings, video teleconference (VTC), and other distance support conferencing is recommended. Also, the SMEs should come from a number of different areas. If they all come from the schoolhouse, the decisions that are made tend to reflect what exists in training rather than what actually exists on the job.

- **Technical Manuals and other Technical Publications**. These documents give valuable job performance information on the operation and maintenance of equipment, weapons, and weapons systems. Every job task list should have duties and tasks taken from technical documents or a authorized requirements sponsor.

3-8

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- **Maintenance and Material Management (3-M) System**. Consult the NAVSEAINST4790. 8 (Series) as these volumes provide detailed information on what is necessary to do a job.

- **Personnel Performance Profile (PPP) Tables**. PPPs provide:

  - Lists of required skills and supporting knowledge's.
  - Support systems, subsystems and equipment.
  - A PPP lists the minimum knowledge and skills required to operate and maintain a system, subsystem, or equipment. Existing PPP tables are listed in the NETPDTC NCMR Database. NETC N74 is the PPP manager/owner.

- **Others, such as, Navy Training Systems Plans (NTSP), Engineering Drawings, Service Manuals, etc**. Sources not mentioned may contain valuable job analysis information. All possible sources should be reviewed. Consult your CCA to ensure complete coverage.

Once you have secured all the documents, review their reference lists for additional publications, appropriate for your CTTL list. Continue this process until all available publications have been secured. At this point your list may contain Navy instructions, notices, manuals and other publications that list information or describe duties/tasks (skills) necessary to perform the work in your area.

STEP 3:   REVIEW/COMPILE JOB ANALYSIS DATA/INFORMATION

In the previous step you gathered all the documents that contain job related data/information in the area you have defined. In this step you will systematically work your way through each of these documents, pulling out and recording each duty and task that supports the course mission statement. Be sure to annotate the source of each duty and task selected as you work through the document since you will use this information in Step 7. You will be reviewing many similar statements. In order to ensure complete coverage of the job, it is necessary to accept some extremely similar items at this point. Any duplication will be eliminated in later steps.

- Using the AIM II application vice Excel spread sheets will provide the linkage to the requirements and resources that you need for long term maintenance of your course. It is highly recommended that AIM II be used to create your CTTL.

- Experience in CTTL development has led to certain general rules for writing duty and task statements. These are shown in Table 3-1, Rules for Writing CTTL Statements. When completed, each CTTL statement will:

  - Support the COURSE MISSION STATEMENT.
  - Be SHORT.
  - Begin with a performance action VERB.
  - End with an OBJECT.
  - Be OBSERVABLE and MEASURABLE.
  - Meet ALL the guidelines listed in Table 3-1.

Job analysis includes safety knowledge that is required prior to performing duty/task and safety procedures that must be followed while performing a duty/task. Safety will be included as a CTTL line item as appropriate.

TABLE 3-1: RULES FOR WRITING CTTL STATEMENTS

RULE	CORRECT	INCORRECT
Each statement will begin with a *PERFORMANCE ACTION VERB* and contain the *OBJECT* of the action of that verb.	*Write* Enlisted Performance Evaluation *Develop* Skill/Knowledge Inventory	*Know* the contents of the Enlisted Performance Evaluation
If there are *multiple actions (two or more verbs)*, separate statements should be written unless there is no possibility the action would or could be trained separately.	*Develop* Duty/Task Inventory *Sort* Duty/Task Inventory	*Develop and Sort* Skill/ Task Inventory
The preposition "on" is used rather than "of" when referring to objects.	Perform weekly maintenance *on* typewriters	Perform weekly maintenance *of* typewriters
Latin abbreviations such as "i.e." and "e.g." are not used. Use "such as."	Fill out maintenance forms *such as* Job Log (JL-1) and Action Taken Form (ATF-1)	Fill out maintenance forms, *e.g.*, Job Log (JL-1) and Action Taken Form (ATF-1)
Excessive use of "a", "an" and "the" should be avoided.	Fill out description block of supply form (DD-1234)	Fill out description block of *a* supply form (DD-1234)
Vague, nonspecific adjectives, especially those that imply value or "goodness" should be avoided. Use adjectives with precise, specific meanings.	Boot up computer with *MS-DOS* program	Ensure MS-DOS program is working well
Do not use parentheses within parentheses.	Fill out parts ordering form (Standard for Navy Supply and Special for Local Purchase)	Fill out parts ordering form (Standard for Navy supply (and special for local purchases))
Do not specify object types if there are only a small number of types (three or less) and these types would be well known to people familiar with the job.	Verify leave and earnings	Verify leave and earnings *(Officer and Enlisted)*

3-10

TABLE 3-1: RULES FOR WRITING CTTL STATEMENTS (CON'T)

RULE	CORRECT	INCORRECT
Acronyms may be used, however, they must be spelled out the first time they appear unless they are acronyms in such common usage that they are thought of as words such as Radar and Sonar.	Prepare course training task list (CTTL)	Prepare CTTL
Objects are normally written in singular form unless the objects are normally taught together.	Fill out Travel Claim *form*	Fill out Travel Claim forms
Do not write statements with unnecessary phrases such as "Follow the procedures for....."	Trace supply spare part requisition action	*Follow the procedure for tracing supply spare part requisition action*
Do not specify objects by brand name or specific nomenclature if the object belongs to a class of objects found on the job and training could be provided on any one of the objects in this class.	Operate *word processing program*	Operate *Wordstar Release 4.0* word processing program
When specifying publications or forms, spell out the name of the publication or form, followed by the number or nomenclature in parentheses.	Fill out Joint Message Form (DD-93)	Fill out form DD-93
If there are *multiple objects (two or more)*, write a separate statement for each object unless the objects are normally taught together.	Fill out *Spare Parts Request (PR-471)* Fill out *Parts Consumption Log (PCL)* Fill out *Action Summary Log (ASL)*	Fill out *Spare Parts Request (PR-471), Parts Consumption Log (PCL), and Action Summary Log (ASL)*
Use *short words and phrases* in preference to long words or expressions.	Write Production Control Report	Accomplish necessary action to generate report involved in, and necessitated by, strict adherence to, and maintenance of, production control procedures
Write simple statements without qualifiers unless the qualifier is essential to the meaning of the statement.	Fill out spare parts request (PR-471)	Fill out spare parts request (PR-471) *to order spare parts*

RULE	CORRECT	INCORRECT
Do not write statements that are too detailed, such as minor steps of a procedure.	Complete Supply Action Form (SAF-1)	Complete: (1) Block 1, National Stock Number, of Supply Action Form (SAF-1) (2) Block 2, Item Name, of Supply Action Form (SAF-1)
Do not use unnecessary phrases such as "when appropriate" or "in accordance with prescribed directives."	Complete Joint Message Form (DD-93)	Complete Joint Message Form (DD-93) in accordance with prescribed directives
Do not specify conditions under which the action is performed nor standards to which it should be performed.	Prepare Standard Navy Letter	Prepare Standard Navy Letter using Wordstar word processing program and IAW Navy Correspondence Manual (SECNAVINST 5216.5C)
Do not write statements that refer to school training situations or devices.	Prepare Automated Supply Order Form (ASF1)	Prepare Simulated Automated Supply Order Form (ASF1) using Automated Supply Requisitioning Training Device 8A14
Do not write statements using "recognize" except where the recognition refers to characteristics such as physical shape, color, sounds, etc.	Recognize battleship silhouette	Recognize battleship effectiveness
Do not use the "ing" form of the verb.	Fill out Joint Message Form (DD-93)	Draft message, filling out Joint Message Form (DD-93)

3-11

- Use of electronic media to develop your CTTL. Using the
  rules for writing CTTL statements, follow the basic steps
  outlined below and begin analyzing each of the automated
  job data bases/documents you have assembled.

> If the specific system, subsystem, equipment, procedure, operation,
> function, etc., is not listed, locate a similar section in the data
> base/document. Use these items as generic statements. *Modify* each
> task selected for training, as required, by adding the equipment name,
> specific job performed, etc., to change the duty/task/skill from
> generic to course-specific. EXAMPLE: OCCSTD — "Perform maintenance
> on the missile tube;" CTTL statement — "Perform maintenance on the D-3
> missile tube."

SECTION 3 - ANALYSIS OF DOCUMENTATION

3. Front End Analysis (FEA) Reports. FEA reports consist of
duty and task statements. You may be able to record these
duties and task statements verbatim on your CTTL.

> The FEA Training Decision Summary Report (TDSR)
> will indicate the source document for each
> statement contained in the report.

3.1 General Documentation. Because general documentation comes
in many forms, there are no hard and fast rules for analysis.
The idea is to extract each significant duty and task that
applies to your job area. For a large manual, you might write a
statement for each section, subsection, or other unit, depending
on the organization of the document. As an example, consider
the following Table of Contents from Navy Equal Opportunity (EO)
Manual.

OPNAVINST 5354.1 SERIES, NAVY EQUAL OPPORTUNITY (EO) MANUAL

TABLE OF CONTENTS

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Chapter I, Section 1a of the above document discusses the EO policy of the Navy. This can be written as shown below.

CTTL STATEMENT: Write official policy of the Department of the Navy concerning equal opportunity for all Navy members.

Section 1b deals with the major elements of a headquarters EO program. This could be written as shown below.

CTTL STATEMENT: Develop the major elements for a Headquarters level EO program.

Finally, Section 1c, a Fleet/Shore Command program, would appear as shown.

CTTL STATEMENT: Develop the major elements for a Fleet/Shore Command level EO program.

For smaller documents you might write only one or two statements which cover the entire document such as "Retrieve information from OPNAVINST 1234.5C". The objective remains to capture the skills of each source document that are significant to your job area.

Formal Navy Course Curriculum Outlines/Training Course Control Documents. The analysis of these documents is very straight forward. Outlines/TCCDs consist of learning objectives which follow a set pattern. Objectives consist of an action verb (behavior), conditions, and standards. For your purpose *IGNORE* the conditions and standards. Concentrate on the action only. Write statements from *ONLY* those objectives which support the course mission statement. Ignore "orientation" objectives such as those that deal with schoolhouse organization, grading policy, or other information irrelevant to "on the-job" situations.

Objectives will be either skill or knowledge. If skill, isolate the "*action*" portion, consisting of a performance action verb, the object of that action, and the minimum qualifiers, so that the statement makes sense. Add the action statement to the CTTL using the rules which have been provided. Examples are shown below.

3-13

OBJECTIVE	CTTL STATEMENT
4.2 Given incomplete Pay Data Cards and a typewriter, fill out all blocks IAW OPNAVINST 1234.5C.	Fill out Pay Data Card (DD-21)
6.10 In a simulated counseling session, counsel personnel regarding Navy EO policy.	Counsel personnel Navy EO policy

If the objective consists of knowledge, isolate the "action" portion, consisting of an action verb, the object of that action and the minimum qualifiers, so that the statement makes sense. Write the statement with a performance action verb. Add the statement to the CTTL using the rules which have been provided.

Training Manuals and Non-Resident Training Courses. Two approaches can be used to analyze these documents. If they contain learning objectives, they can be handled in the same manner as learning objectives from course outlines as described above. If they do not contain learning objectives, write statements for each section, subsection, or paragraph in the same way as for instructions or technical manuals as described under General Documentation.

OBJECTIVE	CTTL STATEMENT
2.1 Using OPNAVINST 5580.1, List criteria for selecting duty MA personnel	Select Duty MAA Candidates

Standards. Naval and Occupational Standards are statements of knowledge or skill requirements. Skill statements may generally be copied nearly verbatim. As an example:

OCCUPATIONAL STANDARDS (SH3) TECHNICAL ADMINISTRATION	CTTL STATEMENT
69303 PREPARE EXPENDITURE DOCUMENTS	Prepare expenditure document

3-14

Writing standards as knowledge CTTL statements is also
straightforward. You will need to add a performance action verb
or verb phrase. As an example:

NAVAL STANDARDS STATEMENT	CTTL STATEMENT
914 CHEMICAL, BIOLOGICAL AND RADIOLOGICAL (CBR) DEFENSE	
914401 DUTIES AND RESPONSIBILITIES OF MONITORING AND DECONTAMINATION TEAMS	Monitor decontamination

Naval Enlisted Classifications (NEC) and Navy Officer Billet
Classifications (NOBC) are written in a "text" format but still
contain skill/knowledge statements which are easily extracted.
As an example:

NEC	**CTTL STATEMENT**
INTELLIGENCE SPECIALIST IS-3920 Operational Intelligence Analyst	
Evaluates all-source intelligence information, prepares intelligence plots, and current intelligence reports, maintains current intelligence files, and assists in intelligence administration	Evaluate all source intelligence information Prepare intelligence information. Prepare intelligence Plot. Prepare current report Assist in intelligence Administration

NEC	**CTTL STATEMENT**
GENERAL TRAINING GROUP 9502 Instructor, Academic	
Develops, coordinates, and instructs academic/professional education program. Evaluates trainees' performance and provides certification.	Develop academic/ professional education program. Coordinate academic/ professional education

Recommends improvement in curriculum.

Program; Instruct academic/ professional education program; Evaluate academic/professional performance; Maintain academic/professional education program documentation; Provide academic/ professional education certification; Recommend improvement in academic/ professional education curriculum.

Occupational Task Lists are lists of task(s) or skill statements compiled by NAVMAC. These lists are developed for each Navy Rating. You may transfer verbatim most of these statements. Do not include non-technical, non-job area related statements such as housekeeping tasks (cleaning compartments, sweep downs, etc.).

Equipment Lists are lists of equipment operated, used, or maintained by members of a rating. Write "operate", "use", or "maintain" followed by the equipment name for each item of equipment that is used in the performance of a job.

Personnel Qualification Standards (PQS). PQS generally contain a mix of equipment and non-equipment skill/knowledge qualification requirements. Work through the Fundamentals, Systems and Qualification section, transferring skill statements that pertain to your job area. A particular concern in PQS analysis is to ensure that the statements you write retain their context. You may have to add a performance action verb, verb phrase, and/or qualification statements. As an example:

PQS	**CTTL STATEMENT**
MK 41 VERTICAL LAUNCHING SYSTEM 302.2.5 Install/remove packaging, storage handling, and transportation	Remove packaging from equipment
1204 Radio Communications System 1204.1 What is the function of this system?	Write the function of the Radio Communications System

PPP Tables. Review all line items that support the course mission statement. Many of the statements can be used verbatim. Others will have to be modified. Ensure all statements that you transfer to your CTTL conform to the rules for writing CTTL statements as outlined in Table 3-1. The following example illustrates how one or more CTTL statements may be derived from one PPP line item:

STEP 4: REFINE DUTIES AND TASKS

PPP LINE ITEM	CTTL STATEMENT
S1286 MK 92 FIRE CONTROL SYSTEM 2-2-5. Perform intra- and/or inter-system documented procedures for alignment, calibration, and adjustment of the MK 92 FCS STIR Weapon Control Console Equipment for optimum Operation	Align MK 92 FCS STIR Weapon Control Console

Calibrate MK 92 FCS STIR Weapon Control Console

Adjust MK 92 Weapon Control Console |

- In this step you will refine the list of duties and tasks you compiled in the last step. You will retain only duties and tasks that support the course mission statement. Remember, selecting duties and tasks for training is a "judgment call" and requires:

  - A clear understanding of the duties and tasks that are required to do the job.
  - Thorough analysis of all collected job data/information.
  - A clear understanding of the level and in what setting training is appropriate. For example, if the course mission reflects entry level skills, then advanced duties/tasks would be inappropriate. Does the data indicate that a duty/task should be taught OJT? The school setting may not be the best option.

> Involve more than one person in this step. The best way to accomplish this is the *Jury-of-Experts* approach. SMEs from commands that provide and receive students from the course should be part of the Jury. This will ensure complete coverage and minimize the possibility of important duties and tasks being overlooked.

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- You are now ready to begin looking at your list line by line. Give consideration to grouping items by subject/content area. Carefully do the following:

> **Ensure safety precautions and operational risk management are included where appropriate**

- DELETE duties/tasks that do NOT support the course mission statement.
- DELETE duties/tasks that do NOT require training.
- DELETE duties/tasks that are listed but NOT performed on the job.
- REVISE any statements that are written incorrectly.
- ENSURE both knowledge (designated as "K" for training) and performance (designated as a "S" for skill) duties/tasks use performance action verbs.
- ADD any duties/tasks that are required but not listed.
- DELETE duties/tasks that are taught elsewhere at the same level.

STEP 5: SORT CTTL STATEMENTS BY DUTIES AND SUPPORTING TASKS.
You are now ready to organize the refined list of statements developed in Step 4 into Duties with their supporting Tasks. This will be a lot easier if you pay attention to the organization of the Duty/Task list. Many of the statements are already grouped by subject/content areas, maintenance procedures, or operational steps. All you need to do is identify the Duties and their respective supporting Tasks. Proceed with the following:

- Identify DUTY line items on the CTTL.
- Remember, a DUTY directly supports the Course Mission Statement and is a major part of the job.
- It is possible there may be only one duty in the entire CTTL.
- For each DUTY identify all CTTL TASKS which directly support the duty and list these supporting tasks under the respective duty they support.

> If a line item does NOT support the Course Mission Statement, or a duty, *DELETE* the item from the CTTL.

3-18

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- The result will be a list of duties with supporting tasks listed for each duty on the (CTTL).

    EXAMPLE: A CTTL lists 50 duties/tasks.

    Three of them are:

    Inspect service pistol.
    Maintain service pistol.
    Fieldstrip service pistol.

    Note: The second item, "maintain service pistol" is the broadest based line item and is therefore the DUTY. The CTTL line item "inspect service pistol" and "fieldstrip service pistol" support the duty "maintain service pistol" and are therefore supporting tasks which are listed directly under this duty. (See VOLUME II, Tab A-2 for samples of completed CTTL line items)

STEP 6: CHECK EACH DUTY WITH SUPPORTING TASKS FOR COMPLETENESS/ CONTINUITY:

- Although the (CTTL) should be a complete list of all the duties and supporting tasks necessary for training in a course, there may be items which were overlooked/omitted.
- Review the (CTTL) to ensure all duties required to support the Course Mission Statement are listed.
- Check to see that all duties are adequately supported by the task necessary to perform each duty.
- Add duties and supporting tasks as required to ensure complete coverage of the Course Mission Statement.

    EXAMPLE: Duty - Maintain service pistol.

    Tasks: Inspect service pistol.
            Fieldstrip weapon.
            Disassemble weapon.
            Reassemble weapon.
            Conduct functional check of weapon.

- In the preceding example several tasks that support the *DUTY* have not been listed. Assume that "*Conduct safety check of weapon*" is a supporting task which was never listed on the (CTTL). This supporting task should be added to your list under "Maintain service pistol."

- Update the (CTTL) to reflect any additions/deletions.

STEP 7: PREPARE THE CTTL. The exact format of the CTTL will be determined by the nature and extent of your curriculum development project. Requirements and formats will vary among Functional Commanders. The elements described below should be included in the CTTL as a minimum. A format sample may be found in Volume II, Tab A-2.

TOP OF PAGE:

- Heading. LIST, "COURSE TRAINING TASK LIST" plus course title and CIN.
- Course Mission Statement. COPY the statement directly from your approved TPP

COLUMN 1. NO. (NUMBER): ASSIGN a number to each line item for reference purposes only.

COLUMN 2. SOURCE:

- LIST the document(s), reference(s) and other information sources from which the duty or task was extracted. Be specific enough (chapter; paragraph, if necessary) so the person writing learning objectives can locate the information supporting the duty/task. See sample CTTL in Volume 2 for examples.
- INCLUDE, as appropriate, source names, acronyms, titles, and numbers.

COLUMN 3. DUTY/TASK: LIST the duties with their supporting tasks developed in STEP 5 that have been selected for training.

COLUMN 4. LEVEL:

- DETERMINE the level of training for each line item.
- Serves as the bridge between the job statement and learning objectives.
- "S" indicates the duty/task will be taught at the skill or "hands-on" level. Trainees will actually perform the duty/task in the schoolhouse.

3-20

- "K" indicates the duty/task will be taught to the knowledge level only. Trainees will recall/recognize names, dates, terminology, steps, procedures, shapes, sounds, characteristics, etc., and/or comprehend procedures, concepts, rules or principles.
- Reasons for using "S" or "K"
- The Course Mission Statement is used to determine which duties must be taught at the performance or "S" level in the course. Duties and supporting tasks should be taught at the skill level if possible.
- Constraints such as space, equipment, funding, personnel, facilities, course length, class capacity, etc., may require some duties/supporting tasks to be taught at the knowledge level.

COLUMNS 5 THROUGH (Add additional columns as needed):

- Only if required, desired, or advisable:
- Duties/tasks NOT selected for training.
- Duties/tasks selected for training but not taught due to facility, funding, personnel and/or other constraints.
- Duties/tasks recommended for follow-on training.
- Provide comments and/or any other required information.
- Clarify/amplify items in the CTTL.
- Provide a complete list of documents, acronyms, dates and/or numbers, etc.

STEP 8: PERFORM QUALITY ASSURANCE CHECK. Use the CHECKLIST in Table 3-2 to review the CTTL.

SECTION 4 - SUMMARY

4. You have just completed the Analyze phase of the Task Based Curriculum Development method. The output of the phase is a CTTL. This CTTL tells you exactly what will be taught in the new or revised course. In the next chapter, you will take the duties with their supporting tasks listed on the CTTL and develop learning objectives.

TABLE 3-2: QUALITY ASSURANCE CHECKLIST

	HAVE ALL OPERATION RISK MANAGEMENT (ORM) AND SAFETY PRECAUTIONS BEEN INCLUDED?

1.	Do all statements begin with a performance action verb and end with an object of that action?
2.	Are there any multiple action skill statements (skill statements with two or more action verbs)? These should generally be written as separate statements unless normally taught together
3.	Is the preposition "on" used when referring to action on an object?
4.	Are any Latin abbreviations (i.e. or e.g.) used? Use "such as."
5.	Has the use of "a," "an," and "the" been kept to a minimum?
6.	Have any vague, nonspecific adjectives, especially those implying value been used? Only adjectives with specific meanings should be used.
7.	Are there any parentheses within parentheses? These should not be used
8.	Have any object types been specified when the object types are well known to people familiar with the content area? Do not specify object types if unnecessary.
9.	Are all acronyms spelled out the first time they appear in the CTTL?
10.	Are objects written in singular form unless normally taught together?
11.	Have any unnecessary phrases such as "follow the procedures for..." been used? These should be eliminated.
12.	Have any objects been identified by brand name or specific nomenclature? This is incorrect if the objects belong to a class, are found on the job, and training could be provided on any one of the objects in this class.
13.	Has the full name and nomenclature of publications and forms been used?
14.	Have all columns been completed for each line item?
15.	Have all statements been written with as few words as possible?
16.	Have unnecessary qualifier words been used? Qualifiers should only be used if essential to the meaning of the statement.
17.	Are any statements written at too detailed a level? Statements should be written to the procedure level but should not specify the steps of a procedure.
18.	Have redundant phrases such as "when appropriate" been used? These should be eliminated.
19.	Do any statements contain conditions or standards? These should be eliminated.
20.	Do any statements refer to schoolhouse training situations or training devices? These should be rewritten.
21.	Has the word "recognize" been used only to indicate recognition of physical characteristics (shape, color, etc.)?
22.	Are all acronyms, dates, reference lists, etc., clarified/amplified?
23.	Have all duplicate statements been eliminated?
24.	Are there any additional duties/tasks required to support the course mission statement?
25.	Are there any unnecessary duty/task statements?
26.	If you are using a word processing program, has a "spell-check" been performed?

DESIGN PHASE

CHAPTER 4

CURRICULUM OUTLINE OF INSTRUCTION

4-1

INTRODUCTION

In the last chapter you were told how to determine what will be taught in a new or revised course. The output of the chapter was a CTTL. This CTTL is the foundation for the entire curriculum development effort. During the next phase of the project, the Design Phase, you will write and sequence the Learning Objectives (LO) for the new/revised course. You will compile these objectives into the CURRICULUM OUTLINE OF INSTRUCTION.

The Design Phase is the transition between the job world and the schoolhouse. All duties and tasks listed on the CTTL will be developed into LOs. LOs tell exactly how the job duties and tasks will be performed in the schoolhouse.

When all the LOs have been written, you will arrange the objectives in the order in which they will be taught. This arrangement will help produce the most effective learning in the shortest time possible.

In this chapter you will receive information and procedures that will help you write and sequence LOs. Please read the following pages carefully before you begin.

SCOPE

- Provide guidance for writing Learning Objectives.
- Explain the terms which apply to Learning Objectives.
- Describe the step-by-step procedures for writing Learning Objectives.
- Describe step-by-step procedures for sequencing Learning Objectives.

> ILE Learning Objective guidance is provided
> in MPT&EECIOSWIT-ILE-SPEC-1B

SECTION 1 - INFORMATION

With a completed CTTL, you are ready to begin the Design Phase of curriculum development. A list of learning objectives, arranged in a logical teaching sequence, is the output of this phase.

_____

SECTION 2 - LEARNING OBJECTIVE (LO)

2.1. LO is a statement of what the trainee can do after training (completing the course or part of the course).

2.2 Based on the CTTL.

EXAMPLE: TROUBLESHOOT designated radar devices to a defective component in accordance with applicable technical manuals, using the necessary test equipment and observing applicable safety precautions.

- Additional examples are found in this chapter and in Volume II, Tab A-3.

SECTION 3.0   AN LO IS MADE UP OF THREE ELEMENTS.

3.1 Behavior. What the trainee is expected to do (performance) after training. The behavior element is made up of three parts:

- Subject. The trainee is always the subject. If not specifically stated, the trainee is understood to be the subject.
- Verb. Use a performance action verb to state what the trainee is expected to do. The action must be observable and measurable. Examples include adjust, align, troubleshoot, and operate. Figure 4-1 contains a more complete list of action verbs for your use. If you have any doubt regarding the performance validity of a verb, verify the verb in the dictionary.
- Object. The object is what the performance action verb acts upon. This may be a single word or group of words.

EXAMPLE: SOLVE addition, subtraction, and multiplication problems.   In the example above the *subject* is the *trainee*, the *performance action verb* is *solve*, and the *objects* of the action verb are the *addition, subtraction, and multiplication problems*.

PHYSICAL SKILLS		MENTAL SKILLS	KNOWLEDGE COMMUNICATION	ADMINISTRATIVE SKILLS
accomplish	isolate	achieve	communicate	administer
adjust	load	analyze	define	coordinate
align	locate	calculate	describe	decide
apply	manipulate	choose	explain	deliver
balance	measure	compare	express	draw
calibrate	move	compute	identify	fill out
change	operate	condense	illustrate	instruct
check	perform	decide	list	list
clean	plot	derive	name	manage
complete	position	determine	state	report
construct	remove	diagnose	summarize	submit
correct	repair	distinguish	tell	
de-energize	replace	evaluate	write	
demonstrate	show	interpret		
employ	start	monitor		
energize	stop	observe		
enter	test	recognize		
exchange	trace	select		
inspect	troubleshoot	solve		
install	use	synthesize		
	utilize			

FIGURE 4-1: ACTION VERBS

- **Condition.** Circumstances under which the behavior will be performed. You will select these circumstances to clarify the manner in which the behavior in the schoolhouse will be performed.

  EXAMPLE: Given a trainer having a solid state trapezoidal wave generator circuit, multimeter, and oscilloscope.

- Some condition elements list the help or assistance given the trainee in performing the behavior.

  EXAMPLES are in *italics:*

  TRACE signal flow through the receiver, *using the schematic diagram provided.*
  ALIGN the IF strip of the radio receiver. *Use of the technical manual is permitted.*
  MULTIPLY two three-digit numbers, *using a calculator.*

4-4

- Other condition elements set limits or restrictions on the trainee in performing the behavior element.

  EXAMPLES are in italics:

  FIELDSTRIP the .45 caliber pistol while blindfolded.
  COMPUTE the surface area of a sphere without the aid of a calculator.

3.2 A learning objective may require more than one condition in describing the circumstances in which the trainee will perform the desired behavior in the schoolhouse. In such cases, additional circumstances can be included.

  EXAMPLE: The trainee could be required to,
  "Use the proper tools to build a frame house,
  given boards cut to size."

> In writing LOs you can assume that the trainee is to perform under normal classroom conditions -- given paper, pencil, and appropriate instruction. Therefore, these conditions are NOT stated in the LO. Include only meaningful conditions. Do NOT list a condition just to have a condition.

3.3. Standard. How well the trainee is expected to do the behavior. Reflects the quantity and/or quality of trainee performance. Do not state a standard unless the standard is meaningful to the objective. Usually, safety objectives (either knowledge or performance) require 100% correct response. Processes must be "in correct order." Products are +/- a tolerance.

  EXAMPLE: Within +/- 10 percent accuracy
  and while observing all applicable personnel
  and equipment safety precautions.

- See Figures 4-2 and 4-3 for guidelines you can use when writing the standard element of your LOs.

  > Standards for knowledge objectives are *100 percent unless otherwise stated.*

CRITERIA	WHAT IS SPECIFIED
COMPLETENESS	The precise nature of the output. Number of steps, points, pieces, etc. that must be covered or produced Any quantitative statement that indicates an acceptable portion of the total
ACCURACY	How close to correct the performance must be Exact numbers reflecting tolerances Values or dimensions that the acceptable answers/performance assume
TIME	Exact time to demonstrate the behavior

FIGURE 4-2: CRITERIA FOR STANDARDS IN LEARNING OBJECTIVES

_____

DESCRIBE STANDARDS BY	EXAMPLE
Referring to a Standard Operating Procedure	PERFORM the procedure the pilot follows to complete an instrument landing, given the situational requirements for an instrument approach and the local airfield regulations. The performed steps will be *IN CORRECT ORDER AND WILL COMPLY WITH NAVY INSTRUCTIONS AND LOCAL REGULATIONS.*
Imply the standard of NO ERROR	COMPUTE the surface area of the sphere to *TWO DECIMAL POINTS*, given the diameter of a sphere and a calculator. Adding he/she will perform *"without error"* would not increase the requirements for accuracy.
Specifying minimum acceptance level of performance	MULTIPLY two three-digit numbers, given a calculator, and write the *ANSWER TO THE NEAREST TENTH.* This clearly states the degree of accuracy required for satisfactory achievement of the objective.
Specifying the time requirements	*TYPE* a letter, from a 200-word draft, *WITHOUT ERROR AT A MINIMUM RATE OF 40 WORDS PER MINUTE.* Time is an important factor, so it is included in the objective.
Specifying the rate of production	*TYPE* final report from a draft copy, without error *AT A MINIMUM OF 20 PAGES PER DAY.* The amount produced daily is an important factor, so it is included in the objective.
Specifying qualitative requirements	*ADJUST* a misadjusted carburetor to idle *SMOOTHLY* at 500 rpm, given the necessary tools. Smoothness is a qualitative standard.

FIGURE 4-3: LEARNING OBJECTIVES WITH STANDARDS IN ITALICS

SECTION 4 - UT THE THREE ELEMENTS TOGETHER TO FORM AN LO

Example: MEASURE the output, amplitude, rise time, and jump voltage within +/- 10 percent accuracy, given a trainer having a solid state trapezoidal wave generator circuit, multimeter and oscilloscope, while observing all applicable personnel and equipment safety precautions.

4.1 ALL LOs must have these three elements, whether written or implied:

- BEHAVIOR.
- CONDITION(s).
- STANDARD.

4.2. When possible, write the behavior element first in your LO.

4.3. Before you begin writing LOs from the CTTL, you will need to know the difference between *Terminal Objective (TO)* and *Enabling Objective (EO)*.

SECTION 5 - A TERMINAL OBJECTIVE.

5. Terminal objective:

- Is developed from one or more duties listed on the CTTL.
- Is a learning objective that the trainee will accomplish by the end of the course?
- Indicates the ability to perform those tasks selected for training.

> The Course Mission Statement might be confused with a TO. The primary difference is that a TO relates to trainee behavior, while the Course Mission Statement is descriptive of the course — not the trainee.

SECTION 6 - AN ENABLING OBJECTIVE

6. Enabling Objectives:

- Is developed from one or more Tasks listed on the CTTL.
- Is a learning objective that the trainee may accomplish at any point in the course after receiving appropriate training.
- Supports directly the achievement of a TO.
- May support other EOs.
- Identifies the behaviors necessary to demonstrate the achievement of a particular task.

> Course indoctrination lessons and course introduction lessons are not supported by duties and tasks listed on the CTTL. In such cases LOs are not required.

SECTION 7 - PROCEDURES FOR WRITING LOs

7. The finalized CTTL completed during the Analyze Phase will contain a listing of all duties and tasks a trainee must complete during a specific course. These duties and tasks become LOs for a course only when appropriate conditions and standards have been added to each statement. All the LOs for the course must support the CTTL items which in turn support the Course Mission Statement. As you go through the steps outlined below, give consideration to the following items:

- Write only LOs that you will measure. If you cannot measure the LO, do not write the objective.
- Write the least number of objectives as possible to support all the CTTL items.
- Use knowledge level verbs such as "explain, describe, and state" to write knowledge TOs and supporting knowledge Eos.

7.1. If you follow the above guidance, you will increase the developer's flexibility in writing curriculum and testing materials.

4-9

SECTION 8 - STEPS USED TO WRITE LOs

Consider using the "*Learning Objective Analysis
Worksheet*", Figure 4-5, (or similar form) for steps 4
through 8. An example may be found at the end of this
chapter.

COURSE:	UNIT:	LESSON TOPIC:	DUTY/TASK I.D. NO.:

FILL OUT ONE SECTION ONLY	
☐ TERMINAL OBJECTIVE NUMBER	☐ ENABLING OBJECTIVE NUMBER

BEHAVIOR
CONDITION
STANDARD

FIGURE 4-4: LEARNING OBJECTIVE ANALYSIS WORKSHEET

STEP 1: IDENTIFY DUTY CTTL LINE ITEMS

- These will become terminal (end-of-course) objectives.
- It is possible there may be one duty in the entire CTTL.
- Remember, DUTIES directly support the Course Mission Statement.

STEP 2:   IDENTIFY THE CTTL TASKS WHICH SUPPORT EACH OF THE DUTIES

- These will become EOs.
- Supporting tasks include all task statements listed under each duty.

4-10

> If a line item does *NOT* support the Course Mission
> Statement or a duty, *DELETE* the item from the CTTL.

STEP 3: WRITE A TO FOR EACH DUTY LISTED ON THE CTTL

- Each TO must support the Course Mission Statement.
- Use only performance action verbs for all duties listed on the CTTL with a "S" in the level column.
- Use knowledge verbs for all duties listed on the CTTL with a "K" in the level column.
- Keep the behavior SHORT.
- You may be able to use the exact CTTL duty statement for the behavior element of the TO.
- Modify the behavior element, if necessary, to reflect what the trainee will do in the schoolhouse. The modified behavior must support the Course Mission Statement.
- Add conditions as appropriate.
- Add standards as appropriate.

STEP 4: WRITE PERFORMANCE EOs to SUPPORT PERFORMANCE TOs FIRST

- For all supporting task statements listed on the CTTL with a "S" listed in the level column.
- Use only performance action VERBS.
- Keep the behavior SHORT.
- You may be able to use the same CTTL task statement for the behavior element of the EO.
- Modify the behavior element, if necessary, to reflect what the trainee will do in the schoolhouse. The modified behavior must support the TO.
- One task may result in multiple objectives.
- Tasks may be combined to produce one objective.
- Add conditions as appropriate.
- Add standards at 100 percent unless another standard is listed.

STEP 5: WRITE SUPPORTING KNOWLEDGE EOs

- For all supporting tasks listed on the CTTL with a "K" in the level column.

4-11

- To provide information a trainee will need to know in order to master a terminal or enabling objective.

- Knowledge EOs support both performance and knowledge TOs and EOs. Develop at least one Knowledge EO to support Skill TOs.
  - Generate knowledge EOs to support performance TOs if appropriate.
  - Generate knowledge EOs to support performance Eos.

Example: EO behavior element: "INSPECT service pistol."

Knowledge the trainee must learn in order to complete this behavior might be:

Steps required to inspecting the service pistol.
Part/functions of a service pistol.
Safety precautions to be followed while inspecting a service pistol.

A supporting knowledge EO would be written for each of the three supporting knowledge's listed above.

- Follow the basic procedures outlined in steps 4 and 5 to write your supporting knowledge EOs.
- Use knowledge verbs such as describe, explain, or state to write the behavior element.
- The implied standard for knowledge EOs is 100 percent unless another standard is listed.
- The implied condition for knowledge EOs is "from memory" unless otherwise stated.
- Other examples are found in Volume II, Tab A-3.

STEP 6: ASSIGN NUMBERS TO ALL TOs FIRST

- Number each TO with a whole number: 1.0, 2.0, 3.0, 4.0, etc.
- The number assigned to a particular TO should be based on some logical order.

EXAMPLE: In most equipment courses, "operation" would be taught prior to "maintenance." Therefore, the terminal task covering operations will be numbered 1.0, while maintenance will be numbered 2.0.

4-12

- See Volume II, Tab A-3 for more numbered TOs.

> Learning objective numbering is INDEPENDENT
> of all other LESSON PLAN numbering.

The following example illustrates the numbering and
relationships between TOs and EOs presented in this chapter.

_____

EXAMPLE:

TO 1.0 PERFORM corrective maintenance to the prescribed
level (under limited supervision) on a simulated Integrated
Weapons System using documented procedures, appropriate
test equipment, and applicable safety procedures. (CTTL
#16)

EO 1.1 DESCRIBE the characteristics of an Integrated
        Weapons System.
   1.2 EXPLAIN the theory, interfacing, and operation of
        an Integrated Weapons System.
   1.3 STATE the documented maintenance procedures for an
        Integrated Weapons System.
   1.4 DESCRIBE the safety precaution to be observed while
        operating and troubleshooting an Integrated Weapons
        System.
   1.5 OPERATE a simulated Integrated Weapons System using
        documented procedures, appropriate test equipment,
        and applicable safety procedures.
   1.6 PERFORM corrective maintenance to the prescribed
        level on the communication subsystem of an
        Integrated Weapons System under limited supervision
        using documented procedures, appropriate best
        equipment, and applicable safety procedures.

STEP 7: ASSIGN NUMBERS TO EOs

- Assign numbers to supporting EOs according to the TO the EO
  supports.
- Use decimal numbers to number EOs.

  - First is the number of the TO the EO supports.
  - Second is a sequential number indicating the EO's
    position among other EOs supporting the TO.

_____

_____

EXAMPLE: An EO numbered 3.5 would be the fifth EO
supporting terminal objective 3.0.

_____

- See Volume II, Tab A-3 for more examples.

**STEP 8: CROSS REFERENCE EACH TERMINAL OBJECTIVE TO THE CTTL
DUTY LINE ITEM NUMBER SUPPORTED**

- All duties listed on the CTTL have a number, usually a
  sequential whole digit: 1, 2, 3, 4, etc.

- List this number in parentheses following each TO.

_____

EXAMPLE: If a TO is "MAINTAIN service pistol, under
battlefield conditions per the service manual" and the
duty is number "16" on the CTTL, the cross reference
would appear:

MAINTAIN service pistol, under battlefield conditions per
service manual. (16)

_____

NOTE:

As an aid to tracking, ALL LOs may be identified with their
CTTL number. This is an optional practice.

STEP 9: PERFORM QUALITY ASSURANCE CHECK:

9.1. Before you continue, please check your LOs for the
following:

- Ensure all CTTL items are supported.
- All have a behavior, condition, and standard.
- All TOs are supported by EOs.

9.2. With a completed set of LOs, you are now able to arrange
these objectives in a logical teaching sequence. TOs with their
supporting EOs will be listed in the order in which the LOs will
be taught. Sequencing procedures are presented in the next
section.

SECTION 9 - SEQUENCING LEARNING OBJECTIVES

9.1 Information: You have just completed writing all the LOs
for your course. You will now arrange these LOs in a logical
teaching sequence. The sequenced LOs are the building blocks
for the other course materials.

9.2 Methods of Sequencing LOs:

- Job Performance Order. The order in which the duties and
  tasks are performed. The sequence is the same as the job
  sequence. For example, a gunner may learn to load, aim, and
  then fire the weapon.
- Chronological Order. The sequence flows from Lesson Topic
  to Lesson Topic on the basis of the order in which the
  events covered occurred in time. For example, Sailors may
  be taught about World War I, then World War II, then the
  Korean War, Viet Nam, and finally Gulf War.
- Critical Sequence. Ordered in terms of their relative
  importance. For example, a first aid course may address
  potentially fatal injuries, then permanently disabling
  injuries, and finally minor injuries.
- Simple to Complex. The sequence in terms of increasing
  difficulty. For example, marine navigation based on buoys
  and landmarks may be taught before navigation based on the
  location of stars or the angle of the sun.
- Comparative Sequence. Familiar topics are considered
  before unfamiliar ones. Submariners should study familiar
  American submarines before attempting to study less
  familiar foreign submarines.
- Relationships between Objectives. First, determine the
  relationship between the Los.

  - Dependent Relationship. To master one LO, you must
    first master some of the other LOs. These are
    sequenced and taught first.
  - Supportive Relationship. The learning in one LO
    transfers over to another LO and makes mastery of the
    second LO easier. These should be sequenced and
    taught as closely together as possible. Schoolhouse
    situations may also cause support relationships.
    Examples include availability of equipment, similar
    conditions (at night, on a muddy terrain, while
    flying), safety, and/or cost.

4-15

- Independent Relationship. One LO is not related to another LO. You can sequence and teach these as appropriate.

- You may want to reverse one of the sequencing techniques. Lesson topics may be ordered in reverse chronological order or from least critical to most critical. Give consideration to these approaches. The best sequence is the one that works best for the trainees.
- Use one or a combination of the methods described to sequence the LOs in a logical teaching order. Consider this a tentative sequence for the course. The final sequence will be made after the pilot (course tryout). After sequencing, LOs may not be in their original numerical order.

9.3 Major Divisions of the Course:

- When all of the LOs for the course are properly sequenced, the divisions of the course can be identified.

    - The course is first broken down into one or more major divisions called UNITS.
    - UNITS are then broken down into LESSON TOPICS.

- Use the "natural breaks" method to determine both Units and Lesson Topics.

    - Look at your list of sequenced LOs for "major changes" in subject matter content.

EXAMPLE: One system to another.
One subsystem to another
Going from theory/knowledge to performance/skill
Going from operations to maintenance

    - Consider these points as candidates for UNITS.

EXAMPLE: If a course is to provide training on the operation and maintenance of a hardware system, the "natural breaks" would be System Operation, then (depending on the size of the system) Preventive Maintenance, and Corrective Maintenance. Possible UNITS might be Systems Operation, Preventive Maintenance, and Corrective Maintenance.

- Apply a similar process to each UNIT. The "natural
  breaks" that appear within each unit will be your
  Lesson Topics.

- In a larger system the Preventive Maintenance (PM) and
  Corrective Maintenance (CM) "natural breaks" may
  encompass such a large number of tasks that the divisions
  would be more properly broken down on the basis of PM and
  CM on the various subsystems that comprise the system.
  The sequence would then be System Operation, PM and CM on
  subsystem "a," PM and CM on subsystem "b," etc., until
  all subsystems are completed.

- After all LOs have been sequenced into Units and Lesson
  Topics, assign titles to each Unit and Lesson Topic.

  - Be descriptive of the content of the Unit or Lesson
    Topic.

_____
EXAMPLE: SCUBA Diving Equipment
                Single-Hose Regulators
                Universal Gas Laws
                Diver Air Supply
                SCUBA Equipment Maintenance
_____Diving Medicine_____ _

9.3.1. Assign consecutive numbers to the sequenced Units and
Lesson Topics.

- Unit Number. Use whole number digits. Number the first
  Unit 1, the second 2, the third 3, and continue using
  consecutive whole numbers until all Units have been
  numbered.

- Lesson Topic Number. Use digits. The first digit(s)
  indicates the Unit supported by the Lesson Topic. The
  second digit(s) indicates the sequence the Lesson Topic is
  taught.

_____
EXAMPLE: UNIT 3: Power Distribution.
Lesson Topic 3.1: Pole Climbing
Lesson Topic 3.2: Power Distribution Blueprints
Lesson Topic 3.3:
Lesson Topic 3.4:
Lesson Topic 3.5: Setting Utility Poles_____ _

4-17

In this example the Unit Number is 3. The first Lesson Topic number in the Unit is 3.1; the second Lesson Topic number is 3.2. The remaining Lesson Topics are numbered sequentially in the order in which they are taught.

- See Volume II, Tab A-3 for more samples.
- Frequently the developer must make trade-offs when sequencing the Units and Lesson Topics.
- Such things as the availability of equipment and the amount of time required to prepare for a laboratory session may influence the sequence.

- Whatever the sequence, it must support and help achieve the learning goals established in the objectives.

SECTION 10 - SUMMARY

You will now take the LOs, numbered and sequenced into Units and Lesson Topics, and combine them with other course-related information to produce a document. See Volume II, Tab A-3, TRAINING COURSE CONTROL DOCUMENT (TCCD), for sample CURRICULUM OUTLINE OF INSTRUCTION pages. In the next chapter you will learn how to develop a TCCD for your course. Fortunately, most of the work is already done.

DESIGN PHASE

CHAPTER 5

TRAINING COURSE CONTROL DOCUMENT

5-1

INTRODUCTION

The **Training Course Control Document (TCCD)** is the output of the Design Phase and serves as the primary development and management document for a course. The approved TCCD serves as the authority for further development and consolidates the information needed by curriculum developers to create the curriculum and support materials for a course. Thus, careful attention must be paid to the detail, content, and structure of the TCCD.

SCOPE

- Provide an understanding of the purpose of the TCCD.
- Explain the terms which apply to the TCCD.
- Provide guidelines for building the TCCD.

SECTION 1 - DESCRIPTION OF THE TCCD

1. The TCCD is a collection of products that expresses, in summary form, the content, structure, and essential management information for a course. Most of the information has already been developed; in the TCCD it is consolidated in a single document for submittal. The TCCD consists of the following items:

- Front Matter
- Curriculum Outline of Instruction.
- Annexes.

> A sample of a typical TCCD can be found in Volume II, Tab A-3 of this manual.

SECTION 2 - TCCD Components

2.1. Front Matter contains:

- Cover Page. The cover page contains the same information as the TPP cover page, with the identifier "Training Course Control Document for (course title)." The cover will be page "1" in the table of contents, but the number will not be printed on the cover page. The cover will carry the original and revised publication dates as appropriate.

_____

- Letter of Promulgation. Issued after successful course pilot, a page is "reserved" as a place marker at this point in the development.
- Record of Changes.
- Table of Contents.
- Foreword. Not required, but serves as a place to explain to reviewers any unique aspects of the course which may not be apparent from the basic data.
- Course Data Page. This data should reflect the course(s) as will be taught from implementation onward. Most times the course data will be the same as the "planned" course data in the TPP.
- Trainee Data. Consists of the following:

    - Personnel Physical Requirements. Physical requirement for a rating (YN, RP, AT, etc.) may be found in the Manual of Navy Enlisted Manpower and Personnel Classification and Occupational Standards, NAVPERS 18068 (Series).
    - Additional physical requirements may be imposed by specialty groups (aircrew, submarine, diver, etc.) which involve many ratings.
    - The current list of specialty groups is located in the Navy Military Personnel Command (NMPC) manual, article 1830180.
    - The specific physical requirement for each of the current specialty groups is found in the Manual for the Medical Department, NAVMED P-117.
    - Physical requirements for training are entered in CANTRAC and revised as necessary.

- Security clearance. This is the security clearance necessary for the course. It is also possible that, and should be noted if, a higher security clearance is required by the teaching site.
- Prerequisites. List the prerequisites required of the trainees that are scheduled to attend the course. Prerequisites may be equipment, rate or rating specific, basic skills, or course specific. Prerequisites normally relate to prior training or skills, not ASVAB scores.

5-3

- Obligated service. This information is available in NAVMILPERSCOM manuals. An entry of "In accordance with the Enlisted Transfer Manual" may also be used.
- NOBC/NEC/Military Occupational Specialties (MOS) earned. This information may be copied from the same entry on the Course Data Page.

2.2. Curriculum Outline of Instruction (COI): Guidelines for the COI are discussed in Chapter 4 of this Volume. See Volume II, TAB A-3 for sample COI pages.

2.3. TCCD Annexes: TCCD annexes provide the resource requirements and time allocations for the training course.

- Resource Requirements List (RRL). The RRL is a composite listing of all the material needed to conduct training. For example:

  - Items listed in the TPP RRL such as facilities modifications are now assumed to be in place and are not included in the TCCD RRL.
  - Quantities of training items listed are the numbers required to conduct the course. A TPP RRL for Revision may require only six more of an item to support the revision, but a total of 30 items are needed to support the revised course.
  - The TCCD RRL may contain more line items within a category of items, or more categories of items than the TPP RRL. This is because the development effort is further along and requirements may have been identified which were not known at the time the TPP was developed.

- Items to be included:

  - Texts. List all the text materials, such as LESSON PLAN (LP), instruction sheets NOT contained within a TRAINEE GUIDES (TG), that are used in the course. Identify texts by Navy number and title, and indicate the number of copies allocated per instructor, per trainee, and per class for one convening of the course.

5-4

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- References. List, in alphanumeric order, all the reference documents used in conducting the course. Again, indicate the number of copies allocated per instructor, per trainee, and per class for one convening of the course.
- Equipment. This includes all the equipment, special tools, and test equipment required to conduct the course. List as appropriate:

   - Technical training equipment by Make (Mk), Model (Mod), and official name

   - Specialized test equipment and instructional tools such as mock-ups and models.

   - Computer terminals used in support of computer-based instruction.

   - Common hand tools and general purpose test equipment. Do not individually list tools and equipment that are given a group listing in a technical manual, such as TM-09-2320-289-30 Tools and Test Equipment.

- Pre-faulted modules:

  - VI and IMM. List films, videotapes, videodiscs, transparencies, wall charts, photographs, slides, etc., used in the course. Interactive Courseware (ICW) packages will be included in this grouping.
  - Other. If required, list any other materials not applicable to the other headings.

- Course Master Schedule (CMS). The CMS and Master Schedule Summary Sheet will be developed in accordance with NETCINST 1510.1. The CMS places the Units and Lesson Topics of the Curriculum Outline of Instruction into a time schedule.
- Consideration must be given to grouping topics for continuity. For example, a practical application session is best if carried through to its conclusion on the same day.
- Try to keep closely related Lesson Topics grouped so that one topic is not left to the next day or over a weekend.
- Tests are usually placed at approximately 40-50

- Instructional hour intervals throughout the course or at any point in the course deemed necessary to properly evaluate knowledge/skill level. Test development is the subject of Chapter 8 of this volume. Here, the consideration is to place knowledge and performance tests at points where evaluation should occur. Decisions made here will form the basis for developing tests and a testing plan in accordance with NAVEDTRA 135(Series).
- The periods shown for each Lesson Topic contain the total course periods required to present the Lesson Topic. Here, it is important to differentiate between curriculum periods (the unconstrained time that would be required to teach the lesson topic classroom and labs, as shown in the LESSON PLAN) and course periods (the periods needed to teach all sections of the class, including bottleneck periods). Curriculum periods do not include testing. The total course length will be the sum of the course hours, testing periods, and authorized administrative periods.
- The development of the Course Master Schedule and Course Master Schedule Summary Sheet are important because of their use for instructor/support personnel computations.
- See NETCINST 1510.1 for detailed instructions.

SECTION 3.0.

SUMMARY: The CCA will review and approve the TCCD for compliance with NAVEDTRA 130 (Series) guidelines. The developer will review the TCCD throughout the development process for currency, adequacy, and accuracy. Changes in subsequent documents, such as changes in objectives which may be made during the development of the LESSON PLAN, will affect the TCCD.

DEVELOP PHASE

CHAPTER 6

LESSON PLAN

INTRODUCTION

Curriculum materials are a plan for learning. The care and accuracy devoted to developing them will affect the quality of the results. Curriculum materials consist of a LESSON PLAN, a TRAINEE GUIDE (TG) or individual instruction sheets, Tests/Test Items and support material.

During the Plan Phase, the need for new or revised training is identified and documented in the TPP. The scope of the training required is determined in the Analyze Phase and summarized in the CTTL. The CTTL duties and tasks selected for training in a particular course are then translated during the Design Phase into terminal and enabling objectives which are recorded in the TCCD. In the Develop Phase, curriculum materials are developed to support the objectives.

This chapter will discuss LESSON PLANS. The following chapters will discuss the remaining curriculum materials designed to supplement the instructor's presentation or to assist the trainee.

Development of the *LESSON PLAN, TRAINEE GUIDE* and *Tests*, to a large extent, occurs simultaneously. That is, as you are creating an LP, TG or Test you are shifting back and forth to the other two as good ideas come to mind. Hence, it is important to read all three chapters before attempting to develop either a LP, TG or Test.

SCOPE

- Provide the guidelines for LESSON PLAN format.
- Provide a step-by-step procedure for developing Lesson Topics/LESSON PLAN.
- Instructional methods used most often in the Navy.

COURSE MODIFICATIONS
Course revisions and modifications are discussed in Volume III, Chapter 7

Identification of LESSON PLAN elements/pages affected by a revision or modification are discussed in this chapter under Training Materials Modifications.

SECTION 1 - A LESSON PLAN

- Programs the use of all other training materials.
- Contains learning objectives that reflect knowledge and/or skills attained upon successful completion of the course.
- Provides an outline of instructional materials to be taught in a logical and efficient manner.
- Provides specific equipment and instructional media requirements, and guidance for conducting the course.

SECTION 2 - ELEMENTS OF THE LESSON PLAN

2.1. The LESSON PLAN, depicted in Figure 6-1, consists of the following minimum elements:

- Front Matter.
- Lesson Topics.

It is highly unlikely to have a formal course which consists of only one Lesson Topic. When multiple Lesson Topics are combined and organized, they form a LESSON PLAN. Volume II, Tab A-4, contains a sample of a LESSON PLAN which meets the minimum requirements of this manual.
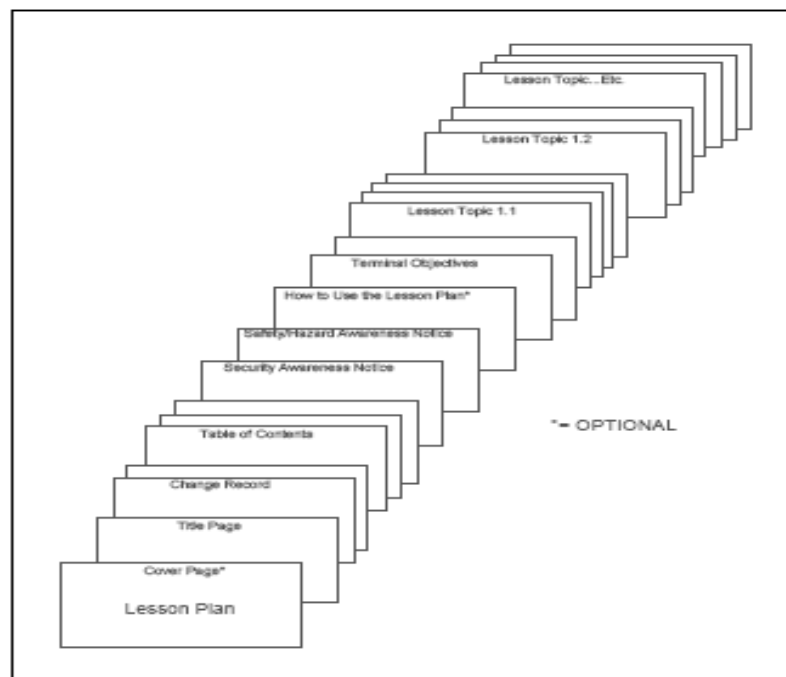
FIGURE 6-1: LESSON PLAN ORGANIZATION

6–3

2.2. Front Matter

- Consists of the following elements in this order:

    - Cover Page (Optional).
    - Title Page.
    - Change Record Page.
    - Table of Contents Page(s).
    - Security Awareness Notice Page(s).
    - Safety/Hazard Awareness Notice Page(s).
    - How to Use the LESSON PLAN (Optional).
    - Terminal Objectives Page(s).

- Each page except the Cover and Title pages:

    - Has a two-line running header consisting of:
    - The phrase LESSON PLAN.
    - The course CIN.
    - See LESSON PLAN in Volume II, Tab A-4, for an example of the layout.
    - If there are multiple volumes, the volume number will follow the CIN.

2.3. COVER PAGE (Optional)

- Printed on heavy paper stock or equivalent material.
- Optional at the CCMM's or the CCA's direction.
- If required, the Cover will contain:

    - The phrase LESSON PLAN.
    - Course title.
    - CIN.
    - Security classification (if applicable).
    - CCMM's name and address.
    - CCA's name and address.
    - Date the LESSON PLAN was prepared.
    - An identification seal such as the Navy seal, community logo, or similar illustration may also be added.

2.4. TITLE PAGE: The Title Page provides for easy identification of the course, including information on the revision and change version of the course.

- The Title Page will contain:

  - The phrase LESSON PLAN.
  - Course title.
  - CIN.
  - Revision number in Alpha characters following the CIN (if required).
  - The word Change with Arabic number following the CIN (if required).
  - Volume number (if a multi-volume LESSON PLAN).
  - Security classification (if applicable).
  - Name and address of CCMM.
  - Name of CCA.
  - Month and year the LESSON PLAN was prepared. If a revision, the later date is placed in parentheses under the original promulgation date.

2.5. CHANGE RECORD PAGE: The Change Record provides space for recording information related to training materials modifications incorporated into the LESSON PLAN after it is approved for implementation.

- Under the heading Change Record, provide space to record:

  - Number and description of change.
  - Name of the person inserting the change.
  - Date change entered.

2.6. TABLE OF CONTENTS PAGE(S)

- Under the heading Table of Contents, for a single volume LESSON PLAN list:

  - Front matter elements, such as Change Record, Security Notice.
  - The Table of Contents itself will not be listed.
  - All Lesson Topics by Unit, number, and complete title in the order in which they appear.

- Under the heading Table of Contents, for a multiple volume LESSON PLAN:

  - In the first volume, list the complete contents of all volumes in the LESSON PLAN.

_____

- In subsequent volumes, only the Lesson Topics in that volume will be listed by unit, number, and complete title in the order they are taught.

2.7. SECURITY AWARENESS NOTICE PAGE(S): Each LESSON PLAN shall bear the highest security   classification demanded by its contents.

- Under the heading Security Awareness Notice:

  - State whether classified material is contained in the course or not.
  - Describe procedures for handling and safeguarding classified materials used in the course.

- Refer to the latest OPNAVINST 5510.1(Series) on Security Program Regulations to ensure that all training materials are marked and handled in accordance with the latest policy guidance.

> The Security Awareness Notice should be as individual as the course. This notice does not relieve the developer from the responsibility of incorporating security requirements throughout the course.

2.8. SAFETY/HAZARD AWARENESS NOTICE PAGE(S): Under the heading Safety/Hazard Awareness Notice:

- Identify hazards to personnel and equipment.
- Provide special direction to personnel concerning safety.
- Provide safety precautions for the protection of personnel and equipment.
- Provide specific policy on Training Time Out (TTO).
- Provide for designated Volunteer High Risk Courses specific policy on Drop on Request (DOR).
- Describe the purpose of the Emergency Action Plan (EAP).
- Provide instructions for the reporting of safety and hazard violations.
- Specify safety and hazards found in the course.
- Identify relevant documentation containing specific precautions and preventive measures.

> Refer to NAVEDTRA 135(Series) and NETCINST 5100.1
> Series on Training Safety to ensure that the latest
> policy guidance is incorporated in the notice.

2.9.   TERMINAL OBJECTIVES PAGE(S): Under the heading Terminal
Objectives (TO):

> The Safety/Hazard Awareness Notice should be as
> individual as the course. This notice does not
> relieve the developer from the responsibility of
> incorporating safety throughout the course.

- List the TOs in numeric sequence.
- After each TO list the Identification Number of the CTTL
  item from which it was developed.

> Terminal Objectives will be the same as the TCCD
> CURRICULUM OUTLINE OF INSTRUCTION.

2.10.   Lesson Topics

- Lesson Topics are organized into Units and Lesson Topics.

  - Units and Lesson Topics are numbered the same as the
    TCCD Curriculum Outline of Instruction.
  - Units are listed in the Table of Contents for
    organization purposes but there are no Unit pages.

- Each Lesson Topic contains two parts:

  - Topic pages.
  - Discussion-Demonstration-Activity (DDA) pages.

- Each page of the Lesson Topic:

  - Has a three-line running header.

    -First line contains the phrase LESSON PLAN.
    -Second line contains the Unit number, title and CIN.
    -Third line contains the Lesson Topic number and title.

- Has the Lesson Topic number and title centered on the first Topic Page.

- Has on all following Topic and DDA pages, the Lesson Topic number and title flush left under the Unit number and title.
- Displays all Topic page information in dual columns of approximately the same width. This is commonly called "newspaper" columns because the information continues from the bottom of the left hand column to the top of the right hand column.
- Displays all DDA page information in dual columns.

2.11. TOPIC PAGES:

- The Topic Pages list:

  - Allocation of classroom and laboratory time.
  - Enabling objectives (appended with their CTTL numbers).
  - Trainee preparation materials.
  - Instructor preparation materials.
  - Training materials required.

- Under the headings Class Periods and Lab Periods, list in periods, not in hours or minutes, the time required for the Lesson Topic.

  - Periods are defined in NAVEDTRA 135 (Series).
  - Time usually will not be listed in fractions of a period. If it is necessary, the time should be shown in quarter-period increments (.25, .50, .75).
  - If the Lesson Topic has both classroom and laboratory periods, list both. If not, list only the applicable periods.
  - The time displayed represents the total time necessary to present the Lesson Topic or conduct one laboratory session. (For example, a two-period laboratory session which must be conducted in three shifts would be shown as two periods, not six.) It does not include testing time associated with the Lesson Topic.
  - Testing periods are shown on the Course Master Schedule.

- Under the heading Enabling Objectives, list the enabling objectives in the order they are taught.

6-8

_____

- Objectives will be the same as the CURRICULUM OUTLINE OF INSTRUCTION.

> If, during the development of the Lesson Topic, a particular Topic is determined to be incorrectly titled and/or sequenced, make required changes and update the TCCD CURRICULUM OUTLINE OF INSTRUCTION accordingly.

- Under the heading Trainee Preparation Material, list Trainee Support Material and Reference Publications.

  - Under the heading Trainee Support Material, list individually each Instruction Sheet to be studied/reviewed by the trainees prior to starting the Lesson Topic, such as, Outline Sheet 7-1-1, Information Sheet 7-1-2. These Instruction Sheets were assigned in the previous Lesson Topic.
  - If no support materials are to be reviewed, enter the word None.
  - Under the heading Reference Publications, list all material to be read by the trainee prior to starting the Lesson Topic, such as technical manuals or instructions.
  - All references will be listed by identification number/publication number, full title, and source (if not obvious from the number/title).
  - Any publication listed here will also be listed as an Instructor Preparation Reference Publication.
  - If no reference publications are required, enter the word None.

- Trainee Preparation Materials will usually be listed in the DDA pages as part of the Assignment in the previous Lesson Topic.

  - Trainee Preparation Materials will either be referred to or reviewed with the trainee and therefore will appear in the Related Instructor Activity (RIA) column.

- Under the heading Instructor Preparation:

  - Enter the phrase Review Assigned Trainee Materials.
  - Under the heading Reference Publications, list all references which are cited as "Refer to" or "Reference" in the RIA column.

6-9

-All references will be listed by identification
 number/publication number, full title, and source (if
 not obvious from the number/title).
-No reference will be listed under Reference Publications
 if it is not cited in the RIA column.

- Under the heading Training Materials Required, list all
  support materials which are required for the instructor
  to present/conduct the Lesson Topic, such as
  publications, wall charts, transparencies, and fault
  insertion guides.

  -Support materials will be listed by type and
   identification number.
  -If all Instruction Sheets are bound into a TRAINEE
   GUIDE, list "TRAINEE GUIDE."
  -If the Instruction Sheets are issued separately, list
   the individual Instruction Sheet by type and number.
  -"Refer to" publications are those to be used by the
   trainee during the Lesson Topic and are listed by number
   and title.

  > Such common classroom materials as desks, chalk/VAP boards,
  > podium, overhead projector, and screen will NOT be listed under
  > Instructor Preparation.

2.12.   DISCUSSION-DEMONSTRATION ACTIVITY (DDA) PAGES

- DDA pages consist of two columns labeled:

  - Discussion Point (DP).
  - Related Instructor Activity (RIA).

- Under the heading Discussion Point list all points to be
  covered, in the proper sequence for presentation, including
  all sub-points necessary to ensure the proper level of
  coverage for each discussion point.

  - The first DP will be numbered 1, and will be under the
    heading Introduction:

    -Review the Lesson Topic EOs.
    -Provide an overview of the Lesson Topic.
    -Provide motivational statements on importance of the
     subject matter.
    -List any safety precautions related to the Lesson Topic.

6-10

_____

- For Lesson Topics which include labs involving equipment, the first DP will also include a review of Training Time Out (TTO) procedures.
- For courses which are designated Volunteer High Risk Courses, the Introduction DP of each laboratory Lesson Topic will review Drop on Request (DOR) procedures.

> NAVEDTRA 135(Series) and NETCINST 5100.1 Series contain the latest policy, requirements, and procedures for training safety and the TTO and DOR programs.

- All DPs that follow:

  -Will be numbered consecutively, starting with 2.
  -Support the Lesson Topic EOs.
  -Will be presented in objective sequence.
  -Cover facts, concepts, principles, and procedures that trainees must know to accomplish the tasks being trained.
  -Break down the general concepts into their simplest component
   parts and segments, which are presented one by one.
  -Will be presented in sufficient detail to lead the instructor smoothly and comprehensively through all portions of
   the presentation.
  -May range from minimal to a level of detail where no research
   of the technical documentation is necessary.

> The DPs guide the instructor's presentation so, normally, only key words or phrases are entered.

  -Should not usually exceed the fourth level of subheadings
  _____
  EXAMPLE:
  3.
     a.
        (1)
           (a)
  _____

- DPs will be listed with ample space between DPs for the instructor to insert notes and examples as part of his personalization of the topic.

- Personalization occurs when the LESSON PLAN has been issued to the instructor.
- A DP labeled Summary and Review will:

  - Be a review of the major DPs.
  - Condense and repeat the principal points of the Lesson Topic.
  - Condense and repeat the EOs.
  - Check the trainee's comprehension of the Lesson Topic by providing review questions/problems.

- The final DP for most Lesson Topics will be labeled Assignments and will:

  - Direct the trainees to Instruction Sheets which will assign homework to reinforce the Lesson Topic material.
  - Direct the trainees to Instruction Sheets which will assign trainee preparation for the next day's Lesson Topic(s).
  - Tell trainees when the test on the Lesson Topic will occur.

- For Lesson Topics which combine classroom and laboratory sessions, in addition to the Summary and Review and, if appropriate, the Assignment, there may be an Application.

  - Application directs the trainees to an instruction sheet, usually a Job Sheet, which assigns a problem or laboratory exercise that allows the trainee to practice what has been taught.
  - When safety is part of a DP, it should begin with the words Safety Precaution, followed by the specific information.

- When there are multiple teaching facilities:

  - Verify that each site has the equipment, etc., before including the requirement in the Lesson Topic.
  - Site-unique requirements, which because of resource constraints cannot be changed to a standard, require a site-specific alternative DP or special instructions to the instructor.

6-12

- Under the heading Related Instructor Activity, the RIA column gives the instructor specific directions which:

  - Are keyed/numbered to correspond to the DP in the DP column to which they relate.

    -There need not be an entry in the RIA column for every entry in the DP column.
    -There must be an entry in the DP column for every item in the RIA column.

  - Refer to reference documents that the instructor can use to prepare to teach a DP.
  - Refer to support materials and appropriate demonstrations that are to be used to support DPs.
  - List actions to be performed by the trainees during the presentation of instruction; such as, take notes, refer to.
  - Provide guidance to the instructor on how to present the DP.

  _____
  EXAMPLES: "Draw on board," "Demonstrate procedure.,"
             "Reference MILPERSMAN 5030320...." update   _
  _____

  - Use the phrase "Reference..." to direct the instructor where to locate information needed to prepare to teach a discussion point.

    -The first time the reference is listed in the RIA column, list it by complete number and title.

  - Use the phrase "Refer to..." to direct the instructor to use in class a particular reference, document, or Instruction Sheet.
  - Use the phrase "Display..." to direct the instructor to use a particular Instructional Media Material (IMM) referenced by identification number and title.
  - May use phrases such as "Demonstrate...," "Show...," and "Point to..." as appropriate to tell the instructor what actions are required.
  - May use the phrase "Review as Required" to indicate points in the Lesson Topic where the amount of discussion depends on the trainees' understanding and must be a judgment call on the part of the instructor.
  - Include under the Introduction DP:

6-13

_____

-Directions to the instructor to introduce self if it
 is the first time the instructor and trainees have
 met, and any specific relationships or examples that
 the instructor should cover.

- Label and clearly state problems/exercises at the
  appropriate point, along with the correct answers.
- Provide answers to questions on assignment sheets, job
  sheets, and problem sheets at the appropriate point.
- Refer to instruction sheets by type and number, such
  as, Job Sheet 4-2-4, in the order of their use within
  the Lesson Topic.

  -The phrase "Question number and answer" indicates the
   question number shown on the Instruction Sheet and
   the correct answer.
  -When questions on Instruction Sheets do not have
   Discrete answers, this should be indicated.

- Cite or assign all Instruction Sheets provided in the
  TRAINEE GUIDE.
- Provide additional information on DPs to be
  emphasized, such as safety precautions.
- Describe demonstrations to be performed by the
  instructor.
- Provide guidance for administering trainee practice
  sessions/labs.
- Provide directions to the instructor for classroom or
  laboratory environmental requirements such as
  temperature, lighting, ventilation, and cleanliness.
- Indicate testing points and use of the Administrator's
  Guide for administering the tests.

  -Chapter 8 of this volume will discuss the
   Administrator's Guide in greater detail.

- Include a Fault Applicability List (FAL) if the
  laboratory has pre-faulted modules or fault able
  modules. The FAL:

  -Identifies the equipment/system to be faulted.
  -Lists faults by identification number.
  -Lists supporting documentation/directions.

SECTION 3 - LESSON PLAN SPECIFICATIONS

> The curriculum developer should ensure that the LESSON PLAN contains all the guidance, directions and information an instructor will need to present a course. Trainees are more likely to grasp and retain facts and concepts that are presented with interesting support materials and which are arranged in a way that enhances learning.

- LESSON PLANS will be oriented horizontally, that is, 11"x 8 1/2" on standard paper. This is often referred to as landscape layout.
- Lesson Plans may be organized into one or more volumes.

  - Do not repeat all elements of the Front Matter for each volume, except where specifically stated.
  - A volume will consist of approximately 200 sheets of paper.

- Lesson Plans may be printed on one side of the page or back-to-back.

  - The phrase "This page intentionally left blank" or similar phrase will NOT be required on blank pages unless all pages must be accounted for because of the classified nature of the Lesson Topic.

- Front Matter pages will be numbered:

  - Consecutively, using Arabic numerals.
  - In the lower right-hand corner of the page.
  - A page number is not placed on the Cover page.
  - A page number is not placed on the Title page; however, it is counted as page 1.

- Lesson Topic pages will be numbered:

  - Consecutively within the Lesson Topic using Arabic numerals.
  - In the lower right-hand corner of the page.

    -The number will consist of the following parts, written in this order:

Unit number.
Lesson Topic number.
Sequential number, starting with 1.

_____
EXAMPLE: 4-10-3   _

Note: In this example, 4 is the Unit number, 10 is the Lesson Topic number, and 3 is the sequential page number within the lesson topic.

Revision/Change Date

SECTION 4 - TRAINING MATERIALS MODIFICATIONS

- If components of a LESSON PLAN (i.e. individual lesson topics) are revised as part of a Revision, an alpha character starting with A for the first Revision will follow the CIN on the LESSON PLAN Cover page and a new publication date will be shown in parentheses under the original publication date. A new Change Record Page will be inserted, as all outstanding Changes will be picked up by a Revision. Revised lesson topics will be printed and replaced as an entirety, with the alpha character appended to the CIN at the top of each lesson topic page.

_____
EXAMPLE: A-433-0023A   _

- If components of a LESSON PLAN are changed as part of a Change, the term Change, with a number starting with 1 for the first Change, will follow the CIN on every page affected by the Change. All changes are entered on the Change Record page.

_____
EXAMPLE: A-433-0023 Change 1

- Interim Changes are entered by the instructor as part of personalization. Instructors can apply pen and ink changes only, cannot delete or modify information. Technical Changes are usually received as a package of replacement pages. The entry is noted on the Change Record page. The CCMM will retain all Interim and Technical Changes for inclusion in later Revisions or Changes as appropriate.

6-16

SECTION 5 - LESSON PLAN/LESSON TOPIC DEVELOPMENT

Lesson Plan/Lesson Topic Development: Some developers can use
the content and format guidelines presented in the previous
sections to develop new and revised LESSON PLANS or individual
Lesson Topics. If a more structured approach is desired, the
following seven-step development plan will aid in development of
a LESSON PLAN and Lesson Topics:

- Review the Learning Objectives.
- Review the technical documentation.
- Organize the individual Lesson Topics.
- Choose or develop Visual Information (VI) aids and
  Instructional Media Material (IMM).
- Prepare initial Lesson Topics/LESSON PLAN.
- Conduct Pilot.
- Finalize Lesson Topics/LESSON PLAN.

STEP 1: REVIEW THE LEARNING OBJECTIVES

- Review the CURRICULUM OUTLINE OF INSTRUCTION in the TCCD to
  determine:

  - The course's Terminal and Enabling Learning Objectives.
  - The course sequence.
  - Any modifications required in the objectives or sequence.

- Objectives may be modified because:

  - The costs associated with performance objectives are
    prohibitive and "paper and pencil" alternatives must be
    substituted for actual hands-on training.
  - Required equipment or publications are unavailable or not
    available in the quantity needed.
  - Constraints in training time do not allow enough time for
    trainees to practice or reach a specific level of
    proficiency.

- Lesson Topics may be re-sequenced for reasons such as:

  - More time is required to practice or prepare for a
    performance test.
  - A Lesson Topic requires more time to teach than was
    estimated.

6-17

- A Lesson Topic's content is a prerequisite to another Lesson Topic.

- TCCD modification:

  - Modifications which do not affect the course length or resources may be approved by the CCMM.
  - Modifications which do affect the course length, or resources require submittal of a TPP per OPNAV MEMORANDUM FOR DISTRIBUTION 7000 Serial N1/127189 Dated 15 Sep 2008 and NETCNOTE 1500 N7 Dated 23 Mar 2009. Information on TPPs may be found in Volume III, Chapter 2 of this manual.
  - All modifications in objectives, Lesson Topic title, or sequence must be incorporated in the TCCD Outline of Instruction.

The final TCCD Outline of Instruction must be the same as the sequence of objectives in the approved course.

STEP 2: REVIEW THE TECHNICAL DOCUMENTATION

- Review the supporting technical documentation and determine the main points to be included in the Lesson Topic.

  - To be appropriate, information must support the objective(s).
  - To be useful, information must aid both the instructor and the trainee in the learning process.

The developer should always begin Lesson Topic development with the latest reference material, but the developer's own experiences, and the experience of other subject matter experts, should also be considered.

STEP 3: ORGANIZE THE INDIVIDUAL LESSON TOPICS

- Organizing the individual Lesson Topic consists of:

  - Developing a content outline.
  - Selecting an instructional method.

- Develop a content outline to support the objectives.

6-18

_____

- Begin by outlining the objectives. Normally the behavior elements of the objectives are the elements of the outline.
- Develop subheads from these elements.

- Add additional DPs if more detail is required.

  > Different levels of detail may be used within a single course/topic, if appropriate. The final decision as to depth of coverage for each DP will be at the discretion of the course developer.

- DPs may be added in the order in which events/steps happen or in the order to be followed in carrying them out.

  _____
  EXAMPLE: Discuss cleaning, priming, then painting metal
            surfaces.

- DPs may be added according to some directional strategy; top-to-bottom, bottom-to-top, the center to the outside.

  _____
  EXAMPLE: Discuss a control panel on a plane by describing first those instruments in the center most often used, then moving out toward the surrounding instruments which are used least often.

- DPs may be added so that one set of conditions is given as a cause for another set.

  _____
  EXAMPLE: Discuss the effect of two dissimilar metals in contact with each other when an electrolyte is introduced causing galvanic corrosion.

- DPs may be added to show that a problem exists and then offering a corrective action that is practical and desirable.

  _____
  EXAMPLE: Discuss implementation of a safety program to reduce the number of traffic fatalities during a holiday period.

- DPs may be added which are for-against an item or show advantages-disadvantages of an event providing fairly even attention to both sides.

6-19

_____

> Before revising an existing Lesson Topic or developing a new one, review existing material and select what is applicable. Look for other courses in the Navy, other military agencies, and other government agencies which teach the same subject or use the same equipment.

_____

EXAMPLE: Discuss various types of methods.

- DPs may be added to describe categories such as classes and components.

_____

EXAMPLE: Discuss classes of ships.

- Select the instructional method which suits the object(s).
- The methods used most often in the Navy are:

  - Lesson.
  - Demonstration.

- A Lesson is a presentation of information, concepts, or principles by a single individual to a group of listeners. It is interactive in nature. It involves visual information (VI) aids and involves two-way communication.

_____

EXAMPLES: Skill, knowledge, or values orientation. Teaching fundamental facts and terminology.

- VI in support of a lesson is used to:

  - Focus trainee interest and attention.
  - Show basic structure of a concept.
  - Relate general concepts to an observable reality.
  - Turn difficult concepts into meaningful pictures.
  - Explain relationships.

- Chapter 9 of this volume provides more information on VI.

_____

EXAMPLE: Introducing new equipment using illustrations, a model, or the actual equipment.

  - Demonstration is the process wherein one person does something in the presence of others to show them how to do it or to illustrate a principle. It covers all the steps students need to learn a skill, in an effective learning sequence.

6-20

_____

_____

EXAMPLE: Showing the effects of acid on metals.   _

- The instructor presents a demonstration, then it is followed by some type of repetition, and then the trainee practices what has been demonstrated.
- Repetition is used to reinforce the action being demonstrated. Types of repetition include:
- Instructor Repetition.
- Trainee Repetition.
- Instructor-Trainee Repetition.
- Group Performance Repetition.
- Coach-and-Pupil Repetition.

- Trainees practice under supervision until they have attained the required proficiency and then they will usually be evaluated by a performance test.
- Chapter 8 of this volume provides more guidance on Performance Testing.
- Multiple methods may be used in the same Lesson Topic.

_____

EXAMPLE: Theory and a performance might be incorporated into the same Lesson Topic.

_____

STEP 4: CHOOSE OR DEVELOP VI AIDS AND IMM

- Use VI aids and IMM in a Lesson Topic to provide:

  - Training when equipment, space, or time is lacking.
  - Remedial or accelerated instruction.
  - Reinforcement.
  - Instruction in subjects which are difficult to present.

- Review existing VI aids and IMM for application to Lesson Topic.

  - Consult Defense Imagery at http://www.defenseimagery.mil/index.html for a list of existing VI aids and IMM which might support the Lesson Topic.
  - Review technical documentation for possible illustrations.

_____

- Review material used in other courses teaching similar subject matter.

- Develop VI aids and IMM complying with guidelines discussed in Chapter 9 of this volume.

- Whatever the instructional media selection, it must support and help achieve the learning objectives.

STEP 5: PREPARE INITIAL LESSON TOPIC/LESSON PLAN

- Prepare a Lesson Topic draft which includes the basic elements of the Topic and DDA pages or Front Matter and Lesson Topics for the LESSON PLAN.

  - Use of computers/word processing equipment in preparing the Lesson Topic/LESSON PLAN is highly encouraged.
  - Review CCA and CCMM requirements for word processing program to be used, font size, and specific formats beyond those established in this manual.
  - Review the printing and publications guidance in NAVEDTRA 135(Series) to ensure compliance.

- Use classified material only when absolutely necessary.

  - Review OPNAVINST 5510.1 Series to ensure compliance with marking and handling requirements for classified material.

- Coordinate quality assurance assistance review with the learning functional area or the Quality Assurance Officer.
- Coordinate review of instructional materials by the CCA, if appropriate.

  - Volume III of this manual and NAVEDTRA 135(Series) provide specific guidance on the management of curriculum development.

- Steps 6 and 7 actually occur after all curriculum materials have been developed.

STEP 6: CONDUCT PILOT: Conduct a pilot for an entire course or a major segment of the course, usually at least one unit in length. This process is discussed in Chapter 10 of this Volume and in Volume III, Chapter 6.

- Review material for correctness and completeness.
- The pilot itself will determine if the trainees have learned what the objectives called for.
- A detailed "redline" copy will identify changes which must be incorporated.

STEP 7 - FINALIZE LESSON TOPIC/LESSON PLAN: Revise and prepare the final versions of the instructor, trainee, and all support materials, including tests and IMM.

- Volume III of this manual and NAVEDTRA 135(Series) describe the procedures for implementing the final material.

SECTION 6 - SUMMARY

There should be a smooth transition between points within a Lesson Topic, from Lesson Topic to Lesson Topic and from Unit to Unit. It is the curriculum developer's responsibility to ensure that the instructional material developed makes efficient and effective use of both the instructor's and the trainee's time. The LESSON PLAN described here and the TRAINEE GUIDE, Test Package, and VI/IMM should mutually support one another.

DEVELOP PHASE

CHAPTER 7

TRAINEE GUIDE

7-1

INTRODUCTION

Whatever the subject being taught, the curriculum developer is responsible for assisting the instructor and the trainees in using their time efficiently while developing the skills, knowledge, and attitudes essential to effective performance in the Fleet. The curriculum developers incorporate their skills, knowledge, and understanding of the subject matter into an instructional strategy in order to best present the material effectively and achieve stated objectives. To ensure uniform coverage of the material, the LESSON PLAN (LP) is developed to guide and direct the instructor.

Through the use of various aids, the curriculum developer directs the trainees to supplementary material, structures their note taking, replaces abstract ideas with concrete images, and may provide trainees with the opportunity to apply their newly acquired skills and knowledge. Development of Instruction Sheets and the TRAINEE GUIDE (TG) are covered in this chapter. A TRAINEE GUIDE leads the trainee through the Course just as the LESSON PLAN guides the instructor.

> Development of the *LESSON PLAN, TRAINEE GUIDE* and *Tests*, to a large extent, occurs simultaneously. That is, as you are creating an LP, TG or Test you are shifting back and forth to the other two as good ideas come to mind. Hence, it is important to read all three chapters before attempting to develop either a LP, TG or Test.

SCOPE

- Describe the content guidelines for a TRAINEE GUIDE.
- Provide a step-by-step procedure for developing Instruction Sheets/TRAINEE GUIDE.

> COURSE MODIFICATIONS
>
> Training materials and modifications are discussed in Volume III, Chapter 7
>
> Identification of TRAINEE GUIDE elements/pages affected by a revision modification are discussed in the chapter under training materials and modification

SECTION 1 - TRAINEE GUIDE

- Is the primary trainee material.
- Contains knowledge and skill objectives the trainee is to attain upon successful completion of the course.
- May provide an outline of instruction.

> This manual establishes the minimum requirements for each of the elements of each Instruction Sheet. It does not specify exact formats, such as, line counts. Samples of Instruction Sheets, which meet the minimum content requirements and provide acceptable formats, are provided in Volume II, Tab A-5 of this manual.

SECTION 2 - ELEMENTS OF THE TRAINEE GUIDE

2.1 The TRAINEE GUIDE, as shown in Figure 7-1, consists of the following:

- Front Matter.
- Instruction Sheets.

> Occasionally, both individual Instruction Sheets and a TRAINEE GUIDE will be used due to security requirements or changes in equipment or procedures.
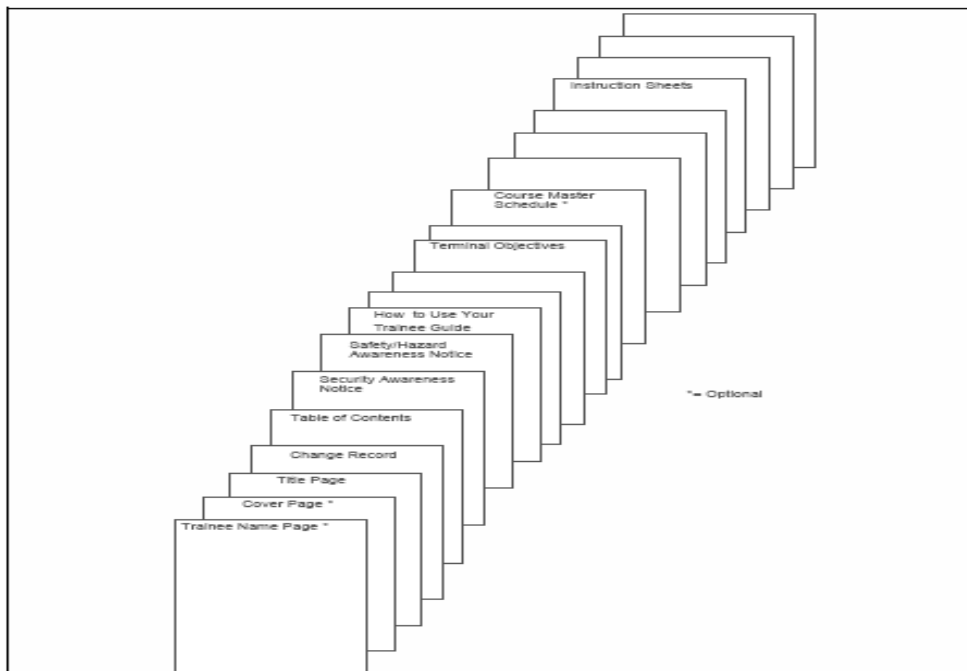
FIGURE 7-1: TRAINEE GUIDE ORGANIZATION

7-3

2.1. Front Matter:

- The front matter of the TRAINEE GUIDE consists of the following elements:

  - Trainee Name Page (Optional).
  - Cover (Optional).
  - Title Page.
  - Change Record.
  - Table of Contents Page(s).
  - Security Awareness Notice Page(s).
  - Safety/Hazard Awareness Notice Page(s).
  - How To Use Your TRAINEE GUIDE Page(s).
  - Terminal Objectives Page(s).
  - Course Master Schedule (Optional).

- TRAINEE NAME PAGE:

  - Is optional at the CCMM's or the CCA's direction.
  - Is used to track copies or to hold a trainee accountable for the TRAINEE GUIDE.
  - If required, the Trainee Name Page provides space to record:
  - Between five and ten trainee names.
  - Class number.
  - Each volume of the TRAINEE GUIDE may have a Trainee Name Page or only those volumes which must be controlled.

- COVER PAGE:

  - It is optional at the CCMM's or the CCA's direction.
  - If required, the Cover contains:

    -The phrase TRAINEE GUIDE for.
    -Course title.
    -Course Identification Number (CIN).
    -Security classifications (if applicable).
    -CCMM's name and address
    -CcA's name and address
    -Date the TRAINEE GUIDE was prepared.
    -An identification seal such as the Navy seal, community
     logo, or a similar illustration may also be added.

  - Cover pages are printed on heavy paper stock or equivalent material.

- TITLE PAGE:

  - Contains the phrase TRAINEE GUIDE for.
  - Course title.
  - Course Identification Number (CIN).
  - Revision number in alpha characters after the CIN (if required).
  - Change number in Arabic numbers after the CIN (if required).
  - Volume number if a multi-volume TRAINEE GUIDE.
  - Security classification (if applicable).
  - Security classification (if applicable).
  - Trainee Name Block (Optional).
  - Name of CCA authorizing publication.
  - Name of CCMM.
  - Month and year the Trainee Guide was prepared. If a revision, the later date is placed in parentheses under the original promulgation date.

- CHANGE RECORD:

  - Under the heading Change Record, provide space for recording information related to each training material modification incorporated into the TRAINEE GUIDE after it is approved for implementation.
  - The Change Record provides space to record:

    -Number and description of change.
    -Person inserting the change.
    -Date change entered.

- TABLE OF CONTENTS:

  - Under the heading Table of Contents, for a single volume TRAINEE GUIDE, list:

    -Front Matter elements, such as, Change Record, Security Notice.
    -Each Instruction Sheet by Unit and Lesson Topic number and complete Instruction Sheet title in the order they are used.

  - Under the heading Table of Contents, for a multiple volume TRAINEE GUIDE, list:

7-5

_____

-In the first volume, a complete listing of the
 contents of all volumes in the TRAINEE GUIDE.
-The Table of Contents will not be listed as an entry.
-In subsequent volumes, list only the contents of the
 respective volume.

> It is very unusual for the TRAINEE GUIDE to be
> multiple volumes. If multiple volumes are required,
> it is usually because one volume is classified.

- SECURITY AWARENESS NOTICE PAGE(S):

  - States whether or not classified material is contained in
    the course.
  - Describes procedures for handling and safeguarding
    classified materials in the course.

    > Each TRAINEE GUIDE shall bear the highest security
    > classification demanded by its contents.

  - Refer to the latest OPNAVINST 5510.1 on Security Program
    Regulations to ensure that all training materials are
    marked and handled in accordance with the latest policy
    guidance.

    > The Security Awareness Notice should be as individual as the
    > course. This Notice does not relieve the developer from the
    > responsibility of incorporating security requirements
    > throughout the course.

- SAFETY/HAZARD AWARENESS NOTICE PAGE(S):

  - Under the heading Safety/Hazard Awareness Notice, the
    Notice:

    -Identifies hazards to personnel and equipment.
    -Identifies special directions to personnel concerning
    safety.
    -Provides safety precautions for the protection of
    personnel and equipment.
    -Provides instructions for the reporting of workplace
    safety and hazard violations.
    -Provides specific policy on Training Time Out (TTO).
    -Provides for designated High Risk Course policy on Drop
    on Request (DOR).

7-6

- The developer should refer to NAVEDTRA 135(Series) and
  the latest NETCINST 5100.1 Series on training safety to
  ensure that the latest policy guidance is incorporated in
  this section.

  > The Safety/Hazard Awareness Notice should be as individual as
  > the course. This Notice does not relieve the developer from
  > the responsibility of incorporating safety throughout the
  > course.

- HOW TO USE YOUR TRAINEE GUIDE PAGE(S):

  - These pages include a general description of the
    composition, function, and use of the Instruction Sheets
    and the TRAINEE GUIDE.
  - Under the heading How To Use Your TRAINEE GUIDE, discuss:

    -The types of Instruction Sheets contained in the
     TRAINEE GUIDE.
    -How to use the Instruction Sheets.
    -The types of examinations and quizzes administered in
     the course.
    -The course divisions.

- TERMINAL OBJECTIVES (TOs) PAGE(S): Under the heading,
  Terminal Objectives, list the terminal objectives in
  numeric sequence.

  > Terminal Objectives will be consistent with the TCCD
  > Outline of Instruction both in content and sequence.

- COURSE MASTER SCHEDULE (CMS) (Optional if not using AIM
  II):

  - CMS should be made available to each trainee as a
    handout, part of the TRAINEE GUIDE, or posted in a
    conspicuous place.
  - If included in the TRAINEE GUIDE, under the heading
    Course Master Schedule (CMS):

    -List the Unit and Lesson Topics by number and title
     in instructional sequence by day and period.
    -Indicate when tests will be administered and which
     Units/Lesson Topics will be covered.

- CMS in the TRAINEE GUIDE usually is identical to the CMS prepared for the TCCD.

2.2. Instruction Sheets:

- Instruction Sheets are organized by Units and Lesson Topics:

  - Instruction sheets include Outline, Assignment, Information, Job, Problem and Diagram Sheets.
  - Units and Lesson Topics are numbered according to the TCCD Curriculum Outline of Instruction.
  - Units and Lesson Topics are listed in the Table of Contents in the Front Matter for organizational purposes but there are no Unit or Lesson Topic Pages.
  - Instruction Sheets are arranged according to the sequence in which they are used within the Lesson Topic they support.
  - All Instruction Sheets are developed to support instructions as presented in the LESSON PLAN. All Instruction Sheets developed will be cited or assigned at some point in the Lesson Topic.

- Each Instruction Sheet has a running header:

  - The first line contains:

    -The phrase TRAINEE GUIDE.
    -CIN.
    -Revision number in Alpha characters (if appropriate).
    -The phrase Change with number in Arabic numbers (if appropriate).
    -Volume number if a multi-volume TRAINEE GUIDE.
    -Security classification (if applicable).

  - The second line indicates, in the right corner, the number of pages composing the Instruction Sheet.

    _____
    EXAMPLE: Page 1 of 4 ___

  - The third line is centered and includes the Instruction Sheet type and its number.

    _____
    EXAMPLE: Outline Sheet 4-10-6 __

> All Instruction Sheets should be marked "For Training Use Only" at either the top or bottom of the page. This is to preclude the instruction sheets being used in the work environment.

2.3. Outline Sheets:

- Is titled the same as the Lesson Topic in the LESSON PLAN.
- Under the heading Introduction, has statements concerning the overall scope and content of the Lesson Topic.
- Under the heading Enabling Objectives, lists the enabling objectives.

    - They are identical to those listed on the topic page of the Lesson Topic.

- Under the heading Topic Outline, presents an outline of the major points to be covered in the Lesson Topic.

    - Only key words or phrases should be entered.
    - More subheadings may be included than on the DDA page in the Lesson Topic.
    - Usually, space will not be provided for note taking.

2.4. Assignment Sheets:

- Is titled so as to describe the subject matter of the sheet.
- Under the heading Introduction, has statements concerning the overall scope and content of the assignment.
- Under the heading Enabling Objectives, lists the enabling objectives.

    - They will be identical to those listed in the Lesson Topic in the LESSON PLAN.
    - If both an Outline Sheet and an Assignment Sheet are used to support a Lesson Topic, the Learning Objectives will be listed only on the Outline Sheet.

- Under the heading Study Assignment, list material to be studied by the trainee before the presentation of the next Lesson Topic. This can be given as a homework assignment.

- Applicable documentation is identified by paragraph, page, figure, or diagram numbers.
- Specific study instructions, including preferred sequence of study may be included.

- Under the heading Study Questions, lists questions which assess understanding of what was studied or tests ability to apply the information.

2.5. Information Sheets:

- Is titled so as to describe the subject matter of the sheet.
- Under the heading Introduction, provides a general explanation of how or why an understanding of the covered material benefits the trainee.
- Under the heading References, lists all publications used to develop the information section of the Information sheet.

    - Each reference is listed by number, volume, part, and complete title.

- Under the heading Information, provides:

    - Information sheets should not reproduce information contained in texts or references readily available at the level required for instructional purposes.
    - Information written clearly and to a level consistent with the understanding of the trainee.
    - Reference to technical manuals or other approved publications citing specific paragraphs, figures, tables, etc.
    - Information on new concepts.

        > EXAMPLE: Special integrated circuit components, unique symbols, terminology

    - Background information.

        > EXAMPLES: Transistors, magnetic amplifiers

    - Clarifying information.

7-10

_____

2.6.   Problem Sheets:

- Is titled so as to describe the subject matter of the sheet.
- Is normally used for paperwork troubleshooting when the equipment is not available.
- Under the heading Problems, problems are presented which:

  - Are organized in any reasonable manner that promotes problem-solving abilities.
  - Provide a clear statement of the problem(s), the conditions, and parameters affecting the problem(s).

- Under the heading Directions, the directions and procedures for the solution to the problem are provided.
- Incorporate drawings/diagrams, if required, as part of the Problem Sheet, not as a Diagram Sheet.

2.7.   Job Sheets:

- Is titled so as to describe the subject matter of the sheet.
- Under the heading Introduction, the purpose of the Job Sheet and trainee benefits are explained.
- Under the heading Equipment, a complete listing of all equipment required for use by the trainee to accomplish the job is provided.

  - Reference to official documentation which lists the equipment may be substituted.

- Under the heading References, all publications required to perform the Job Sheet are listed.

  - Each reference will fully identify the document by number, volume, part, and complete title.

- Under the heading Safety Precautions, state safety precautions that apply to the overall job. For example, in the Volume II Sample TRAINEE GUIDE Job Sheets, Training Time Out procedures are reviewed.

  - If there are no safety precautions related to the overall job, enter "Not Applicable" or "None."

- Under the heading Job Steps, procedures for performing operation, maintenance, troubleshooting, or repair of equipment are listed.

  - Will not duplicate the procedures listed in the reference.
  - Will include specific safety precautions in the Job Steps unless they are called out in the supporting technical manuals/references and cited in the step.
  - May consist of either general or discrete step-by-step procedures for performing tasks associated with a job.
  - Provide sufficient space under each Job Step to record information.

- Under the heading Self-Test Questions, or after individual Job Steps, questions are provided which:

  - Are easily understood, grammatically correct, and easily graded by the instructor.
  - Are technically correct and have direct application to the task being performed.
  - Require analysis and thought similar to that required in the actual job situation.

  > Administration of a performance test is accomplished by using an Administrator's Guide and Job Sheets. Chapter 8 will provide additional information on the Job Sheet and its use in performance tests

2.8. Diagram Sheets:

- Is titled so as to describe the subject matter of the sheet.
- Under the heading Diagram, provides diagrams, schematics, or charts.

  - Organized in any reasonable manner to accomplish the Lesson Topic objectives.
  - May range from foldout schematics or block diagrams to a simplified schematic.
  - Should be large enough so the trainee can make pertinent notations.

_____

SECTION 3 - INSTRUCTION SHEETS NOT IN A TRAINEE GUIDE

3.1 Instruction Sheets distributed separately:

- Will not have Front Matter.

  - Security information or safety/hazard awareness
    information may be provided on an Information Sheet.

- Listed under training materials required.
- Have the same content and form as those contained in a
  TRAINEE GUIDE, except the following will be omitted from
  the running header:

  - Volume identification.
  - The phrase TRAINEE GUIDE.

> Instruction Sheets and the TRAINEE GUIDE are important parts of the
> total instructional package. As much thought and attention should go
> into them as into the LESSON PLAN.

SECTION 4 - TRAINEE GUIDE SPECIFICATIONS

4.1. All TRAINEE GUIDES developed in accordance with this
manual:

- Are oriented vertically (8 1/2" x 11") on standard paper.
  This is often referred to as portrait layout.
- Are organized into one or more volumes.

  - Volume number will be included in the cover page
    between the title and CIN.

> Will repeat all elements of the Front Matter for each
> volume, except for How to Use Your TRAINEE GUIDE, Terminal
> Objectives, and Course Master Schedule.

- May be printed on one side of the page or back-to-back.

  - The phrase "This page intentionally left blank" or
    similar phrase will not be required on blank pages
    unless all pages must be accounted for because of the
    classified nature of the TRAINEE GUIDE material.

7-13

- Generally, a TRAINEE GUIDE will be created when the number of Instruction Sheet pages exceeds the number of pages which would be required by the Front Matter.

- Number Front Matter pages:

  - Consecutively using Arabic numbers.
  - Placing number in the lower right-hand corner of page.
  - Do not place a number on the Trainee Name Page or the Cover.
  - Do not place a number on the Title Page; although, the Title Page is counted in the numbering of the Front Matter as page 1.

- Each Instruction Sheet:

  - Is titled as to the type of Instruction Sheet.
  - Is identified with a three-element number which relates the Instruction Sheet to the Unit-Lesson Topic in the LESSON PLAN it supports/supplements.

    -First element - Unit number.
    -Second element - Lesson Topic number.
    -Third element - Sequence number within the Lesson Topic.
    _____
    EXAMPLE: Assignment Sheet 7-3-1   _

    -In this example, 7 is the Unit number, 3 is the Lesson Topic, and 1 is the sequence number.

  - Is page numbered consecutively within the Instruction Sheet in the format of "Page __ of__ " on the second line of the running header.

SECTION 5 - TRAINING MATERIALS MODIFICATIONS

- If components of a TRAINEE GUIDE (i.e. individual instruction sheets) are revised as part of a Revision, an alpha character starting with A for the first revision will follow the CIN on the title page and a new publication date will be shown in parentheses under the original publication date. The entire instruction sheet will be printed with the revised CIN. No entry will be made on the Change Record Page.

EXAMPLE: A-433-0023A

- If components of a TRAINEE GUIDE are changed as part of a Change, the term Change, with a number starting with 1 for the first change, will follow the CIN on every page affected by the Change. All changes are entered on the Change Record Page.

EXAMPLE: A-433-0023 Change 1

- Interim and Technical Changes are entered by the instructor. The entry is noted on the Change Record Page. The CCMM will retain all Interim and Technical Changes for inclusion in later Revisions or Changes as appropriate.
- Categories of training materials modifications are discussed in NETCINST 1510.1.

SECTION 6 - TRAINEE GUIDE/INSTRUCTION SHEET DEVELOPMENT

Some developers can use the content and format guidelines presented in the previous sections to develop a new or revised TRAINEE GUIDE or individual Instruction Sheets. If a more structured approach is desired, the following five-step development plan will aid in development of a TRAINEE GUIDE or Instruction Sheet.

- The five steps are:

  - Review the Lesson Topic and technical documentation.
  - Select appropriate Instruction Sheet.
  - Prepare initial Instruction Sheets/TRAINEE GUIDE.
  - Conduct Pilot.
  - Finalize Instruction Sheets/TRAINEE GUIDE.

STEP 1:   REVIEW THE LESSON TOPIC AND TECHNICAL DOCUMENTATION

- Review the Lesson Topic to determine the topic's:

- Place in the course sequence.
- Learning objectives.
- Instructional method.

- Review the Technical Documentation to determine:

7-15

- Information which should be provided to the trainee.
- Which reference material can be used in lieu of reproducing the information in the TRAINEE GUIDE.

STEP 2: SELECT APPROPRIATE INSTRUCTION SHEET

- There are six types of Instruction Sheets:

  - Outline Sheet.
  - Assignment Sheet.
  - Information Sheet.
  - Problem Sheet.
  - Job Sheet.
  - Diagram Sheet.

- Use Instruction Sheets to provide:

  - Supplementary information needed to complete a course successfully.
  - Information which is not available in reference publications at the level required for instructional purposes.
  - Problems to complete or a series of steps to perform which call upon trainees to apply what they have learned.
  - The most appropriate experience for the trainee.

- All Instruction Sheets will comply with the requirements of OPNAVINST 5510.1 Series for the marking and handling of classified material.

- Outline Sheets:

  - Provide the trainee with an outline of the major teaching points in the Lesson Topic.
  - Are consistent with the outline of the discussion points contained on the Lesson Topic DDA pages.
  - Allow the trainee to follow the progress of a Lesson Topic.

- Assignment Sheets:

7-16

- Simplify the trainee's search for relevant data.
- Prepare the trainee for future job tasks that require researching and locating data in technical manuals necessary for operational and maintenance purposes.
- Maximize the effectiveness of the trainee's study by providing clear statements of learning objectives and study questions.

- Information Sheets:

  - Provide additional, amplifying, or background information essential to the trainee but absent from or not easily found in the technical manuals or other official documentation.
  - Are useful for promoting or aiding the trainee's comprehension of technical manual materials.

- Problem Sheets:

  - Present practical problems requiring analysis and decision-making similar to what trainees may encounter in their eventual job assignments.
  - Engage the trainee in problem solving, emphasizing the fundamentals of logical thinking, and give practice in the application of knowledge to practical situations.
  - Are used when the subject matter of a course requires the ability to solve a problem in a logical manner.

    > A Problem Sheet is NOT to be used for testing, a substitute for laboratory activity, or as a do-it-yourself training method.

- Job Sheets:

  - Direct the trainees in the step-by-step performance of a practical job that may be encountered in their eventual job assignment.
  - Provide a means for the trainee to apply knowledge obtained during instruction.
  - Do not contain any directions to the instructor.
  - Require the trainees to use the technical documentation in performing their task just as they would in their ultimate assignments.

7-17

> Specific safety precautions rather than general safety
> precautions should be incorporated in the Job Sheet.

- Diagram Sheets:

  - Provide the trainee with copies of special course
    material such as diagrams, schematics, or illustrations.
  - May depict a sketch the instructor will also draw on the
    board, Instructional Media Material (such as a
    transparency), or any diagram or schematic the developers
    may deem important for trainee use.

> diagram Sheets are NOT to be provided where material
> exists in reference documentation and the use of that
> documentation will suffice.

STEP 3: PREPARE INITIAL INSTRUCTION SHEET/TRAINEE GUIDE

- Prepare Instruction Sheet drafts which meet the Instruction
  Sheet format requirements.

  - Use of electronic media in preparing the Instruction
    Sheets/TRAINEE GUIDE is highly encouraged.
  - Review CCA and CCMM requirements for the word processing
    program to be used, font size, and formats beyond those
    established in this manual.

- Multiple types of Instruction Sheets may be used throughout
  a Lesson Topic as well as a course.
- Review printing and publications guidelines in NAVEDTRA
  135(Series) to ensure compliance.
- Use classified material only when absolutely necessary.

  - Review OPNAVINST 5510.1 series to ensure compliance with
    marking and handling requirements.

- Coordinate quality assurance assistance review with the
  learning standards office or the Quality Assurance Officer.
- Coordinate review of instructional materials by the CCA, if
  appropriate.
- Determine if Instruction Sheets should be distributed
  separately or bound in a TRAINEE GUIDE.

- Determine quantity of Instruction Sheets used.

    -If the number of Instruction Sheet pages would exceed
     the number of Front Matter pages, create a TRAINEE
     GUIDE.

- Determine requirement to control classified material.

    -TRAINEE GUIDES should be unclassified whenever possible.
     Classified Instruction Sheets should be issued when
     needed.

- Determine frequency with which the material must be
  updated.

    -Instruction Sheets which require frequent updates should
     not be bound in a TRAINEE GUIDE.

- Volume III of this manual and NAVEDTRA 135(Series) provide
  specific guidance on the management of curriculum
  development.

> Steps 4 and 5 will occur after all instructional
> material has been developed.

STEP 4: CONDUCT PILOT

- Conduct a pilot for an entire course or a major segment of
  the course, usually at least one Unit in length. This
  process is discussed in Chapter 10 of this volume and in
  Volume III, Chapter 6.

    - Review material for correctness and completeness.
    - The pilot itself will determine if the trainees have
      learned what the objectives called for and use the
      Instruction Sheets as designed.
    - A detailed "red-lined" copy will identify changes which
      must be incorporated.

STEP 5: FINALIZE INSTRUCTION SHEETS/TRAINEE GUIDE

- Revise and prepare the final versions of the instructor,
  trainee, and support materials including tests and
  instructional media.

_____

- Chapter 6 of Volume III provides specifics on finalizing the material.
- Volume III of this manual and NAVEDTRA 135(Series) will describe the procedures for implementing the final material.

SECTION 7.0 SUMMARY

Instruction Sheets and the TRAINEE GUIDE reinforce or supplement training provided in the formal training environment by the instructor. Instructions Sheets should be used when the material is not available or not easily found in the technical manuals and other official documents the trainee will use on the job.

7-20

DEVELOP PHASE

CHAPTER 8

TEST FOR MEASUREMENT OF
TRAINEE ACHIEVEMENT

INTRODUCTION

As a curriculum developer, your responsibilities include establishing methods for determining how well the trainees have achieved the objectives. Practical work is one such method and includes lab assignments, homework, and in-class assignments.

Tests must be developed when a grade (either within-course or end-of-course) is to be assigned, or a trainee's course PASSING/FAILURE must be decided and recorded. This chapter will provide you with guidelines for designing and developing Performance and Knowledge Tests, based on the development and use of job sheets, test items and tests.

Organization of this chapter. In most cases the information provided in this chapter will suffice for the design, development and scoring (grading) of performance and knowledge tests. A series of three appendices is included at the end of this chapter for those who require additional information in these subject areas.

> Development of the LESSON PLAN (LP), TRAINEE GUIDE (TG) and Tests, to a large extent, occurs simultaneously. That is, as you are creating an LP, TG or Test you are shifting back-and-forth to the other two as good ideas come to mind. Hence, it is important to read all three chapters before attempting to develop either an LP, TG or Test.

SCOPE

To provide information on Test Development and Administration for those involved in developing Task Based Curriculum.

The diagram 8-1 below lays out the Testing process in the order that events should occur:

```
+---------------------------------------------------+
| INTRODUCTION TO TESTING                           |
+---------------------------------------------------+
```

PERFORMANCE TESTS   KNOWLEDGE TESTS

```
+------------------+              +------------------+
|  Test Design     |              |  Test Design     |
+------------------+              +------------------+
         |                                 |
         v                                 v
+------------------+              +------------------+
|  Develop Tests   |              |  Develop Tests   |
+------------------+              +------------------+
         |                                 |
         v                                 v
+------------------+              +------------------+
| Develop Test     |              | Develop Test     |
| Administrator's  |              | Administrator's  |
| Guide            |              | Guide            |
+------------------+              +------------------+
         |                                 |
         +----------->  +-----------<------+
                        |
             +-------------------------+
             | Develop Testing Plan    |
             | (NAVEDTRA               |
             | 135(Series))            |
             +-------------------------+
                        |
                        v
```

```
+---------------------------------------------------+
| Pilot Tests As Part of Course Pilot               |
| and Implementation Phase                          |
+---------------------------------------------------+
```
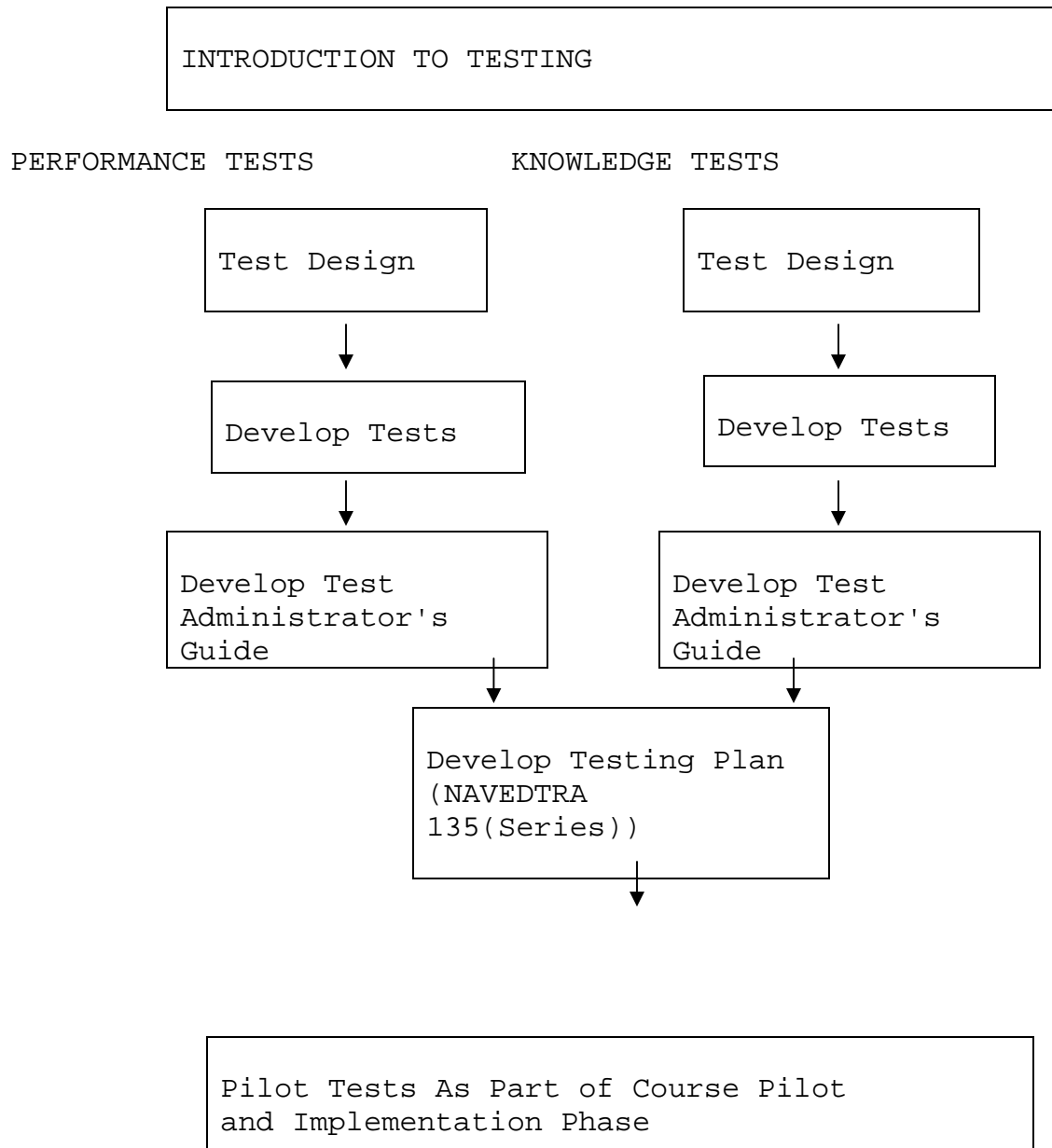
Diagram 8-1

SECTION 1 - INTRODUCTION TO TESTING

1.1. Definitions:

- Tests are the primary tool for determining trainee attainment of the TOs/EOs and, therefore, his/her relative success in the course. Progress/Comprehensive tests are considered formal tests. Critical LOs are always formally tested. Less critical LOs may be formally tested or be informally measured by quizzes, homework assignments, or practical work.
- Performance tests measure a trainee's ability to perform a specific skill or behavior by using actual equipment or training devices.
- Knowledge tests are used to measure the trainee's achievement of theory and/or background knowledge in support of performance of a skill.
- Measurement is the process of assessing what the trainee has demonstrated by taking the Performance/Knowledge test.
- Evaluation is the process of comparing a measurement against an established standard.
- Grading is labeling (scoring) the evaluations, usually according to a level of success, e.g., go/no—go.

1.2. Required events for test development are:

- Design the Tests.   Here decisions as to the What, When and How of testing will be determined.
- Develop the Performance Tests.   Job Sheets will be developed and used as the basis for measuring trainee's ability to perform duties or tasks.
- Develop the Knowledge Tests. Decisions will be made as to where and what knowledge tests are required to measure trainee knowledge necessary to support the achievement of performance objectives.
- Develop Administrator's/Trainee Testing Information. Essential information will be developed for facilitating the administration of both Performance and Knowledge Tests.
- Develop Testing Plan.

> Testing Plan development is contained in NAVEDTRA 135(Series). A sample Testing Plan is provided in Volume II.

8-4

SECTION 2 - DESIGN PERFORMANCE TESTS

During Performance Test Design you will decide what skills to
test by selecting LOs, how to test for these skills and when in
the testing program to test for this knowledge.

Of these two processes, test design and test development, test
design is most important and effective tests seem to follow
naturally from a good test design.

2.1. Performance Test Design requires that you determine:

- Criticality of each performance learning objective and
  level of acceptance. This process will help you to decide
  which performance objectives to measure through testing and
  which should be measured by practical work.

- Whether to use the actual equipment in the test situation
  or to simulate performance on the equipment may also be a
  factor.

  - In many cases this decision will already have been made.
  - If not, see Addendum 8-A for guidance in deciding whether
    to test using the actual equipment or simulation.

2.2. Decide Which Performance LOs To Test:

- Criticality of Skill:

  - Refers to how important the skill is in relation to its
    application to actual job performance.

    -High: Skill is used during job performance.
    -Moderate: Skill influences job performance.
    -Low: Skill has little influence on job performance.

- Other Criticality Factors:

  > Criticality refers to a LOs importance as related to
  > the performance of a job task.

  - Safety to personnel/equipment—Critical tasks are those
    which are considered high risk or dangerous.
  - Frequency of performance; the more often a task is
    performed the more critical it becomes.

- LOs importance to the overall course mission.
- LOs importance to on-the-job performance.

- Rank order or group LOs by category of criticality:

  - Rank ordering of LOs consists of placing them in a list ranging from most critical to least critical. If a course has 20 performance LOs, rank them from 1 (most critical) to 20 (least critical).
  - Group by categories of criticality; establish 3 to 5 categories ranging from highly critical to least critical.
  - Highly critical LOs must be formally tested. Less critical LOs may be informally tested by other means such as practical work.

  > Set a cut-off point between most critical and least critical. For instance: You decide that LOs ranked in the upper 66% are most critical. They require formal testing. LOs ranked in the lower 33% are less critical. Formal testing is not required.

- Performance Objective test guidelines:

  - Those performance objectives having the highest criticality rating must be formally tested.

    -As a rule of thumb those performance objectives judged to rank in the upper one-third as to criticality should be tested by a Progress/Comprehensive Performance Test. This is formal testing.
    -Performance objectives judged to rank in the middle-to-lower one-third as to criticality should be tested by having the trainees complete job sheets in a laboratory as part of the application section of a Lesson Topic. This is informal testing, in that the performance evaluation lacks the controls of formal testing.
    -Performance objectives judged to rank in the middle-to-lower one-third as to criticality may also need to be tested to show the logic of the learning process. This can be accomplished by an informal quiz, or assigning problem sheets for evaluation.

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- When you have completed this process: You will have one set of Performance LOs from which to build the tests.

2.3. Develop Performance Tests:

- Job Sheets.

  - Job Sheet Evaluation Instruments.
  - Performance Test Administrator's Guide.

2.4. Develop Job Sheets:

- For specific guidance on developing job sheets see Chapter 7, TRAINEE GUIDE, of this volume.
- Job Sheet problems must be consistent with those used during the course. They may not be used to introduce unfamiliar information.
- Each Job Sheet must require the trainee to use the technical documentation just as he will upon reaching his ultimate job assignment.

  - Amplifying information may be incorporated into the job sheet to compensate for inadequate/incomplete technical documentation.

- Each Job Sheet must be directly related to either a skill TO or a skill EO.
- Job Sheets also provide a means for the trainee to apply knowledge obtained during instruction and may, therefore, be used in place of a knowledge test for the information.
- Each Job Sheet will support one of these test types: a product, a process, or product and process combined.
- Performance Test types are:

  - Product.
  - Process.
  - Combination (of Product and Process).

- Performance Test types explained.

  - Product:

    -A product is an observable result—something you can see, hear, or touch.

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-A solder joint is a product because it can be seen and touched.
-A completed form is a product because it can be seen.

- Product testing is possible when:

  -The objective specifies a product.
  -The product can be measured as to the presence or absence of certain characteristics, e. g., does it look right, have the right texture, sound the way that it should?
  -Procedural steps may be performed in a different order or sequence without affecting the product.

- Process. A process consists of step-by-step procedures required to produce a product or complete a task. Process testing is appropriate when:

  - The product and the process are the same thing—such as teaching a lesson.
  - There is a product, but safety, high cost, or other constraints present the product from being measured.
  - It is necessary to examine each step of the process in order to diagnose the reason for performance failure.
  - There may be a product, but there are critical points in the process which must be performed correctly because of the possibility of damage to personnel or equipment.
  - The objective specifies a sequence of steps that can be observed.
  - The process does not result in a product.
  - Your interest is in the actual behavior itself.

- Combination.   This performance test is concerned with both an observable result, and the step-by-step process leading to the result.
- Combination testing is appropriate when:

- Both product and process are equally important to the final result, or it is required so as to avoid hazards to personnel or equipment.
- Safety considerations almost always dictate that the operation or maintenance of a device, i.e., the process, be done in a certain way. However, the outcome, i.e., the product, is just as important to successful job performance.

8-8

- Product/Process/Combination Learning Objectives Illustrated

> Product Objective: Construct a Box Sill Floor Frame to within 1/8-inch of required dimensions (The final product will be graded for conformity to the specifications).
>
> Process Objective: Measure a crankshaft journal for Wear, Taper, and Out-of-Roundness (Exact measurements require that the measuring process is followed precisely).
>
> Combination Objective: Perform a Daily System Operating Test (DSOT) on the Close-In Weapons System—CIWS—(A systematic, step-by-step process must be followed to ensure a fully operational CIWS, or product).

- Deciding which Performance Test type to use:

  - Test for the product if the objective contains specific standards that the product must meet.
  - Test for the process if the objective has specific standards that must be adhered to, including:

    -Safety procedures.
    -Time standards.
    -Requirements that the steps be performed in a certain order.

  - Test for the process when diagnosis is important, i. e., if it is important to know when or where errors occur.
  - If either process or product can be measured, select the one that is easiest to measure, using the following guidelines:

    -Time or number of personnel required to conduct the performance test.
    -Can the product be tested without examining the process.
    -Can errors be made early in the process which might be costly or dangerous.

    > See Addendum 8 — A: In—Depth Discussion of Performance/Knowledge Test Design , at the end of this chapter, for more information on this topic.

8-9

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2.5. Develop Job Sheet Evaluation Instruments:

- Evaluation Instruments may include:

  - A Checklist.

    AND/OR

  - A Rating Scale.   For use in evaluating the correctness
    of the product or performance of the process.

    AND

  - Grading Criteria (Scoring Guide). To be used in
    determining a grade for the product or
    process required by the Job Sheet.

    > Figure 8 - 1 and Figure 8 - 2, several pages further on,
    > show examples of a Job Sheet Checklist and Job Sheet
    > Rating Scale, respectively.
    >
    > Figure 8 - 3 and Figure 8 - 4, several pages further on,
    > show examples of Grading Criteria for the above-listed
    > Job Sheet Checklist and Job Sheet Rating Scale.

- Guidelines For Developing:

  - Develop one checklist and/or rating scale, and grading
    criteria, for each step or group of steps on the Job
  - Sheet.
  - For Product Performance Tests:

    -When a product trait is either present or absent and
     can be measured by checking yes or no a checklist may
     be the best to use.
    -When product quality can vary from high to low, adequate
     to inadequate, good to bad, or some other range; a
     rating scale may be the best to use.
    -Whether a checklist or rating scale is chosen will
     depend upon the particular situation and the developer's
    discretion - some situations/developers might use a
     checklist; others might use a rating scale; sometimes
     using both might seem the most appropriate thing to do.

  - For Process Performance tests:

-When a step is either done or not done and can be
 measured by checking yes or no, a checklist may be the
 best to use.
-When performance of a step can vary in quality from
high to low, best to worst, good to bad, or some other
 range, a rating scale may be the best to use.
-A rating scale may also be the best to use when a step
 has more than two possible outcomes.
-Whether a rating scale or checklist is chosen will
 depend upon the particular situation and the developer's
 discretion - some situations/developers might use a
 checklist; others might use a rating scale; sometimes
 using both might seem the most appropriate thing to do.

- For Grading Criteria (Scoring Guide):

  -This may be the most critical step in performance test
   development because it ensures standardized grading.
  -The scoring guide contains a description of how each
   step or group of steps is to be graded.
  -When using knowledge test-items in a performance test
   indicate the correct response and how many points will
   be deducted for an incorrect response.
  -When knowledge test-items are included as part of a
   performance test they will not constitute a major
  portion of the trainees' overall grade.

  > If you require more information about developing grading
  > criteria, see Addendum 8 — C: Grading Criteria for Performance
  > Tests at the end of this chapter and NAVEDTRA 135(Series)
  > Appendix B.

- Evaluation Instrument selection:

  - It may make no difference whether a checklist or rating
    scale is used because almost all rating scales can be
    turned into checklists, and some checklists can be made
    into rating scales.
  - Grading criteria for the course is a factor:

    -If the course is graded SAT or UNSAT, a checklist may be
     the most appropriate to use.
    -If the course is graded with a numerical grade, a rating
     scale may be the most appropriate to use.

- It is important:

- To define checklist steps and rating scale decisions as precisely as possible. The more precisely you can describe the behaviors the more effective the Job Sheet Checklist/Rating Scale will be.

- To make the grading criteria for each Job Sheet Checklist and Job Sheet Rating Scale as precise as possible. This helps remove instructor subjectivity from the grading process.

- Construct the Job Sheet Evaluation Instrument:

  - Each Checklist/Rating Scale/Grading Criteria should include, as appropriate:

    -A list of steps to be evaluated—this information comes from the related job sheet.
    -When impossible to evaluate each step separately—review the job sheet and, where possible, group individual steps into like areas and evaluate them as one step.
    -Each step or group of steps will be numbered.
    -Briefly describe the evaluation procedures.
    -Indicate the type of instrument.
    -Indicate critical steps.
    -Provide space for comments or description of errors.
    -Include space for required administrative information e.g, name, abbreviated Social Security Number, class, beginning and ending time, score, etc.
    -Personal information consistent with Personal Identifiable Information (PII) directives.

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PERFORMANCE TEST
JOB SHEET 5-1-5 CHECKLIST

TITLE: Measuring a Crankshaft Journal

TRAINEE NAME/RATING_____SSN_____
INSTRUCTOR/EVALUATOR_____
DATE_____ TIME STARTED_____TIME COMPLETED_____

Evaluation instructions: This test evaluates procedures and use of
measuring tools. Observe trainee taking measurements indicated. Watch
for correct application of tools, and ability to interpret/record tool
readings. Observe that student uses correct methods to move heavy
parts. If unsafe practices are observed, STOP THE TEST.

All recorded measurements for this Job Sheet must be +/- .0001" of
journal proof dimensions. Mark each measurement as SAT or UNSAT. If
UNSAT, comment as to why.

     1. Measure and record outer end of journal.
       a. Vertical dimension   (SAT) (UNSAT)
       b. Horizontal dimension   (SAT) (UNSAT)

Comment:_____
             _____
             _____

     2. Measure and record center of journal.
       a. Vertical dimension   (SAT) (UNSAT)
       b. Horizontal dimension   (SAT) (UNSAT)

Comment:_____
             _____
             _____

     3. Measure and record inner end of journal.
       a. Vertical dimension   (SAT) (UNSAT)
       b. Horizontal dimension   (SAT) (UNSAT)

Comment:_____
             _____
             _____

FIGURE 8-1: SAMPLE PERFORMANCE TEST CHECKLIST

8-13

PERFORMANCE TEST
JOB SHEET 5-1-5 GRADING CRITERIA

TITLE: Measuring a Crankshaft Journal

Grading Criteria for Job Sheet 5-1-5 is SAT/UNSAT. There is no product created by the trainee during this performance test. The sequence in which measurements are taken during the test is not as important as the correct use of measuring tools, accuracy of the measurements and interpretation of tool readings.

A numeric score is derived from the following:

      All trainees start the test with 100 points.

      Ten (10) points are deducted for any recorded measurement that exceeds journal proof dimensions by +/- .0001" and results in an UNSAT for that measurement. Comments to aid remediation are required for each UNSAT marked.

      A score of 80 points or above is SATISFACTORY completion of the test.

Procedures: Steps 1, 2, and 3 relate to measurement techniques, tool reading, and safe practices. Three or more incorrect readings results in failure of the test. Safe practices are mandated. If unsafe practices are observed, the instructor has two options:

      1. Interrupt the test and correct the trainee. Make appropriate comment on Job Sheet check list.

      2. If safety violation warrants; STOP THE TEST, AND PROCEED IN ACCORDANCE WITH SCHOOL DIRECTIVES. This results in immediate test failure.

FIGURE 8-2: SAMPLE PERFORMANCE TEST GRADING CRITERIA

PERFORMANCE TEST
JOB SHEET 10-3-2 RATING SCALE

TITLE: Construct a Box Sill Floor Frame

TRAINEE NAME/RATING_____SSN_____
INSTRUCTOR/EVALUATOR_____
DATE_____ TIME STARTED_____TIME COMPLETED_____

Item No	Step/Description/Observation	Deduct
1.	Marked and cut all sill plates squarely to proper length within 1/8".	0, -5, -10
2.	Installed sill plates within 1/8" of specified location, ensuring they are square and level.	0, -5, -10
3.	Laid out header joists for floor joists 16" On center, within 1/8".	0, -5, -10
4.	Measured, marked, and squarely cut each joist To specified length, within 1/8"	0, -5, -10
5.	Aligned header and floor joists (Crown up) within 1/8" of specified location and height	0, -5, -10
6.	Snapped chalkline across floor joists on centerline of building, within 1/8"	0, -5, -10
7.	Placed and secured bridging staggered 1 1/2" off center, within 1/8"	0, -5, -10
8.	Installed subfloor with joists staggered and butted tightly on center of the joists driven flush with the surface.	0, -5, -10
9.	Subfloor nailed 8" on center, with nails driven flush with the surface.	0, -5, -10
10.	Used all tools and materials properly.	0, -5, -10
Critical	OBSERVED ALL SAFETY PRECAUTIONS	-10

Evaluation Procedure: Observe trainee during construction. Comment on safety observance and use of tools, as appropriate. Take measurements upon completion of project, and grade in accordance with Job Sheet 10-3-1 Grading Criteria.

FIGURE 8-3: PERFORMANCE TEST RATING SCALE

PERFORMANCE TEST
JOB SHEET 10-3-2 GRADING CRITERIA

TITLE: Construct a Box Sill Floor Frame

Grading Criteria is **SAT/UNSAT**, based on a numerical threshold. A numeric value must be assigned to each evaluated step.

*A safety violation will stop the performance test and the Administrator will immediately provide remediation. Safety violations which may have led to injury or damage to equipment will result in an UNSAT performance and failure of the Test.

    Any product dimension within 1/8" of specification = -0 points

    Any product dimension 3/16" out of specification   = -5 points

    Any product dimension more than 3/16" out of
    specification   = -10 points

    Each noted occurrence of improper tool usage   = -5 points.

* = Critical step.

All students start with 100 points. Minimum passing score is 75 points.

FIGURE 8-4: SAMPLE GRADING CRITERIA FOR A RATING SCALE

2.6. Develop Performance Test Administrator's Guide:

- Develop Instructions to the Trainee, including (See Figure 8-5 for an example):

  - A description of the test.
  - Safety precautions which must be observed with specific warnings about any unusual conditions that exist.
  - An explanation of the job steps to be performed and exactly what the trainee is required to do.
  - The level of assistance permitted.
  - Information on how the grade will be determined, including a list of the critical steps which may result in mandatory failure of the test.
  - A list of tools, test equipment, and training material.
  - Allocated time limit and importance of time to test grade.
  - Relationship of the test to the performance objective.

INSTRUCTIONS TO THE TRAINEE

1.. Present the following to the trainee:

a. This is a performance test for the _____. The test will consist of _____ tasks, and you will have _____ amount of time to complete the test. Prior to the beginning of each task, you will be given an explanation of the task, what to do and the time limit for each.

b. All test equipment, tools, and materials are available to you. You must determine what is needed for each task.

c. You may be required to leave the area after each task if additional preparation is required for the next task.

d. You will be evaluated on your performance and your practice of safety precautions. The administrator will intervene to prevent or correct a violation of any safety precaution.

e. You will not be assisted with your performance. The administrator may intervene after a task begins in order to correct a critical procedural error.

f. The requirements may be restated or explained at your request. Do your best. If you cannot perform the task, inform the administrator.

g. You will be observed closely. Try not to let this interfere with performance. All critical steps must be performed correctly. Some steps will be scored on a "Yes/No" basis and some will be scored with a rating scale.

2. Ensure that the trainee understands all of the above items before proceeding to the first problem.

FIGURE 8-5: SAMPLE TEST ADMINISTRATOR'S GUIDE INSTRUCTIONS TO THE TRAINEE

- Develop Instructions to the Administrator (see Figure 8-6 for an example), including:

  - A brief description of the task to be performed.
  - A list of required tools, test equipment, and training material.
  - Specific instructions describing how to set up the equipment/job performance.
  - Instructions on any special safety precautions/procedures that may be applicable.
  - Instructions on the use of knowledge test-items (written and/or oral).
  - Guidance on the actions to be taken in the event that the trainee does not perform as anticipated. If a critical step is improperly performed, remediation and retesting are in order.

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```
                INSTRUCTIONS TO THE ADMINISTRATOR

1.  The trainee will be performing the _____  task(s).  The
following tools and test equipment are required:

    a.
    b.
    c.
    d.

2.  Preset the following controls on the _____.

    a.
    b.
    c.
    e.
    f.  Remove part no.___ from the____ and replace with faulted part.

3.  State the following special procedures to the trainee:

    a.  Briefly describe the task and its relationship to the
objective.

    b.  State any special safety precautions/procedures that may be
applicable.

    c. Provide additional information specific to the test.

4.  Orally quiz student on applicable safety precautions using
questions from the evaluation checklist.

5.  If the trainee fails a critical step remediate by _____.
```

FIGURE 8-6: SAMPLE INSTRUCTIONS FOR THE ADMINISTRATOR

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This concludes the discussion on Performance Test
Design/Development.  Remember; if you need more information see
Addendum 8-A on Performance Test Design/Development.
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8-20

SECTION 3 - DESIGN KNOWLEDGE TESTS

- During Knowledge Test Design you will decide what Knowledge to test by selecting LOs, how to test for this knowledge and when in the testing program to test for this knowledge.
- Of these two processes, test design and test development, test design is most important and effective tests seem to follow naturally from a good test design.

3.1. Knowledge Test Design requires that you determine:

- Level of learning required of each knowledge LO:

  - This process requires you to examine how the knowledge will be used on-the-job and to design the test accordingly.
  - For instance, if instantaneous total recall to a situation is necessary (such as the proper response to an incoming Exocet Missile) your test must require the trainee to answer from memory - you could hardly give the trainee the time to locate the answer in the technical documentation.
  - If, on the other hand, a procedure will always be performed using the technical documentation then your test must allow the trainee access to this documentation.

- Criticality of each knowledge topic learning objective. This process ensures that knowledge deemed critical is measured over other, less important knowledge.

3.2. Decide Which Knowledge LOs To Test. The Level of Learning is determined by:

- The conditions, behavior, and standards specified in each objective.
- It is very important that you know how the information being taught will be used on the job and then test for the information at that level which it will be used.
- Following are the different ways (or levels of learning) in which knowledge is used on-the-job:

  -K1 - Recognize.
  -K2 - Recall.

8-21

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-K3 - Comprehend.
-K4 - Apply.
-K5 - Analyze/Synthesize/Evaluate.

- Each piece of information used on-the-job: Will be used at one of these levels.

- It is absolutely imperative that:

The level chosen for construction of the knowledge test item match the level at which the corresponding information is used on-the-job.

Therefore, if your analysis determines that the information is used at the application level on-the-job then the corresponding test item must be at the application level.

- The levels of learning are described as follows:

  - K1 - Recognize. Recognition is the process of verbatim identification of specific terms, facts, rules, methods, principles, procedures, objects, etc., that have been presented during training. The information to be identified is selected from two or more alternatives.

    -EXAMPLE: Identify a particular switch on a piece of equipment by matching its name to a diagram of the switch.

  - K2 - Recall. Recall is the verbatim remembering of specific terms, facts, rules, etc. In answering a recall test item, the trainee remembers and responds exactly as taught. For a recall test item, the trainee responds from memory instead of selecting the response from two or more alternatives. Recall is tested with closed book tests; otherwise the trainee's ability to remember information is not tested and the item becomes a recognition item.

    -EXAMPLE: List the steps of an emergency procedure.

8-22

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- K3 – Comprehend. Comprehension is understanding what was taught rather than simply memorizing the words. It can be demonstrated by interpreting, explaining, translating, or summarizing information. When measuring the trainee's understanding of an objective, verbatim recall or recognition must be avoided. This requires the developer to paraphrase the material presented rather than taking it word for word from the text.

  EXAMPLE: Explain orally how a steam turbine works.

- K4 - Apply. Application involves the ability to use acquired knowledge in a situation not specifically demonstrated during instruction, but job related. Application questions require trainees to demonstrate knowledge through mental skill exercises. The test items must be different than those used in class to be considered application. If the problem is exactly the same the trainee may be memorizing the problem and the item becomes a recall item.

  EXAMPLE: Determine resistance values from circuit diagrams.

- K5 – Analyze/Synthesize/Evaluate. Analysis involves the understanding of the elements of data and relationships among the data that make meaning of information explicit. Synthesis is the ability to put parts together to form new patterns or structures such as a unique communication, a plan of operations, or a set of abstract relations. Evaluation involves the judgments of the value or effectiveness of procedures or solutions based on data, criteria and standards.

  EXAMPLE: Determine the best method for stowing ammunition on a ship.

- Criticality of Knowledge:

- Refers to how important the knowledge is in relation to its application to actual job performance.

  High: Knowledge is used during job performance.
  Moderate: Knowledge influences job performance.
  Low: Knowledge has little influence on job performance.

8-23

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- Other Criticality Factors Knowledge Applies To:

  > Criticality refers to an LOs importance as related to the performance of a job.

  - Safety to personnel/equipment—Critical tasks are those which are considered high risk or dangerous.
  - Frequency of performance—The more often a task is performed the more critical it becomes.
  - LOs importance to the overall course mission.
  - LOs importance to on-the-job performance.

- Rank order or group LOs by category of criticality:

  - Rank ordering of LOs consists of placing them in a list ranging from most critical to least critical—A course has 20 knowledge Ls. Rank them from 1 (most critical) to 20 (least critical).
  - Group by categories of criticality—Establish 3 to 5 categories ranging from highly critical to least critical.
  - Highly critical LOs must be formally tested. Less critical LOs may be informally tested by other means such as graded homework or problem sheets.

    > Set a cut-off point between most critical and least critical. For instance: You decide that LOs ranked in the upper 66% are most critical. They require formal testing. LOs ranked in the lower 33% are less critical. Formal testing is not required.

- Knowledge Objective test guidelines:

  - Those knowledge objectives having the highest criticality rating must be formally tested.

    -As a rule of thumb those knowledge objectives judged to rank in the upper one-third as to criticality should be tested by a Progress/Comprehensive Knowledge Test. This is formal testing.

-Knowledge objectives judged to rank in the middle-to-
  lower one-third as to criticality may tested by having
  trainees answer questions on Job Sheets or other
  instruction sheets, such as Assignment Sheets. This is
  informal testing, in that the performance evaluation
  lacks the controls of formal testing.

-Knowledge objectives judged to rank in the middle-to-
  lower one-third as to criticality may also need to be
  tested to show the logic of the learning process. This
  can be accomplished by an informal quiz, or assigning
  problem sheets for evaluation.

• When completed, you will have one set of Knowledge LOs
  from which to build the tests.

NOTE:

See Addendum 8—B for an in-depth discussion of
knowledge test design.

3.3. Develop Knowledge Tests:

• Knowledge Test components are:

  • Knowledge Test Booklets.
  • Knowledge Test Administrator's Guide.

• Knowledge Test Item Formats are:

  • Multiple Choices.
  • True-False.
  • Matching.
  • Completion (e.g. labeling, short answer).
  • Essay.

• Test item construction:

  • Multiple—Choice:

    -Have a stem containing the problem statement.
    -A closed stem may either be written as a complete
     statement or as an incomplete statement.

-An open stem is an incomplete statement with the
 response positioned at the end of the statement.
-The EXCEPT format is not recommended but may be used in
 the stem if the word is capitalized or underlined.
-A list of possible answers (alternatives) which complete
 the stem or fill-in-the-blank within the stem.

- True—False:

  - Consists of a direct statement and either a true/false or
    a yes/no alternative.

- Matching:

  - Consists of directions to inform the trainee how to match
    the listed items. Normally has two columns listed below
    the directions with the questions/stimuli placed in the
    left-hand column and, answers/responses placed in the
    right- hand column.

- Completion:

  - These consist of incomplete statements, containing a
    blank-to-be-filled-in. The missing segment is an
    important part of the statement such as the key element
    of a process, an item of equipment.
  - The response is positioned at or near the end of the
    incomplete statement.
  - May also include diagrams with certain items in the
    diagram either highlighted or otherwise marked, with
    space provided for the response.

- Essay:

  - Must state clearly and precisely what type of response is
    required.

NOTE:

See Addendum 8—B for an in-depth discussion of knowledge
test development.

3.4. Develop Knowledge Test Administrator's Guide:

- Develop Test Booklet.

  - The Test Booklet contains test items and a test answer key. It is constructed from the test item bank and serves as a guide for development of later alternate versions of the test.
  - Indicate how many points will be added for correct responses or deducted for an incorrect response.

- Develop Instructions to the Administrator.

See Figure 8–7 for an example.

  - Prior to the start of testing:
  - How to prepare the test area.
  - Instructions for trainees.
  - Time limit allowed for testing.
  - Instructions for the administrator at test completion.

- At the completion of testing:

  - How to secure the test area.
  - How to review, evaluate, or critique the test and record the test results.

8–27

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                TEST INSTRUCTIONS FOR THE ADMINISTRATOR

1.  Prior to the start of testing:

    a.  Cover or remove all training aids that could assist the trainee in
answering test items.

    b.  Have trainees clear their desks of all unrelated testing material.

    c.  Inform the trainees of the test time limit(s), if any.

    d.  Provide pencils and scratch paper as necessary.

    e.  Read the test instructions to the trainees.

    f.  Provide reference documentation if applicable and any instructions
for its use.

    g.  Carry out any other local instructions as necessary.

2.  At the completion of testing:

    a.  Collect and inventory all testing material.

    b.  Check test for marks made by the trainees.

    c.  Review the test with the trainees.

    d.  Evaluate any test items challenged by the trainees.

    e.  Carry out any other local instructions as necessary.
```

FIGURE 8-7: SAMPLE INSTRUCTIONS FOR THE ADMINISTRATOR

- Develop Test Instructions to the Trainee, including:

  See Figure 8—8 for an example.

  - How to fill out answer sheet administrative data.
  - The consequences of cheating.
  - How to handle the test answer sheets and test support materials.

8-28

TEST INSTRUCTIONS TO THE TRAINEE

1. Print name, rating, rate, class number, and the date at the top of the answer sheet.

2. There will be no talking during the test nor are you permitted to leave your seat without permission. If you have a question, raise your hand and the administrator will come to you.

3. If you cheat during a test, your test booklet, answer sheet and all scratch paper will be confiscated. You will receive a zero as your grade. Disciplinary action will be taken.

4. Read each test item carefully. Choose the answer you believe to be correct. There is only one correct answer to every test item.

5. Darken the appropriate box on your answer sheet for each test item. If you wish to change your answer, circle the unwanted answer and darken in the appropriate box. (This instruction is included only when matching readable scoring sheets are used with true-false, multiple-choice and matching test items).

6. When you have finished the test, turn in the test booklet, answer sheet, and all scratch paper to the instructor. You may then quietly leave the room or remain at your seat while the proctor scores your answer sheet (if the test is not machine scored). There will be a complete review of the test.

7. If you have any questions regarding these instructions, notify the administrator immediately.

8. DO NOT WRITE OR MAKE ANY STRAY MARKS IN YOUR TEST BOOKLET.

FIGURE 8-8: SAMPLE KNOWLEDGE TEST INSTRUCTIONS TO THE TRAINEE

This concludes the discussion on Knowledge Test Design/Development. Remember; if you need more information see the Addendum 8-B on Knowledge Test Design/Development.

-   Develop Testing Plan:

-   The Testing Plan documents the test procedures for the course. A Testing Plan is required, but the content and format can vary. See NAVEDTRA 135(Series), Chapter 5 for information on developing a Testing Plan.
-   A representative sample of a Testing Plan is provided in Volume II of this manual.

SECTION 4 - PUTTING IT ALL TOGETHER

4. So Far

- You have developed a variety of documents that are associated with Testing and the Measurement of Trainee Achievement.
- These documents should include the following:

  - Performance Tests/Job Sheets.
  - Performance Test Administrator's Guide.
  - Knowledge Test Booklet.
  - Knowledge Test Administrator's Guide.
  - Performance/Knowledge Test Design (OPTIONAL).
  - Testing Plan.

> As you assemble each document, look at the related example in Volume II for required headings/information and overall document format.

4.1. Assemble Job Sheets: As per Chapter 7 and the Volume II example, plus:

- Security classification if applicable—must appear on the page.
- All knowledge test questions must meet the requirements for writing knowledge test questions.

4.2. Assemble Performance Test Administrator's Guide: The Guide consists of the following:

- Cover Page.
- Instructions to the Administrator.
- Evaluation Instrument.
- Grading Criteria.
- Instructions to the Trainee.
- Performance Record Sheet.

> This list of elements for the Administrator's Guide is comprehensive. They are not necessarily those elements which must be applied to every performance test.

_____

4.3. Cover Page: As per the Volume II example, plus:

- Security classification if applicable—must appear on the page.

4.4. Instructions to the Administrator: Provide, as appropriate:

- Consecutive page numbering beginning with Instructions to the Administrator.
- A brief description of the task to be performed.
- Instructions on any safety and other special precautions or procedures that may be applicable.
- Required tools, test equipment, and training material including the Job Sheets by title and number.
- Specific instructions describing how to set up the equipment or laboratory configuration.
- Specific instructions on what assistance the administrator may provide or any special tasks, steps, or actions the administrator is to perform and when.
- Instructions on the use of knowledge test-items (written and/or oral), if applicable.
- Guidance on the actions to be taken in the event that the trainee does not perform as anticipated.
- The allocated time limit for individual trainee tests and any effect time spent on the test has on the grade.
- Directions on when to present Instructions to the Trainee.

4.5. Evaluation Instrument: As per the Volume II example, plus:

- List and number the steps, or groups of steps, to be evaluated. This list will be consistent with the related Job Sheet.
- Step Description describes the type of instrument— checklist or rating scale and which steps are critical.
- Description of Errors describes the most common errors trainees might make in completing the step(s).

4.6. Grading Criteria: Provide a scoring guide that describes how each step or group of steps is to be graded.

4.7 . Instructions to the Trainee: Describe, as appropriate:
The test.

- Safety precautions which must be observed, with specific
  warnings about any unusual conditions that exist.
- An explanation of the job tasks to be performed and exactly
  what the trainee is required to do.
- The level of assistance permitted.
- Information on how the grade will be determined, including
  critical steps which may result in mandatory test failure.
- Allocated time for the test and its importance to the
  trainee's test grade.
- Relationship of the test to the performance objective being
  tested.
- The consequences of cheating.

4.8. Performance Record Sheet: Used for administrative
information, e. g., Abbreviated Social Security Number, class
number, beginning/ending test times, score, etc.

- If automated record keeping support is provided this sheet
  may not be required—see NAVEDTRA 135(Series).

NOTE: Student and Staff administrative records/files must be
guarded with current PPI Directives.

SECTION 5 – ASSEMBLE KNOWLEDGE TEST BOOKLET

5. The Booklet includes:

- Cover Page.
- Test Questions.
- Answer Sheets.
- All pages are numbered consecutively, following the Cover.

5.1. Cover Page: As per the Volume II example, plus:

- Security classification if applicable—must appear on the
  page.

5.2 Test Questions:

- All test questions should be numbered.

5.3. Answer Sheet:

Not required if the trainees are to enter their answers in the Test Booklet.

Required if the Test Booklets are reusable.

SECTION 6 - ASSEMBLE KNOWLEDGE TEST ADMINISTRATOR'S GUIDE

- The Guide consists of the following:

  - Consecutive page numbering beginning with Instructions to the Administrator.
  - Cover Page.
  - Instructions to the Administrator.
  - Evaluation Instrument.
  - Grading Criteria.
  - Instructions to the Trainee.

    > If all knowledge tests are administered alike only one Guide may be required. If each test or group of tests has unique requirements additional Administrator's Guides may be required.

6.1. Cover Page: As per the Volume II example, plus:

- Security classification if applicable—must appear on the page.

6.2. Instructions to the Administrator: As per the Volume II example, plus:

- Describe, for Prior to the Start of Testing, as appropriate.

  - How to prepare the test area.
  - Instructions for trainees.
  - Time limit allowed for testing.
  - A list of required materials, including manuals, equipment (i.e. calculators) scratches paper and answer sheets.

- Describe, for At the Completion of Testing, as appropriate.

- How to secure the test area.
- How to review, evaluate, or critique the test and record the test results.

8-33

6.3. Evaluation Instrument: As per the Volume II example, plus:

- The Answer Key will be prepared at the time the test is developed and becomes part of the Administrator's Guide.

or

- When a test is generated by randomly selecting test items from a Test Bank immediately prior to test administration the answer key will be prepared at the same time.

6.4. Grading Criteria: This consists of a scoring guide to describe how each question/group of questions is graded.

6.5. Instructions to the Trainee: This includes:

- A description of the test.
- Directions on how to fill out answer sheet's administrative data.
- Correct handling of test answer sheets and test support materials.
- The consequences of cheating.
- Time allocated for the test and its importance to the test grade.

SECTION 7 - ASSEMBLE TEST DESIGN

- Preparation and assembly of this document is optional, and at the discretion of the training activity.
- If criticality, level of learning and other criticality factors were arrived at by doing these tasks on paper, and /or other elements of the process were recorded as the decisions were being made, you may compile these documents as the Test Design.

SECTION 8 - ASSEMBLE TESTING PLAN

- See local directives for Testing Plan format and content requirements.
- A representative Testing Plan is shown in Volume II.

Note: For additional guidance see the following ADDENDA:

8-34

8-A: PERFORMANCE/KNOWLEDGE TEST DESIGN

8-B: KNOWLEDGE TEST ITEM DEVELOPMENT

8-C: GRADING CRITERIA FOR PERFORMANCE TESTS

_____

ADDENDUM 8-A

IN-DEPTH DISCUSSION

OF

PERFORMANCE/KNOWLEDGE TEST DESIGN

8-A-1

INTRODUCTION

Familiarity with the following terms associated with classification and types of tests will assist you in understanding this Chapter.

- Terms Associated with Developing Tests:

PERFORMANCE TYPES:	KNOWLEDGE TEST ITEMS:
Process	Multiple Choice
Product	True-False
Combination	Matching
	Completion
	Essay

- Terms Associated with Placement of Tests in the Course:

  - PERFORMANCE TESTS/KNOWLEDGE TESTS
  - Pretest
  - Progress Test
  - Quiz
  - Within-Course Comprehensive Test
  - Comprehensive Test (Post-test)

SECTION 1 - TEST DESIGN

1.1. Test Design is the process of determining:

- What will be tested and to what learning level.
- How it will be tested.
- When it will be tested.

1.2. The Process of Test Design requires that you:

- Determine objectives requiring formal testing.
- Decide what you are testing for.
- Determine appropriate type of test.

_____

- Determine test placement.
- Classify each test.
- General Guidelines for test administration.
- Develop Performance Test types.
- Develop Knowledge Test items.
- This is also the outline for this Addendum.

SECTION 2 - DETERMINE OBJECTIVES REQUIRING FORMAL TESTING

2.1. The following rules apply:

- All LOs must be measured.
- Formal testing of LOs may be accomplished by:

  - Testing each TO individually and none of its related EOs.
  - Testing the EOs which, as a group, equal the TO.
  - Testing a TO, or some part there of, and some of its supporting EOs.
  - Any combination of the above during the course.

- Informal measurement or testing of LOs may be accomplished by:

  - Class work or homework assignment.
  - Practical work supported by a Job Sheet.
  - Informal quiz.
  - EOs will be tested as necessary to ensure that the prerequisite skills/knowledge supporting the TOs is being acquired.

2.2. When you have completed this process: You will have one set of Performance LOs and one set of Knowledge LOs from which to build the tests.

2.3. The next step in the process of test design is:

- To take each Performance LO, one-by-one, and decide WHAT you will be testing for (a process or a product).
- When finished with these LOs you will then take each of the Knowledge LOs and, one-by-one, make a similar determination for them.

SECTION 3 - DECIDE WHAT YOU ARE TESTING FOR

8-A-3

3.1. What you test for can be a:

- Process (Performance)—Focus is on whether the trainee can correctly perform the steps of the procedure or process.
- Product (Performance)—Focus is on whether the trainee can produce or construct a product that meets specifications.
- Combination (Performance)—Focus is on both the correct performance of the procedural steps and construction of the product.

3.2. If operation/maintenance is to be taught: Most of the tests will probably be of the Process Type—This is because operation and maintenance revolves around the performance of step-by-step procedures.

3.3. If other duties/tasks are to be taught:

- Many of the tests will probably be of the Product Type—This is because many duty/tasks result in the making of a product. Yeoman and Personnel Specialist complete many different forms (products); Construction Electricians install electrical wiring and fixtures (products) and Builders construct buildings (products).
- Combinations (process and product) may also be prevalent. A Construction Mechanic overhauls an engine—the engine is the product but it is critical that an exacting process be followed in overhauling the engine.

SECTION 4 - SIMULATED OR ACTUAL EQUIPMENT PERFORMANCE

4. Performance Test Design also requires the developer to determine whether the trainee will demonstrate performance on the actual equipment or simulate equipment performance.

4.1. Use the actual equipment when: The objective requires product evaluation—simulation cannot be used because simulated performance does not generate the same product as does real-world performance.

4.2. Simulation may be required when:

- The performance objective behavior, condition, or standard required for on-the-job performance cannot be performed in the training environment.

- Testing constraints, such as the following, make it impossible to test the task as it is performed on the job:

  - Lack of equipment.
  - Insufficient instructor personnel.
  - Insufficient time for testing.
  - Risk to safety of personnel.
  - Risk of damage to equipment.

4.3. Simulation may be desirable because:

- Simulation offers distinct advantages over actual equipment usage in the training environment, such as:

  - Simulation may make it possible to save time, equipment wear and tear, or personnel usage.
  - Simulation may allow for more time to be spent on critical steps.
  - Simulated performance may be accomplished in less than "real time."
  - Simulated performance may allow less critical steps or equipment start-up time to be skipped.

- The simulator may allow more performance/diagnostic data to be recorded than can be obtained from real equipment.
- The simulator may allow "play back" so that trainees can critique their own performance.
- The simulator may allow for more standardization and control of the test situation.

> Through the process of Performance Test Design you should now be able to examine all Skill LOs of the course and determine those to be formally tested, those requiring informal testing, how each objective will be tested, and whether actual or simulated performance is most desirable.

4.4. Some of what you test for will likely be: Knowledge—Focus is on whether the trainee has acquired the necessary knowledge to do the process or product; understands the associated safety/hazard precautions; can use the technical documentation.

In extreme situations, a knowledge test may be used in place of a product, process, or combination performance test. This is permissible only when facilities/equipment/material will not allow a performance test.

However, it is permissible, and often desirable, to construct/administer a knowledge test that closely duplicates on paper performance of the process or construction of the product, or both.

4.5. When it comes to Knowledge Tests:

- WHAT will be greatly influenced by HOW the knowledge will be used on-the-job.
- You must also identify what Knowledge is critical to on-the-job performance, and build the tests around this knowledge.
- You should attempt to use a form of Knowledge Test that closely matches how the knowledge is used on-the-job.
- You will achieve these goals by determining the appropriate type of test for each Knowledge LO (you should have already done this for the Performance LOs, but if you encountered difficulty this next section will help you).

SECTION 5 - DETERMINE APPROPRIATE TEST TYPE

5.1. Recall that the test types are:

- PERFORMANCE—Process—Product—Combination;
- KNOWLEDGE—Multiple Choice—True—False—Matching— Completion—Essay.

5.2. Factors to consider:

- Behavior/Condition specified in the objective.
- Availability of equipment/training devices.
- Space availability.
- Number of trainees.
- Time required administering the test.
- Use/Adequacy of technical documentation.
- Aided or unaided performance.
- Individual, team or group performance.
- Philosophical considerations.

8-A-6

SECTION 6 - DISCUSSION OF THE IMPORTANT FACTORS

6.1. Behavior/Condition specified in the objective:

- These indicate what is to be tested and helps or vonstraints (Conditions) that will affect the test taker's performance.
- You must decide how best to test for the objectives' behavior/condition—your goal must be to match what is done on-the-job as closely as possible: Allow technical documentation use if done on-the-job; Test for knowledge of safety by recall/observance; Test for time if it is important on-the-job. Figure 8-A-1 provides guidance for matching behavior to the test and test item type.

Behavior	Performance	Multiple Choice	True-False	Matching	Completion	Essay
Product	×					
Process	×					
Combination	×					
Recognition		×	×	×		
Recall					×	×
Comprehension		×	×	×	×	×
Application		×	×	×	×	×
Analysis/ Synthesis/ Evaluation		×	×			×

FIGURE 8-A-1: BEHAVIOR TEST ITEM COMPARISON

6.2. Availability of equipment/training devices:

- Performance may be impossible because the equipment, or a training device, is not available. Try to construct, on paper, test situations that allow a judgment to be made as to the trainee's ability to perform—given the equipment.
- Paper troubleshooting problems and scenarios requiring written responses are particularly good. Better still, perhaps you can devise some means of simulating the desired performance. See the guidance presented earlier in this chapter.

8-A-7

- The number of training devices/equipment may be insufficient to allow for adequate practice, remediation, or testing. The suggestions given above apply here also. In either case, performance cannot be as good as desired if the trainees cannot be given sufficient time for practice and remediation.

6.3. Space availability: Available space for performance testing is limited. You may not be able to conduct as many performance tests as desired. Simulation or pencil and paper performance tests can alleviate this situation to some degree.

6.4. Number of trainees: Design the tests to accommodate the expected maximum Trainee loading.

6.5. Time required to administer the test:

- Performance Tests should constitute the major portion of testing time, in the absence of any of the above constraints—"major portion" means that the time devoted to performance testing falls within a range of 51% to 100% of testing time.
- Time required to set-up the test situation, time allocated for taking the test, reviewing and grading, should also be considered.
- However, the Course Master Schedule reflects only the time allocated for the trainee's taking and reviewing the test.

6.6 . Adequacy of technical documentation:

- All technical documentation must be reviewed by SMEs to determine if it is adequate to support performance.
- When technical documentation is inadequate, missing information or incomplete steps must be prepared and incorporated into the job sheets, evaluation guide, as well as an Information Sheet.

6.7. Aided or unaided performance:

- Analysis of each task will determine if the technical documentation must be available during the test— technical documentation should be provided if it will also be used during on-the-job performance of the task.

8-A-8

- Most performance objectives will require the use of the technical documentation during the test.
- When on-the-job performance of a task is without reference to technical documentation, the test must do likewise—with the following provision regarding safety:
- When trainee injury or equipment damage is a test possibility then prior to the test, a knowledge test must be given to ensure the procedural steps and safety precautions are committed to memory or his practice performance may be observed and a judgment made that the trainee is adequately prepared to take the performance test.

6.8.   Individual, team or group performance:

- When the trainee's on-the-job performance will be as a member of a team, the test must require the trainee to perform as a member of a team.
- When the trainees must qualify at each position on the team, then they must be tested in each position.

6.9.   Philosophical considerations:

- There must be a definite and valid reason for giving a test—this applies particularly to knowledge tests. A test will not be given for the sake of giving a test. Valid reasons for giving a test, particularly knowledge, include:

  - To reduce the possibility of Trainee injury and/or equipment damage—a knowledge test allows a judgment to be made that the trainee is adequately prepared for equipment performance.
  - To make a judgment as to whether the trainee is adequately prepared for the job at their next duty station.
  - For grading purposes, either final comprehension, or within-the-course.
  - To assign rank-order to a class of trainees.
  - For motivational purposes.
  - To ensure that trainees are doing/continue to do any homework assignments.

8-A-9

SECTION 7 - DETERMINE TEST PLACEMENT

- During Course Master Schedule development you made a best guess as to where tests would be administered in the course.
- You should now be at this point in curriculum development: Instructional sequence has been finalized; Lesson Topics have been developed; Allocation of instructional time for each lesson topic is firmed-up (as much as it can be prior to conducting the pilot course).
- There are a number of questions (see below) you should ask about each Lesson Topic or the course in general. Answering a question yes means a test is possible at that point in the course. When finished, you will have decided where to place each test in the course.

7.1. There are a number of questions (see below):

- Is there a need to determine what the trainee knows before presenting additional instruction?
- Is there a need to assess how well the trainee has learned the material just taught?
- Is there a need to determine if the trainee has acquired certain prerequisite skills or knowledge before being allowed to progress further in the course—particularly to the next Lesson Topic or go into a performance lab?
- Is there a need to determine that the trainee requires remedial instruction before being allowed to progress further in the course, or go to the laboratory?
- Is there a need to assess whether the material taught matches the objectives, especially the performance ones?

SECTION 8 - CLASSIFY EACH TEST

8.1 This requires that you decide each test's purpose:

- Pretest — Given at the beginning of the course or unit of instruction.

  - May be used to accelerate the course or unit of instruction. See NAVEDTRA 135(Series).
  - May be used to assess whether the trainee has the required prerequisite skills and knowledge needed to have a fair chance at passing the course.

8-A-10

- May be used, in conjunction with a post test, to determine how much learning has taken place.

- Progress Test — Given at different points within the course to assess trainee progress.

  - Frequently administered at the completion of a group of Lesson Topics, or a particularly lengthy Lesson Topic.

- Quiz — a short test, often devised by the instructor and used to assess understanding of recently taught material.

  - These tests, as a rule, are unscheduled and not part of the formal test program.

- Final Comprehensive Test — Given at the end of the course.

  - Used to measure mastery of the LOs particularly the critical performance LOs.

- Within-Course Comprehensive Test — Administered for longer courses when it is not practical to administer one final test.

> See NAVEDTRA 135(Series), Appendix B, for further discussion of test classification and uses.

SECTION 9 - GENERAL GUIDELINES FOR TEST ADMINISTRATION

9.1. The following information, along with that already compiled:

- Will further assist you in deciding how much time to devote to Performance and Knowledge Testing, where to locate each test within the course, and the purpose of each test (pretest, progress, Post-test, etc.).

9.2 In general, the following guidelines should be followed:

- Some type of test should be administered about every 40-50 periods of instruction.
- More frequent testing is warranted if critical skills or knowledge must be assessed before new skills are taught.

- Less frequent testing is appropriate when the trainee must be given the time to develop skills which can only be attained by laboratory practice sessions, or if significant preparation outside the classroom is required for proficiency.
- Tests are usually developed to assess mastery of a group of Lesson Topics, but may cover a single Lesson Topic, especially if the topic is a lengthy one.
- Time allowed for the administration of knowledge tests is usually limited to 10 percent of total instructional time.
- All tests should be sequenced so that the trainee has sufficient time to study the material before the test— As a rule, the minimum time provided should be at least one overnight period set aside for preparation.

SECTION 10 - DEVELOP PERFORMANCE TESTS/KNOWLEDGE TESTS

10.1. Performance tests are developed first:

- Process Performance Tests—measure well-defined steps which the trainee must integrate or sequentially perform for the process to be done correctly. They require the trainee to use a Job Sheet, and:

  - Demonstrate all important and essential steps and factors required for successful performance of the behavior.
  - Comply with safety precautions.
  - Utilize tools and equipment correctly.
  - Perform all steps within a given time frame.
  - Perform all steps while under the direct observation of the instructor.

- Product Performance Tests — place importance on the final product or result. They also require the trainee to use a Job Sheet. Examples are to:

  - Complete a form to be compared to a completed document.
  - Build/make an item, the dimensions of which will be measured against a standard/tolerance.

  - Build/make an item to perform a certain function.
  - Assemble/connect equipment to perform a certain function.
  - Finish the task within a given time.

8-A-12

- Combined Product and Process Tests—incorporate the requirements of each of the two types of tests described above.

10.2. Knowledge Tests are developed next:

- Knowledge Tests—Measure the trainee's knowledge or comprehension of certain facts or procedural steps:

  - Trainee answers may be oral or in writing.
  - The test items include: multiple-choice, true-false, matching, completion and essay items.
  - Knowledge test items, written to test a particular Topic, are assembled into a Test Item Bank.

10.3. Determine number of knowledge test items:

- There is no established formula for determining the most appropriate number of test items required to test any given topic learning objective. However, the below-listed guidelines are factors to consider:

  - Criticality of the objective. When both critical/less critical objectives are measured on the same test the critical objective(s) should have more items to ensure the test reflects the critical aspects of the course.
  - Instructional time allotted to present the material. For example, if the majority of the material covers one objective, then the majority of the tests items should cover that objective. This ensures that the emphasis on the test is the same as the emphasis in the classroom.
  - Complexity of the material. The more complex the material, the more test items required to ensure understanding.

10.4. Regardless of the type of question each will:

- Be keyed to the LO that it measures.
- Include the correct answer(s) and, when appropriate, the discussion points covered by the test question.
- Be marked if a critical question.

Note: Guidelines for developing knowledge test items are discussed in Addendum 8—B, which begins on the next page.

8-A-12

ADDENDUM 8-B

IN-DEPTH DISCUSSION

OF

KNOWLEDGE TEST DESIGN/DEVELOPMENT

SECTION 1 - KNOWLEDGE TESTS

1.1. Knowledge Tests are: Required to evaluate the trainee's ability to recognize, recall, or comprehend facts, procedures, rules, principles, or concepts that are required to perform a skill.

1.2. The following steps are required to develop knowledge tests:

- Determine level of learning required to test the objective.
- Refer to the number of test items required per objective, developed previously.
- Develop knowledge test items:

  - Multiple Choice.
  - True-False.
  - Matching.
  - Completion.
  - Essay.

- Oral versus written testing.
- Ensure appropriateness of test items.

SECTION 2 - REFER TO NUMBER OF TEST ITEMS REQUIRED

2.1. This step was completed earlier: But the information is needed now so you will know how many knowledge test items to develop for each objective.

2.2. Most of the remainder of this Addendum focuses on:

- How-to develop each of the five most-often used knowledge test item types, and a brief description as to the best use for each type of test item.
- Types of knowledge test items are:

  - Multiple Choice.
  - True False.
  - Matching.
  - Completion.
  - Essay.

- Each type will be discussed in the order listed above.

8-B-2

SECTION 3 - DEVELOP MULTIPLE CHOICE KNOWLEDGE TEST ITEMS

3.1. The multiple choice test item is:

- The most versatile of all knowledge test item formats. It can be used to test for all levels of knowledge except recall.
- A cardinal rule in test item development is to communicate effectively. Otherwise, the trainee must guess at what the test writer is asking—following the guidelines discussed in this section on multiple choice test writing will ensure effective communications between the trainee and test writer.

3.2. The multiple-choice test item consists of:

- A stem containing the problem statement.
- A list of possible answers, or alternatives.
- As a rule there are four alternatives, or possible answers— but, depending upon the nature of the content being tested, there can be more than or fewer than four possible alternatives.
- Only one alternative is the correct answer.

3.3. General Guidelines for Stem Construction:

- The stem must include all information, conditions, assumptions, and details required to correctly answer the question without requiring the trainee to refer to the alternatives.
- The stem should be phrased positively instead of negatively. If a negative must be used, it should be highlighted (in caps or underlined) so that the trainee will notice it and interpret the item correctly.
- Wording in the stem should be clear and unambiguous, so that only one answer is correct.
- Words, phrases, etc. that pertain to all alternatives must be included in the stem, rather than being repeated in the alternative.
- Information not essential to the interpretation of the test item must be omitted.
- If the test item uses an illustration on a separate sheet of paper, that illustration must be referenced in the stem by figure number.

8-B-3

- Test items in the form of questions must be complete sentences ending with a question mark.
- The completion position (blank) of an incomplete statement test item must be near or at the end of the stem.
- There should be only one completion position (blank) in a stem.
- Stems prepared in question forms are preferred over the incomplete statement form except when it would make the test item grammatically clumsy or difficult to understand.
- Test only one idea or central thought.

3.4 General Guidelines for Constructing Alternatives:

- The test item developer must exercise care when designing alternatives for the test items.
- Alternatives must be plausible but clearly incorrect and should fit well with the stem.
- The difficulty of the item will depend largely upon the alternatives.
- The more closely related the alternatives are, the more difficult it is for trainees to select the correct answer.
- A good rule is to develop alternatives based upon common misconceptions by trainees and inexperienced job incumbents.
- Alternatives may be prepared based on how trainees might incorrectly manipulate terms, symbols, etc.
- An additional rule is to look at the correct answer and determine how it may be made incorrect.

3.5. Specific Guidelines for Constructing Alternatives:

- The item must have only one correct answer.
- Alternatives should be closely related.
- Alternatives must be meaningful and not subject to automatic elimination by the trainees because they are irrelevant or unrelated to the question.
- Do not use interrelated answers, such as C is true if A and B are false.
- Use a vocabulary which is familiar or can be explained within the limits of the test item.

- All alternatives must be of approximately the same length and complexity.
- Do not use words such as always, never, etc.
- Do not use as alternatives — all of the above, none of the above.
- Express all alternatives in similar form.
- Avoid negative wording, which is confusing—however, if used, highlight negative wording by capitalizing, underlining or italicizing.
- Punctuation of alternatives must conform grammatically with the structure of the stem.
- When the stem is a question and the alternative is a complete sentence, begin the alternative with a capita letter and end it with a period.
- When the stem is a question and the alternative is an incomplete sentence, begin the alternative with a capital letter and end without a punctuation mark.
- When the stem is an incomplete sentence, with the response (blank) position at the end of the stem, begin the alternatives with lower case letters—except for proper nouns—and end with a period.
- When the stem is an incomplete sentence, each of the alternatives should be worded so that it forms a logical sentence when written into the incomplete position (blank).
- The position of the correct answer among the alternatives must be determined by a random selection process to avoid any patterns which may bias the test.
- For multiple-choice items that involve numerical answers the alternatives must be arranged in ascending or descending order.

3.6. Discussion of Types of Stems:

- Closed Stem—So-called because the stem begins with a capital letter and ends with a period or question mark; may take the form of:

  - Closed Stem as a Question.
  - Closed Stem as an Incomplete Statement.

- Open Stem—So-called because the stem is in the form of an incomplete statement with no ending punctuation (until the stem is completed by the alternative, which has the correct ending punctuation).

_____

3.7.   Examples of Closed Stem Test Items:

- Closed stem as a question:

  Which of the following actions is required to remove a
  hinged type 2 module on the MTRE Mk 7 Mod 2/4?

  (a)Disconnect plates from the type 2 module.
  (b)Insert "T" handle into quick release fasteners.
  (c)Remove all Type 3 modules and connectors.
  (d)Rotate hold down clamps to vertical position.

- Advantages/Disadvantages to closed stem as a question:

  - The stem must clearly state the problem.
  - The possibility of giving trainees grammatical clues is
    reduced.
  - However, lengthier alternatives (responses) may be
    required.

- Closed stem as an incomplete statement:

  The setting of the AN/ABC-3Q flip-flop.......indicates
  that intent-to-fire has been energized.

  (a) B43.
  (b) C2l.
  (c) C24.
  (d) D32.

- Advantages/Disadvantages to closed stem as an incomplete
  statement:

  - Note that the completion position appears within the stem
    and not at the end of the stem—Also that seven ellipses
    (periods) are always used to indicate where the
    incomplete portion of the stem lies.
  - This type is easier to write than the closed stem as a
    question format.
  - This type encourages memorization and the taking of test
    items verbatim from the material—Hence, use sparingly.

3.8 .   Example of Open Stem Test Item:

8-B-6

When crimping both a stranded wire and a solid wire in the same contact, the solid wire's position in relation to the stranded wire is _____.

(a) above.
(b) below.
(c) beside.
(d) diagonal.

- Advantages/Disadvantages to open stem test items: Note that the response position is always at the end of the statement, and that each alternative provides a logical conclusion to the stem.

  - Open Stem items are easier to write than closed stem test items.
  - There is a tendency to avoid thinking about the question before the alternatives are developed, resulting in illogical and unrelated alternatives.
  - The less similar alternatives are in content the easier it becomes for trainees to select the correct alternative.

3.9. Formats for Multiple Choice Test Items:

- Standard Format—Use this format when you just want the trainee to select the correct answer from among the four alternatives provided.
- Except Format—Use this format when you want the trainee to recognize the correct alternatives and select the one which is incorrect.

3.10. Example of Standard Format: This format is straightforward and easiest to develop.

3.11. KNOWLEDGE TEST.

- Example of Except Format:

  A specific torque pattern and associated torque values can be found in the SINS technical manual for all of the following assemblies or components EXCEPT _____.

  (a) an azimuth synchro assembly mounted to the stem.
  (b) a velocity meter mounted to the platform.

8-B-7

(c) a replacement gyroscope mounted to the stable platform.
(d) a platform stem mounted to the bedplate.

- The EXCEPT in the stem must always be capitalized, bolded, and underlined or italicized.
- Use this format sparingly.

3.12. Common Errors in Writing Multiple Choice Test Items:

- Using similar wording in both the stem and only the correct alternative. This suggests the correct answer
- Example — error underlined:

What is the purpose of the MARDAN maintenance test set?

(a) Monitors the C. P. operations.
(b) Furnishes power to MARANDA.
(c) Functions as a running time meter.
(d) Provides static <u>testing</u> of MARANDA.

- Stating the correct alternative in greater detail than the other alternatives. This often clues the correct answer.
- Example — error underlined:

When all weapon power is removed from the PIP, which of the following statements is true?

(a) All power is lost to the MCC equipment.
(b) The MCC equipment is furnished power from NAV via the MSR.
(c) The DCCs have heater power applied.
(d) <u>Power from the ship control center may be present in MCC since it only goes through the SHIP JP.</u>

- Using two or more alternatives with the same meaning. This eliminates them as useful alternatives and simplifies the choice.
- Example—error underlined:

What is the final step in performing post-maintenance checks?

8-B-8

(a) <u>Secure the front panel to the chassis</u>.
(b) <u>Make sure the front panel is secure</u>.
(c) Set manual test switch to "OFF."
(d) Rerun the diagnostic tests.

- Using alternatives that are included in other alternatives. This causes confusion for the trainee.
- Example—error underlined (note that alternative 2 includes alternative 1. Therefore, if alternative 2 is correct, then so is alternative 1):

  What is the operating time, in seconds, for the pressurization/ compensation blow valve to roll from shut to open?

  (a) <u>1 to 3</u>.
  (b) <u>1 to 4</u>.
  (c) <u>4 to 6</u>.
  (d) 9 to 11.

3.13. This concludes the discussion:

- Of how to develop Multiple Choice Test Items.
- Next, we will discuss how to develop True-False Test Items.

SECTION 4 - DEVELOP TRUE-FALSE KNOWLEDGE TEST ITEMS

4.1. True - false test item is:

- A two-response multiple-choice item that is used when only one plausible alternative to an item exists.
- The true-false test item's primary drawback is its susceptibility to guessing—The trainee has a 50% chance
- of responding correctly even though he does not know the correct answer.
- True-false items may be written to test recognition, comprehension, application, or evaluation.

4.2 Format of true-false test items is straightforward:

- The stem is a direct statement.
- The two alternatives are labeled a. True and b. False, or a. Yes and b. No, depending on whichever is most appropriate.

8-B-9

Example:

When placing the CA in stowage, CA temperature must be normal prior to securing heater power.

a. True.
b. False.

4.3. Construction of True-False Test Items:

- The stem (descriptive statement) must include all relevant information required to correctly answer the item.
- The stem must be concise and clear—The proposition to be judged as true or false must be evident.
- The identification (TRUE/FALSE) must precede the descriptive statement, or stem.
- A false statement must be consistent with a commonly held misconception.
- Specific determiners, such as: always, never, none, all, may, sometimes **will not be used**.
- Keep descriptive statements short—Long statements are harder to read and more difficult to judge true or false.
- When possible, state each item positively to minimize confusion.
- True-False test items will not be lifted verbatim from the curriculum.

4.4. This concludes the discussion:

- On developing true-false test items.
- Next we will discuss developing matching test items.

SECTION 5 - DEVELOP MATCHING KNOWLEDGE TEST ITEMS

5.1. Description and Use of matching test items:

- The matching test form consists of two lists containing related words, phrases, or symbols.
- The trainee is required to match elements on one list with associated elements on the other list according to specific instructions.
- The trainee pairs the elements in each list and records the answer.

8-B-10

- Matching test items are ideal for testing recognition but may also be used to test comprehension and application.

5.2. Format for Constructing Matching Test Items:

- The matching test item consists of directions and two columns listed below the directions stem.
- The directions explain how to match the items in the two columns.
- One column lists the questions or problems to be answered.
- The other column lists the answers.

Example:

DIRECTIONS: Using the FCDs in OP 1324, MATCH the circuit element listed in column B to the signal that it generates (column A).

Write the letter representing your answer in the blank to the left of each signal in column A. You may use a letter in column B once, more than once, or not at all.

COLUMN A   COLUMN B

1. ____DATA CHK NOT OK   a.   Bl0
2. ____DATA CHK OF   b.   B13
3. ____DRY RUN   c.   B16
4. ____EQ CONT RST 2   d.   B46
5. ____DATA CHK REQ   e.   B49
6. ____DATA CJJK ALM   f.   C30
                            g.   D56

5.3. Construction of Matching Test Items:

- The stem directions must clearly describe how the trainees are to match the question and the answer.
- Questions are always placed in the left-hand column—Answers are always placed in the right-hand column.
- When possible, the answer list should consist of single words, numbers, codes, symbols, short phrases, etc.
- All answers should appear to be related to the questions to help prevent elimination of unrelated answers.
- Directions must state how often the answers may be used.

- Arrange the answers in a logical order.
- Place the entire matching test item on one page.

5.4. This concludes the discussion:

- On developing matching test items.
- Next we will discuss developing completion knowledge test items.

SECTION 6 - DEVELOP COMPLETION KNOWLEDGE TEST ITEMS

6.1. The completion test item is:

- A free response test item type that requires the trainee to provide the missing information from memory, as compared to the recognition of information as per multiple choice, true-false and matching type test items.
- The completion test may also require the trainee to list a series of part names, procedural steps, etc. from memory.
- Another format of completion testing requires the labeling of a diagram from memory.

6.2. Advantages/Disadvantages of Completion Test Items:

- Guessing is minimized.
- This type of test item is easy to construct.
- Completion test items are useful in situations where trainees must write a computational equation, define terms, list part names and functions, etc.
- However, they are more difficult to score and must be accompanied by grading criteria.

6.3. Formats of Completion Test Items:

- Complete a statement by providing the missing word or phrase.

  Example:

  The station clock and time display tests check performance of the individual stages of the register designated.......

8-B-12

- State a definition or computational formula or define a term in response to a question.

  Example:

  What is the name of the unit which detects angular motion and supplies an output through precession?

- List a series of procedures, steps, etc. from memory — This test item may be written as a question or statement.

  Example:

  What are the steps in ordering DLR equipment?

6.4. Construction of Completion Test Items:

- Wording must be clear and comprehensive so that the trainee who is knowledgeable in the subject area can answer correctly.
- The missing segment of the incomplete statement must be important, such a key element of a process, piece of equipment, etc.
- Provide adequate space on the answer sheet for the response to be entered.
- Use a direct question to test for comprehension of technical terms or knowledge of definitions.
- Do not make the correct answer give away words which may be guessed by those who do not really know the information.
- Also, avoid giving grammatical or other cues which may indicate the correct answer.
- Avoid using statements taken directly from the curriculum.
- Develop grading criteria which lists all acceptable answers.
- For incomplete statement test items:

  - Do not omit so many words that the statement becomes unclear, forcing trainees to guess.
  - Place the response position near, or at the end of the stem—A response position near the beginning is harder to read and takes longer to answer.

6.5. This concludes the discussion on:

8-B-13

- How to develop completion test items.
- Next we will discuss essay test item development which is the last of the five types of knowledge items.

SECTION 7 - DEVELOP ESSAY KNOWLEDGE TEST ITEMS

7.1. Essay type test items:

- Require the trainee to answer a question with an original, written response.
- Are useful for testing one's ability to organize data and express thoughts clearly in writing.
- Require a relatively subjective scoring process since many factors may affect the correctness of a response.
- Must be scored by someone knowledgeable in the subject area, unless there is only one possible response.
- Are time consuming and difficult to score.

7.2. Construction of Essay Test Items:

- An essay question is especially useful for assessing learning of a comparatively large body of information as well as individual elements within that body.
- The test item must state clearly and precisely the type of response that is required.
- Limits for the response must be identified by specifying the points to be addressed — Limits include length of response and time allowed to respond.

  Example:

  Compare and contrast gas turbine and 1200 PSI propulsion plants. Your discussion should include descriptions of the major components of each system. Partial credit will be given.

7.3. Essay Test Items are useful for:

- Comparison or contrast of items and procedures.
- A decision for or against system or equipment operation.
- Relationships such as causes and effects.
- Illustration (sketch) of principles learned.

8-B-14

- Statement of purpose in selecting a method or technique.
- Criticism of the adequacy/correctness of a diagram or procedure.
- Discussion of primary, alternate, and/or emergency procedures.
- Explanation or definition of tasks.
- Observation from illustration or operation.
- Evaluation of the appropriateness of a procedure, technique, etc.

7.4. A Model Answer or Grading Criteria is required:

- The grading criteria should list all essential data a knowledgeable trainee can be expected to provide.
- The model answer/grading criteria are used as the standard answer by which all other answers are scored.
- They set the weight (value) of each item or part of an item.
- When to use oral tests and written tests follows.

SECTION 8 - ORAL VERSUS WRITTEN TESTING

8. Oral versus written Testing:

- Oral tests are best used when the trainee is exposed to this type of test on the job, such as propulsion engineering boards, safety reviews, and so forth. They are usually administered in a board type format with trainees responding to questions asked by a panel of evaluators.
- Written tests are of two types:

  - Open book tests evaluate a trainee's ability to locate and record information using technical documentation—They are used whenever the on-the-job situation requires the use of technical documentation.
  - Closed book tests are used when the knowledge being tested for is normally required on-the-job without reference to the technical documentation.

8.1. Factors may limit your choice of oral or written test:

8-B-15

- Trainee Instructor Ratio/Class Size — Oral Tests are not recommended if the trainee/instructor ratio exceeds 10/1 or class size is over 20, because of time constraints.
- Environmental Limitations—Written Tests are recommended when other trainees may overhear the test examiner or if there is excessive noise involved.
- Number and Format of Test Items—Written Tests are suggested if there are many test items or if they take the form of multiple choices or matching test items.

8.2. Next you will learn: How to determine if all of the many knowledge test items you have written meet standards for correctness.

SECTION 9 - ENSURE APPROPRIATENESS OF TEST ITEMS

9.1. SMEs should answer these questions for each test item:

- Is the item technically correct and is the correct response keyed?
- Does the item test the objective?
- Does the item test knowledge critical to the task associated with the objective?
- Is the item written to the appropriate learning level?
- If recognition, recall, or comprehension of the knowledge being tested is required for competent performance on-the-job, is the item a closed-book item?
- If the knowledge being tested is normally looked up during performance of on-the-job task(s), is the item an open - book test and is the essential technical documentation furnished?
- Are all words spelled correctly — is the grammar correct — does the item meet format construction guidelines?

9.2. If the answer is NO:

- To any of these questions, correct the discrepancy and try again to answer the question.
- Does each knowledge test item meet all criteria above?

9.3. This finishes the discussion of this Addendum:

- Go next to Addendum 8-C if you need to learn more about developing performance test grading criteria.

_____

ADDENDUM 8-C

IN-DEPTH DISCUSSION

OF

GRADING CRITERIA FOR PERFORMANCE TEST

SECTION 1 - GRADING CRITERIA—PURPOSE

- Grading criteria describe the standards by which the trainees will be measured and factors that will be considered in determining the trainee's grade on an individual performance or knowledge test/test item.

1.1. Use of grading criteria:

- They enable the instructor to determine whether or not an individual trainee, or team, has met the objective(s).
- Grading criteria provide for an unbiased and non-subjective evaluation of the trainee's ability with respect to a particular area of performance or knowledge.

1.2. Grading criteria for performance tests:

- YES/NO Checklist—Describe in detail what constitutes satisfactory and unsatisfactory performance:

  - For Process Testing—Describe the correct procedure, including the following:
  - Number of points each step or group of steps is worth.
  - Number of points to be deducted for specific errors.
  - Number of trials allowed per step or group of steps.
  - Procedural steps which, if performed improperly, cause trainee failure and test stoppage.
  - For Product Testing—Describe the characteristics of a good product, including:
  - Point value assigned each characteristic.
  - Number of points to be deducted for specific errors.
  - Number of trials allowed for each product.
  - Any omitted characteristic that is cause for failure.

- Rating Scale—Describe in detail how the trainees' grades will be determined.

1.3. Other important grading criteria factors:

- Compliance with required safety precautions.
- Correct operation of equipment after completed assembly.
- Physical testing of the finished job.
- Time required completing the job.

8-C-2

- Skill in using tools.
- Care and use of the equipment.

> The grading criteria should describe what the trainee
> is expected to do and what happens if the requirements
> are not met.

DEVELOP PHASE

CHAPTER 9

VISUAL INFORMATION

AND

INSTRUCTIONAL MEDIA MATERIAL

INTRODUCTION

In the previous chapters you were told how to develop and revise curriculum materials for new and existing courses. The output of those chapters was LESSON PLANS, TRAINEE GUIDES, and TEST PACKAGES. You are now ready to begin work on the Visual Information (VI) that supports the LESSON PLANS and TRAINEE GUIDES that you have already developed.

Additionally, information will be provided for developing the On-the-Job (OJT) Training Handbook, one form of Instructional Media Material (IMM). Note that VI, either singly or in combination with other VI, may be transformed into IMM by making it a self-supporting package.

Selecting VI materials always begins with a careful analysis of learning objectives to determine the most appropriate VI and ends with course promulgation. In this chapter, step-by-step procedures for the analysis of objectives, selection of the most appropriate VI product(s) based on the analysis, are outlined.

Production of VI materials, other than simple graphics and overhead transparencies, is seldom accomplished directly by in-house curriculum developers. This is because VI production is governed by detailed OPNAV and NETC instructions. VI products must be developed in accordance with the latest regulations. Your command's Video Information Manager will assist you in gathering information and completing required forms.

OPNAVINST 5290.3, SECNAV 5870.4A, and NETCINST 3140.1 defines the VI products exempt from production reporting requirements. Exemptions include graphics and overhead transparencies.

SCOPE

- Define types and applications of VI materials.
- Determine the need for VI materials.
- Determine the type(s) of VI materials which best support training.
- Explain the VI development process.
- Provide an overview of OJT Handbook development, one form of IMM.

DEFINITIONS:

- <u>Visual Information (VI)</u>. Use of one or more of the various visual media with or without sound. VI includes still and motion picture photography, video recording with or without sound, graphic arts, visual aids, models, displays, visual presentation services, and the support processes. (NETCINST 3104.1 and MILHDBK 29612-3A)
- <u>Instructional media materials (IMM)</u>. 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.

INFORMATION:

- VI materials are used to introduce, reinforce, or supplement training provided in the formal environment. They are primarily used in conjunction with a LESSON PLAN.

> Because of its wide range of applications and uses, INTERACTIVE COURSEWARE (ICW) is NOT addressed in this chapter as audio/visual media. MPT&E CIOSWIT-ILE-STD-1B and MPT&E CIOSWIT-ILE-Guide -3B addresses analysis, development, and application of ICW.

SECTION 1 - VI MATERIALS AND IN-HOUSE CURRICULUM DEVELOPERS

1. VI Materials and In-House Curriculum Developers:

- Because of the requirements of covering instructions, VI materials development is generally limited to simple transparencies and schoolhouse produced training aids.
- Complex transparencies requiring graphics arts services and VI products meeting the definition in current instructions need to be produce in accordance these directives.

1.1. Procedures for Selecting VI Materials

- Each item of VI material has its own unique application and contribution to learning. While some approaches are better than others, many factors must be considered by the curriculum developer when determining the type(s) of VI materials to be used for a given situation. Application, advantages, disadvantages, and cost for development and

9-3

maintenance must be considered in the selection process. However, the final VI item(s) selected should be that which, in the Curriculum Developer's judgment, best supports the learning objectives, based on an evaluation of the course.

> Development of professional-looking, instructionally effective VI materials is costly and time consuming. NAVEDTRACOM has been criticized for failure to properly manage VI production to reduce duplication of effort. Therefore, VI materials of greater complexity than what can be produced by in-house developers must adhere to the requirements of NETCINST 3104.1 and its supporting instructions. Use your initiative and imagination to identify and select appropriate VI materials; leave production to the professionals. "Free lance" VI production is definitely discouraged and may be contrary to regulations.

- VI materials selection and application has three basic components:

  - Needs Assessment. Evaluates learning objectives for a given Lesson Topic/Course to determine if VI support is required and, if a need is determined, which type(s) should be developed.
  - Development. Provides the necessary information needed to develop the selected type(s) of VI items to support given Learning Objectives.
  - Pilot. Evaluates all VI materials developed for a given Lesson Topic/Course in the actual training environment to determine accuracy and adequacy in support of the Learning Objectives. VI materials should be completed and available at the same time other course materials are ready for pilot.

- VI selection factors are discussed in the following paragraphs.

1.2. Needs Assessment. Follow the steps listed below to complete your VI materials Needs Assessment.

- Evaluate the LOs in a Lesson Topic using the questions below:

  - Would VI Aids enhance "Hands On" Training? (Skill enhancement)
  - Would VI Aids enhance understanding of the Learning Objective? (Knowledge enhancement)

Note: Continue with the following steps if you answered "Yes" to either of the above questions. A "No" response indicates VI materials may not be appropriate.

- Evaluate the LOs against the VI characteristics (applications, advantages, disadvantages and cost considerations) listed in the VI characteristics outline to determine the type(s) of VI which best supports the Learning Objective(s).
- Review LOs to determine if multiple learning objectives could be supported by a single VI item (such as a videotape or slide presentation).
- Select the next LOs and repeat the process until the VI Needs Assessment has been completed for each Lesson Topic.

1.3. VI Development. Other than creating simple transparencies and training aids within the capability of in-house developers, all development of VI products must comply with current directives. Because professional VI production is costly and takes time, early liaison with the command's VI Manager is essential.

SECTION 2 - VI CHARACTERISTICS TABLE

2. Audio Presentation: (Applications, advantages, disadvantages, and cost considerations).

2.1. Applications:

- When sound is critical to training.
- Large group instruction.
- Small group instruction.
- Individual instruction.
- May support a slide presentation.
- Augment other VI and IMM packages.

2.2. Advantages:

- Provide alternate information sources for trainees with low reading skill levels.
- Permit the rearrangement of sound materials through editing.
- Playback units can be small and portable.
- Tapes may be erased and reused.

9-5

2.3. Disadvantages:

- Susceptible to outside distraction if earphones are not
  used.

- Fixed rate of information flow; therefore, adjustments to
  learning rate are difficult.

2.4. Cost Considerations. When recordings are produced locally
with existing recorders the cost is very low. Audio tape
recorders/players are inexpensive.

2.5 Development Procedures. In accordance with NETCINST 3104.1.
See your command's VI Manager.

SECTION 3 - SLIDE PRESENTATION

3.1. Applications:

- Presentations consist of a series of 35mm slides which are
  developed to assist and supplement instruction by providing
  a sequential visual presentation of materials, ideas, or
  concepts.
- Present a complete subject within a self-contained package.
- May be programmed by a LESSON PLAN, audio cassette or other
  software.
- Supplement or reinforce discussion points within a topic.

3.2. Advantages:

- The full range of photographic techniques (stop action,
  selected depth of field, microphotography, air brushing,
  etc.) is available.
- Slide sequence may be rearranged easily to meet specific
  needs. Slide update is easily accomplished without
  extensive changes or expensive equipment.
- Slides can be made with any 35mm camera.
- The projected image can be seen by large groups.
- Can easily be produced by computer graphics packages.

3.3. Disadvantages:

- Full motion cannot be shown.

- For group use, the room must be partially darkened for good visibility.
- The instructor cannot provide additional visual data as with a transparency.

3.4. Cost Considerations. Individual slides are relatively inexpensive to produce. The major cost of slide presentations is development of the Audio-Visual concept of the program itself. Transparencies and other single visual media do not require the planning and coordination necessary to build an entire slide presentation.

3.5. Development Procedures. In accordance with NETCINST 3104.1. See your command's VI Manager.

SECTION 4 - TRANSPARENCY AND DIGITAL STILLS

4.1. Applications. Transparencies and digital stills are the most frequently used VI aid in support of instruction. Discussed here are basic transparencies containing text and graphics can be developed on most desktop computers and produced on office reproduction equipment. A threshold is reached when the services of graphics arts is required (engine cutaway drawings, hydraulic flow diagrams, etc). Take the time to have your ideas expressed in a professional-looking product by your VI support personnel.

- Assist and supplement instruction by providing a visual presentation to the trainees.
- Supplement, do not replace, the spoken word.
- Present one central idea with maximum clarity and simplicity.

4.2. Advantages:

- Easy to prepare.
- If you have a copy machine, you can make transparencies.
- Easy to revise and re-sequence.
- Require few environmental adjustments.
- Require an overhead projector and appropriate PC software per format of digital stills.

4.3. Disadvantages:

9-7

- Very few.
- In large quantities, may be difficult to use and store.

4.4. Cost Considerations. Simple text and graphics transparencies and digital stills are an inexpensive medium. Development and implementation costs are relatively low because of the minimal expense of the materials utilized. Maintenance and duplication are relatively inexpensive.

4.5. Development Procedures. OPNAVINST 3104.1, Encl (1), para. 7 defines the VI products exempt from production reporting requirements. Exemptions include graphics and overhead transparencies. Development of transparencies is accomplished by any means available to the developer.

SECTION 5 - VIDEO TAPES/DIGITAL MEDIA

5.1. Applications: Provide one of the best means of conveying an idea or series of ideas where complex or dangerous operations or motion must be presented. Video tapes/video media can be provided as stand-alone.

- May be programmed or specialized presentations, depending on the need and conditions surrounding the training.
- Designed to support a central theme by developing several major points into a continuous flow of information.
- Generally do not require any specific programming however, where applicable, they may be programmed from LESSON PLANS.
- Designed to support a central idea by developing several major points into a continuous flow of information.
- Present one or a related series of segments, each designed to illustrate a single concept or idea.
- Developed when motion or a complex operation is difficult to present using transparencies or other conventional media.

5.2. Advantages:

- The immediate search and playback capabilities permit greater utilization of the learning effort.
- Familiarity of the average trainee with the equipment minimizes distracting novelty effects.
- Video Tapes/digital media are relatively inexpensive to duplicate, either one time or in large quantity.

9-8

- Provide alternate information channels for trainees with low reading skills.
- Provide continuity of action, showing events as they actually occur.
- "Front seats" can be provided. Demonstrations can be shown, using all necessary equipment, showing all of the
- actual steps. Everything can be shown at the right angle, aspect, and speed for the best analysis and learning.
- Skills can be learned by watching a task performed on film and subsequently practicing the task.
- Dangerous or expensive procedures can be shown.

5.3. Disadvantages:

- Tape size and format differences make video tapes incompatible with some types of video playback equipment.
- Playback units/systems are expensive.

5.4. Cost Considerations. Development of high quality videotaped studio productions requires a large and highly skilled staff. As technology continues to grow, better results are being obtained using hand-held cameras and mobile studios. Original productions require a significant amount of preliminary design work long before actual taping begins.

5.5. Development Procedures. In accordance with NETCINST 3104.1. See your command's VI Manager.

SECTION 6 - WALL CHARTS (WC)

6.1. Applications:

- Used much like transparencies to assist and supplement instruction by providing a visual presentation to the trainees.
- Programmed by the Related Instructor Activity (RIA) column of the LESSON PLAN.

    - Directs the Instructor to provide information while addressing the Wall Chart as a visual to amplify the information being presented.

- In general, Wall Charts:

9-9

- Supplement, do not replace, the instructor.
- Focus rather than divert attention.
- Present one central idea with maximum clarity and simplicity.
- Can be used to provide visual support to more than one discussion point.

6.2. Advantages:

- Require fewer environmental adjustments than projected visuals.
- Not dependent upon availability and operability of projection equipment.

6.3. Disadvantages:

- Rely heavily on the effectiveness of the instructor.
- May contain too much detail.
- In large quantities, more difficult to use and store in comparison to projected visuals.
- Relatively long lead time for revision.

6.4. Cost Considerations. WCs are primarily an inexpensive medium. Development and implementation costs are relatively low because of the minimal expense of the materials utilized. Maintenance and duplication are relatively inexpensive.

6.5. Development Procedures. In accordance with NETCINST 3104.1. See your command's VI Manager.

SECTION 7 - INSTRUCTIONAL MEDIA MATERIAL (IMM) ON-THE-JOB TRAINING (OJT) HANDBOOK

7.1. Information. For our purposes, IMM is considered to be "stand alone" instructional packages. The OJT Handbook is the most common, and is the IMM most commonly produced by in-house curriculum developers. IMM can:

- Provide training for which formal schools have a lack of equipment, space, time, or instructors.
- Provide training that may be used for remedial or accelerated instruction.
- Provide prerequisite training for advanced courses.

9-10

- Fill gaps in training that occur within or between courses.
- Provide instruction in subjects which are difficult to present in the lecture environment or skills which cannot be performed in the laboratory environment.
- Generate/maintain trainee interest in a Lesson Topic.

7.2. Applications:

- Consists of a single lesson or a series of lessons designed to support selected learning objectives.
- In effect, a self-study learning package.
- Requires little or no assistance to complete.
- May use support materials such as audio tapes, slides or videotapes as part of the presentation.
- Can be used as stand-alone training or remedial training

7.3. Advantages:

- Each trainee can proceed at a rate in accordance with his/her particular abilities.
- Training may be accomplished at convenient times and places.
- Topics can be repeated or restudied as desired or required.
- Difficulty and level of training may be adapted to varying trainee populations.
- Cost per trainee is quite low, if throughput is high and content stable.

7.4. Disadvantages:

- Long development time.
- Rely heavily on the reading ability of the trainee.
- Hard to ensure configuration control.

7.5. Cost Considerations. The initial cost for development, including writing and piloting OJT Handbooks may be higher than other printed materials. Maintenance costs depend on the revision requirements, but will normally be higher than for other materials. When augmented by audio and/or visuals, development and maintenance costs are even higher.

SEE ADDENDUM 9-A FOR DEVELOPMENT PROCEDURES.

SECTION 8 - SUMMARY

Development of the appropriate VI materials and IMM starts when all Learning Objectives for the course have been evaluated and the type or types of instructional support have been selected. VI materials, other than simple transparencies that can be developed locally, require liaison with the command's VI Manager. A step-by-step procedure for the development of the OJT Handbook form of IMM is included in this chapter. All VI materials and IMM are piloted to determine if the Learning Objectives are adequately supported.

ADDENDUM 9-A

ON-THE-JOB TRAINING HANDBOOK

SECTION 1 - DEVELOPMENT

STEP 1. VISUALIZE OBJECTIVES. Before an OJT Handbook can be developed, the overall goal or theme must be established. The developer must determine what ideas or concepts should be learned and develop the OJT Handbook to enforce these ideas or concepts. If Learning Objectives do not currently exist, refer to Chapters 3, 4 and 5 of this manual for analysis and development procedures prior to continuing.

- Evaluate Learning Objectives and determine the overall goal or theme of the OJT Handbook.
- Evaluate Learning Objectives for key elements that need support materials to illustrate overall goal or theme.
- Determine the support materials needed to illustrate key elements.

STEP 2. DEVELOP OJT HANDBOOK OUTLINE:

- List the Learning Objectives of the OJT Handbook in a logical teaching sequence.
- The Learning Objectives should now be arranged into logical groupings of knowledge and/or skills.
- These groupings provide the outline for the lessons in the OJT Handbook.

STEP 3. DEVELOP LESSONS. Materials are developed for the lessons identified in STEP 2 of this procedure. They are designed to meet specific knowledge and/or skill requirements as called for in the Learning Objectives. Each lesson should be designed so that an average trainee can complete the lesson within 20 to 45 minutes. Generally, lessons consist of the following elements:

- LEARNING OBJECTIVES: Provide a list of the objectives that will be accomplished upon completion of the OJT Handbook.

- LESSON PRETEST

  - For lessons which have a knowledge requirement.
  - Designed to identify weaknesses in the trainee's knowledge of the lesson Learning Objectives.

9-A-2

- The results of the Lesson Pretest are used to direct trainees to specific study assignments to correct the identified weaknesses.
- Use the procedures for Test Item Development contained in Chapter 8 of this manual.
- One question per Learning Objective should be the minimum.
- Include an evaluation procedure to help the trainee develop a personalized study plan for the lesson. Include directions on where to locate the answers to the pretest.

- ASSIGNMENT SHEETS Contain the following:

  - Introduction. States the purpose of the assignment.
  - Learning Objectives. List the objectives that will be accomplished upon completion of the assignment.
  - Related Materials. List all materials not contained in the OJT Handbook but required to complete the lesson.
  - Study Assignments. Contains a listing of study assignments relating to each Lesson Pretest question and instructions for completing each study assignment.

- INFORMATION SHEETS:

  - Develop when the information needed to complete the OJT Handbook is not found in sources available to the trainee or if the available information is inadequate to meet the goals of the lesson.
  - Use the same procedures as development of an Information Sheet for a TRAINEE GUIDE. See Chapter 7 of this manual.

- WORK SHEETS:

  - Assign knowledge skill or physical skill tasks for the trainee to perform.
  - Can be used as the lesson itself or as part of the lesson.
  - Contain the following elements:
  - Introduction. States the purpose of the worksheet and lists the Learning Objectives to be met by the lesson.
  - Related Materials. List all materials not contained in the OJT Handbook but required to complete the lesson.
  - Equipment. List all equipment to which the trainee must have access in order to complete the work sheet.

9-A-3

_____

- Work Assignments Instructions. Direct the trainee to proceed to the next OJT Handbook element upon completion of the assigned tasks or to postpone the tasks if the equipment and/or supervision are not available.
- Tasks Paragraph. Lists the work assignments which may involve the use of a system, subsystem and/or equipment in conjunction with standard operation and maintenance procedures or may direct the trainee to exercise mental skills.

- END-OF-LESSON TESTS:

  - Each lesson concludes with an End-of-Lesson Test. The test contains instructions directing the trainee through the test and on to the next OJT Handbook element upon successful completion.
  - Use the procedures for Test Item Development contained in Chapter 8 of this manual.
  - Include questions that directly correspond to the lesson Learning Objectives AND questions asked on the Lesson Pretest.

- ANSWER SHEETS:

  - Develop for both the Lesson Pretest and the End-of-Lesson Test.
  - Designed to provide immediate feedback to the trainee.
  - May consist of a separate blank question form with a corresponding list of answers.

> VI used as supporting materials for an OJT Handbook is developed using the procedures contained in the VI portion of this Chapter.

STEP 4. DEVELOP FRONT MATTER:

- Designed to introduce and describe the contents of the OJT Handbook.
- Consists of the following elements:

  - Title Page. Lists the title and other identifying information for the OJT Handbook.
  - Contents Page. Lists the lesson subject titles and the beginning page numbers for each element of the lessons.

9-A-4

- Introduction. Informs the trainee of the purpose of the OJT Handbook, approximate completion time, OJT Handbook Learning Objectives, recommended prerequisites, and safety and/or security requirements associated with the OJT Handbook. Additionally, the introduction provides a description of each element of the OJT Handbook and any related materials needed to complete the OJT Handbook.

STEP 5. ASSEMBLE OJT HANDBOOK. When all materials have been developed, the OJT Handbook is assembled into a single document following the outline developed in STEP 2 of this procedure.

STEP 6. REVIEW OJT HANDBOOK

- Review OJT Handbook to verify that:
- Content is technically accurate. This should be done by a SME.
- The overall goal or theme of the OJT Handbook has been met.
- The key elements that needed illustration have been supported by other IMM.
- Detail of the OJT Handbook is at the same level and depth as the Learning Objective(s) being supported.
- Classification markings are appropriate.
- Lesson sequence supports the OJT Handbook outline.
- Each knowledge lesson Learning Objective is tested on the Lesson Pretest.
- Each question on the Lesson Pretest has a corresponding question on the End-of-Lesson Test.

PILOT COURSE DEVELOP PHASE

CHAPTER 10

PILOT AND IMPLEMENTATION APPROVAL

INTRODUCTION

In previous chapters, the products of the Plan, Analyze, Design, and Develop Phases have been created and assembled. In this chapter, the products are presented as a full length course of instruction, conducted at a Navy School by Navy instructors — a pilot. The output of a successful pilot is approval of the Curriculum Materials for implementation.

SCOPE

- Provide an understanding of the process of validating curriculum materials.
- Explain the terms which apply to the pilot and implementation.
- Describe the step-by-step procedures for piloting Curriculum Materials.

SECTION 1 - PILOT

A pilot is defined as the first full length course conducted at a Navy school, by Navy instructors, using the Curriculum and Supporting Training Materials prepared specifically for that course. The purpose is to validate the Curriculum and Materials, and to determine trainee effectiveness in attaining the Course Objective(s).

> Piloted COI enrolled student population are actual trainees, not conducted with available staff in lieu of trainees.

1.1. Implementation. At the conclusion of the course pilot, and after corrections indicated by the pilot have been incorporated into the course material, the course is implemented by issuance of a Letter of Promulgation by the CCA. Formal training commences at all designated sites.

1.2. Pilot Procedures:

- Volume III, Chapter 6 provides detailed information on conducting a course pilot trial and subsequent implementation.
- The procedures of Volume III, Chapter 6 are generally applicable to pilot convenes of contractor-developed courses.

10-2

1.3.   Implementation Procedures:

- A pilot serves to validate a Curriculum and its Supporting
  Materials. The Pilot Course Develop Phase includes formal
  approval of the course for instruction and placing it on
  line.

  - Revise the material as indicated by pilot.
  - CCA issues Letter of Promulgation.

- Following implementation, emphasis shifts to training
  course management and curriculum maintenance — the subjects
  of NAVEDTRA 135(Series).

LIST OF ACRONYMS

AAC	Acquisition Advice Code
AG/SAG	Activity Group/Sub-Activity Group
AIM	Authoring Instructional Materials
AIM I	PPP Based Authoring Tool (Legacy)
AIM II	Task Based Authoring Tool (Legacy)
AOB	Average On Board
ASVAB	Armed Services Vocational Aptitude Battery
BCA	Business Case Analysis
CAGE	Commercial and Government Entity Code
CAIMS	Conventional Ammunition Integrated Management System
CANTRAC	Catalog of Navy Training Courses
CARIS	Corporate Automated Resource Information System
CCA	Curriculum Control Authority
CCMM	Course Curriculum Model Manager
CDP	Course Data Processing
CeTARS	Corporate enterprise Training Activity Resource System
CIN	Course Identification Number
CM	Corrective Maintenance
CMS	Course Master Schedule
CNP	Chief of Naval Personnel
COG/NIIN/SMIC	Cognizance Code/National Item Identification Number/Special Material Identification Code
CPATS	CNET Program Automated Tracking System
CPM	Content Planning Module
CTTL	Course Training Task List
DDA	Discussion-Demonstration Activity
DOD	Department of Defense
DOR	Drop On Request
DP	Discussion Point
DSOT	Daily System Operating Test
EO	Enabling Objective
FAL	Fault Applicability List
FEA	Front End Analysis
ICW	Interactive Courseware
IETM	Interactive Electronic Technical Manual
ILE	Integrated Learning Environment
IMI	Interactive Multimedia Instruction
IMM	Instructional Media Material
ISD	Instructional Systems Design
ITRO	Interservice Training Review Organization
JDTA	Job Duty Task Analysis
JTI	Job Task Inventory

A-1

KM	Knowledge Management
LC	Learning Center
LO	Learning Objective
LOM	Learning Object Module
LP	Lesson Plan
LS	Learning Site
LSAR	Logistics Support Activity Record
LSO	Learning Standards Officer
MCRF	Master Course Reference File
MILCON	Military Contract
NALC	Navy Ammunition Logistics Code
NCMR	Navy Curriculum Materials Repository
NEC	Navy Enlisted Classification
NETC	Naval Education and Training Command
NETPDTC	Naval Education Training Professional Development and Technology Center
NITRAS	Navy Integrated Training Resources Administration System
NKO	Navy Knowledge Online
NOBC	Navy Officer Billet Classification
NPC	Navy Personnel Command
NTFS	Navy Training Feedback System
NTSP	Navy Training Systems Plan
O&MN	Operation and Maintenance Navy
OCCSTD	Occupational Standard
OJT	On-The-Job Training
PADDIE	Plan, Analyze, Design, Develop, Implement and Evaluate
PM	Preventive Maintenance
POA&M	Plan of Action and Milestones
POM	Program Objective Memorandum
PPP	Personnel Performance Profile
PQS	Personnel Qualification Standard
RIA	Related Instructor Activity
RIT	Revolution in Training
RRL	Resource Requirements Listing
SM&R	Source, Maintenance, and Recoverability
SME	Subject Matter Expert
SYSCOM	Systems Command
TA	Training Agency
TCCD	Training Course Control Document
TDSR	Training Decision Summary Report
TG	Trainee Guide
TO	Terminal Objective
TPP	Training Project Plan
TSA	Training Support Agency

TTE	Technical Training Equipment
TTO	Training Time Out
VI	Visual Information
WC	Wall Charts

Naval Education and Training Command

NAVEDTRA 130B
September 2009

Support Manual for MIL-HDBK-29612-2A

TASK BASED
CURRICULUM DEVELOPMENT MANUAL
VOLUME II SAMPLE PRODUCTS

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

DEPARTMENT OF THE NAVY
NAVAL EDUCATION AND TRAINING COMMAND
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PENSACOLA, FL 32508

1500
Ser N00/ 337
AUG 13 2009

LETTER OF PROMULGATION FOR NAVEDTRA 130B

1. This guidance manual has been extensively revised. Most of the revisions are in response to user comments and reflect a continuing effort to increase the manual's utility to the training field. NAVEDTRA 130B, Volumes I-III, supersedes and replaces NAVEDTRA 130A, dated July 1997.

2. The procedures in this manual follow a Task Based Curriculum Development method. This manual is intended for use by military, civil service, and contractor personnel engaged in Navy training materials development and modification.

3. Procedural guidance for development of training materials following a Personnel Performance Profile based method is published in NAVEDTRA 131 (Series).

4. This publication is available electronically at: Navy Knowledge Online (NKO) - NETC N74 Learning Standards Homepage; and Navy Marine Corps Intranet's (NMCI) Total Records and Information Management (TRIM).

5. Corrections and comments concerning this manual are invited and should be addressed to the Naval Education and Training Command, attention: N7.

6. Reviewed and approved.

G. R. JONES

PUBLISHED BY DIRECTION OF COMMANDER NAVAL EDUCATION AND TRAINING

TAB A-1

TRAINING PROJECT PLAN

TRAINING PROJECT PLAN

FOR

NAVY SCUBA DIVER

A-433-0023A

PREPARED FOR

DIRECTOR, LEARNING AND DEVELOPMENT (NETC N7)
9549 BAINBRIDGE AVE
NORFOLK, VIRGINIA 23511-2612

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

SEPTEMBER 2009

TRAINING PROJECT PLAN

TABLE OF CONTENTS

TRAINING PROJECT PLAN

A. <u>COURSE DATA</u>

<u>**CIN**</u>:   A-433-0023A   ___   ___X___   _____
                                New   Revision Cancel

<u>**CDP (s)**</u>:   <u>**Training Site (s)**</u>:

1. 087R   Mobile Diving and Salvage Unit Two
            Little Creek, Virginia 23521

2. 031Y   Naval Amphibious School Coronado,
            California 92155

*3. 6419   Naval Diving and Salvage Training Center
            Panama City, Florida 32407

 4. 2114   Naval Submarine Training Center, Pacific
            Pearl Harbor, Hawaii 96860

(* = Course Curriculum Model Manager)

<u>**Training Type**</u>:   C

> Note: Training types would include A, C, F, T, etc… Training type amplification can be found within NAVEDTRA 135B.

<u>**Work Center**</u>:   NA

> Note: This identifies area of responsibility within a Learning Center/Site. Not used in all Learning Centers/Sites.

<u>Course Mission Statement</u>: The SCUBA Diver course is designed to provide qualified personnel with the basic training necessary to qualify as a SCUBA diver, perform as a dive team member to plan and conduct open circuit SCUBA diving operations including inspection of major hull components. Diving operations includes underwater searches, underwater maintenance and preparation of records and reports. Conduct initial treatment of diving related injuries. Inspection and maintenance is performed on open circuit SCUBA equipment and accessories along with charging of SCUBA cylinders. Day and night diving operations will be conducted from a shore installation and open water to a qualification depth of 130 FSW.

(1)

A-1-4

Occupational Classification/Prerequisites: NEC 5345/There
is no prior training prerequisites for this course. Service
and physical requirements are in CANTRAC.

Course Overview:

Instruction includes:

Diving physics and medicine.
Buoyant and free ascent procedures.
Underwater search procedures.
Work techniques using open circuit SCUBA.
Graduates are qualified to a maximum depth of 130 feet.

Learning Site(s) Summary:

1. Mobile Diving Course and Salvage Unit Two

	Course Length	Class Capacity	Class Convenings	AVG OnBoard	Student Throughput
Current:	26	18	7	8.98	126
Planned:	0	0	0	0.00	0

2. Naval Amphibious School

	Course Length	Class Capacity	Class Convenings	AVG OnBoard	Student Throughput
Current:	26	25	8	14.25	200
Planned:	0	0	0	0.00	0

3. Naval Diving and Salvage Training Center

	Course Length	Class Capacity	Class Convenings	AVG OnBoard	Student Throughput
Current:	26	25	9	16.03	225
Planned:	40	25	13	35.62	325

4. Naval Submarine Training Center, Pacific

	Course Length	Class Capacity	Class Convenings	AVG OnBoard	Student Throughput
Current:	26	25	7	12.47	175
Planned:	40	25	12	32.88	300

NOTE: Course Length is in calendar days. "Current" course
length is frequently extended by several calendar days at all
sites due to bottlenecks caused by training sections exceeding
the number of authorized instructors.

(2)

A-1-5

> **NOTE TO READER**: The information provided in this sample TPP has been constructed to illustrate the requirements of this manual and governing instruction. It is based on the SCUBA course but does <u>not</u> represent the actual course.

B. <u>**JUSTIFICATION**</u>:

1. Reference: None.

2. Reason for revision: A course revision is required to support changes to Team Member/SCUBA Diver procedures including:

   a. Modifications in sea rescue procedures and equipment needs.

   b. Increased safety requirements mandated for sea divers and operators/maintainers.

   c. Requirements to reduce maintenance problems with diving equipment.

   d. Due to service downsizing annual student throughput will decrease from 726 to 625. This course will be cancelled at:

      Amphibious School, Coronado
      Mobile Diving and Salvage Unit Two

   e. Course length at the two remaining sites will be increased from 26 calendar days to 40 calendar days to support the increased training requirements.

   f. The current course at all sites has excessive "bottleneck" periods due to instructor shortfalls. Qualified instructors must frequently be borrowed from other courses to minimize bottlenecks. The revised course will support an adequate number of instructors to eliminate bottlenecks in training.

3. Change directives:

   a. OPNAV ltr Ser 4321 of 1 September 1989.

(4)

A-1-6

b.   NAVSAFECEN bulletin 8790 of 13 October 1989.

c.   FLETAP report C89-08.

d.   NETPDTC Training Importance Survey "U.S. Navy Diver"

4.   Summary of Differences: This course will be cancelled at Amphibious School, Coronado and Mobile Diving and Salvage Unit Two.

5.   Impact If Not Approved:

Continuation with the existing course, while shorter and with a greater annual throughput, means teaching maintenance of new SCUBA equipment in a cursory manner. Also, less time spent in the water, lessening the proficiency of graduates.

Given the hazardous nature of this occupation, this places graduates at serious risk, and places the burden of expanded training in the unstructured OJT environment. Extended graduation dates due to course bottlenecks will continue to negatively impact the Navy's Individuals Account.

C.   SAFETY RISKS AND HAZARDOUS MATERIALS:

This course will be designated as high risk in accordance with NETCINST 5100.1. Special emphasis must be placed on strict compliance with published safety precautions and on personal awareness of potentially hazardous conditions peculiar to diving. All personnel must have a comprehensive knowledge of emergency procedures which prescribe courses of action to be followed in the event of equipment failure or human error. Strict adherence to approved and verified operating, emergency, and maintenance procedures is MANDATORY. As a minimum, each individual is responsible for knowing, understanding, and observing all applicable precautions.

D.   CURRICULUM DEVELOPMENT METHOD:

1.   The following documents will be developed in support of this course in accordance with NAVEDTRA 130B.
2.   The documents that will be produced for this course will be as follows:

(5)

A-1-7

     a.   Training Project Plan.

     b.   Training Task List.

     c.   Training Course Control Document.

     d.   Lesson Plan.

     e.   Trainee Guide.

     f.   Knowledge/Performance Tests and Administrator's Guides.

     g.   Instructional Media Materials.

     h.   Testing Plan.

3.   The primary mode of instruction:

The primary mode of instruction will be group-paced consisting mainly of lecture, in-water, and land laboratory periods with practical problem solving experiences. The trainees will be guided by the instructors during problem solving sessions to allow maximum acquisition of knowledge and skills.

(6)

A-1-8

E.   RESOURCE REQUIREMENTS:

SITE: MOBILE DIVING AND SALVAGE UNIT TWO
CPATS Document #: None - Non NETC activity
Cost Account Code: None

Manpower

	FY2009	FY2010	FY2011	FY2012	FY2013
Officer Billets Required	1	1	0	0	0
Billets Authorized	1	1	1	1	1
Billets Compensated	0	0	0	0	0
Billets Available	1	0	1	1	1
Delta	0	0	1	1	1
Enlisted Billets Required	3	3	0	0	0
Billets Authorized	3	3	3	3	3
Billets Compensated	0	0	3	3	3
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0

NOTE: Enlisted billets compensated reflects course cancellation at this site in FY2011 and reassignment of instructors to NAVDIVESALVTRACEN.

	FY2009	FY2010	FY2011	FY2012	FY2013
Civilian Billets Required	0	0	0	0	0
Billets Authorized	0	0	0	0	0
Billets Compensated	0	0	0	0	0
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0

| OPN | F3/FF | D | $0 | $0 | $0 | $0 | $0 |

(7)

A-1-9

Training Equipment

Funding

Approp	AG/SAG	Expense	FY2009	FY2010	FY2011	FY2012	FY2013
OMN	F3/FF	E	$0	$0	$0	$0	$0

Facilities: No additional MILCON requirements, special projects renovations, or base operations support required to cancel this course at MOBDIVSALVU TWO.

SITE: MOBILE DIVING AND SALVAGE UNIT TWO

Site Consideration: Currently, this site has adequate equipment to support a class size of 18 plus 3 instructors. Upon cancellation of the course at Mobile Diving and Salvage Unit Two all equipment will be available for redistribution to NAVDIVESALVTRACEN and NAVSUBTRACENPAC.

Publications

No.	Number	Title	Supplier	QTY REQ'D	QTY O/H	QTY Short
1.	AIG-239	Diver's Advisory		25	25	0
2.	OPNAVINST 3150.28	Diving Log		150	150	0
3.	NA	Equipment PMS		1	0	1
4.	NA	Equipment technical/maintenance manuals		1	0	1
5.	NAVSEAINST 10560.2C	Instruction		1	0	1
6.	OPNAVISNT 5102.1C	Instruction		1	0	1
7.	SS-710AA-MMO-010	Life Preserver, Mk 4		1	0	1
8.	NAVSEA 10560.2A	List of Approved Diving Equipment		25	25	0
9.	NA	Locally prepared job sheets		1	0	1
10.	NA	NAVSHIPS Technical Manual		1	0	1
11.	BUPERS Manual	Navy Military Personnel Command Manual		1	0	1
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat		3	3	0
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	NAVSEA 0994-LP-001-9010	25	25	0
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	NAVSHIPS 0994-007-8010	25	25	0
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	NAVSHIPS 0994-007-8010	30	0	30
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	NAVSHIPS 0901-LP-081-0010	25	25	0

NOTE TO READER: This is a representation of publications available for redistribution.

(8)

A-1-10

Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		25	49	0	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		25	25	0	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		25	53	0	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		25	24	1	ea	$147.00			NAVSEAINST 10560.2

> **NOTE TO READER**: No Training Materials required. Course will be cancelled at this site before the revised curriculum is implemented.

(9)

A-1-11

SITE: NAVAL AMPHIBIOUS SCHOOL
CPATS Document #: 91 63018 63018 S332/89 64018 63018/2156
Cost Account Code: 5WBC

Manpower

	FY2009	FY2010	FY2011	FY2012	FY2013
Officer Billets Required	1	1	0	0	0
Billets Authorized	1	1	1	1	1
Billets Compensated	0	0	0	0	0
Billets Available	0	0	1	1	0
Delta	0	0	1	1	1
Enlisted Billets Required	5	5	0	0	0
Billets Authorized	5	5	5	5	5
Billets Compensated	0	0	5	5	5
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0

NOTE: Enlisted billets compensated reflects course cancellation at this site in FY2011 and reassignment of instructors to NAVSUBTRACENPAC.

	FY2009	FY2010	FY2011	FY2012	FY2013
Civilian Billets Required	0	0	0	0	0
Billets Authorized	0	0	0	0	0
Billets Compensated	0	0	0	0	0
Billets Available					
Delta	0	0	0	0	0

Funding

Approp	AG/SAG	Expense	FY2009	FY2010	FY2011	FY2012	FY2013
OMN	F3/FF	E	$0	$0	$0	$0	$0
OPN	F3/FF	D	$0	$0	$0	$0	$0

Facilities

Special Projects 90-03-801 equipment storage space renovation - $17.5K.

(10)

A-1-12

SITE: NAVAL AMPHIBIOUS SCHOOL

Site Consideration:

Currently, with a class size of 25 plus 5 instructors there is insufficient equipment. However, class size has not exceeded 18. Upon cancellation of this course at all of the Naval Amphibious schools, training equipment will be available for redistribution to NAVDIVESALVTRACEN and NAVSUBTRACENPAC.

Publications

No.	Number	Title	Supplier	QTY REQ'D	QTY O/H	QTY Short
1.	AIG-239	Diver's Advisory		1	1	0
2.	OPNAVINST 3150.28	Diving Log		400	400	0
3.	NA	Equipment PMS		1	0	1
4.	NA	Equipment technical/maintenance manuals		1	0	1
5.	NAVSEAINST 10560.2C	Instruction		1	0	1
6.	OPNAVISNT 5102.1C	Instruction		1	0	1
7.	SS-710AA-MMO-010	Life Preserver, Mk 4		65	65	1
8.	NAVSEA 10560.2A	List of Approved Diving Equipment		45	45	0
9.	NA	Locally prepared job sheets		1	0	1
10.	NA	NAVSHIPS Technical Manual		1	0	1
11.	BUPERS Manual	Navy Military Personnel Command Manual		1	0	1
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat		1	1	0
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	NAVSEA 0994-LP-001-9010	50	50	0
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	NAVSHIPS 0994-007-8010	50	50	0
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	NAVSHIPS 0994-007-8010	30	0	30
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	NAVSHIPS 0901-LP-081-0010	50	50	0

> **NOTE TO READER**: This us a representation of publications available for redistribution.

(11)

A-1-13

Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		34	34	0	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		34	28	6	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		34	27	7	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		34	28	6	ea	$147.00			NAVSEAINST 10560.2

NOTE TO READER: This is only a representation of the equipment available for redistribution.

NOTE TO READER: No Training Materials required. Course will be cancelled at this site before the revised curriculum is implemented.

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(12)

A-1-14

SITE: NAVAL DIVING AND SALVAGE TRAINING CENTER
CPATS Document #: 91 63190 63190 C108A
Cost Account Code: 5PPQ

Manpower

	FY2009	FY2010	FY2011	FY2012	FY2013
Billets Required	1	1	1	1	1
Billets Authorized	1	1	1	1	1
Billets Compensated	0	0	0	0	0
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0
Enlisted Billets Required	6	6	16	16	16
Billets Authorized	6	6	6	6	6
Billets Compensated	0	0	3	3	3
Billets Available	0	0	0	0	0
Delta	0	0	-7	-7	-7

NOTE: Three compensated billets come from redistribution of
Mobile Diving and Salvage Unit Two manpower assets upon
course cancellation. NAVDIVESALVTRACEN can provide no
compensation billets.

	FY2009	FY2010	FY2011	FY2012	FY2013
Civilian Billets Required	0	0	0	0	0
Billets Authorized	0	0	0	0	0
Billets Compensated	0	0	0	0	0
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0

Funding

Approp	AG/SAG	Expense	FY2009	FY2010	FY2011	FY2012	FY2013
OMN	F3/FF	E	$0	$0	$0	$0	$0
OPN	F3/FF	D	$0	$0	$0	$0	$0

Facilities

No additional MILCON requirements, special projects
renovations, or base operations support required.

(13)

A-1-15

SITE: NAVAL DIVING AND SALVAGE TRAINING CENTER

Site Consideration:

Training equipment numbers are based on a projected class size of 25, 16 instructors, plus spares. The redistribution of usable equipment made available by the cancellation of this course at Amphibious Base, Coronado, and Mobile Diving and Salvage Unit Two will help reduce shortages.

Training Materials numbers are based on 16 instructors, and a student load of 325/yr.

Films

No.	Designator	Title	Running Time	QTY REQ'D	QTY O/H	QTY Short
1.	F0600-AA-PP-89	Navy SCUBA Diver Safety	30 Minutes	2	0	2

Publications

No.	Number	Title	Supplier	QTY REQ'D	QTY O/H	QTY Short
1.	AIG-239	Diver's Advisory		16	6	10
2.	OPNAVINST 3150.28	Diving Log		400	250	150
3.	NA	Equipment PMS		1	0	1
4.	NA	Equipment technical/maintenance manuals		1	0	1
5.	NAVSEAINST 10560.2C	Instruction		1	0	1
6.	OPNAVISNT 5102.1C	Instruction		1	0	1
7.	SS-710AA-MMO-010	Life Preserver, Mk 4		30	40	0
8.	NAVSEA 10560.2A	List of Approved Diving Equipment		30	30	0
9.	NA	Locally prepared job sheets		1	0	1
10.	NA	NAVSHIPS Technical Manual		1	0	1
11.	BUPERS Manual	Navy Military Personnel Command Manual		1	0	1
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat		20	25	0
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	NAVSEA 0994-LP-001-9010	30	25	5
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	NAVSHIPS 0994-007-8010	30	30	0
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	NAVSHIPS 0994-007-8010	30	0	30
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	NAVSHIPS 0901-LP-081-0010	30	30	0

(14)

A-1-16

Slides

No.	Title	Number	Source	QTY REQ'D	QTY O/H	QTY Short
1.	Underwater Search Equipment	1-1	NAVDIVSALVTRACEN	2	0	2

Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		50	25	25	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		50	24	26	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		50	27	23	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		50	26	25	ea	$147.00			NAVSEAINST 10560.2

Training Materials

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Knowledge Test Administrators Guide				20	0	20	ea				
2.	Lesson Plan				20	0	20	ea				
3.	Peformance Test Administrators Guide				20	0	20	ea				
4.	Trainee Guide				400	0	400	ea				

Transparencies

No.	Title	Number	Graphic Description	QTY REQ'D	QTY O/H	QTY Short
1.	Underwater Hull Cleaning	Bot Scr Prod		2	0	2

NOTE TO READER: This is only a representation of the types of equipment and materials which would be listed under Training Equipment and Training Materials.

(15)

A-1-17

VI Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Chalk Board(Portable)	Manuf. P/N	Open Purchase		10	0	10	ea	$38.00			
2.	Overhead Projector	Manuf. P/N	Open Purchase		5	0	5	ea	$150.00			
3.	Slide Projector, 35mm	Manuf. P/N	Open Purchase		5	0	5	ea	$165.00			

Videos

No.	Designator	Title	Running Time	QTY REQ'D	QTY O/H	QTY Short
1.	DP-49	Charging SCUBA Cylinders	30 Minutes	2	0	2

(16)

A-1-18

SITE: NAVAL SUBMARINE TRAINING CENTER, PACIFIC
CPATS Document #: 90 63154 63154 Y2943
Cost Account Code: 5PBB

Manpower

	FY2009	FY2010	FY2011	FY2012	FY2013
Officer Billets Required	1	1	1	1	1
Billets Authorized	1	1	1	1	1
Billets Compensated	0	0	0	0	0
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0
Enlisted Billets Required	5	5	14	14	14
Billets Authorized	0	0	5	5	5
Billets Compensated	0	0	5	5	5
Billets Available	0	0	0	0	0
Delta	0	0	-4	-4	-4

NOTE: Compensated billets come from redistribution of Naval
Amphibious School manpower assets upon course cancellation at
that site. NAVSUBTRACENPAC can provide no compensation
billets.

	FY2009	FY2010	FY2011	FY2012	FY2013
Civilian Billets Required	0	0	0	0	0
Billets Authorized	0	0	0	0	0
Billets Compensated	0	0	0	0	0
Billets Available	0	0	0	0	0
Delta	0	0	0	0	0

Funding

Approp	AG/SAG	Expense	FY2009	FY2010	FY2011	FY2012	FY2013
OMN	F3/FF	E	$0	$0	$0	$0	$0
OPN	F3/FF	D	$0	$0	$0	$0	$0

Facilities

No additional MILCON requirements, special projects
renovations, or base operations support required.

(17)

SITE: NAVAL SUBMARINE TRAINING CENTER

Site Consideration:

With a current class size of 25 plus 6 instructors, equipment is adequate. For a projected class size of 25 plus 14 instructors, additional SCUBA cylinders, MK4 life preservers, and wrist compasses are needed. Some equipment will be available from the redistribution of equipment due to course cancellations at Naval Amphibious School and Mobile Diving and Salvage Unit Two.

Training Materials numbers are based on 14 instructors, and a student load of 300/yr.

Films

No.	Designator	Title	Running Time	QTY REQ'D	QTY O/H	QTY Short
1.	F0600-AA-PP-89	Navy SCUBA Diver Safety	30 Minutes	2	0	2

Publications

No.	Number	Title	Supplier	QTY REQ'D	QTY O/H	QTY Short
1.	AIG-239	Diver's Advisory		15	5	10
2.	OPNAVINST 3150.28	Diving Log		400	200	200
3.	NA	Equipment PMS		1	0	1
4.	NA	Equipment technical/maintenance manuals		1	0	1
5.	NAVSEAINST 10560.2C	Instruction		1	0	1
6.	OPNAVISNT 5102.1C	Instruction		1	0	1
7.	SS-710AA-MMO-010	Life Preserver, Mk 4		30	30	0
8.	NAVSEA 10560.2A	List of Approved Diving Equipment		30	30	0
9.	NA	Locally prepared job sheets		1	0	1
10.	NA	NAVSHIPS Technical Manual		1	0	1
11.	BUPERS Manual	Navy Military Personnel Command Manual		1	0	1
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat		15	5	10
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	NAVSEA 0994-LP-001-9010	30	30	0
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	NAVSHIPS 0994-007-8010	30	30	0
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	NAVSHIPS 0994-007-8010	30	0	30
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	NAVSHIPS 0901-LP-081-0010	30	30	0

(18)

A-1-20

> **NOTE TO READER**: This is only a representation of the types of publications which would be listed under Publications.

Slides

No.	Title	Number	Source	QTY REQ'D	QTY O/H	QTY Short
1.	Underwater Search Equipment	1-1	NAVDIVSALVTRACEN	2	0	2

Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		50	48	2	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		50	40	10	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		50	52	0	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		50	47	3	ea	$147.00			NAVSEAINST 10560.2

> **NOTE TO READER**: This is only a representation of the types of equipment which would be listed under Training Equipment.

Training Materials

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Knowledge Test Administrators Guide				20	0	20	ea				
2.	Lesson Plan				20	0	20	ea				
3.	Peformance Test Administrators Guide				20	0	20	ea				
4.	Trainee Guide				400	0	400	ea				

> **NOTE TO READER**: This is only a representation of the types of equipment which would be listed under Training Materials.

(19)

A-1-21

Transparencies

No.	Title	Number	Graphic Description	QTY REQ'D	QTY O/H	QTY Short
1.	Underwater Hull Cleaning	Bot Scr Prod		2	0	2

VI Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	QTY O/H	QTY Short	U/I	Unit Cost	CAGES Code	M&R Code	Technical Reference
1.	Chalk Board(Portable)	Manuf. P/N	Open Purchase		10	0	10	ea	$38.00			
2.	Overhead Projector	Manuf. P/N	Open Purchase		5	0	5	ea	$150.00			
3.	Slide Projector, 35mm	Manuf. P/N	Open Purchase		5	0	5	ea	$165.00			

Videos

No.	Designator	Title	Running Time	QTY REQ'D	QTY O/H	QTY Short
1.	DP-49	Charging SCUBA Cylinders	30 Minutes	2	0	2

F. COMPENSATION

Manpower	Number/Type Billets	Source of Compensation	Shortfall
MOBILE DIVING AND SALVAGE UNIT TWO	3 Enlisted instructor	A-433-0023 cancelled at this site	
NAVAL AMPHIBIOUS SCHOOL	5 Enlisted instructor	A-433-0023 cancelled at this site	
NAVAL DIVING AND SALVAGE TRAINING CENTER	3 Enlisted instructor	MOBDIVSALU TWO	7
NAVAL SUBMARINE TRAINING CENTER PACIFIC	5 Enlisted instructor	NAVPHIBSCOL	4

(20)

A-1-22

Funding	Dollar Amount	Source of Compensation	Shortfall
MOBILE DIVING AND SALVAGE UNIT TWO	$0.00	None	$0.00
NAVAL AMPHIBIOUS SCHOOLS	$0.00	None	$0.00
NAVAL DIVING AND SALVAGE TRAINING CENTER	$0.00	None	$0.00
NAVAL SUBMARINE TRAINING CENTER PACFIC	$0.00	None	$0.00

G. MILESTONES

Milestone	Date Start	Date Complete
1. Approval of Training Project Plan.		27 Nov 2008
2. Develop Course Training Task List.	25 Oct 2008	14 Nov 2008
3. Develop Training Course Control Document.	14 Nov 2008	14 May 2009
4. Approval of Training Course Control Document.		16 Jun 2009
5. Develop Curriculum and Support Material.	14 May 2009	14 Dec 2009
6. Request authorization to conduct pilot.		14 Dec 2009
7. Conduct Pilot.	16 Mar 2010	15 May 2010
8. Submit Pilot Course Monitoring Report and Red Line Copy.		15 Jun 2010
9. Issue Letter of Promulgation.		22 Jun 2010
10. Incorporate changes.	15 Jun 2010	14 Aug 2010
11. Distribute Print Master to Training Sites.		14 Aug 2010

(21)

A-1-22

Milestone	Date Start	Date Complete
12. Instructor Certification/Personalization.	14 Aug 2010	07 Sept 2010
13. Implementation of Training Program. Cancel courses at Mobile Diving and Salvage Unit Two and Naval Amphibious School.	10 Sept 2010	

(23)

A-1-23

TAB A-2

COURSE TRAINING TASK LIST

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

Course Mission Statement: The SCUBA Diver course is designed to provide qualified personnel with the basic training necessary to qualify as a SCUBA diver, perform as a dive team member to plan and conduct open circuit SCUBA diving operations including inspection of major hull components. Diving operations includes underwater searches, underwater maintenance and preparation of records and reports. Conduct initial treatment of diving related injuries. Inspection and maintenance is performed on open circuit SCUBA equipment and accessories along with charging of SCUBA cylinders.   Day and night diving operations will be conducted from a shore installation and open water to a qualification depth of 130 FSW.

No	Source	Duty/Task	Level
1.	Navy Military Personnel Command Manual, BUPERS Manual	**QUALIFY AS A SCUBA DIVER**	S
2.	Navy Military Personnel Command Manual, BUPERS Manual	MEET SCUBA diver physical conditioning level	S
3.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	SELECT SCUBA diver equipment for qualification dives	S
4.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COMPLY with SCUBA diving safety requirements	S
5.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**PREPARE DIVING RECORDS**	S
6.	Instruction, OPNAVINST 5102.1C	COMPLETE diving mishap	S
7.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COMPLETE individual diving log report and diver's personal dive log	S
8.	Instruction, NAVSEAINST 10560.2C	VERIFY approval for service diving equipment	S
9.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PREPARE custody records for for diving equipment (NAVPERS Form 601-13)	K
10.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**COMPLY WITH DIVING ACTIVITY AIR SAMPLING PROGRAM REQUIREMENTS**	K

A-2-2

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

No	Source	Duty/Task	Level
11.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PREPARE Air Sampling Kit data sheet	S
12.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	SUBMIT Air Sampling Kit data sheet	K
13.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COLLECT ambient air samples	S
14.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COLLECT source air samples	S
15.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COMPLY with purity standards for divers breathing air	K
16.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COMPLY with periodicity and conditions for air source sampling	K
17.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**PLAN OPEN CIRCUIT SCUBA DIVING OPERATIONS**	S
18.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Select open circuit SCUBA equipment and related underwater accessories	S
19.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Plan for effects of undersea environment on light, heat and sound	K
20.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	CONVERT English and Metric systems of measurement	K
21.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Plan for the effect of buoyancy and pressure	K
22.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Plan for the effects of waterborne pressure	K
23.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Plan for the reaction of gases to changes in temperature, volume, and pressure	K
24.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	CHART decompression dives	K
25.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	CHART repetitive dives	K
26.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	CHART dives in extremely cold environment	K

A-2-3

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

No	Source	Duty/Task	Level
27.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	ESTABLISH minimum personnel required by function	K
28.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	COMPLY with working limits	K
29.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	UTILIZE tides, depth, and current information	K
30.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	IDENTIFY considerations that effect dive planning	K
31.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PLAN for emergency procedures	K
32.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**PERFORM OPEN CIRCUIT SCUBA DIVE**	S
33.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM donning gear procedures	S
34.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM water entries and exits	S
35.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM buddy breathing	S
36.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM buoyancy control	S
37.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM ditch and don equipment	S
38.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM emergency recovery	S
39.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM free and buoyant ascent	S
40.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM surface swim with fins	S
41.	Locally prepared job sheets, NA	PERFORM work on mechanical Projects	S
42.	Locally prepared job sheets, NA	PERFORM compass swim	S
43.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**PERFORM UNDERWATER SEARCH**	K

A-2-4

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

No	Source	Duty/Task	Level
44.	U.S. Navy Diving Manual, Volume 1, NAVSEA NMD; And Underwater Work Techniques Vol. 1, NAVSEA UWT	PERFORM circling line search	K
45.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	PERFORM linear search	K
46.	Underwater Work Techniques, Vol. 1, NAVSEA UWT	PERFORM jackstay search	K
47.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	APPLY pull signals	K
48.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	APPLY SCUBA hand signals	K
49.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**PERFORM INITIAL TREATMENT FOR DIVING ACCIDENTS AND INJURIES**	K
50.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	RECOGNIZE the physiology of the respiratory and circulatory systems	K
51.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	ADMINISTER adult CPR	K
52.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Remove foreign body airway obstructions	K
53.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	Diagnose pressure and non-pressure related injuries	K
54.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	RECOGNIZE dangerous marine life	K
55.	U.S Navy Diving Manual, Volume 1, NAVSEA NDM	RECOGNIZE injuries caused by specific dangerous marine life	K
56.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	APPLY first aid for injuries received from dangerous marine life	K
57.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	OBSERVE precautionary procedures for dealing with dangerous marine life	K

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

No	Source	Duty/Task	Level
58.	Equipment PMS, NA	**PERFORM INSPECTION AND MAINTENANCE ON OPEN CIRCUIT SCUBA EQUIPMENT AND REALTED UNDERWATER ACCESSORIES**	S
59.	Equipment PMS, NA	PERFORM periodic and/or required inspections and maintenance	S
60.	Equipment technical/ maintenance manuals, NA	ASSEMBLE/DISASSEMBLE open circuit SCUBA equipment and related accessories	S
61.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	**CHARGE OPEN CIRCUIT SCUBA EQUIPMENT**	S
62.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	APPLY General Gas Laws when SCUBA charging SCUBA cylinders	K
63.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	APPLY safety procedures	S
64.	U.S. Navy Diving Manual, Volume 1, NAVSEA NDM	CHARGE SCUBA cylinders	S
65.	NAVSHIPS Technical Manual, NA; and Underwater Work Techniques, Vol 2 NAVSHIPS UWT	**CONDUCT INSPECTION OF MAJOR HULL COMPONENTS**	S
66.	NAVSHIPS Technical Manual, NA; and Underwater Work Techniques, Vol 2, NAVSHIPS UWT	LOCATE major components of ship's hull	K
67.	NAVSHIPS Technical Manual, NA	LOCATE fouling areas of ship's hull	K
68.	NAVSHIPS Technical Manual, NA	IDENTIFY progressive fouling patterns of underwater growth on ship's hull	K
69.	NAVSHIPS Technical Manual, NA	APPLY fouling rating scale	K
70.	NAVSHIPS Technical Manual, NA; and Underwater Work Techniques, Vol 2, NAVSHIPS UWT	CONDUCT day inspection of ship's hull	S

COURSE TRAINING TASK LIST (CTTL)

NAVY SCUBA DIVER

A-433-0023A

No	Source	Duty/Task	Level
72.	NAVSHIPS Technical Manual, NA; and Underwater Report Work Techniques, Vol. 2, NAVSHIPS UWT	PREPARE ship's hull inspection	S
73.	NAVSHIPS Technical Manual, NA; and Underwater Work Techniques Manual, Volume 2, Part 2	APPLY safety precautions related to ship's hull inspections	S

NOTE: Statements in **all bold** represent a **DUTY**. All other statements represent supporting tasks.

TAB A-3

TRAINING COURSE CONTROL DOCUMENT

TRAINING COURSE CONTROL DOCUMENT

FOR

NAVY SCUBA DIVER

A-433-0023A

PREPARED FOR

DIRECTOR, LEARNING AND DEVELOPMENT (NETC N7)
9549 BAINBRIDGE AVE
NORFOLK, VIRGINIA 23511-2612

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

OCTOBER 2008

TRAINING COURSE CONTROL DOCUMENT

LETTER OF PROMULGATION

Note to developer: The Letter of Promulgation
will be added after the CCA has approved the
course for implementation.   It may also be
automated in AIM after all steps have been
completed.

TRAINING COURSE CONTROL DOCUMENT

SUMMARY OF DIFFERENCES

None.

(1)

A-3-4

TRAINING COURSE CONTROL DOCUMENT

TABLE OF CONTENTS

<u>**Contents**</u>   <u>**Page**</u>

(2)

A-3-5

TRAINING COURSE CONTROL DOCUMENT

FOREWORD

This course is designed to teach the knowledge and skills needed to perform basic SCUBA diver tasks. The course was previously taught at four sites: Naval Amphibious School, Coronado; Naval Submarine Training Center, Pearl Harbor; Mobile Diving and Salvage Unit Two, Little Creek and Naval Diving and Salvage Training Center, Panama City. In FY 09 this course will be canceled at the Amphibious School and Mobile Diving and Salvage Unit Two. Manpower and equipment resources from the canceled sites will be redistributed to the remaining two sites. This TCCD describes the revised training program at Naval Submarine Training Center, Pearl Harbor and Naval Diving and Salvage Training center, Panama City.

Panama City is the only site with a diving tower. This impacts on the number of instructors and course length between the two sites. However, adjustments have been made for periods and ratios, and overall course length is the same for both sites.

(3)

A-3-6

TRAINING COURSE CONTROL DOCUMENT

COURSE DATA

Course Title:

    NAVY SCUBA DIVER

Course Identification Number (CIN):

    A-433-0023A

Training Type:

    NA

Course Data Processing Code (CDP) by Site:	CDP
1. MOBILE DIVING AND SALVAGE UNIT TWO	087R
2. NAVAL AMPHIBIOUS SCHOOL	031Y
3. NAVAL DIVING AND SALVAGE TRAINING CENTER	6419
4. NAVAL SUBMARINE TRAINING CENTER, PACIFIC	2144

Course Status:

    Revision

Course Mission Statement:

    The SCUBA Diver course is designed to provide qualified personnel with the basic training necessary to qualify as a SCUBA diver, perform as a dive team member to plan and conduct open circuit SCUBA diving operations including inspection of major hull components. Diving operations includes underwater searches, underwater maintenance and preparation of records and reports. Conduct initial treatment of diving related injuries. Inspection and maintenance is performed on open circuit SCUBA equipment and accessories along with charging of SCUBA cylinders. Day and night diving operations will be conducted from a shore installation and open water to a qualification depth of 130 FSW.

(4)

A-3-7

TRAINING COURSE CONTROL DOCUMENT
COURSE DATA (CONT.)

Occupational Classification/Prerequisites: It is proposed that
NEC 5345 be awarded to the Team Member/SCUBA course graduate/
there is no prerequisite training.

Course Overview:

1. Course content includes:

- Apply basic diving physics laws and formulas.
- Identify diving diseases and injuries, and select the
  appropriate treatment.
- Perform underwater search.
- Perform basic underwater hull inspection and search
  techniques.
- Perform as Recorder, Log Keeper, Chartman for SCUBA
  operations.
- Perform as diver's Tender for SCUBA operations.

2. Qualify to dive, in accordance with U.S. Navy Diving Manual
(NDM), Vol. 1, to designed certification depths in the following
equipment:

- Open Circuit SCUBA

3. Perform step-by-step maintenance and repair procedures in
accordance with approved technical manuals, Planned Maintenance
System, and the U.S. NDM, Vol 1, on the following equipment:

- SCUBA Air Tanks (Steel and Aluminum).
- 1st and 2nd stage regulators and hoses.
- Life preserver and buoyancy compensators.

4. Diving operations may be performed from surface or
subsurface vessels, or ship repair facilities or other selected
shore installations as necessary, dependent upon organizational
mission and commander's requirements.

- Graduates are qualified to a maximum depth of 130 feet.

Course Length Required: 40 Calendar Days

(5)

A-3-8

TRAINING COURSE CONTROL DOCUMENT
COURSE DATA (CONT.)

Training Sites:

   1.   MOBILE DIVING AND SALVAGE UNIT TWO
       LITTLE CREEK, VIRGINIA 23521

   2.   NAVAL AMPHIBIOUS SCHOOL
       CORONADO, CALIFORNIA 92155

 *3.   NAVAL DIVING AND SALVAGE TRAINING CENTER
       PANAMA CITY, FLORIDA 32407

   4.   NAVAL SUBMARINE TRAINING CENTER, PACIFIC
       PEARL HARBOR, HAWAII 96860

(* = Course Curriculum Model Manager)

Number of Convenings By Site:	Planned
1. MOBILE DIVING AND SALVAGE UNIT TWO	0
2. NAVAL AMPHIBIOUS SCHOOL	0
3. NAVAL DIVING AND SALVAGE TRAINING CENTER	13
4. NAVAL SUBMARINE TRAINING CENTER, PACIFIC	12

Class Capacity By Site:	Planned
1. MOBILE DIVING AND SALVAGE UNIT TWO	
a. Maximum	0
b. Minimum	0
2. NAVAL AMPHIBIOUS SCHOOL	
a. Maximum	0
b. Minimum	0

(6)

A-3-9

TRAINING COURSE CONTROL DOCUMENT
COURSE DATA (CONT.)

Class Capacity By Site: Planned

    3.   NAVAL DIVING AND SALVAGE TRAINING CENTER

        a.   Maximum   25

        b.   Minimum   10

    4.   NAVAL SUBMARINE TRAINING CENTER, PACIFIC

        a.   Maximum   25

        b.   Minimum   10

Planned Average On-Board By Site:

    1.   MOBILE DIVING AND SALVAGE UNIT TWO   0.00

    2.   NAVAL AMPHIBIOUS SCHOOL   0.00

    3.   NAVAL DIVING AND SALVAGE TRAINING CENTER   35.62

    4.   NAVAL SUBMARINE TRAINING CENTER, PACIFIC   32.88

Instructor/Support Manning:

    The estimated plan for Instructor/Support Manning is based
    on the same ratios for all sites. Periods and ratios can be
    found in the Course Master Schedule.

Work Center: NA

(7)

A-3-10

TRAINING COURSE CONTROL DOCUMENT

TRAINEE DATA

Personnel Physical Requirements:

Students entering the SCUBA Diver Course must be volunteers;
be physically qualified in accordance with Article 15-36,
Manual of the Medical Department; be qualified swimmers
first class in accordance with MILPERSMAN standards; be
recommended by their Commanding Officer; be interviewed by a
designated Diving Officer; and be screened by a designated
diving activity, in accordance with MILPERSMAN.

Security Clearance:

No security clearance is required for entry into the Diver,
SCUBA Course.

Obligated Service:

12 Months

NOBC/NEC Earned:

5345

(8)

A-3-11

TRAINING COURSE CONTROL DOCUMENT

OUTLINE OF INSTRUCTION SUMMARY

Lesson Number	Title	Class Periods	Lab Periods	PA Periods	Total Periods
Unit 1: SCUBA DIVER QUALIFICATIONS					
1.1	SCUBA DIVING	2.0	0.0	0.0	2.0
	Unit 1 Total	2.0	0.0	0.0	2.0

> Only Lesson Topic 1 of Units 8 and 9 are used as samples in NAVEDTRA 130 (Series) Volume II. Interim units of instructions are intentionally omitted.

Lesson Number	Title	Class Periods	Lab Periods	PA Periods	Total Periods
Unit 8:	OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE				
8.1.	SCUBA CHARGING	2.0	1.0	0.0	3.0
	Unit 8 Total	2.0	1.0	0.0	3.0
Unit 9:	INSPECTION OF MAJOR HULL COMPONENTS				
9.1.	UNDERWATER HULL INSPECTION	4.0	1.0	0.0	5.0
	Unit 9 Total	4.0	1.0	0.0	5.0
	COURSE TOTAL	8.0	2.0	0.0	10.0

	Periods	Percent
Class	8.0	80.0
Lab	2.0	20.0
PA	0.0	0.0
Total	10.0	100.0

(9)

TRAINING COURSE CONTROL DOCUMENT

CURRICULUM OUTLINE OF INSTRUCTION

UNIT 1: **SCUBA DIVER QUALIFICATIONS**

Terminal Objective(s):

1.0 QUALIFY as a SCUBA diver in accordance with Navy
Military Personnel Command Manual (BUPERS Manual),
Article 1410380, Exhibit 6. (CTTL item #1)

Lesson Topic 1.1: SCUBA DIVING

Enabling objective(s):

1.1 **PERFORM** physical training with the class as a group in
accordance with the Course Master Schedule, and
successfully MAINTAIN diver physical qualification
standards throughout the course of training in
accordance with BUPERS Manual, Art. 1410380,
Exhibit 5.

1.2 **IDENTIFY** the minimum equipment which must be worn by a
Navy SCUBA diver in accordance with U.S. Navy Diving
Manual, Volume 1.

> Only Lesson Topic I of Units 8 and 9 are used as samples in Volume II. Interim
> units of instruction are intentionally omitted.

UNIT 8: **OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE**

Enabling Objective(s):

6.0 **CHARGE** open circuit SCUBA following a checklist and in
accordance with the U.S. Navy Diving Manual, Volume 1.
(CTTL item #61)

Lesson Topic 8.1:   SCUBA CHARGING

Enabling Objective(s):

6.1 **APPLY** General Gas Laws when charging SCUBA cylinders
in accordance with U.S. Navy Diving Manual, Volume 1.

(10)

A-3-13

TRAINING COURSE CONTROL DOCUMENT

CURRICULUM OUTLINE OF INSTRUCTION (CONT.)

6.2 **FOLLOW** safety precautions applicable to charging Open Circuit SCUBA in accordance with the U.S. Navy Diving Manual, Volume 1.

6.3 **CHARGE**, as a member of a SCUBA charging team, SCUBA cylinders in accordance with the U.S. Navy Diving Manual, Volume 1, to the accuracy required by the Diving Training Standards following an Open Circuit SCUBA charging checklist for the available system.

UNIT 9: **INSPECTION OF MAJOR HULL COMPONENTS**

Terminal Objective(s):

7.0 **APPLY** underwater hull search techniques to CONDUCT inspection of major hull components in accordance with Underwater Work Techniques Manual, Vol. 2, while performing operations as a SCUBA diver. Observe applicable safety precautions. (CTTL item #65)

4.0 **PLAN** OPEN CIRCUIT SCUBA DIVING OPERATIONS in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP001-9010, chapter 4. (CTTL item #17)

Lesson Topic 9.1:   UNDERWATER HULL INSPECTION

Enabling Objective(s):

7.1 **IDENTIFY** the components of the ship's hull in accordance with the Underwater Work Techniques Manual, Volume 2.

7.2 **DESCRIBE** the stages of growth commonly found on underwater hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2.

7.3 **STATE** the general contents of the Fouling Rating Scale, and the Paint Deterioration Rating Scale, in accordance with the NAVSHIPS Technical Manual,

(11)

A-3-14

TRAINING COURSE CONTROL DOCUMENT

CURRICULUM OUTLINE OF INSTRUCTION (CONT.)

Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.

7.4   **DESCRIBE** the fouling areas of hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.

4.13   **IDENTIFY** considerations that affect dive planning in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-2.

7.5   **APPLY** the specific safety precautions associated with underwater hull inspections in accordance with the U. S. Navy Diving Manual, Volume 1; the Underwater Work Techniques Manual, Volume 2; and the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.

7.6   **PERFORM** day and night underwater hull inspections in accordance with the NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2.

7.7   **PREPARE** the ship's hull inspection report in accordance with the Diving Training Standards.

(12)

A-3-15

Annex A

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST

<u>Learning Site</u>

MOBILE DIVING AND SALVAGE UNIT TWO

Site Consideration:

Currently, this site has adequate equipment to support a class size of 18 plus 3 instructors. Upon cancellation of the course at Mobile Diving and Salvage Unit Two all equipment will be available for redistribution to NAVDIVESALVTRACEN and NABSUBTRACENPAC.

1. Publications

No.	Number	Title	QTY REQ'D	Supplier
1.	AIG-239	Diver's Advisory	25	
2.	OPNAVINST 3150.28	Diving Log	150	
3.	NA	Equipment PMS	1	
4.	NA	Equipment technical/maintenance manuals	1	
5.	NAVSEAINST 10560.2C	Instruction	1	
6.	OPNAVISNT 5102.1C	Instruction	1	
7.	SS-710AA-MMO-010	Life Preserver, Mk 4	25	
8.	NAVSEA 10560.2A	List of Approved Diving Equipment	25	
9.	NA	Locally prepared job sheets	1	
10.	NA	NAVSHIPS Technical Manual	1	
11.	BUPERS Manual	Navy Military Personnel Command Manual	1	
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat	3	
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	25	NAVSEA 0994-LP-001-9010
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	25	NAVSHIPS 0994-007-8010
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	30	NAVSHIPS 0994-007-8010
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	25	NAVSHIPS 0901-LP-081-0010

(A-1)

A-3-16

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

2. Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	U/I	Unit Cost	CAGE Code	SM&R Code	Technical Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		25	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		25	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		25	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		25	ea	$147.00			NAVSEAINST 10560.2

(A-2)

A-3-17

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

Learning Site

NAVAL AMPHIBIOUS SCHOOL

Site Consideration:

Currently, with a class size of 25 plus 5 instructors there is insufficient equipment. However, class size has not exceeded 18. Upon cancellation of the course at Naval Amphibious School, training equipment will be available for redistribution to NAVDIVESALVTRACEN and NABSUBTRACENPAC.

1. Publications

No.	Number	Title	QTY REQ'D	Supplier
1.	AIG-239	Diver's Advisory	1	
2.	OPNAVINST 3150.28	Diving Log	400	
3.	NA	Equipment PMS	1	
4.	NA	Equipment technical/maintenance manuals	1	
5.	NAVSEAINST 10560.2C	Instruction	1	
6.	OPNAVISNT 5102.1C	Instruction	1	
7.	SS-710AA-MMO-010	Life Preserver, Mk 4	65	
8.	NAVSEA 10560.2A	List of Approved Diving Equipment	65	
9.	NA	Locally prepared job sheets	1	
10.	NA	NAVSHIPS Technical Manual	1	
11.	BUPERS Manual	Navy Military Personnel Command Manual	1	
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat	1	
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	50	NAVSEA 0994-LP-001-9010
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	50	NAVSHIPS 0994-007-8010
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	30	NAVSHIPS 0994-007-8010
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	50	NAVSHIPS 0901-LP-081-0010

(A-3)

A-3-18

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

2. Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	U/I	Unit Cost	CAGE Code	SM&R Code	Technical Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		34	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		34	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		34	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		34	ea	$147.00			NAVSEAINST 10560.2

(A-4)

A-3-19

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

Learning Site

NAVAL DIVING AND SALVAGE TRAINING CENTER

Site Consideration:

Training equipment numbers are based on a projected class size of 25, 16 instructors, plus spares. The redistribution of usable equipment made available by the cancellation of this course at Amphibious Base, Coronado, and Mobile Diving and Salvage Unit Two will help reduce shortages.

Training Materials numbers are based on 16 instructors, and a student load of 325/yr. NDSTC Panama City is the only site with a diving tower. The distribution of periods and ratios for Naval Submarine Training Center, Pacific are adjusted so the overall course length is the same for both sites.

1. Films

No.	Designator	Title	Running Time	QTY REQ'D
1.	F0600-AA-PP-89	Navy SCUBA Diver Safety	30 Minutes	2

2. Publications

No.	Number	Title	QTY REQ'D	Supplier
1.	AIG-239	Diver's Advisory	1	
2.	OPNAVINST 3150.28	Diving Log	400	
3.	NA	Equipment PMS	1	
4.	NA	Equipment technical/maintenance manuals	1	
5.	NAVSEAINST 10560.2C	Instruction	1	
6.	OPNAVISNT 5102.1C	Instruction	1	
7.	SS-710AA-MMO-010	Life Preserver, Mk 4	65	

(A-5)

A-3-20

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

No.				
8.	NAVSEA 10560.2A	List of Approved Diving Equipment	65	
9.	NA	Locally prepared job sheets	1	
10.	NA	NAVSHIPS Technical Manual	1	
11.	BUPERS Manual	Navy Military Personnel Command Manual	1	
12.	OPNAV 5100 Series	Safety Precautions for Forces Afloat	1	
13.	NAVSEA NDM	U.S. Navy Diving Manual, Vol I	50	NAVSEA 0994-LP-001-9010
14.	NAVSEA UWT	Underwater Work Techniques, Vol 1	50	NAVSHIPS 0994-007-8010
15.	NAVSEA UWT	Underwater Work Techniques, Vol 2	30	NAVSHIPS 0994-007-8010
16.	S9086-CQ-STM-010/ CH-081 R2	Waterborne Underwater Hull Cleaning of Navy Ships, Chapt, 081	50	NAVSHIPS 0901-LP-081-0010

3. Slides

No.	Title	Number	Source	QTY REQ'D
1.	Underwater Search Equipment	1-1	NAVDIVSALVTRACEN	2

4. Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	REQ'D	U/I	Unit Cost	Code	Code	Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		50	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		50	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		50	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213		50	ea	$147.00			NAVSEAINST 10560.2

> **NOTE TO READER:** This is only a representation of the types of equipment which would be listed under Training Equipment.

(A-6)

A-3-21

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

5. Training Materials

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	U/I	Unit Cost	CAGE Code	SM&R Code	Technical Reference
1.	Knowledge Test Administrators Guide				20	ea				
2.	Lesson Plan				20	ea				
3.	Peformance Test Administrators Guide				20	ea				
4.	Trainee Guide				400	ea				

> **NOTE TO READER**: This is only a representation of the types of equipment which would be listed under Training Equipment and Training Materials.

6. Transparencies

No.	Title	Number	Graphic Description	QTY REQ'D
1.	Underwater Hull Cleaning	Bot Scr Prod		2

7. VI Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	U/I	Unit Cost	CAGE Code	SM&R Code	Technical Reference
1.	Chalk Board(Portable)	Manuf. P/N	Open Purchase		10	ea	$38.00			
2.	Overhead Projector	Manuf. P/N	Open Purchase		5	ea	$150.00			
3.	Slide Projector, 35mm	Manuf. P/N	Open Purchase		5	ea	$165.00			
4.	Video Monitor 35"	Manuf. P/N	Open Purchase		5	ea	$500.00			

(A-7)

A-3-22

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

8. Videos

No.	Designator	Title	Running Time	QTY REQ'D
1.	DP-49	Charging SCUBA Cylinders	30 Minutes	2

NOTE: Items in 1 & 4 are not on the Training Project Plan RRL. These are items to conduct the course that were identified after the Project Plan was approved.

(A-8)

A-3-23

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

Learning Site

NAVAL SUBMARINE TRAINING CENTER

Site Consideration:

With a current class size of 25 plus 6 instructors, equipment is adequate. For a projected class size of 25 plus 14 instructors, additional SCUBA cylinders, MK4 life preservers, and wrist compasses are needed. Some equipment will be available from the redistribution of equipment due to the course cancellation at Naval Amphibious School and Mobile Diving and Salvage Unit Two.

Training Materials numbers are based on 14 instructors, and a student load of 300/yr.

NDSTC Panama City is the only site with a diving tower. The distribution of periods and ratios for Naval Submarine Training Center, Pacific are adjusted so the overall course length is the same for both sites.

1. Films

No.	Designator	Title	Running Time	QTY REQ'D
1.	F0600-AA-PP-89	Navy SCUBA Diver Safety	30 Minutes	2

2. Publications

No.	Number	Title	QTY REQ'D	Supplier
1.	AIG-239	Diver's Advisory	15	
2.	OPNAVINST 3150.28	Diving Log	400	
3.	NA	Equipment PMS	1	
4.	NA	Equipment technical/maintenance manuals	1	

(A-9)

A-3-24

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

```
5.   NAVSEAINST 10560.2C  Instruction                              1
6.   OPNAVISNT 5102.1C    Instruction                              1
7.   SS-710AA-MMO-010     Life Preserver, Mk 4                     30
8.   NAVSEA 10560.2A      List of Approved Diving Equipment        30
9.   NA                   Locally prepared job sheets               1
10.  NA                   NAVSHIPS Technical Manual                 1
11.  BUPERS Manual        Navy Military Personnel Command Manual    1
12.  OPNAV 5100 Series    Safety Precautions for Forces Afloat     15
13.  NAVSEA NDM           U.S. Navy Diving Manual, Vol I           30    NAVSEA 0994-LP-001-9010
14.  NAVSEA UWT           Underwater Work Techniques, Vol 1        30    NAVSHIPS 0994-007-8010
15.  NAVSEA UWT           Underwater Work Techniques, Vol 2        30    NAVSHIPS 0994-007-8010
16.  S9086-CQ-STM-010/    Waterborne Underwater Hull Cleaning of   30    NAVSHIPS 0901-LP-081-0010
     CH-081 R2            Navy Ships, Chapt, 081
```

> **NOTE TO READER:** This is only a representation of the types of publications which would be listed under Publications.

3. Slides

No.	Title	Number	Source	QTY REQ'D
1.	Underwater Search Equipment	1-1	NAVDIVSALVTRACEN	2

4. Training Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	REQ'D	U/I	Unit Cost	Code	Code	Reference
1.	Compass, wrist, non-magnetic		1HM-6605-00-079 007 ED		50	ea	$75.00			NAVSEAINST 10560.2
2.	Cylinder, SCUBA Twin 80	0765-80 (Black)	9C-4220-00-058 1609		50	ea	$125.00			NAVSEAINST 10560.2
3.	Gage, depth, MK 1 Magnetic		1H-4220-00-639 8999		50	ea	$75.00			NAVSEAINST 10560.2
4.	Life preserver, MK 4	4053604	1H-4220-01-213 3533		50	ea	$147.00			NAVSEAINST 10560.2

(A-10)

A-3-25

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

5. Training Materials

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	U/I	Unit Cost	CAGE Code	SM&R Code	Technical Reference
1.	Knowledge Test Administrators Guide				20	ea				
2.	Lesson Plan				20	ea				
3.	Peformance Test Administrators Guide				20	ea				
4.	Trainee Guide				400	ea				

> **NOTE TO READER:** This is only a representation of the types of equipment which would be listed under Training Equipment and Training Materials.

6. Transparencies

No.	Title	Number	Graphic Description	QTY REQ'D
1.	Underwater Hull Cleaning	Bot Scr Prod		2

7. VI Equipment

No.	Type/Nomenclature	Part Number	COG/NIIN/SMIC	AAC	QTY REQ'D	U/I	Unit Cost	CAGE Code	SM&R Code	Technical Reference
1.	Chalk Board(Portable)	Manuf. P/N	Open Purchase		10	ea	$38.00			
2.	Overhead Projector	Manuf. P/N	Open Purchase		5	ea	$150.00			
3.	Slide Projector, 35mm	Manuf. P/N	Open Purchase		5	ea	$165.00			
4.	Video Monitor 35"	Manuf. P/N	Open Purchase		5	ea	$500.00			

(A-11)

A-3-26

TRAINING COURSE CONTROL DOCUMENT

RESOURCE REQUIREMENT LIST (CONT.)

8. Videos

No.	Designator	Title	Running Time	QTY REQ'D
1.	DP-49	Charging SCUBA Cylinders	30 Minutes	2

NOTE: Items in 1 & 4 are not on the Training Project Plan RRL. These are items were identified after the Project Plan was approved.

(A-12)

A-3-27

ANNEX B

MASTER SCHEDULE SUMMARY SHEET   Date: 30 October 2008

Activity: NAVAL DIVING AND SALVAGE TRAINING CENTER

A. LOCATION:

CDP   Site/MTU

087R   MOBILE DIVING AND SALVAGE UNIT TWO
031Y   NAVAL AMPHIBIOUS SCHOOL
6419*   NAVAL DIVING AND SALVAGE TRAINING CENTER
2114   NAVAL SUBMARINE TRAINING CENTER, PACIFIC

(* = Course Curriculum Model Manager)

B. COURSE DATA:

Course: NSD   CIN   A-433-0023A

Periods Per Week: 40   Period Length: 60 minutes

C. MASTER SCHEDULE SUMMARY

        Standard Periods   Bottleneck Periods

T:I Ratio   Periods   T:I Ratio   Periods

25:1   11
 4:1   2

Total periods = 13 (13 Standard Periods + 0 Bottleneck Periods)

Ratio justification for ratios less than planned class size:

Note: Physical conditioning is mandated for all divers so it is
included as part of the 8-hour training day.

(B-1)

A-B-1

TRAINING COURSE CONTROL DOCUMENT

COURSE MASTER SCHEDULE

WEEK 1

Day 1

Topic No.	Type	Period	Topic Title	Period Length	Ratio	Bottleneck Ratio	Justification of Ratios
1.1	Class	1	SCUBA DIVING	50	25:1		
1.1	Class	2	SCUBA DIVING	50	25:1		
	Special	3	Test	50	25:1		

> **NOTE TO READER**: Only portions of Unit 1, Lesson Topic 1; Unit 8, Lesson Topic 1 and Unit 9, Lesson Topic 1 are used as samples in Volume II. Interim units of instruction are intentionally omitted.

WEEK 3

Day 1

Topic No.	Type	Period	Topic Title	Period Length	Ratio	Bottleneck Ratio	Justification of Ratios
8.1	Class	9	SCUBA CHARGING	50	25:1		
8.1	Class	10	SCUBA CHARGING	50	25:1		

(B-2)

A-B-2

TRAINING COURSE CONTROL DOCUMENT

COURSE MASTER SCHEDULE

8.1	Lab	11	SCUBA CHARGING	50	25:1	
	Special	12	Test	50	25:1	
9.1	Class	13	UNDERWATER HULL INSPECTION	50	25:1	
9.1	Class	14	UNDERWATER HULL INSPECTION	50	25:1	
9.1	Class	15	UNDERWATER HULL INSPECTION	50	25:1	

Day 2

Topic No.	Type	Period	Topic Title	Period Length	Ratio	Bottleneck Ratio	Justification of Ratios
9.1	Class	16	UNDERWATER HULL INSPECTION	50	25:1		
1.1	Lab	17	PHYSICAL CONDITIONING	50	25:1		
	Special	13	TEST	50	25:1		

(B-3)

A-B-3

TAB A-4

LESSON PLAN

LESSON PLAN

FOR

NAVY SCUBA DIVER

A-433-0023A

PREPARED FOR

DIRECTOR, LEARNING AND DEVELOPMENT (NETC N7)
9549 BAINBRIDGE AVE
NORFOLK, VIRGINIA 23511-2612

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

NOVEMBER 2008

A-4-1

LESSON PLAN

CHANGE RECORD

Number and Description of Change	Entered By	Date

(2)

LESSON PLAN

A-433-0023A

TABLE OF CONTENTS

Contents	Page

UNIT 1: SCUBA DIVER QUALIFICATION

> NOTE TO READER: Only those Lesson Topics supporting Units 2 and 3 are included to illustrate the contents of a Lesson Plan.

UNIT 8: OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE

UNIT 9: INSPECTION OF MAJOR HULL COMPONENTS

(3)

A-4-3

LESSON PLAN

SECURITY AWARENESS NOTICE

This course does not contain any classified material.

(4)

A-4-4

LESSON PLAN

A-433-0023A

SAFETY/HAZARD AWARENESS NOTICE

This notice promulgates safety precautions to the staff and trainees of the Navy SCUBA Diver Course in accordance with responsibilities assigned by the Chief of Naval Education and Training.

Trainees may voluntarily request termination of training. Any time the trainee makes a statement such as "I QUIT," or "DOR," (Drop on Request), he or she shall be immediately removed from the training environment and referred to the appropriate division or training officer for administrative action. The trainee must then make a written statement, clearly indicating the desire to DOR.

Any time a trainee or instructor has apprehension concerning his or her personal safety or that of another, he or she shall signal for a "Training Time Out" to clarify the situation or procedure and receive or provide additional instruction as appropriate. "Training Time Out" signals, other than verbal, shall be appropriate to the training environment.

Instructors are responsible for maintaining situational awareness and shall remain alert to signs of trainee panic, fear, extreme fatigue or exhaustion, or lack of confidence that may impair safe completion of the training exercise, and shall immediately stop the training, identify the problem, and make a determination to continue or discontinue training. Instructors shall be constantly alert to any unusual behavior which may indicate a trainee is experiencing difficulty, and shall immediately take appropriate action to ensure the trainee's safety.

The safety precautions contained in this course are applicable to all personnel. They are basic and general in nature. Personnel who operate or maintain equipment in support of Navy SCUBA Diver Course must be thoroughly familiar with all aspects of personnel safety, and strictly adhere to every general as well as specific safety precautions contained in operating and emergency procedures and applicable governing directives.

Special emphasis must be placed on strict compliance with published safety precautions and on personal awareness of potentially hazardous conditions peculiar to diving.

(5)

A-4-5

LESSON PLAN

__A-433-0023A__

SAFETY/HAZARD AWARENESS NOTICE (CONT.)

All personnel must have a comprehensive knowledge of emergency procedures which prescribe courses of action to be followed in the event of equipment failure or human error as stated in the Pre-Mishap Plan. Strict adherence to approved and verified operating, emergency, and maintenance procedures IS MANDATORY. As a minimum, each individual is responsible for knowing, understanding, and observing all safety precautions applicable to the command, school, course, their work, and their work areas. In addition, you are responsible for observing the following general safety precautions:

    1. Each individual shall report for work rested and emotionally prepared for the tasks at hand.

    2. You shall use normal prudence in all your functions, commensurate with the work at hand.

    3. You shall report any unsafe conditions, or any equipment or material which you consider to be unsafe, and any unusual or developing hazards.

    4. You shall warn others whom you believe to be endangered by known hazards or by failure to observe safety precautions, and of any unusual or developing hazards.

    5. You shall report to the school any mishap, injury, or evidence of impaired health occurring in the course of your work or during non-training environment.

    6. You shall wear or use the protective clothing and/or equipment of the type required, approved, and supplied for the safe performance of your work.

    7. All personnel in the immediate vicinity of a designated noise hazardous area or noise hazardous operation shall wear appropriate hearing protective devices. (NDSTC Instruction 6260.6 series)

(6)

A-4-6

LESSON PLAN

A-433-0023A

SAFETY/HAZARD AWARENESS NOTICE (CONT.)

(7)

A-4-7

LESSON PLAN

TERMINAL OBJECTIVES

1.0 **QUALIFY** as a SCUBA diver in accordance with Navy Military Personnel Command Manual, BUPERS Manual (CTTL item #1)

4.0 **PLAN** OPEN CIRCUIT SCUBA DIVING OPERATIONS in accordance with U.S. Navy   Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, Chapter 4. (CTTL item #17)

> NOTE TO READER: Sample instruction is provided to fully support only Terminal Objectives 9.0 and 10.0. Sample instruction for Terminal Objectives 1.0 through 3.0, and Terminal Objective 5.0 through 8.0 are intentionally omitted. Terminal Objective 4.0 provides one Enabling Objective for Lesson Topic 3.1.

6.0 **CHARGE** open circuit SCUBA following a checklist and in accordance with the U. S, Navy Diving Manual, Volume 1. (CTTL item #61)

7.0 **APPLY** underwater hull search techniques to CONDUCT inspections of major hull components in accordance with the Underwater Work Technique Manual, Vol 2, while performing as a SCUBA diver. Observe applicable safety precautions. (CTTL item #65)

(8)

LESSON PLAN

Unit 1. SCUBA DIVER QUALIFICATIONS   A-433-0023A

Topic 1.1 SCUBA DIVING

Class periods: 2
Lab periods: 0
PA Periods: 0

Enabling Objectives:

1.1   **PERFORM** physical training with the class as a group in
        Accordance with the Course Master Schedule, and
        Successfully MAINTAIN diver physical qualification
        Standards throughout the course of training in accordance
        With BUPERS Manual, Article 1410280, Exhibit 5.

1.2   **Identify** the minimum equipment which must be
        worn by a Navy SCUBA diver in accordance with U.S.
        Navy Diving Manual, Volume 1.

Instructor Preparation:

A.   Review Assigned Trainee Material.

B.   Reference Publications:

   1.   None.

C.   Training Materials Required:

   1.   None.

Trainee Preparation Materials:

A.   Trainee Support Materials:

   1.   None.

B.   Reference Publications:

   1.   None.

(9)

A-4-9

LESSON PLAN

Unit 1.   SCUBA DIVER QUALIFICATIONS   **A-433-0023A**
Topic 1.1 SCUBA DIVING

DISCUSSION POINT	RELATED INSTRUCTION ACTIVITY

1.   Introduction.

1.   Establish Contact.

2.   **PERFORM** physical training with the class as a group in
         Accordance with the Course Master Schedule, and
         Successfully MAINTAIN diver physical qualification
         Standards throughout the course of training in accordance
         With BUPERS Manual, Article 1410280, Exhibit 5.

3.   **Identify** the minimum equipment which must be
         worn by a Navy SCUBA diver in accordance with U.S.
         Navy Diving Manual, Volume 1.

4.   Summary and Review.

5.   Assignment.

6.   Application.

(10)

A-4-10

LESSON PLAN

Unit 8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE   A-433-0023A
Topic 8.1 SCUBA CHARGING

Enabling Objectives:

6.1   **APPLY** General Gas Laws when charging SCUBA
         cylinders in accordance with the U.S. Navy
         Diving Manual, Volume I.

6.2   **FOLLOW** safety precautions applicable to charging
         Open Circuit SCUBA in accordance with the U.S. Navy
         Diving Manual, Volume I.

6.3   **CHARGE**, as a member of a SCUBA charging team,
         SCUBA cylinders in accordance with the U.S. Navy
         Diving Manual, VOLUME I, to the accuracy required by
         the Diving Training Standards following an Open Circuit
         SCUBA charging checklist for the available system.

Trainee Preparation Materials:

A.   Trainee Support Materials:

         1.   SCUBA CHARGING, Outline Sheet 8-1-1.

NOTE TO READER: Assignment of
Outline Sheet 8-1-1 was made from a
Previous lesson topic. The outline
sheet must be studied prior to
presentation of this lesson topic.

Instructor Preparation:

B.   Reference Publications:

         1.   SCUBA Charging Checklist,
              NAVDIVSALVTRACEN

A.   Review assigned Trainee Material.

B.   Reference Publications:

         1.   Review Diving Training Standards,
              NAVDIVSALVTRECEN 433-0023-1.

         2.   Review Instructional Building Auxiliary
              Air Operating Procedures Manual,
              NAVDIVSALVTRACEN Local Instruction.

         3.   Review SCUBA Charging Checklist,
              NAVDIVSALVTRACEN.

         4.   Review U.S. Navy Diving Manual, Vol 1,
              NAVSEA NDM.

C.   Training Materials Required:

         1.   Instruction Sheets
              a.   SCUBA CHARGING, Outline Sheet 8-1-1.

(11)

LESSON PLAN

Unit 8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE   **A-433-0023A**
Topic 8.1 SCUBA CHARGING

        b.   SCUBA Charging, Assignment Sheet
            8-1-2.
        c.   SCUBA Charging, Job Sheet 8-1-3.
    2.   Transparencies:
        a.   Scan SCUBA Charging, 8-1-1.
        b.   Scan SCUBA Charging, 8-1-2.
        c.   Scan SCUBA Charging, 8-1-3.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
1. Introduction.	1. Establish Contact.
	Introduce yourself and give any background on yourself that might be of interest.
	Establish Readiness.
	Motivating Statements:
	Tell trainees how they will use the course material.
	Tell trainees why they need to know the lesson material.
	Safety-Review TTO.
	Refer to Outline Sheet 8-1-1, SCUBA CHARGING, and review objectives.
1. General Gas Laws that affect SCUBA charging.	2. Reference U.S. Diving Manual, Vol 1, NAVSEA NDM, paragraph 2-5-2.
	Discuss Diving Training Standards, NAVDIVSALVTRACEN 433-0023-1,

(12)

A-4-12

LESSON PLAN

Unit 8.   OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE   **A-433-0023A**
Topic 8.1 SCUBA CHARGING

DISCUSSION POINT

a.   The factors of temperature, volume, and pressure are interrelated such that a change in any of these factors must be balanced by a corresponding change in one or both of the others.

b.   SCUBA charging increases the pressure in the bottle, which increases the temperature of the gas, which heats the bottle.

c.   Effect of Temperature.

(1)   Loss of pressure as the bottle cools to ambient Temperature (Especially in cold water).

(2)   Increased possibility of blow-out disc failure 400 PSI maximum is exceeded.

3.   Charge SCUBA Cylinders.

a.   Ensure there is sufficient pressure in the H.P. banks for the type of cylinder to be charged.

> **WARNING: DO NOT CHARGE ANY SCUBA CYLINDERS HAVING AN EXPIRED HYDROSTATIC TEST DATE. CHARGING A CYLINDER WITH AN EXPIRED HYDROSTATIC TEST DATE MAY LEAD TO RUPTURE OF THE CYLINDER.**

Reference: U.S. Navy Diving Manual, Volume 1 Table 5-4.
NOTE: Never mix steel and aluminum cylinders in the same charging line.

(13)

RELATED INSTRUCTOR ACTIVITY

a.   Display Transparency 8-1-1, SCUBA Charging.

b.   Display Transparency 8-1-2, SCUBA Charging.

c.   Display Transparency 8-1-3, SCUBA Charging.

a.   Reference Instructional Building Auxiliary Air Operating Procedures Manual, NAVDIVSALVTRACEN Local Instruction, Set by command policy (if site specific add note).

A-4-13

LESSON PLAN

Unit 8.   OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE
Topic 8.1 SCUBA CHARGING

A-433-0023A

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
CAUTION: Why? Because of the different charging Pressures involved. EMPHASIZE.	
4. Summary and Review:	4. Review the DPs and repeat the EO(s).
a. General Gas Law.	
b. Charge SCUBA cylinders.	
5. Assignment:	
a. Read Assignment Sheet 8-1-2.	a. Refer trainee to Assignment Sheet 8-1-2, SCUBA CHARGING, and pass instructions that the Assignment Sheet will be reviewed at the beginning of Lesson Topic 9.1.
b. Read Outline Sheet 9-1-1 and Information sheet 9-1-3.	b. Homework. Outline Sheet 9-9-1 and Assignment Sheet 9-1-4 will be listed under Trainee Preparation in Lesson Topic 9.1 and discussed at the appropriate place in the lesson.
c. Testing.	
6. Application.	6. Direct trainee to complete Job Sheet 8-1-2, SCUBA Charging, in lab room #13.

(14)

A-4-14

LESSON PLAN

Unit 8. OPEN CIRCUIT SCUBA EQUIPMENT MAINTENANCE   **A-433-0023A**
Topic 8.1 SCUBA CHARGING

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

                                                        Refer trainee to SCUBA Charging
                                                        Checklist, NAVDIVSALVTRACEN.

    a.   Safety precautions: a.   Review TTO/DOR.

        (1) TTO.

        (2) DOR.

(15)

A-4-15

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   A-433-0023A

Topic 9.1 UNDERWATER HULL INSPECTION

Class periods: 4
Lab periods: 1
PA Periods: 0

Enabling Objectives:

7.1 **IDENTIFY** the components to the ship's hull in Accordance with the Underwater Work Techniques Manual, Volume 2.

7.2 **DESCRIBE** the stages of growth commonly found on the underwater hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2.

7.3 **STATE** the general contents of the Fouling Rating Scale, and the Paint Deterioration Rating Scale, in accordance with NAVSHIPS Technical Manual and Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081

7.4 **DESCRIBE** the fouling areas of ship's hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Surface Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2.

7.5 **APPLY** the specific safety precautions associated with underwater hull inspections in accordance with the U.S. Navy Diving Manual, Volume1: the Underwater Work Techniques Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.

7.6 **PERFORM** day and night underwater hull inspections in accordance with the NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2.

7.7 **PREPARE** the ship's hull inspection report in accordance with the Diving Training Standards.

Trainee Preparation Materials:

A.   Trainee Support Materials:

1.   UNDERWATER HULL INSPECTION, Outline Sheet, 9-1-1.

(16)

A-4-16

LESSON PLAN

Unit 9.   INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

2.   UNDERWATER HULL INSPECTION,
Assignment Sheet, 9-1-4.

B.   Reference Publications:

    1.   None.

          d.   UNDERWATER HULL INSPECTION,
              Outline Sheet, 9-1-4.
          e.   SURFACE VESSEL HULL
              INSPECTION, Job Sheet 9-1-5.

Instructor Preparation:

    A.   Review Assigned Trainee Materials.

    B.   Reference Publications:

        1.   U.S. Navy Diving Manual, Volume 1, NAVSEA NDM.

        2.   Underwater Work Techniques Manual, Volume 2, NAVSEA UWT.

        3.   Waterborne Underwater Hull Cleaning of Navy Ships,
            Chapt.081, S9086-CQ-STM-010/CH=081 2.

    C.   Training Materials Required:

        1.   Instruction Sheets:
            a.   UNDERWATER HULL INSPECTION, Online Sheet 9-1-1.
            b.   PROPELLER NUMBERING SYSTEM, Diagram Sheet 9-1-2.
            c.   FOULING RATING SCALES, Information Sheet 9-1-3.

2.   Transparencies
    a.   Underwater Hull Inspection,
        9-1-1.
    b.   Underwater Hull Inspection,
        9-1-2.
    c.   Underwater Hull Inspection,
        9-1-3.
    d.   Underwater Hull Inspection,
        9-1-4.
    e.   Zinc, Electrical Systems,
        9-1-5.
    f.   Underwater Hull Inspection,
        9-1-6.
    g.   Underwater Hull Inspection,
        9-1-7.
    h.   Underwater Hull Inspection,
        9-1-8.
    i.   Underwater Hull Inspection,
        9-1-9.
    j.   Underwater Hull Inspection,
        9-1-10.

(17)

A-4-17

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

3.   NAVSHIPS Technical Manual, Chapter
081 Waterborne Underwater Hull
Cleaning of Navy Ships.

NOTE TO READER: Transparencies may also be listed
individually, with titles, or by numbers i.e. 3-1-1 to 3-1-10

DISCUSSION POINT	**RELATED INSTRUCTOR ACTIVITY**
1. Introduction.	1. Establish Contact.
	Introduce yourself and give any background on yourself that might be of interest.
	Establish Readiness.
	Motivating Statements:
	Tell trainees how they will use the course material.
	Tell trainees why they need to know the lesson material.
	Safety-Review TTO.
	Refer to Outline Sheet 8-1-1, SCUBA CHARGING, and review objectives.
a. Underwater hull inspection involves the examination of the entire exterior underwater hull and components to determine the condition and needs for maintenance and repair. Stress safety.	

(18)

A-4-18

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**
Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

2.   Safety Reminder.

3.   Various Ship's Hull Components.

   a.   Surface Ships:

      (1) Various types of rudders.

      (2) Various types of propellers.

         (a)   Numbering system.

         (b)   Fixed Pitch.

         (c)   Variable Pitch.

      (3) Different shafting and strut arrangements.

      (4) Cathodic Protection.

      (5) Sonar domes.

2.   Review verbal commands and hand signals for TTO. Review TTO/DOR policy.

(1) Display Transparency 9-1-1, Underwater Hull Inspection.

(2) Display Transparency 9-1-2, Underwater Hull Inspection:

   (a)   Refer to Diagram Sheet 9-1-2, PROPELLER NUMBERING SYSTEM.

   (b)   Explain fixed pitch, variable pitch.

(3) Display Transparency 9-1-3, Underwater Hull Inspection.

Display Transparency 9-1-4, Underwater Hull Inspection.

(4) Display Transparency 9-1-5 Zinc, Electrical Systems.

(5) Display Transparency 9-1-6, Underwater Hull Inspection.

(19)

A-4-19

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(6) Suction and discharge.	(6) Display Transparency 9-1-7, Underwater Hull Inspection.
b. Submarines:	
(1) Single propeller, 7 blade:	(1) Display Transparency 9-1-8, Underwater Hull Inspection.
(a) Numbering system.	
(2) Rudder.	(2) Display Transparency 9-1-9, Underwater Hull Inspection.
(3) Stern Planes and stabilizers.	
(4) Torpedo tube doors.	
(5) Transducer and hydrophones.	
(6) Main Ballast Tank Grate.	
(7) Sonar dome.	
(8) Flush mounted anchors.	

(20)

A-4-20

LESSON PLAN

Unit 9.   INSPECTION OF MAJOR HULL COMPONENTS   A-433-0023A

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
4. Stages of Sea Growth:	
a. Slime - Formation of slime is the first consists of bacteria, fungi, protozoa, and algae. The presence of slime may be confirmed by the generation of a cloud of debris when the surface is wiped by the diver's hand.	a. Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapt. 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.2.2.
b. Grass - Grass is a form of multicellular green algae. It forms most heavily near the surface. It is less evident as depth increases, and its color changes from green to brown.	b. Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapt. 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.2.3.
c. Hard fouling - the dominant organisms in this stage of fouling are barnacles (usually acorn) and tubeworms. Acorn barnacles have conical hard shells with jagged tops. tubeworms form intertwined/tubes lying along, or projecting out from, the hull.	c. Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapt. 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.2.4.
d. Composite - In advanced stages of fouling, the ship will be affected by slime, grass, barnacles, and tubeworms. In addition, fouling will include soft, shell-less animal forms, such as hydrouds, anemones, and tunicates (sea squirts).	d. Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapt. 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.2.5.
e. Amount of sea growth depends on the following:	
(1) Ship location, duration of ships movement, hull protection, and hull cleaning periodically.	

(21)

A-4-21

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**
Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

5.   Fouling Rating Scales:

   a.   Fouling Rating Scale - The Fouling Rating
        Scale describes the ten most frequently encountered
        fouling patterns in order of increasing severity.
        A number has been assigned to each of the ten
        fouling patterns on a scale of 0 to 100, in ten
        point increments. The lowest number represents
        a clean hull and the higher numbers represent
        fouling organism populations of increasing
        density and variety.

   a.   Reference Waterborne Underwater Hull Cleaning
        of Navy Ships, Chapt. 081, S9086-CQ-STM-
        010/CH-081 R2, paragraph 081-1.4 photos, pg
        2 thru 15.

        Refer to Information Sheet 9-1-3, FOULING
        RATING SCALES.

   b.   Paint Deterioration Rating Scale - The Paint
        Deterioration Scale describes the deterioration
        Of the anti-fouling paint on the waterborne hull.
        A number has been assigned to each of the ratings,
        ranging from PDR-10 to PDR-100, in ten point
        Increments. The lowest number represents paint
        Intact and the higher numbers represent
        Deteriorated areas of paint.

   b.   Reference Waterborne Underwater Hull Cleaning
        of Navy Ships, Chapt. 081, S9086-CQ-STM-
        010/CH-081 R2, paragraph 081-1.4 photos, pg
        19 thru 27.

6.   Critical fouling surfaces:

6. Reference Waterborne Underwater Hull Cleaning of
   Navy Ships, Chapt. 081, S9086-CQ-STM-010/CH 081 R2,
   paragraph 081-1.3:

   a.   Propellers:
        Growth causes severe reduction on
        propeller efficiency.

   a.   Reference Waterborne Underwater Hull Cleaning
        of Navy Ships, Chapt. 081, S9086-CQ-STM-
        010/CH-081 R2, paragraph 081-1.4.

(22)

A-4-22

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS A-433-0023A

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT	**RELATED INSTRUCTOR ACTIVITY**
b. Sonar Dome: Performance decreased rapidly when fouling progresses past hard fouling.	b. Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapter. 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.3.3.
c. Docking block bearing surfaces: Does not get painted in dry dock, therefore hard fouling is common in these areas.	c. Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.3.4.
(1) Sea Chest: Hard fouling is common at perimeter and interior of grating. Composite often occurs inside sea chest and is difficult to clean without removing grate.	(1) Reference Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081, S9086-CQ-STM-010/CH-081 R2, paragraph 081-1.3.5.
7. Planning (Assignment Sheet 9-1-4 was assigned as homework in Lesson Topic 6.1):	7. Review Assignment Sheet 9-1-4, UNDERWATER HULL INSPECTION, and answer study questions.
a. Each dive should be completely planned and discussed with ship's personnel and dive team prior to water entry.	a. Reference U.S. Navy Diving Manual, Vol 1, NAVSEA NDM, Chapter 4.
b. Review last hull inspection.	
c. Discuss damage, if any, with dive team:	
(1) Question ship's personnel. Sonar-loss in performance increased noise level. Engineering-shaft vibrations.	

(23)

A-4-23

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(2) Review past UDATS tapes.	(2) Explain UDATS.
(3) Review ship's docking plans.	
8. Use Ship Repair Safety Checklist:	8. Reference NAVSHIPS Underwater Work Techniques, Vol 2, NAVSEA UWT, Part 2, Section 2.
a. Locate dive boat or platform in close proximity of work.	
b. Fly International Code Alpha.	
c. Pass correct word, public address system.	
d. Have Engineering Department representative available topside.	
e. Know what ship's machinery is running.	
f. Ensure vessel is steady in moor or tied up properly.	
g. Ensure safe diving distance between pier and vessel, and between ships.	g. Explain separators/camels.

(24)

A-4-24

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**
Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT	**RELATED INSTRUCTOR ACTIVITY**

9.   Perform underwater hull inspection (day):

    a.   Safety Precautions:

       (1) TTO/DOR.   (1) Review TTO/DOR.

       (2) Specific precautions.

       (3) Review specific safety precautions
           for Job Sheet 9-1-5.

    b.   Surface Vessel Hull Inspection: b.   Refer to Job Sheet 9-1-5, SURFACE VESSEL
                                                        HULL INSPECTION.

       (1) Rudder:

          (a) Clearances.

          (b) Rudder Plugs.

          (c) Overall physical conditions.

          (d) Sound.

(25)

A-4-25

LESSON PLAN

Unit 9.   INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

     (2)   Propellers:

     (a) Dunce.

     (b) Cover Plates.

     WARNING: DO NOT BUMP BLADES WITH   NOTE: Explain Warning - Can damage blades,
     SCUBA CYLINDERS.   SCUBA cylinders or manifold, and can
                                             accidentally activate reserve.

     (c)   Blades.

     (d)   Inspect facing for cavitation effects.

     (e)   Rope Guards (forward of propeller).

     (3)   Struts to Stern Tube:

     (a)   External primary strut housing
          and primary strut.

     (b)   Conditions of zincs.

     (c)   Fairwaters.

(26)

A-4-26

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

      (d) Shaft.

      (e) Secondary strut (if applicable).

      (f) Stern tube.

      (g) Dead lights (if applicable).

      (c) Repeat inspection as per number
           of propellers.

  (4) Engineering Spaces – Safety precautions:

      (a) Ensure diver can surface safely.

      (b) Ensure suctions and discharges are secure.

      (c) Never dive on any engineering spaces
           if machinery is running.

  (5) Bilge Keel.

  (6) Zinc.

(27)

A-4-27

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

      (7)   Main scoop injection pump suction.

      (8)   Main circulation pump suction.

      (9)   Other suctions and discharges.

      (10) Anchor (if applicable).

      (11) Secondary propulsion motor (SPM)
           (as applicable).

      (12) Sonar dome (as applicable).

      (13) Keel and Stem.

  c.   Submarine Hull Inspection:

      (1)   Propeller:

          (a)   Dunce cap.

          (b)   Cover plate.

          (c)   Blades.

(28)

A-4-28

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

        (d)   Inspect facing for cavitation effects.

        (e)   Rope guards (forward of propeller).

        (f)   Zincs.

  (2)   Rudder and Stern Plane areas:

        (a)   Overall appearance.

  (3)   Struts, Stern Tubes, and Fairwaters:

        (a)   External main strut housing and strut.

        (b)   Fairwater halves forward of main strut.

        (c)   Shaft.

        (d)   Stern Tube fairwater.

  (4)   Anchor:

        (a)   Check housing for marine
               growth and obstructions.

(29)

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

    (5) Safety:

      (a) Ensure diver can surface easily.

      (b) Ensure suctions/discharges are
          Secure.

      (c) Never dive on any engineering spaces
          if machinery is running.

    (6) Zinc.

    (7) Torpedo tube shutters.   (7) "Barn Doors."

    (8) Underwater Hull Openings: (8) Display Transparency 9-1-10, Underwater
                                    Hull Inspection.

      (a) After ballast tank group.

      (b) Check suction and discharges.   (b) Trash Disposal Unit (TDU).

      (c) Format ballast tank group.

      (d) BQH sensors.

      (e) Sonar.

(30)

A-4-30

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**

Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

    (9)   Ship's keel and bow.

    (10) Secondary Propulsion Motor (SPM)
         (if applicable).

  d.   Perform Underwater Hull inspection (day).   d.   Perform Job Sheet 9-1-5, SURFACE VESSEL
                                                    HULL INSPECTION.

10. Hull Inspection Report:

  a.   List items to be inspected.

  b.   Include diagrams to show damage.

  c.   Include photographs to show damage, deterioration,
     etc.

  d.   Include UDATS cassettes.

  e.   Developed locally (specifically for):

  (1)   Surface ships.

  (2)   Submarines.

(31)

A-4-31

LESSON PLAN

Unit 9.   INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**
Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

    f.   Diving divisions should retain hull inspection
        report copies for units within their cognizance
        as a ready reference, since past history tells us
        that units tend to misplace their original copies.
        To avoid in-water duplication of your effort,
        maintain a correct administration file (by UIC) of
        all waterborne inspections completed by your divers.

11.   Summary and Review - The objective of this topic was to teach
     the knowledge and skills required to conduct underwater hull
     inspection. To accomplish this, trainees must know the
     different part of the ship, recognize fouling, prepare reports,
     and understand safety procedures. The following subtopics were
     discussed:

    a.   Ship hull configurations.

    b.   Stages of sea growth.

    c.   Planning for inspection.

    d.   Fouling rating scales.

    e.   Fouling areas of ship's hull.

    f.   Diving safety.

(32)

A-4-32

LESSON PLAN

Unit 9. INSPECTION OF MAJOR HULL COMPONENTS   **A-433-0023A**
Topic 9.1 UNDERWATER HULL INSPECTION

DISCUSSION POINT   **RELATED INSTRUCTOR ACTIVITY**

    g.   Surface ship and submarine hull
        inspection.

    h.   Performance of underwater hull
        inspection.

    i.   Hull inspection report.

12. Assignments - The following assignments
    should be completed:

    a.   Complete Assignment Sheet 9-2-1.   a.   Assignment Sheet 9-2-1 is to be
        Trainees are to read Information   completed prior to beginning Lesson
        Sheet 9-2-2 and 9-2-3 and review   Topic 9.2.
        Diagram Sheets 9-2-4 and 9-2-5.

(33)

A-4-33

TAB A-5

TRAINEE GUIDE

TRAINEE GUIDE

FOR

NAVY SCUBA DIVER

A-433-0023A

PREPARED FOR

DIRECTOR, LEARNING AND DEVELOPMENT (NETC N7)
9549 BAINBRIDGE AVE
NORFOLK, VIRGINIA 23511-2612

PREPARED BY

NAVAL DIVING AND SALVAGE TRAINING CENTER
PANAMA CITY, FLORIDA 32407

NOVEMBER 2008

FOR TRAINING USE ONLY

TRAINEE GUIDE

A-433-0023A

CHANGE RECORD

Number and Description of Change	Entered By	Date

FOR TRAINING USE ONLY

ii

TRAINEE GUIDE_____**A-433-0023A**

TABLE OF CONTENTS

FOR TRAINING USE ONLY

iii

TRAINEE GUIDE   **A-433-0023A**

SECURITY AWARENESS NOTICE

This course does not contain any classified material.

TRAINEE GUIDE   **A-433-0023A**
SAFETY/HAZARD AWARENESS NOTICE

This notice promulgates safety precautions to the staff and trainees of the Navy SCUBA Diver Course in accordance with responsibilities assigned by the Chief of Naval Education and Training.

Trainees may voluntarily request termination of training. Any time the trainee makes a statement such as "I QUIT," or "DOR," (Drop on Request), he or she shall be immediately removed from the training environment and referred to the appropriate division or training officer for administrative action. The trainee must then make a written statement, clearly indicating the desire to DOR.

Any trainee having apprehension concerning your personal safety or that of another, you should signal for a "Training Time Out" to clarify the situation or procedure and receive additional instruction as appropriate. "Training Time Out" signals, other than verbal, such as forming a "T" using both hands, can be used.

The safety precautions contained in this course are applicable to all personnel. They are basic and general in nature. Personnel who operate or maintain equipment in support of Navy SCUBA Diver Course must be thoroughly familiar with all aspects of personnel safety, and strictly adhere to every general as well as specific safety precautions contained in operating and emergency procedures and applicable governing directives.

Special emphasis must be placed on strict compliance with published safety precautions and on personal awareness of potentially hazardous conditions peculiar to diving. All personnel must have a comprehensive knowledge of emergency procedures which prescribe courses of action to be followed in the event of equipment failure or human error as stated in the Pre-Mishap Plan. Strict adherence to approved, verified operating, emergency, and maintenance procedures IS MANDATORY. As a minimum, you are responsible for knowing, understanding, and observing all safety precautions applicable to the command, school, course, your work, and your work areas. In addition, you are responsible for observing the following general safety precautions:

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v

A-5-6

SAFETY/HAZARD AWARENESS NOTICE (CONT.)

1. Each individual shall report for work rested and emotionally prepared for the tasks at hand.

2. You shall use normal prudence in all your functions, commensurate with the work at hand.

3. You shall report any unsafe conditions, or any equipment or material which you consider to be unsafe, and any unusual or developing hazards.

4. You shall warn others whom you believe to be endangered by known hazards or by failure to observe safety precautions, and of any unusual or developing hazards.

6. You shall report to the school any mishap, injury, or evidence of impaired health occurring in the course of your work or during non-training environment.

6. You shall wear or use the protective clothing and/or equipment of the type required, approved, and supplied for the safe performance of your work.

7. All trainees in the immediate vicinity of a designated noise hazardous area or noise hazardous operation shall wear appropriate hearing protective devices. (NDSTC Instruction 6260.6 series)

8. You must always observe appropriate safety precautions when working around electrical circuits and equipment to avoid injury or death from electrical shock and short circuits (NDSTC Instruction 5101.2 series).

HOW TO USE YOUR TRAINEE GUIDE

This publication has been prepared for your use while under
instruction. It is arranged in accordance with the topics
taught, and is in sequence with those topics. By using the
table of contents you should be able to locate the lesson topics
easily. By following the enclosed course schedule, you should
be able to follow the course of instruction in a logical manner.
Under each topic there may be the following instruction sheets:

- OUTLINE SHEETS: Provide a listing of major teaching points.
  The outline is consistent with the outline of the
  discussion points contained on the DDA pages in the lesson
  plan. It allows the trainee to follow the progress of
  lesson topic, to take notes as desired, and to retain topic
  information for future reference.
- INFORMATION SHEETS: Amplify supplemental information from
  the reference materials for the course, from technical
  manuals, or from instruction books. You may be tested on
  this material during the course.
- PROBLEM SHEETS: Normally used for paperwork troubleshooting
  when the equipment is not available. Can also be used for
  drill-and-practice problems related to the topic.
- JOB SHEETS: Provide step-by-step instructions for
  developing your skills in performing assigned tasks and
  maintaining the equipment when and where the work is
  assigned, in the laboratory or practical areas.
- ASSIGNMENT SHEETS: To assist you in being prepared for the
  lesson topics and laboratory/practical exercises BEFORE
  they are presented by the instructor or occur in the
  course.
- DIAGRAM SHEETS: These are used as necessary to simplify the
  instruction. They are to aid you in understanding the
  systems, equipment, or topics presented.

All of the instruction sheets are identified by their unit and
lesson topic number. They are listed in the order of their use.
Each lesson topic will contain at least one Enabling Objective.

The Enabling Objectives listed in this Guide specify the
knowledge and/or skills that you will learn during the course,
and reflect the performance expected of you on the job. The
Enabling Objectives specify the knowledge and/or skills you will
learn in a specific lesson topic. You should thoroughly

understand the Enabling Objectives for a lesson topic and what these objectives mean to you before you start each lesson topic. Each learning objective contains behavior(s), conditions, and standards.

They are defined as follows:

- The behavior is a description of the performance and/or knowledge that you will learn in that lesson topic;
- The conditions under which you will be able to perform or use the
- knowledge;
- The standard(s) to which you will be able to perform or use the
- knowledge.

The objectives provide a means by which you can check your progress during training. The objectives also enable you to evaluate your training when you have finished, so you can ensure that you have satisfied the goals of the course. Your instructor will explain the objectives to you at the start of the course. Feel free to ask for additional information during training if you feel that you are not learning as you should.

- STUDY TECHNIQUES: Classroom and laboratory sessions will be conducted by one or more instructors. You will be responsible for completing the material in this guide, some of it before class time. Prior to starting to use this guide, read through the front matter and become familiar with the organization of the material, then follow directions below for each lesson topic:

  - READ the Enabling Objectives for the lesson topic and familiarize yourself with what will be expected of you.
  - STUDY each reading assignment.
  - WRITE any written assignment.
  - EXAMINATIONS AND QUIZZES

Exams and quizzes will be administered as required by the Course Master Schedule. A blitz is an informal test used to check for understanding, and may be given by your instructor at any time. These quizzes do not count toward your final grade. In any event, only the material covered will be tested. All written tests will be in the form of multiple choice, completion, or true/false items. Performance tests will be provided to test job skills as appropriate. Success on exams is dependent upon an understanding of the objectives, involvement in class activities, and good study habits.

TRAINEE GUIDE_____**A-433-0023A**
TERMINAL OBJECTIVES

1.0 **QUALIFY** as a SCUBA diver in accordance with Navy Military Personnel Command Manual BUPERS Manual.

2.0 **PREPARE** DIVING RECORDS in accordance with U.S. Navy Diving Manual, Vol 1, NAVSEA NDM.

3.0 **COMPLY** WITH DIVING ACTIVITY AIR SAMPLING PROGRAM REQUIREMENTS in accordance with U.S. Navy Diving Manual, Vol 1, NAVSEA NDM.

4.0 **PLAN** OPEN CIRCUITS SCUBA DIVE accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, chapter 4.

5.0 **PERFORM** OPEN CIRCUIT SCUBA DIVE in accordance with U.S. Navy Manual, Vol 1, NAVSEA NDM.

6.0 **PERFORM** UNDERWATER SEARCH in accordance with U.S. Navy Manual, Vol 1, NAVSEA NDM.

7.0 **PERFORM** INITIAL TREATMENT FOR DIVING ACCIDENTS AND INJURIES in accordance with U.S. Navy Manual, Vol 1, NAVSEA NDM.

8.0 **PERFORM** INSPECTION AND MAINTENANCE ON OPEN CIRCUIT SCUBA EQUIPMENT AND RELATED UNDERWATER ACCESSORIES in accordance with Equipment PMS, NA.

9.0 **CHARGE** open circuit SCUBA following a checklist and in accordance with the U. S, Navy Diving Manual, Volume 1.

10.0 **APPLY** underwater hull search techniques to CONDUCT inspection of major hull components in accordance with Underwater Work Techniques Manual, Vol. 2, while performing operations as a SCUBA diver. Observe applicable safety precautions.

> **NOTE TO READER:** Sample instruction is provided to support only Terminal Objectives 1.0, 4.0, 9.0, and 10.0. Sample instruction for Terminal Objective 1.0 is intentionally omitted.

TRAINEE GUIDE_____**A-433-0023A**

COURSE MASTER SCHEDULE

A-433-0023A

WEEK 3
Day 1

Topic No.	Type	Period	Topic Title	Period Length	Ratio	Bottleneck Ratio
1.1	Class	1	SCUBA DIVING	50	25:1	
1.1	Class	2	SCUBA DIVING	50	25:1	
	Special	3	TEST	50	25:1	

NOTE TO READER: Only Unit 2, Lesson Topic 1 and Unit 3, Lesson Topic 1 are used as samples in Volume II. Interim units of instruction are intentionally omitted.

8.1	Class	4	SCUBA CHARGING	50	25:1	
8.2	Class	5	SCUBA CHARGING	50	25:1	
8.3	Lab	6	SCUBA CHARGING	50	4:1	
	Special	7	TEST	50	4:1	
9.1	Class	8	UNDERWATER HULL INSPECTION	50	25:1	
9.2	Class	9	UNDERWATER HULL INSPECTION	50	25:1	
9.3	Class	10	UNDERWATER HULL INSPECTION	50	25:1	

Day 2

9.1	Class	11	UNDERWATER HULL INSPECTION	50	25:1	
9.1	Lab	12	UNDERWATER HULL INSPECTION	50	25:1	
	Special	13	TEST	50	25:1	

TRAINEE GUIDE_____**A-433-0023A**

OUTLINE SHEET 1-1-1

SCUBA DIVER QUALIFICATIONS

A. INTRODUCTION:

To qualify as SCUBA divers trainees must go through rigorous physical conditioning. A diver's ability to perform underwater is dependent on the physical conditioning of the diver. The benefits of good physical conditioning are increased self confidence and increased underwater endurance. As a diver, you life depends on the selection and use of the proper, approved equipments. And, although diver work is hazardous, your safety is paramount.

B. ENABLING OBJECTIVES:

1.1 **PERFORM** physical training with the class as a group in accordance with the Course Master Schedule, and successfully **MAINTAIN** diver physical qualification standards throughout the course of training in accordance with BUPERS Manual, Article 1410380.

1.2 **IDENTIFY** the minimum equipment which must be worn by a Navy SCUBA diver in accordance with U. S. Navy Diving Manual, Volume 1.

C. TOPIC OUTLINE:

1. Introduction.

2. Overview.

3. Requirements.

4. Goals of the Physical Conditioning Program.

5. Summary and Review.

6. Assignment.

7. Application.

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TRAINEE GUIDE_____**A-433-0023A**

OUTLINE SHEET 8-1-1

SCUBA CHARGING

A. INTRODUCTION:

Open circuit SCUBA cylinders must be refilled or "topped off" when the pressure in the cylinder is not sufficient to complete the planned dive. The procedure for doing this is called "charging."   In this lesson topic, you will be given the charging air system and charging checklist for use at this command.

B. ENABLING OBJECTIVES:

6.1 **APPLY** General Gas Laws when charging SCUBA cylinders in accordance with U.S. Navy Diving Manual, Volume 1.

6.2 **FOLLOW** safety precautions applicable to charging Open Circuit SCUBA in accordance with the U.S. Navy Diving Manual, Volume 1.

6.3 **CHARGE**, as a member of a SCUBA charging team, SCUBA cylinders in accordance with U.S. Navy Diving Manual, Volume 1, to the accuracy required by the Diving Training Standards following an Open Circuit SCUBA charging checklist for the available system.

C. TOPIC OUTLINE:

1. Introduction.

2. General Gas Law that Affects SCUBA Charging.

3. Charge SCUBA Cylinders.

4. Safety.

5. Summary and Review.

6. Assignment.

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2

A-5-12

TRAINEE GUIDE_____**A-433-0023A**

OUTLINE SHEET 8-1-1

SCUBA CHARGING (CONT.)

7. Application.

> **NOTE TO READER:** Only those instruction sheets supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

TRAINEE GUIDE   **A-433-0023A**

ASSIGNMENT SHEET 8-1-2

SCUBA CHARGING

A. INTRODUCTION:

This assignment is to be completed prior to the material being covered in class.

B. ENABLING OBJECTIVES:

9.1 **APPLY** General Gas Laws when charging SCUBA cylinders in accordance with U.S. Navy Diving Manual, Volume 1.

9.2 **FOLLOW** safety precautions applicable to charging Open Circuit SCUBA in accordance with U.S. Navy Diving Manual, Volume 1.

C. STUDY ASSIGNMENT:

1. Read U. S. Navy Diving Manual, Volume 1, para. 5-3.4; 5-3.5.

D. Study Questions:

1. What are the safety requirements for charging SCUBA cylinders?

2. How often should cylinders be charged?

> **NOTE TO READER**: Only those instruction sheets supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

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4

A-5-14

JOB SHEET 8-1-3

CHARGE SCUBA CYLINDERS

A. INTRODUCTION:

SCUBA cylinders must contain sufficient pressure in order to
effectively and safely complete dives. This Job Sheet will
allow you to practice the step-by-step procedures required
to charge SCUBA cylinders. A major benefit of this exercise
is that you will have the opportunity to make the same
decisions that will be required to perform this task in your
duty assignment.

B. EQUIPMENT:

1. SCUBA charging checklist.
2. SCUBA cylinders.
3. SCUBA charging station including equipment.
4. Hearing protection.

C. REFERENCES:

1. U.S. Navy Diving Manual, Vol 1, NAVSEA NDM.
2. Diving Training Standards, NAVDIVSALVTRACEN 433-0023-1.
3. Instructional Building Auxiliary Air Operating Procedures
   Manual, NAVDIVSALVTRACEN Local Instruction.
4. SCUBA Charging Checklist, NAVDIVSALVTRACEN.

D. SAFETY PRECAUTIONS:

Review TTO/DOR procedures in the Safety/Hazard Awareness
Notice.

E. JOB STEPS:

Perform SCUBA cylinder charging in accordance with
NAVDIVSALVTRACEN checklist 40-8.

F. SELF TEST QUESTIONS:

Note: To be developed.

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TRAINEE GUIDE_____**A-433-0023A**
JOB SHEET 8-1-3

CHARGE SCUBA CYLINDERS (CONT.)

NOTE TO READER: Only those instruction sheets supporting Unit 2, Lesson Topic 1 and Unit 9, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

OUTLINE SHEET 9-1-1

UNDERWATER HULL INSPECTION

A. INTRODUCTION:

Underwater hull inspection involves the examination of the exterior underwater hull and components to determine the condition and needs for maintenance and repair. In this topic, you will be taught the components to be inspected and the procedures for inspection.

B. ENABLING OBJECTIVES:

7.1 **IDENTIFY** the components of the ship's hull in accordance with the Underwater Work Techniques Manual, Volume 2.

7.2 **DESCRIBE** the stages of growth commonly found on underwater hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081, and the Underwater Work Techniques Manual, Volume 2.

7.3 **STATE** the general contents of the Fouling Rating Scale, and the Paint Deterioration Rating Scale, in accordance with NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.

7.4 **DESCRIBE** the fouling areas of hulls in accordance with the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081. 4.13 IDENTIFY considerations that affect dive planning in accordance with U.S. Navy Diving Manual, Volume 1, NAVSEA 0994-LP-001-9010, para. 4-2.

7.5 **APPLY** the specific safety precautions associated with underwater hull inspections in accordance with the U. S. Navy Diving Manual, Volume 1; the Underwater Work Techniques Manual, Volume 2; and the NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Chapter 081.

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7

A-5-17

TRAINEE GUIDE _____ **A-433-0023A**

OUTLINE SHEET 9-1-1

UNDERWATER HULL INSPECTION (CONT.)

7.6 **PERFORM** day and night underwater hull inspections in accordance with the NAVSHIPS Technical Manual and Underwater Work Techniques Manual, Volume 2.

7.7 **PREPARE** the ship's hull inspection report in accordance with the Diving Training Standards.

> **NOTE TO READER**: Only those instruction sheets supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

C. TOPIC OUTLINE:

1. Introduction.

2. Safety Reminder.

3. Ship Hull Components.

4. Stages of Sea Growth.

5. Fouling Rating Scales.

6. Critical Fouling Surfaces.

7. Dive planning.

8. Use Repair Safety Checklist.

9. Perform Underwater Hull Inspection (day).

10. Hull Inspection Report.

11. Summary and Review.

12. Assignment.

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8

A-5-18
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TRAINEE GUIDE⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯**A-433-0023A**

DIAGRAM SHEET 9-1-2

BLADED PROPELLERS (LOOKING FROM STERN TOWARD BOW)
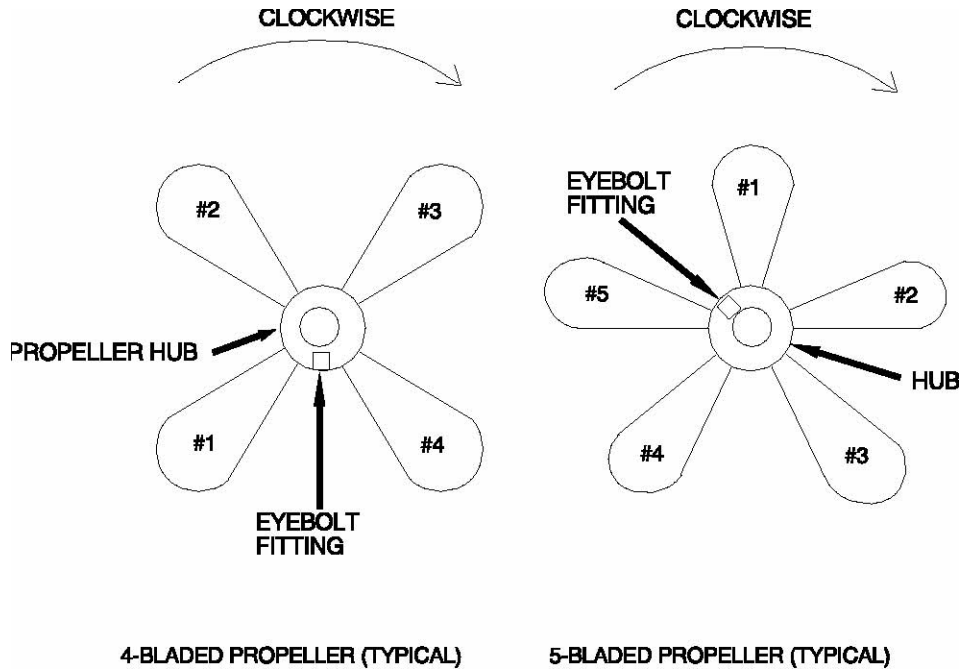
NOTE TO READER: Only those instruction sheets supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

TRAINEE GUIDE _____ **A-433-0023A**

INFORMATION SHEET 9-1-3

FOULING RATING SCALE

A. INTRODUCTION:

This information describes each of the Fouling Ratings.

B. REFERENCE:

NAVSHIPS Technical Manual, Chapter 081, Waterborne
Underwater Hull Cleaning of Navy Ships, Chapt. 081, S9086-
CQ-STM=010/CH-081 R2.

C. INFORMATION:

Fouling Rating, (FR)	Description
0	A clean, foul-free surface; red AF paint (for a ship out of dry dock).
10	Continuous graduations of shades of red and green (incipient) slime.
20	Slime as dark green patches with yellow or brown colored areas (advanced slime).
30	Grass as filaments up to 3 inches (76 mm) length, projections up to 1/4 (6.4 mm) in height; or a flat network of filaments, green, yellow, or brown in color.
40	Calcareous fouling on edges, welded seams, corners, or as discrete patches covering flat areas roughly 9 to 10 inches (229 to 254 mm) diameter.
50	Random and scattered tubeworms or barnacles, (or both) on slightly curved or flat surfaces.
60	Area distribution of tubeworms or barnacles, 1/4 inch (6.4 mm) in diameter or less; fouling does not completely cover or blank out surface.
70	Tubeworms and barnacles completely cover surface in patches exceeding 9 to 10 inches (229 to 254 mm) in diameter. Tubeworms lying flat with radiating fringes of growth or branches 1/4 inch (6.4 mm) in diameter or less.
80	Tubeworms closely packed together and growing upright away from surface. Barnacles growing one on top of another. Calcareous shells appear clean or white in color.
90	Dense growth of tubeworms with barnacles 1/4 inch (6.4 mm) or greater. Calcareous shells brown in color or with slime or grass overly.
100	All forms of fouling present, particularly soft sedentary animals without calcareous covering (tunicates).

NOTE TO READER: Only those instruction sheets supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson Topic 1 are included to illustrate the contents of a Trainee Guide.

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TRAINEE GUIDE   **A-433-0023A**

ASSIGNMENT SHEET 9-1-4

PLANNING UNDERWATER HULL INSPECTION

A. INTRODUCTION:

This assignment is to be completed prior to the material
being covered in class.

B. ENABLING OBJECTIVES:

10.1 **IDENTIFY** the components of the ship's hull in
     accordance with the Underwater Work Techniques Manual,
     Volume 2.

10.2 **DESCRIBE** the stages of growth commonly found on
     underwater hulls in accordance with the NAVSHIPS
     Technical Manual, Waterborne Underwater Hull Cleaning
     of Navy Ships, Chapter 081, and the Underwater Work
     Techniques Manual, Volume 2.

10.4 **STATE** the general contents of the Fouling Rating Scale,
     and the Paint Deterioration Rating Scale, in accordance
     with the NAVSHIPS Technical Manual, Waterborne
     Underwater Hull Cleaning of Navy Ships, Chapter 081.

10.2 **DESCRIBE** the fouling areas of hulls in accordance with
     the NAVSHIPS Technical Manual, Waterborne Underwater
     Hull Cleaning of Navy Ships, Chapter 081.

4.13 **IDENTIFY** considerations that affect dive planning in
     accordance with U.S. Navy Diving Manual, Volume 1,
     NAVSEA 0994-LP-001-9010, para. 4-2.

10.7 **APPLY** the specific safety precautions associated with
     underwater hull inspections in accordance with the U.S.
     Navy Diving Manual, Volume 1; the Underwater Work
     Techniques Manual, Volume 2; and the NAVSHIPS
     Technical Manual, Waterborne Underwater Hull Cleaning
     of Navy Ships, Chapter 081.

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ASSIGNMENT SHEET 9-1-4

UNDERWATER HULL INSPECTION (CONT.)

10.5 **PERFORM** day and night underwater hull inspection in
     accordance with the NAVSHIPS Technical Manual and
     Underwater Work Techniques manual, Volume 2.

10.6 **PREPARE** the ship's hull inspection report in accordance
     with the Diving Training Standards.

C. STUDY ASSIGNMENT:

1. Read U. S. Navy Diving Manual, Volume 1, Chapter 4.

D. STUDY QUESTIONS:

1. What are the inspection materials?

2. How many people inspect at a time?

3. How often should inspections be conducted?

NOTE TO READER: Only those instruction sheets
supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson
Topic 1 are included to illustrate the contents of a
Trainee Guide.

<u>**TRAINEE GUIDE**</u>_____**A-433-0023A**

JOB SHEET 9-1-5

INSPECTION STEPS

A. INTRODUCTION:

Underwater hull inspection requires a thorough knowledge of
the components and conditions peculiar to underwater
operations. This Job Sheet will allow you to practice the
step-by-step procedures required to conduct underwater hull
inspections. A major benefit of this exercise is that you
will have the opportunity to make the same decisions that
will be required to perform this task in your duty
assignment.

B. EQUIPMENT:

1. Open circuit SCUBA outfit.
2. 12" rule.
3. Tending lines.
4. Underwater lights.
5. Chem-lite.
6. Hull inspection report.

C. REFERENCES:

1. Waterborne Underwater Hull Cleaning of Navy Ships, Chapt.
   081, S9086-CQ-STM-010/CH-081 R2.
2. Underwater Work Techniques, Vol 2, NAVSEA UWT.
3. U.S. Navy Diving Manual, Vol 1, NAVSEA NDM.

D. SAFETY PRECAUTIONS:

Review TTO/DOR procedures in the Safety/Hazard Awareness
Notice.

NOTE TO READER: Only those instruction sheets
supporting Unit 2, Lesson Topic 1 and Unit 3, Lesson
Topic 1 are included to illustrate the contents of a
Trainee Guide.

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JOB SHEET 9-1-5

INSPECTION STEPS (CONT.)

E. JOB STEPS:

1. At Diving supervisor's direction, dress in open circuit
    SCUBA following donning sequence in U.S. Navy Diving
    Manual, Volume 1, para. 5-4.2.1. Report to the Diving
    Supervisor for final pre-dive inspection.

2. Review safety checklist in the Underwater Work Techniques
    Manual, Vol. 2, Part 2 Section 4 before entering water.
    At Diving supervisor's direction, make proper water
    entry.

3. At Diving supervisor's direction, descend on craft and
    make an underwater inspection of the craft's hull.

4. Upon surfacing, sound off, "Maximum Depth_____, Bottom
    Time_____." Failure to report this information will
    result in a failing grade for this Job Sheet.

5. At Diving supervisor's direction, make proper water exit.

6. Await further instructions from Diving supervisor.

7. Complete an underwater hull inspection report (one per
    buddy team).

NOTE: Two percent will be deducted for each line pull
       signal not given or given incorrectly.

F. SELF-TEST QUESTIONS:

None.

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14

A-5-24

TAB A-6

TEST ADMINISTRATOR'S GUIDES

NAVY SCUBA DIVER
A-433-0023A

SECTION 1 - PERFORMANCE TEST ADMINSTRATOR'S GUIDE

PERFORMANCE TEST 2-1-1
Life Preserver Familiarization, Mask and Snorkel
And Drown Proofing

NOVEMBER 2008

A-6-2

INSTRUCTIONS TO THE ADMINISTRATOR

General Description of performance test:

Students will be evaluated on their ability to:

1. Maintain buoyancy control.
2. Clear mask utilizing using two methods.
3. Demonstrate proper usage of snorkel both with and without a mask.
4. Stay on the surface while participating in drown proofing.

Safety Precautions:

1. When hands are joined together with line, do not tie the line in a knot.
2. When feet are secured with line, do not tie a knot in such a fashion that it cannot be readily untied.
3. NEVER have both hands AND feet tied at one time.
4. Only put as many trainees in the water as can be safely monitored by the number of instructors present. 25:4 ratio.
5. Instructors refer to Job Sheet 2-1-1 for safety precautions pertaining to the area of which the diving will be conducted.

Environment: Swimming Pool

Equipment per trainee: Mask, Fins, Life Preserver, Snorkel, Wet Suit (as required), short piece of line

Special Instructions:

Trainees may voluntarily request termination of training. Any time the trainee makes such a statement such as "I Quit," or "DOR," (Drop on Request), he or she shall be immediately removed from the training environment and referred to the appropriate division or training officer for administrative action. The trainee must then make a written statement, clearly indicating the desire to DOR.

Any time a trainee or instructor has apprehension concerning their personal safety or that   of another, they shall signal for a "Training Time Out" to clarify the situation as appropriate. "Training Time Out" signals shall be

appropriate to the training environment. "Training Time Out" signals for this unit are a verbal "HELP", or the hand signals for "HOLD" (Clinched fist), "4 FINGERS HELD UP", or the "T SIGNAL" (one hand laid across the end of the other).

Instructors are responsible for maintaining situational awareness and shall remain alert to signs of trainee panic, fear, extreme fatigue or exhaustion, or lack of confidence that may impair safe completion of the training exercise. Instructors shall immediately stop training, identify the problem, and make a determination whether to continue or discontinue training. Instructors shall be constantly alert to any unusual behavior which may indicate a trainee is experiencing difficulty, and shall immediately take appropriate action to ensure the trainee's safety.

EVALUATION INSTRUMENT

<u>Job Sheet Number</u>:   Job Sheet 2-1-1

<u>Steps</u>:

LIFE PRESERVER

   1. Swim to deep end of pool.
 *2. Inflate Life Preserver <u>with oral inflator</u> until positive buoyancy is achieved.
   3. Swim circles on back until told otherwise by instructor.

MASK/SNORKEL

   4. In shallow end of pool, take a breath and submerge until snorkel fills with water.
   5. Surface and exhale through snorkel, blowing water out while keeping face in water.
   6. Continue to breathe through snorkel until comfortable.
   7. Don mask.
   8. Fill mask with water.
 *9. Demonstrate two methods of clearing mask.

      a. Push with palm of hand on top front of mask and exhale through nose with head titled back.
      b. Tilt head to one side, push in on high side of mask and exhale through nose.

A-6-4

*10. Using snorkel, trainee should sit in shallow end of
      pool without mask and breathe through snorkel for a
      minimum of 3 minutes.
*11. Using snorkel and fins, swim circles around the pool
      with face in the water for two laps without lifting
      head out of water.
*12. Throw mask in water and let it sink to the bottom.
      Swim underwater, retrieve mask, and don and clear
      mask of water prior to surfacing.

   DROWN PROOFING

*13. Enter water and use basic survival stroke for 5
      minutes.
*14. Enter water with ankles tied and use modified basic
      survival stroke for 5 minutes.
*15. Enter water, holding a line in both hands. With
      hands touching behind back, use the modified basic
      survival stroke for 5 minutes.

  * = CRITICAL STEP

Step Description:

   1. A Checklist will be used to evaluate trainee
       performance.
   2. Steps 2 and 9 through 15 are critical.
   3. A counseling sheet will be filled out, concerning
       areas of deficiency and ways of improvement, each time
       trainee fails to meet the objectives of this Job
       Sheet.
   4. Mandatory night study will be conducted in the form of
       practice during evening pool hours.
   5. Failure to meet the objectives of this Job Sheet three
       times will institute a counseling sheet being filled
       out on the trainee recommending an Academic Review
       Board (ARB).

Common Errors:

   1. Failure to maintain positive buoyancy.
   2. Failure to successfully clear mask.
   3. Failure to swim while breathing through a snorkel.
   4. Failure to maintain composure while drown proofing.

GRADING CRITERIA

1. Satisfactory: A grade of 80 or more and completion of all critical items.
2. Unsatisfactory: A grade of less than 80 or failure to complete any critical item.
3. There are eight critical steps associated with this Job Sheet. All eight critical steps, when successfully completed equate to a passing score of 80.
4. The remaining seven steps are not individually evaluated, but collectively, their successful performance in accordance with instructions is assigned a value of 0 to 20 points.

INSTRUCTIONS TO THE TRAINEE

1. Use of Job Sheet 2-1-1 is not feasible in the pool environment. Prior to allowing any trainee to enter the pool, review with the trainees as a group, all the tasks they are to demonstrate. After the trainee enters the water, the instructor will pace the trainee through each step using the Job Sheet as a guide.

2. Review DOR and TTO procedures with trainees.

3. Point out time requirements for Steps 1., 13, 14, and 15.

4. Successful completion of this Job Sheet is mandatory prior to breathing compressed air during pool phase of SCUBA.

JOB SHEET 2-1-1

Life Preserver Familiarization, Mask and Snorkel Technique
and Drown Proofing

Introduction: The purpose of the Performance Test is to assess
your skill at maintaining buoyancy control; clearing your mask
utilizing both head tilt methods; using a snorkel both with and
without a mask; and staying on the surface while participating
in drown proofing.

Equipment: Mask, Fins, Life Preserver, Snorkel, Wet-Suit (as
            required), short piece of line

Job Steps:

LIFE PRESERVER

   1. Swim to deep end of pool.

   2. Inflate Life Preserver with oral inflator until positive
       buoyancy is achieved.

   3. Swim circles on back until told otherwise by instructor.

MASK/SNORKEL

   4. In shallow end of pool, take a breath and submerge until
       snorkel fills with water.

   5. Surface and exhale through snorkel, blowing water out
       while keeping face in water.

   6. Continue to breathe through snorkel until comfortable.

   7. Don mask.

   8. Fill mask with water.

   9. Demonstrate two methods of clearing mask.

   10. Using snorkel, trainee should sit in shallow end of pool
       without mask and breathe through snorkel for a minimum
       of 3 minutes.

A-6-7

11. Using snorkel and fins, swim circles around the pool with face in the water for two laps without lifting head out of water.

12. Throw mask in water and let it sink to the bottom. Swim underwater, retrieve mask, and don and clear mask of water prior to surfacing.

DROWN PROOFING

13. Enter water and use basic survival stroke for 5 minutes.

14. Enter water with ankles tied and use modified basic survival stroke for 5 minutes.

15. Enter water, holding a line in both hands. With hands touching behind back, use the modified basic survival stroke for 5 minutes.

JOB SHEET 2-1-1 CHECKLIST

Life Preserver Familiarization, Mask and Snorkel Technique
and Drown Proofing

TRAINEE NAME/RATE_____   SSN_____
INSTRUCTOR/EVALUATOR_____   DATE_____

Evaluation Instructions Critical Steps: Observe trainee
performing each step. Watch for correct use of equipment and
adherence to safety regulations. Indicate trainee's performance
by circling either SAT or UNSAT. Ten points will be awarded for
each step performed satisfactorily. _____

SAFETY - Failure to adhere to all safety requirements will
result in automatic failure of this Performance test.

LIFE PRESERVER

   2.   Inflate Life Preserver with oral inflator   SAT UNSAT
       until positive buoyancy is achieved.

MASK/SNORKEL
   9.   Demonstrate two methods of clearing mask.   SAT UNSAT

  10.   Using snorkel, trainee should sit in   SAT UNSAT
      shallow end of pool without mask and breathe
      through snorkel for a minimum of 3 minutes.

  11.   Using snorkel and fins, swim circles   SAT UNSAT
      around the pool with face in the water
      for two laps without lifting head out of
      water.

  12.   Throw mask in water and let it sink to   SAT UNSAT
      bottom. Swim underwater, retrieve mask, and
      don and clear mask of water prior to
      surfacing.

DROWN PROOFING

13. Enter water and use basic survival   SAT UNSAT
    stroke for 5 minutes.

14. Enter water with ankles tied and use   SAT UNSAT
    modified basic survival stroke for 5
    minutes.

15. Enter water, holding a line in both   SAT UNSAT
    hands. With hands touching behind back
    use the modified basic survival stroke
    for 5 minutes.

Evaluation Instructions for Non-Critical Steps: Observe overall
trainee performing and composure when executing each step.
Assign an overall rating of 0 to 20 points. _____

   LIFE PRESERVER
      1. Swim to deep end of pool.

      3. Swim circles on back until told otherwise by
          instructor.

   MASK/SNORKEL
      4. In shallow end of pool, take a breath and submerge
          until snorkel fills with water.

      5. Surface and exhale through snorkel, blowing water
          out while keeping face in water.

      6. Continue to breathe through snorkel until
          comfortable.

      7. Don mask.

      8. Fill mask with water.

Comments:

Navy SCUBA Diver
A-433-0023A

SECTION 2 - KNOWLEDGE TEST ADMINISTRATOR'S GUIDE

Test for Units 1 through 9

MAY 2009

INSTRUCTIONS TO ADMINISTRATOR

<u>Prior to the start of testing</u>:

1. Cover or remove all training aids that could assist the trainees in answering test items.

2. Have trainees clear their desks of all unrelated testing material.

3. Inform trainees that they have 50 minutes for the test.

4. Provide pencils and scratch paper as necessary.

5. Read the test instructions to the trainees.

6. Provide pertinent diving reference documentation.

7. Comply with local instruction pertinent to testing as applicable.

<u>After completing the test</u>:

1. Collect and inventory all testing material.

2. Check test for marks made by trainees.

3. Review test with trainees.

4. Evaluate any test challenged by trainees.

5. Apply local instructions as necessary.

<u>Test Instructions to the Trainee</u>:

a. Complete the administrative section of the answer sheet by entering your name, Social Security number, and class number.

b. Trainees caught cheating will be given a zero on the test and remanded to the Training Officer for disciplinary action.

C. The Test booklet and answer sheet will be turned in to the administrator at the completion of the Test.

A-6-13

The following test items have been compiled for illustrative purposes to assess trainees' knowledge of Units 2 and 3 of the SCUBA Course:

UNIT 2: **CHARGE OPEN CIRCUIT SCUBA EQUIPMENT**

Lesson Topic 2.1:   SCUBA Charging

A. SCUBA Charging

EO9.1   1.   While charging SCUBA cylinders with high pressure air, the cylinders become hot to the touch. The cause of the increase in temperature is explained by the _____ General Gas Law.
(CTTL #62) (U.S. Navy Diving Manual, Vol. 1, para. 2-5.2.4)

EO9.2   2.   (True/False) When charging SCUBA cylinders you should place your face close to the gage to avoid getting a false reading. False.
(CTTL #63) (U.S. Navy Diving Manual, Vol. 1, Table 5-4, #3)

EO9.3   3.   Name the two accepted methods of charging SCUBA cylinders. _____ and _____.
Cascading and High Pressure Air Compressor
(CTTL #64) (U.S. Navy Diving Manual, Vol. 1, para. 5-3.4)

UNIT 3: **CONDUCT INSPECTION OF MAJOR HULL COMPONENTS**

Lesson Topic 3.1: Underwater Hull Inspection

E10.1   1.   On an illustration of a typical SSBN underwater hull, label each of the indicated components. Underwater Work Techniques Manual, Vol. 2, Fig. 4-1.
(CTTL #66)

E10.2   2.   Name four factors that determine the amount of sea growth a ship will have: Ship location, Duration of ship's movement, Hull protection and Hull cleaning Periodicity.
(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-2.1.1)

E10.4   3. Name three possible effects on a propeller which can
            be caused by use of improper cleaning tools: Change
            acoustic signature, induce singing, induce
            cavitation.
(CTTL #67) (NAVSHIPS Technical Manual, Waterborne Underwater
Hull Cleaning of Navy Ships, Vol. 2, para. 081-3.7.2.1)

E10.2   4. Of the four stages of sea growth, which of the
            following would be the first stage?

            a. Grass.
            b. Tubeworms.
            c. Slime.
            d. Barnacles.
(CTTL #68) (NAVSHIPS Technical Manual, Waterborne Underwater
Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.2.1)

E10.2   5. What stage of sea growth is common on the docking
            block bearing surface areas of a ship? _____
            Stage 3.
(CTTL #68)(NAVSHIPS Technical Manual, Waterborne Underwater Hull
Cleaning of Navy Ships, Vol. 2, para. 081-1.3.4)

E10.2   6. Barnacles and tubeworms would identify which of the
            following stages of sea growth?

            a. Slime.
            b. Grass.
            c. Hard fouling.
            d. Composite.
(CTTL #68)(NAVSHIPS Technical Manual, Waterborne Underwater Hull
Cleaning of Navy Ships, Vol. 2, para. 081-1.2.4)

E10.2   7. Which of the following stages of sea growth is most
            likely to be found inside a sea chest of a ship
            taken from dry dock and then set in port for a year?

            a. One.
            b. Two.
            c. Three.
            d. Four.
(CTTL #68)(NAVSHIPS Technical Manual, Waterborne Underwater Hull
Cleaning of Navy Ships, Vol. 2, para. 081-1.2.5)

E10.4   8.   Why is the docking block bearing surface area of a ship's hull considered to be more susceptible to fouling? _____ Unpainted in dry dock.
(CTTL #68)(NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.3.4)

E10.3   9.   On the Fouling Rating Scale, the lowest number represents _____ a clean hull.
(CTTL #69) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.2.7)

E10.3   10. On the Paint Deterioration Rating Scale, the first three ratings represent:

        a. the highest level of paint deterioration.
        b. appearance associated with normal wear.
        c. blistering, due to paint system failure.
        d. cavitation scouring.
(CTTL #69) (NAVSHIPS Technical Manual, Waterborne Underwater Hull Cleaning of Navy Ships, Vol. 2, para. 081-1.4)

E10.13 11. Name the manual and chapter in the manual where the procedures for diving operations planning are found? U.S. Navy Diving Manual, Vol. 1, Chapter 4
(CTTL #31)

NOTE: For the purposes of this sample, questions for EOs 10.5, 10.6, and 10.7 are omitted.

TAB A-7

MONITORING REPORT

MONITORING REPORT

Navy SCUBA Diver

A-433-0023A

I. Course Identification

    A. LOCATION: NAVDIVSALVTRACEN, Panama City

    B. TITLE: Navy SCUBA Diver

    C. CIN: A-433-0023A

    D. PILOT PERIOD: 16 March through 15 May, 2010

    E. MONITORS: HTCM (DV) Monday (Pilot Team Chairman)
        NAVDIVSALVTRACEN, Panama City; Mr. L. T. Tuesday (Course
        Monitor) NETC Pensacola

II. Administration

    A. Facilities.

        The class capacity is 35. The facilities are adequate
        for this trainee load.

    B. Safety.

        Safety policies and procedures are in place and are
        being practiced. Trainees are aware of Training Time
        Out (TTO) and Drop on Request (DOR) procedures, and
        appear comfortable in utilizing these procedures as
        needed. Instructors maintain situational awareness and
        constantly strive to maintain a safe training
        environment.

    C. Security.

        Course is not classified; therefore, security not
        applicable.

    D. Allocation.

        This course is 40 calendar days long with 30
        instructional days. The trainee/instructor ratio is 12

A-7-2

to 1. This is required due to an increase in planned input and will be adequate.

E. Critique Sheet Summary(s).

1. Trainees' comments are generally favorable toward course content and instructors.

2. Many trainees felt that more time was needed on Gas Laws in Unit 8. Future test performance for this unit will be analyzed to determine if reinforcement is needed.

3. Most junior trainees felt the study questions were helpful; senior trainees less so.

III. Curriculum Validation

A. <u>Lesson Plan</u>. Objectives reflect the tasks to be performed in the job assignment. The objectives are properly structured and clear. Trainees had no problem understanding concepts and ideas stated by the objectives.

B. <u>Trainee Guide</u>. The Trainee Guide is well organized. Safety is addressed in great depth and guidance is provided on how to use the Guide. Suggestions for study and instruction sheets directly support the learning process.

C. <u>Equipment/Tools</u>. Proper equipment is provided to support training. Items such as swim fins, diving watches, strobe lights, diver's lights, snorkels, weight belts, etc. are available and in adequate supply.

D. <u>Support Materials</u>. The course has various Support Materials available and in adequate supply. There are 5 overhead projectors, 5 slide projectors, 13 chalkboards, 8 transparencies, 15 slides, and 9 films.

E. <u>Instruction</u>. The instructors were well prepared and the lessons were well presented. The instructional materials, methods, and devices all serve to support the attainment of course objectives.

F. <u>Testing</u>. Tests are administered as reflected in the Course Master Schedule. However, the instructor administers an occasional pop quiz which does not impact course grade. Tests items are randomly chosen from a test bank.

IV. Instructional Accuracy/Adequacy

The yardstick of instructional accuracy was the Curriculum Outline of Instruction (COI) in the TCCD. In this pilot course the COI was followed, but some "backtracking" to earlier topics was done for reinforcement of weak points. Because all trainees passed all objectives by testing, adequacy of objectives is accepted. External evaluation by Naval Training Requirements Review (NTRR) and direct Fleet feedback will determine if the objectives and their achievement continue to meet the Fleet's needs.

V. Minority Reports

None.

VI. Other

None.

TAB A-8

TESTING PLAN

TESTING PLAN

FOR

NAVY SCUBA DIVER COURSE

A-433-0023A

AUGUST 2009

Tests and Methods

This testing plan establishes procedures to use when evaluating
the trainees' performance in attaining course objectives.
Progress through the course is measured by Progress Tests,
Within-course Comprehensive Tests, and Practical Work.
Progress and Within-course Comprehensive Tests are both
knowledge and performance. Lesson Topics are logically grouped
and make up a unit. Instruction is presented at the lesson topic
level. Tests are as follows:

     Physical Screening Test - A physical fitness test
administered on the second day of the course.

     Unit 1 Progress Test - A knowledge test administered at the
3rd period of Unit 1.

     Unit 2 Progress Test - A knowledge test administered at the
end of the first section of Unit 2.

     Physical Fitness Test - A physical fitness test administered
in the second week of training.

     Unit 2 Progress Test - A knowledge test administered at the
end of unit 2.

     Within-course Comprehensive Test 1 - A knowledge test
administered at the end of Unit 2.

     Within-course Comprehensive Test 2 - A performance test
administered at the end of Unit 2.

     Unit 3 Progress Test - A two-part knowledge test
administered at the end of Unit 3.

     Within-course Comprehensive Tests 3 and 4 - Knowledge tests
administered at the end of Unit 3.

     Within-course Comprehensive Test 5 - A performance test
administered at the end of Unit 3.

     Unit 8 Progress Test - Performance test for charging SCUBA
cylinders.

     Unit 9 Progress Test - Performance test for underwater hull
inspection.

Physical Fitness Test - A physical fitness test administered in the fifth week of training.

Knowledge Test Procedures. Knowledge tests are administered to the entire class. Normally, this consists of written and/or oral examinations. Results of the tests are used to diagnose problem areas of the class as a whole and specific problems of the individual trainee prior to continuing with the course.

Performance Test Procedures. Performance tests are administered to the entire class. Normally, this consists of diving charts which require trainees to accurately perform the steps in the process. Instructors evaluate the decisions and behaviors of the trainee. Failure to meet the standard constitutes failure of the test. The instructor will provide specific feedback to the trainee as to his/her performance on the first test to allow the trainee to correct any problems. Additional practice may be required for the trainee prior to retaking the test.

Testing Constraints

The NAVDIVSALVSCOL compressed air and filter systems are scheduled for major overhaul. Work should be completed prior to the implementation date. If work is not completed prior to the first class convening, this will preclude achievement of Terminal Objective 2.0, Charge SCUBA Cylinders. The alternatives are:

1. An attachment to the trainee's record of course completion stating that Terminal Objective 2.0, SCUBA Cylinder Charging, was not achieved due to local constraints and that this training must be accomplished through On-the-Job-Training (OJT) prior to granting the NEC.

2. Contracting use of civilian diving facilities for this training.

Performance Test Numerical Grade

The standard for performance test grades is pass/fail or a minimum of 80 points out of a possible 100. Practical work grades are based on laboratory sessions in which trainees complete job sheets. The instructor will observe and grade the Laboratory sessions. All critical steps must be performed without error.

Minimum Passing Grade

The minimum passing grade for the U.S. Navy SCUBA Diver Course is 80. Evaluation of the course objectives and the inherent dangers of diving operations require the minimum passing grade be set above the average level of understanding.

Final Grade

A final course grade reflects the trainee's scores on progress tests and comprehensive tests. Scores for practical work are not averaged since it is graded on a pass/fail basis and trainees must pass all such work to graduate. Knowledge progress tests and the knowledge component of comprehensive tests add a maximum of 10 points each to the final grade of 80. Physical fitness testing is not assigned a grade since it is a course prerequisite.

Remediation

Remediation for trainees is initially performed at the class level. Answers to all progress test items are available to the trainees during the examination review while the instructor provides explanations for the correct responses. Specific problem areas that the general class experiences will be explained at this time. Trainees who pass the test will be remediated immediately on any questions/problem missed. Trainees who score below the minimum passing score will be subject to instructor oral remediation and night study. Trainees who fail the retake of both knowledge and performance tests will be recommended for an Academic Review Board (ARB).

Test Schedule

See Course Master Schedule.

Naval Education and
Training Command

NAVEDTRA 130B
September 2009

Support Manual for
MIL-HDBK-29612-2A

TASK BASED
CURRICULUM DEVELOPMENT MANUAL
VOLUME III MANAGER'S GUIDE

NAVEDTRA 130B

TASK BASED CURRICULUM DEVELOPMENT MANUAL

MANAGER'S GUIDE

NAVEDTRA 130B - TASK BASED CURRICULUM DEVLOPMENT MANUAL
VOLUME III - MANAGER'S GUIDE
TABLE OF CONTENTS

LIST OF ACRONYMS

AAC	Acquisition Advice Code
AG/SAG	Activity Group/Sub-Activity Group
AIM	Authoring Instructional Materials
AIM I	PPP Based Authoring Tool (Legacy)
AIM II	Task Based Authoring Tool (Legacy)
AOB	Average On Board
ASVAB	Armed Services Vocational Aptitude Battery
BCA	Business Case Analysis
CAGE	Commercial and Government Entity Code
CAIMS	Conventional Ammunition Integrated Management System
CANTRAC	Catalog of Navy Training Courses
CARIS	Corporate Automated Resource Information System
CCA	Curriculum Control Authority
CCMM	Course Curriculum Model Manager
CDP	Course Data Processing
CeTARS	Corporate enterprise Training Activity Resource System
CIN	Course Identification Number
CM	Corrective Maintenance
CMS	Course Master Schedule
CNP	Chief of Naval Personnel
COG/NIIN/SMIC	Cognizance Code/National Item Identification Number/Special Material Identification Code
CPATS	CNET Program Automated Tracking System
CPM	Content Planning Module
CTTL	Course Training Task List
DDA	Discussion-Demonstration Activity
DOD	Department of Defense
DOR	Drop On Request
DP	Discussion Point
DSOT	Daily System Operating Test
EO	Enabling Objective
FAL	Fault Applicability List
FEA	Front End Analysis
ICW	Interactive Courseware
IETM	Interactive Electronic Technical Manual
ILE	Integrated Learning Environment
IMI	Interactive Multimedia Instruction
IMM	Instructional Media Material
ISD	Instructional Systems Design
ITRO	Interservice Training Review Organization
JDTA	Job Duty Task Analysis
JTI	Job Task Inventory

KM	Knowledge Management
LC	Learning Center
LO	Learning Objective
LOM	Learning Object Module
LP	Lesson Plan
LS	Learning Site
LSAR	Logistics Support Activity Record
LSO	Learning Standards Officer
MCRF	Master Course Reference File
MILCON	Military Contract
NALC	Navy Ammunition Logistics Code
NCMR	Navy Curriculum Materials Repository
NEC	Navy Enlisted Classification
NETC	Naval Education and Training Command
NETPDTC	Naval Education Training Professional Development and Technology Center
NITRAS	Navy Integrated Training Resources Administration System
NKO	Navy Knowledge Online
NOBC	Navy Officer Billet Classification
NPC	Navy Personnel Command
NTFS	Navy Training Feedback System
NTSP	Navy Training Systems Plan
O&MN	Operation and Maintenance Navy
OCCSTD	Occupational Standard
OJT	On-The-Job Training
PADDIE	Plan, Analyze, Design, Develop, Implement and Evaluate
PM	Preventive Maintenance
POA&M	Plan of Action and Milestones
POM	Program Objective Memorandum
PPP	Personnel Performance Profile
PQS	Personnel Qualification Standard
RIA	Related Instructor Activity
RIT	Revolution in Training
RRL	Resource Requirements Listing
SM&R	Source, Maintenance, and Recoverability
SME	Subject Matter Expert
SYSCOM	Systems Command
TA	Training Agency
TCCD	Training Course Control Document
TDSR	Training Decision Summary Report
TG	Trainee Guide
TO	Terminal Objective
TPP	Training Project Plan
TSA	Training Support Agency

TTE	Technical Training Equipment
TTO	Training Time Out
VI	Visual Information
WC	Wall Charts

INTRODUCTION

CHAPTER 1

TRAINING MATERIALS DEVELOPMENT

INTRODUCTION

The procedures for developing training materials following the Task Based Curriculum Development method are divided into six interrelated phases - Plan, Analyze, Design, Develop, Implement and Evaluate or "PADDIE."

- *PLAN PHASE* identifies resource requirements and the sequence of events in the development process.
- *ANALYZE PHASE* produces the job tasks, task sequence, level of performance, and the skills and knowledges which must be taught.
- *DESIGN PHASE* produces the course learning objectives and an instructional sequence.
- *DEVELOP PHASE* produces the instructional materials for the instructor and the trainee.
- *IMPLEMENT PHASE* begins when the Curriculum Control Authority (CCA) has approved a course for use and the Learning Center/Functional Commander authorizes the course to be taught.
- *EVALUATE PHASE* consists of the evaluation and revision of the training materials based on assessment of the training materials and the performance of the graduates in the Fleet.

This manual covers the Plan, Analyze, Design, and Develop Phases. In the volumes comprising this manual the steps required and approval points for products developed in each of these phases are discussed. The Implement Phase is introduced as part of Chapter 7 of this volume. Implementation and Evaluation are also addressed in NAVEDTRA 135(Series): Navy School Management Manual. The overall process is illustrated in Figure 1-1.

NAVEDTRA 130B: Task Based Curriculum Development Manual is designed to guide Navy activity personnel (curriculum developers) in the development of accurate and effective training materials. This manual:

Specifies the tasks necessary to develop and support training materials.

- Establishes the sequence of task performance.
- Assigns task performance responsibilities.
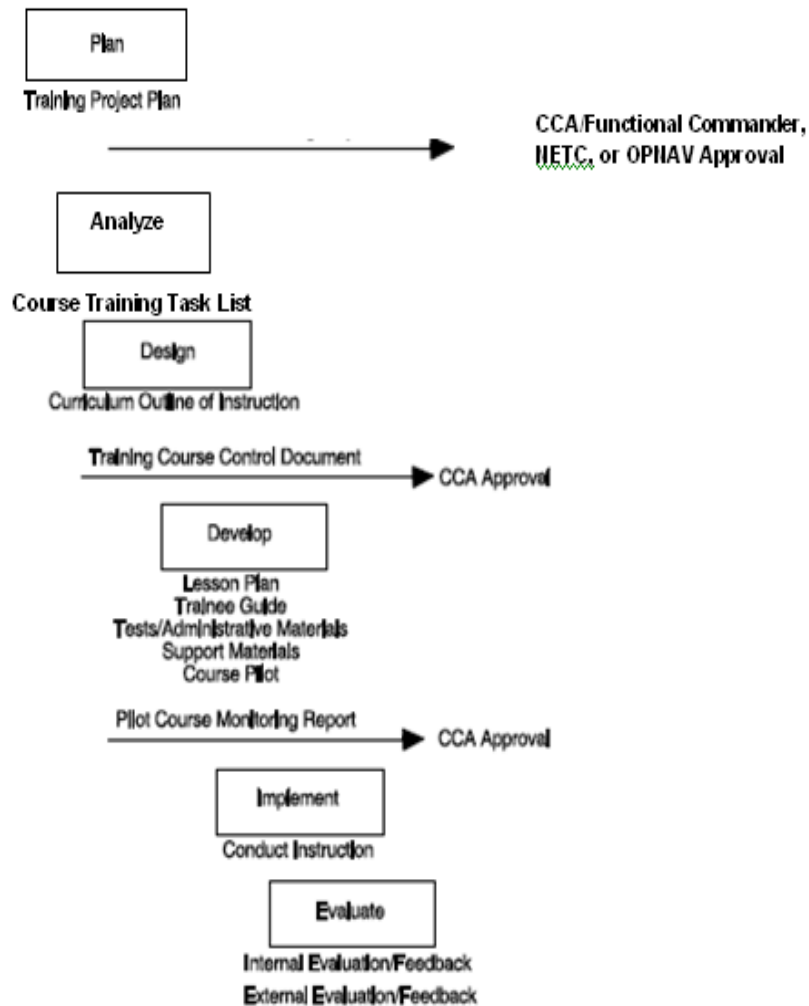
FIGURE 1-1: CURRICULUM DEVELOPMENT PROCESS

SECTION 1 - TRAINING MATERIALS

Training materials include management materials, curriculum materials, and support materials. The training materials produced by Navy in-house developers follow the guidelines of these manuals.

Recognizing the complexity of training materials development and the external factors which influence curriculum development projects, this manual is **NOT** to be used as a prescriptive document. Waiver of any phase or procedure within a phase is at the discretion of the Curriculum control Authority.

1.1. Management materials define training requirements and provide an overall plan for the accomplishment of these requirements. Management materials for development include:

- Training Project Plan (TPP).
- Course Training Task List (CTTL).
- Training Course Control Document (TCCD).
- Testing Plan.
- Pilot Course Monitoring Report.
- Documentation required or appropriate for audit trail

1.2. Curriculum materials include all materials required for the presentation of information and the development of skills in formal school training. Under this definition, curriculum materials include:

- Lesson Plan (LP).
- Trainee Guides (TG) (or instruction sheets).
- Test Materials.
- Other materials used for instruction.

1.3. Support materials are instructional materials and other devices used in support of formal instruction, informal instruction, or for independent study. Some of the most common support materials are:

- Visual Information (VI) include:

  - Wall Charts.
  - Films.
  - Videotapes/Digital Media.
  - Transparencies.

- Instructional Media Material (IMM) include:

  - On-the-Job (OJT) Training Handbook.

- Training devices.
- Textbooks.
- Technical manuals.
- Other materials helpful in the preparation of lesson topics (Fault Insertion Guide, Instructor Utilization Handbook).

SECTION 2 - TRAINING MATERIALS SUPPORT

All training materials are maintained current and accurate by surveillance and modification efforts.

2.1. Surveillance: Constant surveillance is required to detect changes in documentation, equipment, or procedures that impact training materials. Procedures for identifying training material deficiencies, for recommending changes, and for coordinating recommended changes are given in Chapter 7 of this volume.

2.2. Training Materials modifications: There are four categories of training materials modifications: Interim Change, Change, Technical Change, and Revision. The definition for each category is found in NAVEDTRA 135 (Series). Procedures for incorporating training materials modifications are described in the sections for those materials in Volume III, Chapter 7 of this manual.

SECTION 3 - PROGRAM PARTICIPANTS

The following participants have vital roles in the development and support of training materials:

3.1. Training Agency (TA)

- An office, bureau, command, or headquarters exercising command of and providing support to some major increment of the Department of the Navy's formal training effort. TAs are:

  - Commander, Naval Education and Training (NETC).
  - Navy Medicine Manpower Personnel Training and Education Command (NAVMED MPTEC).
  - Naval War College (NAVWARCOL).
  - U.S. Naval Academy (USNA).
  - Commander, United States Fleet Forces Command (USFFC).
  - Commander, Naval Reserve Forces (NAVRESFOR).

3.2. Training Support Agency (TSA)

- An office, command, or headquarters responsible for providing material and other forms of support to the TA.

- The TSA is normally a SYSCOM responsible for providing training support to the TA for a piece of equipment, a subsystem, or a system.

> EXAMPLES: Initial (factory) training, curriculum development, instructional media materials, training equipment, pre-faulted modules, training equipment life-cycle maintenance support, and curriculum surveillance services.

- Whether involved in a training development project, or in training support, a TSA is usually appointed directly or indirectly by CNO.
- The TSA liaisons with the TA, or a TA-appointed Curriculum Control Authority, to assure products or services meet training command standards and Fleet requirements.

3.3. Functional Commander: NETC has designated Learning Centers and Functional Commanders to plan, manage, and budget for training courses across broad functional areas.

3.4 Curriculum Control Authority (CCA): To support NETCs functions as a TA, NETC designates a Learning Center/Functional Commander to have curriculum control of specific courses/training programs.

- The CCA functions identified in this manual are NETC's TA responsibilities which are delegated to the Learning Center/Functional Commander having curriculum control authority.
- CCA approves instructional methods and materials.
- A single alphabetic character is used in the first position of the Course Identification Number (CIN) to identify the command which has Curriculum Control Authority. Volume I of NAVEDTRA 10500 (CANTRAC) identifies the command having curriculum control for existing courses.

3.5 Learning Site (LS): A Navy command which has a primary mission of conducting or supporting training. A school or institution at which courses are offered. The LS has responsibility for maintaining selected audit trail documents, annually reviewing training materials in the form of a Formal Course review, making recommendations to CCMM for changes/revisions, and maintaining training equipment and facilities.

3.6 Course Curriculum Model Manager (CCMM): A CCMM is assigned by the CCA with the responsibility for conducting and maintaining a specific course. The CCMM initiates curriculum development and training materials modification, conducts curriculum reviews and analysis of feedback, maintains course audit trail documentation, and develops and approves changes. The CCMM normally functions as the developer for Navy in-house-developed courses. However, the CCA can also designate personnel, other than the assigned CCMM as required, to perform these functions. CCMM functions as the developer and 1st line of approval authority for in-house and contract developed curriculum.

SECTION 4 - APPLICABLE DOCUMENTS

The documents listed below are the primary resources to be used by activity developers in the design and development of training materials. Use of documents and manuals in effect on the training materials commencement date stated in the project plan is assumed. Later issues of these specifications, standards, documents, and publications, or new specifications, standards, documents, and publications, may be used subject to joint agreement of the CCA and activity curriculum developers.

4.1 Standards, General: In June 1994, the Secretary of Defense directed that "Performance specifications shall be used when purchasing new systems, major modifications, upgrades to current systems, and non-developmental and commercial items for programs in any acquisition category (in lieu of Military Specifications and Standards)." Source: SECDEF memo, Subject: Specifications and standards - A New Way of Doing Business, dated 29 June 1994. Consequently, references to MIL-STDS have been deleted.

4.2 Publications

- Chief of Naval Operations

  - OPNAVINST 1500.2 Responsibilities and Procedures for Establishment and Coordination of Contractor Developed Training for Military and Civilian Personnel
  - OPNAVINST 1500.76(Series) Naval Training System Requirement, Acquisition, and Management
  - SECNAVINST 5870.4(Series) Permission to Copy Material Subject to Copy write

- SECNAVINST 5510.30(Series) Department of the Navy Personnel Security Program Instruction
- OPNAVINST 1500.27(Series) Interservice Training
- OPNAVINST 1500.47(Series) Navy Training Quota Management
- OPNAVINST 1500.74(Series) Utilization of Enlisted Occupational Standards for Training and Career Development
- OPNAVINST 1500.75(Series) Safety Policy and Procedures for Conducting High Risk Training
- OPNAVINST 3500.34(Series) Personnel Qualification Standards (PQS) Program
- OPNAVINST 3500.39(Series) Operational Risk Management
- OPNAVINST 5100.19(Series) Navy Safety and Occupational Health (SOH) Program Manual for Forces Afloat
- OPNAVINST 5100.23(Series) Navy Safety and Occupational Health (SOH) Program Manual
- OPNAVINST 3104.1(Series) Navy Visual Information (VI) Production, Replication, Distribution and Management Information System Policy, Responsibilities, and Procedures
- OPNAVINST 5513.1(Series) Department of the Navy Security Classification Guide
- OPNAVINST 5510.10(Series) Corporate enterprise Training Activity Resource System (CeTARS) Catalog of Navy Training Courses and Training Reporting Requirements
- OPNAVINST 11102.2(Series) Training System Installation and Transfer
- NAVPERS 18068(Series) Vol I and Vol II Manual of Navy Enlisted Manpower and Personnel Classifications and Occupational Standards (NEOCS)
- NAVEDTRA 130 (Series) Task Based Curriculum Development Manual
- NAVEDTRA 131(Series) Personnel Performance Profile Based Curriculum Development Manual
- NAVEDTRA 134(Series) Navy Instructor Manual
- NAVEDTRA 135(Series) Navy School Management Manual
- NAVEDTRA 10052-AJ Bibliography for Advancement Study
- NAVEDTRA 10500 Catalog of Navy Courses (CANTRAC)
- NAVTRASYSCEN P-530 Naval Training Systems Center Guide
- NETCINST 1500.1 Catalog of Navy Training Courses (CANTRAC) (NAVEDTRA 10500)
- NETCINST 1500.3 Institutional Accreditation
- NETCINST 1500.4 Interservice Training Review Organization (ITRO)
- NETCINST 1510.1 Navy Training Management

- NETCINST 1543.4 Technical Training Equipment (TTE)
- NETCINST 3104.1 Visual Information (VI) Program Management
- NETCINST 5100.1 Safety and Occupational Health and High Risk Training Safety Program
- NETCINST 7500.2 Technical Training Audit Program (TTAP)
- Training Requirements Data Base Annual Report - Naval Education and Training Program Management Support Activity (NETPDTC)
- MPT&E CIOSWIT-ILE-STD-1B Navy ILE Presentation Standards
- MPT&E CIOSWIT-ILE-GUIDE-3B Navy ILE Instructional Content Style guide, Interactive Multimedia Instruction & Instructor Led Training
- DOD MILHDBK 29612.3A DOD HDBK Development of Interactive Multimedia Instruction (IMI) (Part 3 of 5)
- MIL-PRF-29612B Training Data Products
- MIL-HDBK 29612-1A Guidance for Acquisition of Training Data Products and Services (Part 1 of 5)
- MIL-HDBK 29612-2A Instructional Systems Development/Systems Approach to Training and Education (Part 5 of 5)
- MIL-HDBK 29612-4 Glossaries for Training (Part 4 of 5)
- MIL-HDBK 29612-5 Advanced Distributed Learning (ADL) Products and Systems (Part 5 of 5)
- NAVSEAINST 4790.8 (Series) Ships Maintenance and Material Management (3-M) Manual (Vol 1-3)

SECTION 5 - SECURITY REQUIREMENTS

Classified information shall be handled in accordance with the Department of the Navy Supplement to the DOD Information Security Program Regulation (SECNAVINST 5510).

SECTION 6 - SAFETY REQUIREMENTS

Safety, occupational health, and hazard awareness information must be incorporated into the curricula of all appropriate training courses, as prescribed by NETCINST 5100.1 series as per NAVEDTRA 135 (Series).

SECTION 7 - SUMMARY

This chapter has provided an overview of the training materials process management. The individuals assigned the responsibility of managing the development or revision of training materials

should become familiar with the guidelines for the management, curriculum, and support materials discussed in the three volumes of this manual as well as the applicable documents listed in this chapter.

PLAN PHASE

CHAPTER 2

TRAINING PROJECT PLAN

INTRODUCTION

A curriculum development project is a complex undertaking, bringing together a wide range of human and material resources for the goal of creating quality training. Curriculum development consists of six phases, beginning with the Plan Phase. This phase consists of gathering information and building a curriculum development plan. The output product of this phase is the Training Project Plan (TPP). When approved, the TPP becomes the authorization to undertake a course revision or a new course development project through the Pilot and Implementation Phases, and the initiation of resource requisitions. A TPP is also required to cancel a course. This chapter provides amplifying information, sources of data, and a structure for developing and assembling a TPP.

GOVERNING INSTRUCTIONS AND DIRECTIVES

Throughout this chapter, numerous instructions are cited. This ensures that actions governed by instructions are carried out in accordance with the latest directives. Accordingly, instructions cited are assumed to be the most current, and series suffixes are not used. A manager should review the instructions listed in Chapter 1 to ensure that applicable requirements are considered throughout the curriculum development process.

NETCINST 1510.1, NAVEDTRA 135 (Series) and amplified by OPNAV Memorandum for Distribution 7000 N1 127189 of 15 September 2008 are the primary governing requirements for a TPP, and its approval. The information in this chapter must be applied in accordance with the current issue of these references.

SECTION 1 - PLANNING FOR COURSE REVISION, NEW COURSE DEVELOPMENT OR COURSE DEACTIVATION

Most TPPs shall be for revisions to existing courses – reflecting the constant introduction of new equipments, processes, and technologies into the Fleet. Although fewer in number, new course development projects respond to new requirements that cannot be met by revising an existing course. Courses are canceled when they become obsolete, or the training they provided is absorbed by other courses.

- The Plan Phase is the first of the six phases in the training materials development process. The output, the TPP, provides the blueprint and justification for the revision of an existing course, development of a new course, or course deactivations. "Revision," for our use, is defined in NAVEDTRA 135(Series). In general, a revision means that the course mission has changed, course length is increased, or additional resources are required. A decrease in course length may also fall under the definition of a revision; the CCA will direct submittal of a TPP.

> COURSE REVISION: A TPP shall be developed and approved in accordance with NAVEDTRAs 135, 130 and 131 as well as supplemental guidance provided by as specified in NETCNOTE 1500/N7 dated 23 Mar.

> NEW COURSE DEVELOPMENT: Completing a TPP for new course development requires establishing a Course Identification Number (CIN), CDP, initiating entries for the CANTRAC and CeTARS, identifying preliminary resource requirements, and possibly planning for facilities requirements. This entails careful research and documentation. See NAVEDTRA 135(Series) for specific guidance of establishing a new course.

> COURSE DEACTIVATION: NETCINST 1510.1 (Series), NECTNOTE 1500/N7 Dated March 2009, and NAVEDTRA 135B contain procedures for initiating and documenting the deactivation of an existing course or training program. A TPP is required.

SECTION 2 - JUSTIFICATION FOR COURSE DEVELOPMENT, REVISION, AND DEACTIVATION

There has to be a reason (or reasons) to undertake the development of a new course, the revision of an existing course, or to cancel a course. The justification for initiating these actions may come from:

- Navy Training System Requirements, Acquisition, and Management Plans (NTSPs), OPNAVINST 1500.76(Series):

  - Introduction of new weapons systems or engineering, or changes/modifications to existing systems.
  - "Life-cycle" documents reviewed and updated annually.

- Tasking by higher authority:

  - OPNAV. Introduction of new technologies, techniques, or equipment not supported by an NTSP which can replace existing subjects, be added to an existing course, or require a new course.
  - OPNAV. Fleet manning requirements may dictate an increase (or decrease) in student throughput, which requires an adjustment in resources.
  - NETC. Addition of "by direction" topics or courses, or mandated course reductions.

- Internal course reviews and local command initiatives:

  - Course reviews or data analysis determine students are not meeting course objectives and need additional "hands on" time that can only come from extending the course length.
  - Combining, re-sequencing or deleting subjects permits objectives to be met in less time and the decrease in instructional periods impacts instructor manning.
  - Data analysis or studies may show that a new course can "common core" subjects which are now taught in several separate courses.

- External course reviews:

  - Indicates problems with course content (obsolete objectives) or structure in terms of graduates not being able to perform on the job.

- Surveillance and external feedback:

  - The Navy Training Feedback System (NTFS) provide input mechanisms, data analysis, and feedback to ensure that training ashore meets Fleet requirements.
  - Job Duty Task Analysis (JDTA) is the process that NETC is maturing to list the jobs performed by an occupational field, who performs them, and the frequency of performance. A survey of jobs performed within a rating may indicate a need to revise training.
  - Human Performance Requirement Review (HPRR) consists of course reviews by Fleet, Learning Centers, and Systems Command representatives to assess existing training and to identify inefficiencies, redundant or unnecessary material.

- Training Appraisal.
- Updated Occupational Standards.
- Enlisted Rating Mergers.

SECTION 3 - TRAINING PROJECT PLAN (TPP)

The TPP presents a blueprint for curriculum development which contains course data, justifications for the course revision, new course development, or course deactivation. It includes impact statements, milestones, and resource requirements. Supportive information in developing the TPP can be found during the decision process of the project with Front End Analysis (FEA) and Business Case Analysis (BCA).

- The following paragraphs provide some general information on Training Project Plans.

Each project plan will be as unique as the project it describes. Your project may not require every item of information included in this chapter or shown in the Volume II TPP sample. Alternatively, our project plan may benefit from additional items and enclosures. The CCA and Functional Commander, working with the TPP developer, shall designate mandatory TPP elements, and possible call for additional data which will reinforce the project plan. A sample package may be provided to guide developers, or additional requirements may be levied b command instructions. All data should be researched, referenced, and be as accurate as possible. However the TPP is recognized as a planning document, subject to revisions.

3.1. Purpose and Use of a TPP

The TPP describes all training and training support elements required to provide trained personnel to operate and maintain systems or equipments, or perform tasks and functions. It provides a Plan of Actions and Milestones (POA&M) to achieve a predetermined implementation date. A TPP describes all the factors necessary to prepare and conduct a successful training program and attain optimum use of personnel, hardware, and funds. The course revision or development described in the TPP should meet, and not exceed, the training requirement.
In the case of a course deactivation, the TPP provides justification for the action and a blueprint for reallocation of resources.

3.2. Categories of Resources

- Course development and, often, course revisions require resources to develop or implement the proposed course. Course deactivations may also require resources for such things as the removal and redistribution of equipment. Resources fall into four broad categories: (1) facilities, (2) funding, (3) personnel, and (4) equipment. All four categories require long lead-time planning. An approved TPP is the authority to submit requests for resources. Whenever resources are affected by unfunded requirements, OPNAV requirement as per Memorandum for Distribution 7000 N1 127189 of 15 September 2008 requires that a TPP is routed to OPNAV N15 via NETC N7 for approval and resource allocation.

  - Facilities include new construction, and modification of existing structures such as interior arrangement, power requirements, and air conditioning. Basic categories are MILCON and Special Projects, with the difference being cost, approval authority, and lead time.

- MILCON projects should be identified six (6) years prior to the ready for training date to ensure availability of permanent facilities. Re-locatable facilities can be used as interim workaround solution, but require CNIC approval. Contact NETC N4 for assistance.
- Special projects needed to repair/renovate existing facilities or install training equipment should be identified three (3) years prior to the ready for training date. Contact NETC N4 for assistance.

  - Funding includes all developmental and material costs anticipated for the project through the pilot convening.
  - Personnel includes instructional and support personnel to conduct the course. Any increase in personnel must be identified and justified. A decrease in course length may also require a manpower adjustment.
  - Equipment includes specialized items, systems, tools, or equipments required to support and conduct training.

SECTION 4 -INITIATING A TPP

The decision to prepare a TPP can come from the Learning Center, Learning Site's Commanding Officer or Officer in Charge, or from higher authority.

- The Course Curriculum Model Manager (CCMM) will develop and submit the TPP for a course revision or deactivation.
- The CCA can designate an activity to be the CCMM for a new course and direct them to develop the TPP, or it may be developed by the CCA.
- When Functional Commanders in addition to the CCA are involved in teaching a course, preparation of a TPP should be coordinated with these functional commanders.

SECTION 5 - LOCATING DATA FOR COMPLETING A TPP

Any source which can be used to justify the project and identify the costs can be used in completing a TPP. Examples of some sources are:

- Technical manuals. Manuals should be used to the maximum extent possible as the basis for course content, equipment, and related material.
- Logistic Support Analysis Report (LSAR). A listing of jobs, and the detailed tasks to accomplish each job.
- Navy Training System Plans (NTSP):
- Part II Billet Requirements.
- Part III Personnel and Training Requirements.
- Part IV Training Logistic Support Requirements.
- CeTARS data. Master Course Reference File (MCRF) displays outyear student loading.
- Resource Requirements. A composite listing of material necessary to implement the course at each site.

SECTION 6 - SELECTING CURRICULUM DEVELOPMENT METHOD

The Navy uses several different methodologies, or systems, for developing training programs. The Task Based method and the Personnel Performance Profile/Training Path System method account for most training program development. Either system is equally capable of being used to develop all varieties of training programs. Each has characteristics and unique features that make it better suited for developing certain training programs. NAVEDTRA 130/131 do not address the Navy's Integrated Learning Environment (ILE) however, the content development guidance serves as a development standard and the foundation for development in ILE.

6.1. The Task Based method was designed for developing training programs that teach performance of a job or function in which operation or maintenance of the hardware is usually incidental or secondary to actual performance of the job. This manual – NAVEDTRA 130(Series): Task Based Curriculum Development Manual – provides details on this method.

6.2. The Personnel Performance Profile/Training Path System (PPP/TPS) system was originally designed for developing training programs that teach operation and maintenance of "hardware," such as equipments, subsystems, or a system. The PPP/TPS system is advantageous where equipment or procedures are subject to frequent updating or change. NAVEDTRA 131(Series): Personnel Performance Profile Based   Curriculum Development Manual provides details on this method.

6.3. NETCINST 1510.1 and NAVEDTRA 135(Series) contains guidelines for determining the system for development of training materials.

- Which system is selected should largely be determined by the needs, desires, and experience of those training activities which will implement and conduct the training program. It is the training activities receptiveness to the delivered training program which will largely determine whether the training program succeeds or fails.

SECTION 7 - TPP OUTLINE

The TPP shall contain all the data and information necessary to identify and justify the course revision or development and the resources required for the training course under consideration. Data for course deactivations is also provided. Specific elements of data and information shall include the following items where applicable. A sample TPP is provided in Volume II, page A-1-1 of this manual.

7.1. Cover Page, to include:

- The phase "Training Project Plan for."
- Complete course title (actual or proposed), with no abbreviations.
- Course Identification Number (CIN), if known. A new course development may not have a CIN assigned at the point the TPP is developed. CINs are assigned by the CCA as per NETC N73 guidance.

- The activity or organization for which the TPP is prepared. This is the sponsoring or tasking agency, usually the CCA.
- Name and address of the entity preparing the TPP.
- Month and year that the TPP is prepared. This is a publication date and may differ from the transmittal or approval letter date. For a revision, the date is shown in parentheses under the original publication date.
- Security classification (if required). TPPs should be unclassified if possible. See SECNAVINST 5510.36 for additional guidance on security classification.

7.2. Table of Contents. The table of contents shall be page 2, immediately after the cover page.

7.3. Course Data Pages, to include:

- The phrase "Course Data."
- Course title, with no abbreviations.
- Course Identification Number (CIN), if assigned.
- Course Data Processing code (CDP). This is a CeTARS identifier which shall be different for each training site.
- Course Status. Identify whether new start, revision, or deactivation of training.
- Course Mission Statement. This is the purpose of the course, and responds to each of the questions below. Indicate if the course mission statement will change as a result of the course revision. The examples below illustrate the types of statements used to answer each
- question:

  WHO is to be trained? "....technicians in the IC rating (E-5 through E-7)....", "....entry level enlisted Operations Specialist....,""....Aviation Electronics Technicians, Aviation Antisubmarine Warfare Operator, and Aviation Electrician's Mate's...."

  WHAT job will the person be trained to perform? "....operation and maintenance of the Inertial Navigation System....", "....instruction and practical application in security fundamentals, basic message format, teletype typing proficiency, message tape preparation, teletypewriter circuit operating procedures, and basic safety precautions....","...._AN/USM-484 Hybrid Test Station operational procedures, test procedures, emergency procedures, and scheduled maintenance procedures...."

DEGREE OF QUALIFICATION or how well the person shall be able to perform the job? "....to perform tasks at the apprentice (journeymen, master) level....", "....to the accuracy specified in supporting documentation...."

WHERE will the person utilize the training? "....ashore and onboard amphibious assault (LHD-and LHA-1) class ships, in port and underway....", "....in afloat and shore communication installations....", "....in the AIMD working environment...."

CONDITIONS under which the graduate will perform on the job. "....under supervision and using technical references....", "....in both field and shop conditions....", "....under all conditions of ship readiness...."

- Occupational classification. Applicable rate, rank designator, NEC or NOBC of the intended input population, and the NEC, NOBC, or MOS earned by course graduates. If it is proposed that an NEC shall be issued or changed as a result of the revised course, consult NAVPERS 18068(Series) for guidance.
- Prerequisites. List the prerequisites required of the trainees that are scheduled to attend the course. Prerequisites may be equipment, rate or rating specific,
- basic skills, or course specific. Prerequisites normally relate to prior training or skills, not ASVAB scores.
- Course overview. A listing of course subjects. Note any changes from the previous project plan. For a new course this shall be a description of the skills and knowledge to be attained. This is not intended to be the equivalent of a curriculum outline, or to contain objectives. The overview helps the Training Agency see what the course will actually contain. A proposed Course Master Schedule prepared in accordance with CNETINST 1540.13 can serve this purpose.
- Course length. Both current and planned course lengths in calendar days should be given.
- Training sites. Commands or activities where the course shall be taught. This information can be combined with the CDP codes, if known. For multi-site training, an asterisk (*) may be used to indicate the CCMM.
- Number of convenings. Number of classes per year for each site, both current and planned.

- Class capacity. Specify the current and planned minimum and maximum class capacity, and if the class capacity will vary between teaching sites.
- Planned Average on Board (AOB), current and planned. This is:

$$\frac{\text{Course length in calendar days X Planned input X \# of Convenings}}{365}$$

- Planned input should include:

  - USN.
  - Reserves of all categories.
  - Other Services.
  - International training students.

- Annual student throughput, current and planned.
- Estimated instructor and support requirements.
- Provide the total number of instructor and support personnel required, current and/or planned. NAVEDTRA 135 (Series) describes the factors required for standard instructor computation. Many of the factors listed, such as classroom and laboratory ratios and instructional periods, may not be known at this point. If the standard computations cannot be applied, provide the rationale for the instructor and support manning figure used.

7.4. Justification. Cite specific references, correspondence, results of conferences, NTSP, FEA, BCA data, etc., where available.

- Reasons for and anticipated benefits of the proposed project:

  - Provides required training.
  - Reduced course length.
  - Increased student throughput.
  - Impact of skill training requirements on the occupational classification system. A new course in "pipeline" training may provide an entrance or exit point to put graduates into the Fleet earlier.
  - Reduced attrition and attendant costs by providing "common core" training.
  - Deactivation of obsolete or redundant training.

- Sources of information or data:

  - Tasking by higher authority. Cite specific correspondence.
  - Internal review has indicated a need for training best met by a new course or a revision to an existing course.
  - External feedback/review. Current graduates are not able to perform on the job, or lack specific skills.
  - Job Duty Task Analysis (JDTA) data. JDTAs are normally accomplished as part of the curriculum development Analyze phase, but existing JDTA data should be used, if available.
  - Impact if the course development or revision is not
  - undertaken.
  - Clearly describe the impact on Fleet requirements and capabilities if the proposal is not undertaken. Note that this is NOT the same as "Justification." "Justification" is the authority behind the proposed revision. "Impact" refers to the consequences to the Navy of maintaining training in the current mode.

    EXAMPLES:

      Shortfall in numbers of trained personnel.

      Inability to operate or maintain updated Fleet equipment.

      Dollars not saved by deleting obsolete objectives and consolidating remaining objectives into a shorter course.

7.5. Safety Risks and Hazardous Materials exposure: Describe anticipated safety risks and exposure to hazardous materials which are absolutely necessary for training realism. Indicate if the proposed training shall be designated "high risk" and fall under the purview of OPNAVINST 1500.75 and NETCINST 5100.1. The incorporation of occupational safety and health considerations into training are defined in OPNAVINST 5100.23(Series), and NETCINST 5100.1.

7.6. Curriculum development method recommended

- Curriculum development follows either task-based procedures (NAVEDTRA 130(Series) Task-Based Curriculum Development Manual),or PPP/TPS based procedures (NAVEDTRA 131(Series): Personnel Performance Profile Based Curriculum Development

Manual). Some of the considerations used to determine the most appropriate curriculum development method may be found in NAVEDTRA 135(Series). Training and Course Supervisors will provide valuable assistance in determining the skills and knowledge, which will become the foundation for the training development or revision. Specify the development method recommended for use and the rationale for its selection.

- When preparing a TPP developed under ILE instructional development, this is not applicable:
- List training materials to be produced under the
- curriculum development procedure selected.

7.7. Compensation: Provide recommended sources of compensation for both manpower and funding. Identify possible course deactivations/reductions, cross utilization of instructors, etc.

7.8. Milestones: A time-phased narrative or graphic representation commencing with TPP approval, milestones shall include identification of major developmental products or events relating to the training materials development method selected, and end with implementation. Projected completion dates for each key event shall be indicated.

7.9. Resource requirements: Provide for each site a best estimate of the known and anticipated resources necessary to implement the training. For a revision, this shall be the additional resources required. For a new development, this shall be all resources needed to conduct the course. Identification of these resources does not constitute approval of the resources; Chief of Naval Personnel (CNP) Corporate Automated Resource Information System (CARIS) document numbers, cost account codes, and Program Objective Memorandum (POM) documentation must be forwarded.

> It is recognized that not all resources requirements may be known when the TPP is submitted. This is an initial submission and subject to revisions.

- Manpower. For new courses or revisions, identify officer, enlisted and civilian billets required, the number of billets authorized, and the number of compensated billets that can be provided, and the difference (if any). For deactivations, identify all billets that shall be offered up. Specify differences (if any). For questions on multi-service manpower issues, contact the NETC N5 Inter-service Training Review Organization (ITRO).

2-13

- Funding. Identify by appropriation, such as, Operation and Maintenance Navy (O&MN), other procurement, Navy
- (OPN), and Activity Group/Subactivity Group (AG/SAG) the one-time (initial) or recurring costs. For existing courses identify only the additional costs required to implement training.
- Specific expense items should be identified and include the following: Curriculum development, supplies, travel, equipment, publications, and printing.
- Contractor costs should be identified, including curricula development, instructors, and the operation and maintenance of training equipment.
- Equipment. Related end-item equipment. "Related" means those specialized items, systems, or equipments required to support and conduct training. For deactivations, identify the disposition/ reassignment of equipment.
- List items, providing as much information as necessary to describe the item, such as:

  - Item name or official nomenclature.
  - Part number.
  - Cognizance Code/National Item Identification Number/Special Material Identification Code (COG/NIIN/SMIC) (Formerly National Stock Number)
  - Any other identifying codes:
  - Acquisition Advice Code (AAC)
  - Commercial and Government Entity (CAGE) code Source, Maintenance, and Recoverability (SM&R) code

    NOTE: When identifying your items, use only the categories and codes that apply to your project. Use your command's logistic resource manager for assistance.

    Indicate the number of items needed to support the course. Multiple training sites may require a further breakdown by site. In cases where some items are currently on hand, list the additional items needed.

    Provide unit of issue and unit costs Technical Reference: Use when a technical reference provides source data, amplifying information, or justification for an item.

    _____

    EXAMPLE: Maintenance Trainers. Normally, weapons system trainers designed to support on-equipment training, specially developed maintenance trainers, simulators/ simulated trainer panels, and other simulator panels/   -

_____

EXAMPLE: Technical Training Equipment (TTE).Operational
equipment used for training purposes. Actual Weapon
Replaceable Assemblies, Line Replaceable Units, Subsystem
Replaceable Assemblies, Shop Replaceable Units, Circuit
Card Assemblies, weapons pylons, engines or equipment
normally a part of a weapon system.

- Test Equipment:

  - Special Purpose Electronic Test Equipment (SPETE). Test
    equipment designed to generate, modify or measure a range
    of functional parameters for a single electronic system
    or equipment. For example, test equipments which perform
    diagnostics and troubleshooting on specific aircraft;
    normally provided by the SYSCOM.
  - General Purpose Electronic Test Equipment (GPETE).
    Electronic test equipment which may be used to test two
    or more equipments or systems, of basically different
    design, by generating, modifying, or measuring a range of
    electronic functions.

    _____

    EXAMPLE: Oscilloscopes, multimeters

    Note: Where GPETE is not being provided by a SYSCOM or
    other sponsor, the Learning Center requests the
    equipment. Refer to OPNAVINST 11102.2 and Integrated
    Learning Environment website,
    https://www.netc.navy.mil/ile/index.aspx. GPETE is
    normally a long lead-time item.

- Visual Information (VI) devices such as projectors, video
  playback equipment, overhead projectors, projector screens,
  movie projectors, television monitors, etc.
- Visual Information (VI) aids. Provide a summary listing
  containing an estimate of the VI aids required to conduct
  the proposed training course. OPNAVINST 3104 is the basic
  reference for these items.
- Special-purpose tools, alignment jigs, and fixtures.
  GO/NO-GO gauges, adapters, and other tools especially
  designed for maintenance of weapon systems and normally
- listed in the technical manual.

- Common hand tools. Tools required performing the training which is not unique to the equipment.
- Consumables. Items that are required for the course, such as magnetic computer disks, special printing paper, plating materials, connector parts, rags, cotton swabs, etc. List quantity required per class. Do not include items that are provided to the students and then retrieved after class.
- Training Devices. Engine cutaways, models, inert bombs/weapons, and other devices especially prepared for demonstration and handling safety. Unless provided by an OPNAV sponsor, these items can have exceptionally long development and procurement lead-times. NAVTRASYSCEN P-530 Navy Training Systems Center Guide refers.
- Specialized maintenance trainers and operator training devices (support training but cannot be substituted for operational equipment).
- Operational and training software, if not included with the hardware. Also, if the software must be modified, the scope of the modifications shall be included. This category also includes Interactive Courseware (ICW).
- General purpose equipment dedicated to a specialized task. For example, general purpose computers "wired in" and used to control training devices.
- Support equipment (Non-Avionic). Maintenance stands, bomb skids, engine stands, mobile hydraulic and electrical power units, mobile air conditioning units, engine removal trailers, and similar materials. NOTE: This category does not include line maintenance test sets.
- Calibration standards. Calibration standard test equipment used in the calibration of electronics equipment and test sets. These items are identified by a "-CS" at the end of the part number.
- Faultable/Prefaulted modules. Modified modules, or modules that shall be modified with insertible faults or malfunctions, for use in troubleshooting and performance testing.
- Trainer-peculiar materials. Items that are used in direct support of the trainer, such as trainer-peculiar special tools or special support equipment.
- Miscellaneous materials. Special clothing, goggles, standard work benches, special furniture, equipments and items which do not fall under any category identified above.

- Ordnance/Ammunition/Pyrotechnics. Live, dummy, or inert.
  List by description and identifying numbers. Per the
  Conventional Ammunition Integrated Management System
  (CAIMS), SPCCINST 8010.12, include the Navy Ammunition
  Logistics Code (NALC) for each item. The NALC can be
  appended to the NSN for each item. Specify requirement per
  student and per class.

- Stand-alone computer systems and peripherals. For example,
  desktop computers and printers used to deliver instruction.
  Not administrative or office support equipment.

- Equipment refurbishment. Available equipment which can be
  used to support training after repair, overhaul, or
  modernization.

- Publications. Commercial, DOD, and military service
  publications or technical manuals required to conduct
  training. List by title, identification number, quantity
  required, and supplier.

- Training material. The type and estimated quantity of
  training materials needed to conduct training. This
  includes instructor guides, trainee guides, instruction
  sheets, etc. Quantities and costs should be estimated
  through course pilot, or until training activity funding
  support can be established.

- Facilities. Identify requirements for MILCON or special
  projects for facilities modification. These requirements
  are highly situation-specific. See OPNAVINST 11102.2 for
  detailed facilities documentation requirements.

EXAMPLE: A major training device needs to be relocated by
the command as part of a course development or revision
project. Or, additional electrical power and cooling are
needed to support new equipment being installed in an
existing space. This can also include accommodations and
adaptations for safety, such as vapor/gas eductors,
filtration, incineration, hazardous materials storage,
handling, and disposal facilities.

- Early consultation with the training activity facilities
  manager is essential to determine the scope of the
  modification or construction, the level of approval and
  funding required.

- Funding thresholds are:

  - Repairs and Construction Less than 500K = Host
    Installation/ Region Funding.

- Repairs Greater than 500K = CNIC Special Projects Funding.
- Construction Greater than 500K and Less than 750K = CNIC Special Projects Funding.
- Construction Greater than 750K = Military Construction (MILCON) = CNIC MILCON Program.

SECTION 8 - TPP APPROVAL

A TPP is submitted via the chain of command for approval at the appropriate level as specified in NETCNOTE 1500 dated 23 MAR 09, NAVEDTRA 135 (Series), and OPNAV Memorandum for Distribution 7000 N1 127189 of 15 September 2008.

> Approval of the TPP may be used as authorization for submission of CPATS, POM and procurement of long lead-time items such as major training devices.

ANALYZE PHASE

CHAPTER 3

COURSE TRAINING TASK LIST

INTRODUCTION

The purpose of the Analyze Phase is to determine what shall be taught in the new or revised course. The analysis conducted is a continuation of the preliminary analysis completed during the Plan Phase. All available documents/data are examined and analyzed to determine what is necessary to do a job. The product of this phase is the Course Training Task List (CTTL) which provides a list of the duties, tasks, and/or skills that are selected for training.

SECTION 1 - COURSE TRAINING TASK LIST (CTTL)

The CTTL serves as the foundation for writing the terminal and enabling objectives which comprise a course of instruction and carry out the course mission statement.

A CTTL will most commonly be developed to support new course development projects. A CTTL may be used for course revisions, depending on the scope of the revisions and the availability of front end analysis data.

The CCMM will review all Navy developed CTTLs for completeness and compliance with NAVEDTRA 130(Series) guidelines and approve their use in support of continued curriculum development. The CTTL is considered a working document; finalized CTTLs are not normally forwarded for CCA approval. However, the CCA has the option of calling for a review and approval of developmental products at any time.

1.1 CTTL Development: The CTTL represents the foundation of knowledge and skills upon which a course is developed. The CTTL shall be developed in accordance with guidance contained in Volume I, Chapter 3, page 3-1, of this manual.

- Development of a new CTTL will generally be accomplished by the developer assigned by the CCA.
- CTTL development should meet the timeline established by the Training Project Plan Milestones. Often, during the Curriculum development process, the original milestone dates are impacted by such things as delays in facilities, unavailability of necessary equipment, or lack of subject matter expert support. When this occurs, the CCA should be notified and a revision to the milestones proposed for approval.

- Forward advance copies of the CTTL to the CCA and other LS, as required. Review comments directed to the CCMM.
- CCMM reviews CTTL for adequacy and compliance with NAVEDTRA 130B. Approve CTTLs for use in development of course objectives.

SECTION 2- SUMMARY

As a working document, routine surveillance of the CTTL for a course is not required.

DESIGN PHASE

CHAPTER 4

TRAINING COURSE CONTROL DOCUMENT

SECTION 1 - INTRODUCTION

The Training Course Control Document (TCCD) is the primary developmental and management document for a course. The approved TCCD serves as the authorization for further development and provides the information needed by curriculum developers to create the training materials for a course. Thus, careful attention must be paid to the detail, content, and structure of the TCCD. Volume I, Chapter 5 of this manual provides guidance on compiling the TCCD.

1.1 Description and Application of the TCCD; The TCCD is a collection of products which expresses in summary form, the content, structure, and essential management information for a course. Most of the information has already been developed; in the TCCD it is placed in a standard format for submittal. The TCCD consists of the following items:

- Front Matter.
- Curriculum Outline of Instruction.
- Annexes.

> The content, structure and essential management information contained in the TCCD is used to implement and manage the course. For this reason it must accurately reflect the final course and must be kept update.

1.2. TCCD Components: The following is a description of each TCCD deliverable:

- Front Matter:

  - Cover page.
  - Letter of promulgation.
  - Table of contents.
  - Foreword (if required).
  - Course data.
  - Trainee data. Consists of the following:
  - Personnel physical requirements.
  - Security clearance.
  - Prerequisites.
  - Obligated service.
  - NOBC/NEC/MOS earned.

- Curriculum Outline of Instruction:

  - In the Curriculum Outline of Instruction, Units and Lesson Topics consisting of terminal and enabling objectives are displayed in the order they shall be taught.
  - Volume I, Chapter 4 of this manual describes the development of the Curriculum Outline of Instruction.

- Annexes:

  - Training course control document annexes provide the resource requirements and time allocations for the training course.
  - Resource Requirements List (RRL). It lists all the resources required to conduct the course. See Volume I, Chapter 5 Section 2.3 of this manual for more details on the development of the RRL.

- Course Master Schedule (CMS). The CMS and CMS Summary shall be developed in accordance with Volume I and Volume II of this NAVEDTRA, NAVEDTRA 135(Series), and CeTARS.

1.3 Review and Approval: The CCA will review and approve all TCCD deliverables.

SECTION 2 - LETTER OF PROMULGATION

Upon completion of the Pilot Course, the CCA will authorize the use of the curriculum through a Letter of Promulgation. This authorization is a permanent part of the course audit trail. It is placed in the TCCD front matter immediately following the cover page. When the TCCD is submitted, a page marker is inserted where the Letter of Promulgation will later be placed.

Authorization to implement the course after the curriculum has been approved and all required resources are in place is the responsibility of the Learning Center or Functional Commander. See Chapter 6 of this volume and NAVEDTRA 135(Series) for additional information.

SECTION 3 - SURVEILLANCE

Each CCMM, for courses under their cognizance, will:

- Review TCCD for currency, adequacy, and accuracy whenever a course change or revision is undertaken.
- Review technical changes to hardware or documentation and evaluate them for impact on existing TCCD and curricula.
- Make recommendations and provide impact comments and/or draft TCCD for the CCA when appropriate changes are indicated for their courses.

Using AIM and linking resources, especially technical data to content can drastically reduce curriculum surveillance time required when a resource is updated. AIM will flag very specific content items based on changes to linked resources such as technical documentation, learning objectives. CTTL items, Lesson Plans, and Trainee Guides.

DEVELOP PHASE

CHAPTER 5

CURRICULUM AND SUPPORT MATERIALS

INTRODUCTION

Curriculum Materials include all materials required for the presentation of information and the development of skill. Support materials are instructional materials and other devices used to support instruction.

SECTION 1- CURRICULUM CONTROL, DEVELOPMENT AND COORDINATION

1.1. Control of Curricula: Control of curricula shall be accomplished by the Curriculum Control Authority (CCA) who assigns coordination, development, and support responsibilities to participants. This is to ensure that:

- Curriculum materials are analyzed for accuracy and effectiveness.
- The need for course revisions or development of new curriculum materials is evaluated.
- Schedules for the development of curriculum materials reflect new equipment deliveries and Fleet training requirements.

1.2. Development of Curriculum: The developer will usually be in the Learning Center (LC) and in some cases delegated to the Learning Site (LS) designated as Course Curriculum Model Manager (CCMM) for the course to be developed or revised:

- For multi-sited courses, the CCMM has a responsibility to liaison with each teaching site to determine site-unique requirements and to solicit review of materials.
- Coincident with the development of Lesson Plan, Trainee Guide, and Test Package, is the procurement of Resource Requirements List items which are identified as part of the TCCD.
- The CCMM is the interim review and approval agent for the development of training materials, up to the pilot convening of the course.
- The CCMM is ultimately responsible to the CCA for the development of all curriculum materials.

  - NAVEDTRA 135(Series) discusses the CCMM's roles and responsibilities in greater detail and should be reviewed before revising or developing instructional materials.

- The developer is responsible for incorporating into the curriculum all requirements residing in current instructions, such as incorporating safety details and developing a Testing Plan.

  - NAVEDTRA 135(Series) should be consulted to ensure all requirements are addressed.

- The developer will work with numerous entities both inside and outside the Navy to ensure that training materials are developed or acquired which meet accepted instructional standards and meet the development schedule.

  - Assistance in meeting these requirements and professional guidance in the development of effective training materials may be obtained from the Curriculum and Instructional Standards functional area or the Learning Standards Officer (LSO), where available. The role and responsibility of the curriculum and instructional standard functions are discussed in NAVEDTRA 135(Series).

- Surveillance of approved, on-line courses is the subject of Chapter 7 of this volume.

1.3. Coordination with Learning Site (LS): Curriculum development for courses which are multi-sited and/or developed by agents other than the LS should involve all LSs at a minimum in the review of the curriculum materials:

- The degree of LS involvement shall be influenced by the approved TPP milestones and CCA directions.
- The developer should forward for review and comment major segments of the course as soon as they are available rather than leaving the review until the total course is developed.
- The LS should review the material for technical accuracy and any problems they might have in implementing the material as written. Review of material should be expedited and comments should be specific and include suggestions for correcting any errors or problems identified.
- LSs may be called upon to pilot the material developed, provide instructors to participate at other sites in piloting the material, and/or provide pilot monitors. (See Chapter 6 of this volume for more information on pilots.)

- If multiple Functional Commanders are involved, resource requirements and other factors which impact on the implementation of the final course should be coordinated with each Functional Commander as soon as requirements are identified.

SECTION 2 - CURRICULUM MATERIALS DEVELOPMENT

Development and approval of the curriculum materials will follow the events listed unless specifically waived by the CCA.

2.1. Review management materials:

- Training Project Plan. As soon as a firm requirement exists, a Training Project Plan (TPP) shall be submitted in accordance with NETCINST 1510.1 and NAVEDTRA 135(Series). Development of the course described in the TPP can proceed while awaiting TPP approval if authorized by the CCA.
- Course Training Task List. The CTTL forms the foundation for the objectives and the core for the Lesson Topics.
- Training Course Control Document. The approved TCCD will provide the Terminal Objectives and Enabling Objectives, course sequence by Unit and Lesson Topic, proposed test points, and resource requirements.

2.2. Establish a development schedule which meets the Milestones approved in the TPP:

- The sequence in which the material is developed must be dictated by each course's individual requirements, including such factors as lead time for VI/IMM or training device development; availability of technical documentation; appropriateness of existing materials, and the number and experience of developers assigned to the effort.
- The preferred sequence of training materials development is:

  - Lesson Plan.
  - Trainee Guide.
  - Test Package.
  - Support Material/Instructional Media Materials.

- The schedule is an internal control document which should be monitored by the developer and the Learning Standards functional lead.
- Monitoring the schedule will lead to early identification of possible changes in the TPP Milestones. Changes in the TPP Milestones must be coordinated and approved by the CCA.

2.2. Review content and/or format requirements levied by the CCA/CCMM in addition to those specified in this manual.

- If the developer is not experienced in application of the NAVEDTRA 130(Series) process, the CCA may require the developer to submit a sample of each type of curriculum material to be developed. This is referred to as a "Cross Section."
- The Cross Section and its contents shall be specified by the CCA, if required.

2.3 Complete development of draft curriculum and support materials.

- The Lesson Plan places the instructional process in the sequence established by the TCCD. In the Lesson Plan, the enabling objectives become discussion points, amplified as necessary to support the terminal objectives, which in turn comprise Lesson Topics.

  - Methods and procedures for Lesson Plan development are contained in Volume I Chapter 6 of this manual.

- Multiple Lesson Topics will normally be under development at one time. It is recommended that a single individual or team be given responsibility for developing a group of related Lesson Topics or Units.
- All Lesson Topic development should be a coordinated effort to ensure a smooth transition from Lesson Topic to Lesson Topic and Unit to Unit.
- The Trainee Guide is designed to support instruction. Most essential are Job Sheets to carry out skill objectives in both practice and test situations.

  - Directions for developing effective instruction sheets are found in Volume I Chapter 7 of this manual.

- Tests measure the trainee's attainment of stated knowledge and skill objectives. Thus, tests are closely related to both the Lesson Plan and the supporting Trainee Guide Instruction Sheets.

  - Procedures for developing knowledge and skill tests are contained in Volume I, Chapter 8 of this manual and additional guidance on the administration of a testing program is provided in NAVEDTRA 135 (Series).

- Support material including VI aids and IMM may actually be developed by personnel not part of the developer's command. This situation may increase the amount of coordination or require longer lead time.

  - Volume I, Chapter 9 discusses the coordination required to develop VI aids and IMM.
  - Other support materials, such as training devices, are governed by their own instructions and shall be coordinated with the CCA.
  - Procurement of technical manuals, textbooks, and government publications is governed by Supply System directives.

- All material should be reviewed by at least one Subject Matter Expert or other designated reviewer beside the developer.

2.4. Reproduce copies of all curriculum materials (including paper copies of VI aids and IMM materials as practical) and forward to designated LSs for review and comment, as directed.

- Review shall be completed within the guidelines listed below, plus 14 days mailing time, unless otherwise directed by the CCA. (See Figure 5-1.)
- Reviews of pipeline courses shall be completed on each segment, with comment time periods based upon segment course length.

EXPECTED COURSE LENGTH	REVIEW TIME
Less than 3 weeks	30 Days
3 weeks to 8 weeks	60 Days
Greater than 8 weeks	90 Days

FIGURE 5-1: GUIDELINES FOR REVIEW OF CURRICULUM MATERIALS

2.5. Modify curriculum materials to reflect the changes identified during review.

- Recommend pilot date to CCA:

  - Advise the CCA of readiness to pilot 90 days in advance. (See Chapter 6 of this Volume for additional guidance on pilot responsibilities.)

- CCA should not authorize a pilot until sufficient VI aids and IMM are on hand to evaluate their integration into the course.

2.6. CCMM/LS will monitor the pilot course as assigned by the CCA.

- Forward pilot course progress reports in accordance with Chapter 6 of this volume.
- The LSO (or Quality Control Officer) at the pilot site should monitor the pilot.
- Red-line curriculum to incorporate proposed changes in the curriculum/support materials.

2.7. CCA signifies approval of the curriculum or red-lined curriculum identified during the pilot by issuing a Letter of Promulgation.

- Authorize LSs (as appropriate) to use approved red-lined pilot curriculum prior to final curriculum.
- Actual implementation of the course or use of the red-lined curriculum if resources are affected must be coordinated with NETC and the LC's Functional Commander.

2.8. Incorporate curriculum material comments in accordance
with approved recommendations of the Pilot Course Report.

- Duplicate and distribute masters of the curriculum
  materials to assigned LSs along with sufficient VI aids and
  IMM to implement the course at each site.
- Duplicate and distribute curriculum materials to LSs with
  receipt card (OPNAV 5511/10). Track receipt cards.

2.9. CCMM and LS perform surveillance on the final curriculum
materials as described in Chapter 7 of this volume.

SECTION 3 - URRICULUM AND SUPPORT MATERIAL REVIEW AND APPROVAL

Curriculum and Support materials may be reviewed by the CCA.

- Usually the CCA review will occur at the end of the
  development process, but the CCA can require additional In-
  process Reviews (IPR) in which CCA, CCMM, LSO, LSs, or
  others as designated by the CCA participate.
- IPRs should be required for new course development and for
  revision of lengthy courses and pipeline courses.
- Review authorities will ensure that developed curriculum
  materials comply with the management materials, are
  technically accurate, and meet the guidelines of NAVEDTRA
  130(Series) and other requirements specified for the
  course.

SECTION 4 - SUMMARY

Each document produced during the curriculum development process
should build and support all others. It is rare that only one
part of the curriculum materials is being worked on at a time.
It is therefore important that all personnel actively engaged in
developing the training materials communicate and exchange
material. Not only is the developer able to see how material
supporting or building on his/her topic is being developed, but
it serves as a review for content and accuracy.

PILOT COURSE DEVELOP PHASE

CHAPTER 6

PILOT APPROVAL

INTRODUCTION

A pilot course is defined as the first full length course conducted at a Navy school by Navy instructors using the curriculum and supporting training materials prepared specifically for that course. The purpose is to validate the curriculum and materials, and to determine their effectiveness and course length. The CCA will determine those course(s) designated as pilot convening's.

- The pilot course process consists of the following elements:

  - Preparation for pilot course convening.
  - Pre-pilot conference.
  - Pilot course convening and course monitoring.
  - Post-pilot conference.
  - Report of pilot course assessment.

SECTION 1 - PREPARATION FOR PILOT COURSE CONVENING

1. The structure and conduct of a pilot course will depend to a great extent on the length of the course, class convening schedule, and the extent of approved curriculum materials and support materials available.

- A short course with infrequent class convening does will permit the conduct of a pilot and assessment of results, and incorporation of review comments prior to the next convening.
- A complex, lengthy course, or the necessity to accommodate class schedules, may dictate the use of a "rolling pilot," where data is gathered and fed back to the developer for incorporation, while the pilot continues for later sections or convening's.

  - Segments of the piloted materials must integrate into the rest of the course. That is, previous training must support the materials being piloted.
  - Temporary duty considerations preclude lengthy participation by support personnel outside the host LS. Use senior, qualified LS personnel as available, preferably personnel NOT directly involved in writing the piloted course materials.

- Have options available to utilize previously approved course materials if piloted segment produces abnormally high test failure rates by students in the pilot class.
- If the piloted segment of a course is acceptable, it should be left in place after pilot. However, final approval of course materials by the CCA should be reserved until all revised materials have been piloted and reported upon. Suggestions regarding the use of this training material include:

  -If corrections are relatively minor, continue to instruct from the red-line materials while corrections are being incorporated into a smooth copy.
  -If corrections result in re-writing or re-sequencing materials within Lesson Topics, return to the use of previously approved materials until corrections are completed.
  -If time and resources permit, pilot the revised materials a second time.

1.1. Preparation for Pilot of New Courses: The following procedures apply to preparation for pilot of new courses:

- Determination of Pilot Course Convening Date. The CCMM will submit a proposed pilot course convening date to the CCA with copies sent to all other participating learning site (LS) as soon as a projected completion date for training materials development is available.
- Readiness to Conduct Pilot Course. Not later than 90 days prior to the designated pilot course convening date, the LS scheduled to conduct the pilot is requested to assess and certify its readiness to conduct the pilot course. This readiness notification should be addressed to and developed in conjunction with the CCA. Copies should be transmitted to any other participating LS or other activities, and include the following elements:

  - A listing of present training material shortages and deficiencies which are projected to be corrected prior to the pilot course convening date.
  - The state of completion, installation, and operability of training devices and laboratories which support the pilot course should also be considered.

- A listing of training material shortages and deficiencies, if any, which are not expected to be corrected by the convening date, or for which delivery/correction dates cannot be determined. Include cognizant activity and estimated delivery/correction dates if known.
- A listing and assessment of any other factors which, in the judgment of the Commanding Officer, could adversely affect the validity of the pilot course as a comprehensive evaluation of all instructional elements. Instructor preparation time and the availability of students with the required prerequisites are among factors to be considered.
- An overall assessment of readiness to conduct the pilot course as scheduled. (Include status and completeness of the curriculum and supporting training materials, technical training equipment, GPETE, training devices, laboratories, COSBAL supply support onboard, etc.)
- If the scheduled date is not recommended, an alternate date should be proposed.

- Pilot Course Convening Approval. The CCA will evaluate the recommendations in the readiness report, approve a pilot course convening date, designate monitoring team members, and specify a due date for submittal of the Final (End of Course) Monitoring Progress Report.

  - This date will normally be 30 days after the estimated course completion date for courses less than 30 days in length, and 30 days after the estimated course completion date for courses 30 days or more in length.
  - The convening date approval letter distribution will include all addressees of the readiness report.

- Pre-Pilot Surveillance. After convening date approval and not later than 14 days prior to the approved pilot course convening date, the LS scheduled to conduct the pilot is requested to submit a message report if the pilot course should NOT be conducted on the approved date.

  - This is an exception report which can be made after pilot convening date approval if the facts and assumptions contained in the original readiness report have significantly changed. Its purpose is to stimulate timely recovery action if possible, and to notify pilot course support activities before attendance plans are finalized.

- Significant changes occurring in the two weeks immediately preceding the pilot course convening date should be reported to the CCA by telephone/electronic mail.

1.2. Pilot of Revised Courses Developed from Existing Curricula: For curriculum developed solely from previously piloted, approved, and promulgated curricula, the following procedures shall be used to expedite curriculum development while retaining an option to pilot when the conditions warrant:

- The first convening of the course shall be conducted using draft curriculum materials. The LS's course supervisor will provide monitoring support for this class.
- Within 30 days after course completion, the LS will provide a synopsis of course supervisor and student critique comments with a recommendation to either continue development to final products, or conduct a formal pilot.
- The CCA will select one of four options for the curriculum materials:

  - Approve as a final curriculum.
  - Approve curriculum for pilot, subject to incorporation of designated comments.
  - Continue to use for training, no pilot required.
  - Require a formal pilot.

- If a formal pilot is required, the LS comments shall be considered a draft curriculum review, and the normal pilot process shall be followed.

SECTION 2 - PRE-PILOT CONFERENCE

Shortly before the pilot course convening date, the monitoring team chairman will convene the pre-pilot conference. Its purpose is to plan the validation process, assign monitoring team responsibilities consistent with the levels of representation available, and discuss/resolve any outstanding issues impacting the conduct of the pilot. The following should be addressed:

- Assignment of monitors and respective responsibilities:

  - Status of management materials.
  - Status of curriculum materials.

6-5

- Status of support materials.
- Status of applicable change recommendations.
- Identification of instructors.
- Status of pilot instructor's Lesson Plan personalization.
- Review of the Readiness to Pilot report or letter.
- Specification of Monitoring Report frequency and due dates.
- A tentative date for the post-pilot conference.

- All problems and discrepancies should be identified and resolved so that a final determination can be made as to the suitability of conducting the pilot course.

  - The chairman will distribute a summary of the agreements reached and responsibilities assigned during the pre-pilot conference.

2.1. Responsibilities and Functions of the Pilot Monitoring Team:

- The pilot monitoring process is an evaluation of all training materials, both knowledge and performance, and it faithfully records in real-time all instructional presentations.

  - It is NOT the responsibility of the monitoring team to develop or revise curriculum material during the classroom/laboratory presentation.
  - If the monitoring team determines that the LOs are not satisfied, recommendations shall be made to the CCA at the post-pilot conference and in the final report.
  - It is the responsibility of the CCA or Training Support Agent (TSA) to determine what action is necessary to accommodate the recommendations.

- The CCMM or LS conducting the pilot course will generally provide most of the monitoring team members from the instructional staff.

  - It is evident that the greatest range of tasks are the responsibility of the course personnel at the host Learning Site conducting the pilot course, with support from within by the Learning Site course supervisor.

- To the maximum feasible extent, other LSs that will teach the course, or the developer if the material was not developed by the host LS, should provide assistance to the host command in the course monitoring effort.

- The pilot course monitor(s) should be:

  - Technically competent to provide the instructor technical assistance as required or capable of accessing a point of contact for technical assistance.
  - Familiar with the development guidelines of NAVEDTRA 130(Series) and the management requirements established in NAVEDTRA 135(Series).
  - Aware of the status and availability of all training materials associated with the particular curriculum.
  - Familiar with approved and pending change recommendations to any training materials which could have an impact on the pilot course.
  - Familiar with the objectives of the preliminary curriculum and approved training.

- The purpose of conducting a pilot course is to validate the curriculum and support materials, and to determine their effectiveness in attaining the course objectives.

  - The role of the chairman is to coordinate and manage the project, and summarize the results in the final course monitoring report.
  - The pilot course monitors serve as the primary judge of the adequacy of a new or revised course. In this role, notes and comments regarding observed problems are later amplified to provide the basis for recommending changes, completing Intermediate and Final Course Monitoring Reports, and, ultimately, in assessing the success or failure of the piloted course.
  - The course monitor is provided with all curriculum materials and references while observing instruction. Addendum A, the Course Monitor Outline, can be used to note problem areas. A summary of all Course Monitor Outlines completed can thus provide a reference for daily and end of course critiques.
  - Addendum B, the Course Monitor Time Log, is used to record the actual time spent on each lesson topic, and, in summary, provides the best estimate of total time required for the course.

- The Chairman shall:

  - Maintain physical custody of the master red-lined curriculum and support materials, ensuring all consensus/ comments/ recommendations of the course monitors are properly and accurately annotated.
  - Chair and conduct critique sessions daily with the course monitors and incorporate comments into the master red-lined curriculum materials. Make the master red-line materials available to course monitors.
  - Inform course monitors of the time and location for critiques.
  - Conduct pre-presentation reviews of curriculum materials.
  - Provide course monitors with presentation material that has been restructured by instructors in advance of presentation.
  - Conduct and chair the scheduled post-pilot conference.
  - Originate all Intermediate Pilot Course Monitoring Reports and the Final Pilot Course Monitoring Report.

- Course Monitors shall:

  - Attend pre-pilot conference.
  - Attend post-pilot conference.
  - Be present for ALL classroom and laboratory sessions.
  - Comment as appropriate on the administrative aspects of the pilot course conduct, using the Learning Site Administrative Review as a guideline (Addendum C).
  - Comment as appropriate on curriculum, using the Course Monitor Outline as necessary.
  - Maintain personal red-line of curriculum materials for use during critiques.
  - Attend ALL critique sessions held to review presentations and resolve comments for incorporation into the master red-line.
  - Attend ALL pre-presentation reviews of curriculum materials requested by the chairman.
  - Accept and use for monitoring the modified curriculum materials supplied by the chairman.
  - Participate in the development of Pilot Course Monitoring Reports.

2.2. The Course Monitoring Outline Sheets, Addendum 6-A, are designed for use by course monitors and to serve as guides for noting subjects or items observed during the course monitoring process that require comment. Typically, one sheet would be completed by each course monitor for each lesson topic, but this is flexible and should be amenable to the structure of the course.

SECTION 3 - PILOT COURSE CONVENING AND COURSE MONITORING

The course shall be conducted and managed in accordance with the Lesson Plan and the management guidelines established in NAVEDTRA 135(Series).

- It is strongly recommended that the instructors not be the individuals who developed the material. The material should stand on its own. Often, when the writer is also the presenter, he will teach what he intended to have in the lesson topic and not necessarily the material which was actually written.
- Often the CCA or the CCMM will establish as a policy that any student recommended for dis-enrollment from a pilot course shall be reassigned to another course teaching the old curriculum. This procedure eliminates the perception that the trainee is being penalized by problems which may be inherent in the material being piloted. NAVEDTRA 135(Series) provides additional information on student management. It and CCA/CCMM policies should be reviewed.
- Pilot monitors shall:

  - Attend critique sessions held at the completion of each instructional day to review presentations and resolve comments for incorporation into the master red-line.
  - Unless otherwise directed by the chairman, assemble in assigned classroom 15 minutes prior to the start of scheduled instruction. Course monitors will return to the classroom or laboratory in sufficient time to ensure they are in place when class breaks are over.
  - Not participate in classroom/laboratory activities or aid the instructors in any way, nor will they discuss their comments or recommendations with the instructors during classroom/laboratory presentations. In no case shall course monitors conduct business with trainees present.

SECTION 4 - POST-PILOT CONFERENCE

At the completion of the pilot, the pilot monitors, CCA, and representatives of the activity which developed the material will meet to discuss their observations and comments on all instructional material, the course management procedures, and the facilities.

> Courses Monitoring Outline Sheets are usually prepared for each Lesson Topic, but the frequency of preparation is base on whatever is appropriate to have meaningful data to discuss at the end-of-day critique and for input to the master red-line Lesson Plan, Trainee Guide, support material, and tests.

- The Course Monitoring Outline Sheets, Time Log, and the Facilities Administrative Review Checklist shall be reviewed to ensure all issues are addressed. Appropriate corrective action shall be recommended.

SECTION 5 - REPORT OF PILOT COURSE ASSESSMENT

The chairman, unless otherwise designated, will prepare the Monitoring Report.

- The report shall be divided into the following sections:

  - Course Identification.
  - Course Administration.
  - Course Validation.
  - Instructional Accuracy/Adequacy.
  - Minority Report (If none, so state).
  - Other (Optional).

- Long courses may require interim pilot course monitoring reports. The final course monitoring report should contain all interim reports, as applicable.
- If the course is to be multi-sited, any problem at these sites which will impair the implementation of the course shall be discussed under the appropriate heading in the report. The site should be clearly identified to distinguish it from the pilot site.

5.1. Course Identification. The course identification section will contain the following data on the pilot course:

- Title of the command conducting the pilot.
- Course Title without abbreviations.
- Course CIN if assigned.
- Inclusive dates of the pilot.
- Name, rate, and rank of all monitors/representatives and the commands or activities they represent.

5.2. Course Administration. The course administration section will contain the following data on the pilot course:

- Facilities. Major deficiencies impairing training and recommended for corrections. If corrective action requires additional resources it should be noted. The LS should prepare separate documentation to their Functional Commander for resources in accordance with NAVEDTRA 135(Series).
- Safety. Personnel and equipment deficiencies impairing training and recommended corrective action. Any safety problems which occur during the pilot shall be reported in accordance with NAVEDTRA 135(Series) and NETCINST 5100.1 as well as noted in the monitoring report.
- Security. Any deficiency impairing training, such as inadequate stowage for classified materials, or affecting the trainees assigned to the course, such as delays in obtaining necessary clearances.
- Allocation. Course and/or topic time, student-to-instructor ratios, and effectiveness of classroom-to-laboratory time allocations with recommendations when times deviate more than 10 percent.
- Critique Sheets. Summarize comments from the outline sheets.

5.3. Curriculum Validation. The curriculum validation section will contain the following information on the pilot course:

- Lesson Plan. Statements as to attainment of objectives, recommendations, instructor/trainee preparation, major deficiencies, etc.
- Trainee Guide. Statements as to the adequacy and organization of all instruction sheets.

- Equipment/Tools. Comments on the quantity/quality of equipment and tools, their adequacy in support of objectives, and trainee's ability to use.
- Support Materials. Comments on the type, quality, quantity, and adequacy to support objectives.
- Instruction. Comments on the quality of instruction in the attainment or lack of attainment of objectives.
- Testing. Comments on the testing strategy, test design, test items, and quantity to support uninterrupted training.

5.4. Instructional Accuracy/Adequacy. This section will address the accuracy, adequacy, sequencing, and overall effectiveness of the training in attaining the stated learning objectives.

5.5. Minority Report. This section provides an opportunity for monitors to provide any alternatives to the recommendations presented in the previous sections. If no minority comments are put forth, it should be noted.

5.6. Other. If any other items should be brought to the CCA's attention but do not fit under any of the other sections, they would be addressed here.

SECTION 6 - PILOT COURSE CORRECTIONS AND ADJUSTMENTS

Based on the findings and comments recorded during the pilot course, it is usually necessary to make corrections and adjustments to the training materials prior to approval and implementation.

- Detailed direction is provided to the developer on what corrections and adjustments are to be made.
- Limitations:

  - Any modification to training materials which does not affect the course mission statement or require additional resources may be corrected as a result of the pilot. The following are examples of such corrections:

    -Revise objectives as necessary to support the course mission.
    -Add, delete, or re-sequence lesson topics.

-Adjust lesson topic periods and ratios.
-Add or delete support material such as transparencies, wall
 charts, and instruction sheets.

- Any modification to training materials which does affect the course mission statement or require additional resources may not be corrected without modification and approval of the TPP. The following are examples of such corrections:

  -Work outside the course mission statement (expand or reduce scope).
  -Change in minimum/maximum class size, established course length, Average on Board (AOB).
  -Require additional resources:

    Equipment
    Facilities
    Personnel
    Funding

SECTION 7 - IMPLEMENTATION PROCESS

Implementation takes place after the pilot course has been conducted and the corrections and adjustments to the training materials indicated by the pilot course have been accomplished.

- CCA Approval:

  - Authorization to use curriculum materials is granted by the CCA through a Letter of Promulgation. This approves the curriculum for use in support of training.

- Functional Commander Approval:

  - Where the CCA and the Functional Commander are different, the Functional Commander authorizes implementation of the course when the material has been approved by the CCA and all required resources   are in place.

- CCMM Responsibilities:

  - Ensure all sites are ready to train.
  - Accommodate site-unique training considerations.

- Distribute all curriculum material masters to all LSs.
- Distribute support materials consistent with the TPP or as directed by the CCA/Functional Commander.
- Submit initial CeTARS and CANTRAC data for new or revised courses.

- CCMM and LS(s) Responsibilities:

  - Certify instructors to teach the course and supervise personalization of Lesson Plans.

- Establish administrative and support functions with:

  - Learning Standards Office (LSO).
  - Training Support Center (TSC)/Training Support Detachment (TSD).
  - Medical (if appropriate).
  - PSA/PSD (if appropriate).

- Distribute training materials.
- Update CeTARS and CANTRAC if necessary.
- Order consumables and other support materials. This should be coordinated with CCA and Functional Commander to avoid duplication of effort or funding conflicts.
- Follow special procedures established for   certification of instruction of high risk courses.

SECTION 8 - SUMMARY

After implementation, responsibility for curriculum maintenance is assigned to the CCMM and course evaluation begins. All future modifications to course materials fall under the guidance of Volume III, Chapter 7 of this manual. Course management is carried out by all sites in accordance with NAVEDTRA 135 series.

EVALUATE PHASE

CHAPTER 7

SURVEILLANCE AND TRAINING MATERIALS MODIFICATION

SECTION 1 - IMPLEMENTATION

The training materials shall be implemented by the CCMM with the cooperation of the LSs teaching the course. NAVEDTRA 135(Series) should be used as a guide for the management of the course. It specifies the audit trail to be maintained for each curriculum development/revision and what records are to be maintained on all courses.

SECTION 2 - EVALUATION

- The central concept behind evaluation is the constant improvement of training materials through a process that:

  - Provides a means of keeping training materials current and accurate.
  - Is responsive to changing training requirements and equipment/documentation alterations.
  - Is open to innovation.

- Evaluation consists of a number of programs which either individually or collectively evaluate the instructional materials, the instruction, the instructors, and the trainees. NAVEDTRA 135(Series) describes the various programs used to evaluate the effectiveness and efficiency of the total training program. The portion of the evaluation program which concentrates on the curriculum is organized around two major functions, surveillance and training materials modification.

SECTION 3 - SURVEILLANCE

Every LS is responsible for monitoring each course it instructs and proposing changes to the CCMM as needed. NAVEDTRA 135(Series) describes in greater detail the responsibilities of LSs and CCMMs.

- Surveillance involves:

  - Monitoring hardware documentation and changes for impact on existing training materials.

- Detecting errors or deficiencies in existing training materials and initiating the necessary corrective action.Training materials modification is the result of surveillance and involves actual alterations to training materials. These alterations range from Interim Changes, such as the correction of clerical errors and insertion of titles, to revisions in course length, the course mission statement, or a shift from one instructional strategy to another.

SECTION 4 - SUPPORT COORDINATION AND CONTROL

- For courses supported by a TSA, both the CCMM and TSA shall be responsible for the surveillance of, and the development of, modification to assigned training materials.
- For courses life-cycle supported by a TSA, the TSA shall introduce Technical Changes to curriculum necessitated by changes in tactical equipment, documentation, maintenance policy, or training-unique equipment.
- For all courses not life-cycle supported by a TSA, the CCMM will perform surveillance and introduce other modifications to curricula.

SECTION 5 - CATEGORIES OF MODIFICATIONS TO TRAINING MATERIAL

5.1. Interim Change. A minor modification to training materials correcting editorial, typographical or technical errors, teach ability, safety or urgent Type Commander promulgated subjects. An Interim Change does NOT require a TPP.

- An Interim Change will NOT alter the course mission statement, terminal/enabling objectives, change the length of the course, or require additional resources.
- The Commanding Officer/Officer in Charge of each LS teaching a course may approve Interim Changes made by the LS for the curriculum it teaches. Interim Changes related to safety shall be implemented and reported to the CCMM immediately.
- Interim Changes not related to safety shall be reported to the CCMM within five working days.
- The CCMM will incorporate Interim Changes in the next promulgated change to the curricula.

- If the Interim Change was generated due to site-unique circumstances, the CCMM will evaluate the Interim Change and upon concurrence will issue an approval letter. CCMM approval shall specify that the change is unique to the submitting site and will not be included in future changes promulgated by the CCMM.
- If the CCMM does not concur with an Interim Change as submitted, the issue shall be forwarded to the CCA for resolution.
- Copies of the Interim Change shall be forwarded to the CCA and TSA as appropriate. Figure 7-1 is a sample letter for forwarding an Interim Change.

```
From:   Commanding Officer, Learning Site
To:     Commanding Officer, Course Curriculum Model Manager

Subj:   INTERIM CHANGE TO COURSE A-234-5678 COMMERCIAL UTILITY CARGO
        VEHICLE (TYPE A) OPERATION AND MAINTENANCE

Ref:    (a) NAVEDTRA 130 (Series)

1.  Discrepancies and/or errors have been encountered in the Lesson
Plan, and the following pen and ink Interim changes have been made:

    a.  In volume 1, on page 4-4-5, change the part of Item 3.a.
which reads:

        (5) Steering/Wheels/Tires
        (6) Brakes

        to read

        (5) Steering/Wheels/Tires/Tubes/Rims
        (6) Brakes/Shoes

2.  This interim Change is in accordance with reference (a) and has
been implemented at this command; request dissemination to other LSs
teaching this course.




                            (LS COMMANDING OFFICER

Distribution:
Center LSs
```

FIGURE 7-1: INTERIM CHANGE LETTER

5.2.   Change.   A modification to training materials that does NOT affect the course mission, does NOT increase course length, and does NOT require additional resources.   A Training Project Plan is NOT required.

- The need for a change may be identified by either the training activity or the CCMM.   Changes shall be approved and promulgated by the CCMM.
- Each Change will incorporate all outstanding interim changes.
- If a conflict exists between a CCMM and another LS over a
- Change, the matter shall be referred to the CCA for resolution.
- For TSA-monitored courses, the TSA will monitor Changes to ensure technical adequacy and accuracy.
- Formatting, production, and distribution of CCMM-originated Changes shall be accomplished by the CCMM.
- Copies of all Changes shall be distributed to each LS instructing the course, the CCA, and TSA (for TSA-supported courses).
- Changes shall be issued by letter as shown in Figure 7-2.

```
From:   Commanding Officer, Course Curriculum Model Manager
To:     Commanding Officer, Learning Site

Subj:   CHANGE 2 TO COURSE A-234-5678, COMMERCIAL UTILITY CARGO
        VEHICLE (TYPE A) OPERATION AND MAINTENANCE

Ref:    (a) NAVEDTRA 130 (Series)

Encl:   (1) Lesson Plan Change Pages
        (2) Trainee Guide Change pages

1.  Incorporate enclosure (1) into the Lesson Plan for subject
course.  Incorporate enclosure (2) into the subject course Trainee
Guide.  This Change is in accordance with reference (a) and
incorporates Interim Changes 2-1 through 2-16 and is approved for
use.  Subsequent Interim Changes will be reflected in Change 3.

                        (CCMM COMMANDING OFFICER)

Distribution:
Learning Center
Learning Sites
```

FIGURE 7-2:   CHANGE APPROVAL LETTER

5.3. Technical Change. A Technical Change addresses any change to tactical or training-unique equipment or documentation originating in the TSA's parent material agency and affecting promulgated curricula. A Technical Change does NOT require a TPP.

- A Technical Change may or may not affect learning objectives. It does NOT affect course mission, course length, or resources. The TSA develops and forwards a Technical Change to the CCMM.

- The Technical Change will consist of smooth change pages to the curricula, with sufficient copies to distribute to all activities teaching the affected course.

5.4. Revision. A modification to the course mission statement, an increase in course length, or training material modification that requires additional resources. A Revision ALWAYS requires a TPP.

- A Revision incorporates previous modifications and supersedes preceding editions of the training materials.
- Revisions require the development and submission of a Training Project Plan for approval. The level of approval for a TPP for revisions will vary based on the project. Refer to NETCINST 1510.1 and NAVEDTRA 135(Series) and OPNAV Memorandum for Distribution 7000 N1 127189 of 15 September 2008 for information on the approval of TPPs. Volume I, Chapter 2 of this manual provides guidance for developing a Training Project Plan.
- If the revision requires additional resources, a CNET Program Automated Tracking System (CPATS) shall be submitted after the TPP has been approved.

  - Revisions shall be prepared by a developer and approved by the CCA.
  - The amount of change to the curriculum will   vary between revisions. Revisions may consist of partial replacements of curriculum and thus, may not require a reprint of the entire curriculum; or the revision may be so extensive that the complete curriculum must be reprinted.

- Revisions to be developed by a TSA to TSA- monitored courses shall be undertaken only with TSA concurrence and acceptance of funding responsibility for development and review of the Revision.
- A developer (LS or TSA) shall be assigned for an approved Revision effort for in-house projects. This
- is usually the CCMM. The development process described in Volume I, appropriately modified by CCA and TSA concurrence, shall be applied to Revisions.

- The intent of training materials modifications is to allow expedient updating of curricula while still maintaining consistent instructional standards throughout the NAVEDTRACOM. Modifications to courses will not be undertaken solely to change format.
- Figure 7-3 describes the originator, promulgation authority, reproduction and distribution activity, and reviewing authority for Interim Changes, Changes, Technical Changes, and Revisions to curricula.

Type of Modification	INTERIM CHANGE	CHANGE	TECHNICAL CHANGE	REVISION
Originator	LS	CCMM	TSA	Per TPP
Pre Promulgation Review	None	CCMM	None	Per TPP
Promulgation Authority	CCMM	CCMM	CCMM	CCA
Reproduction/ Distribution	CCMM/LS	CCMM/LS	Repro: TSA Dist: CCMM	Per TPP

FIGURE 7-3: MODIFICATION APPROVAL/REVIEW MATRIX

ADDENDUM A

COURSE MONITORING OUTLINE SHEET

COURSE MONITORING OUTLINE SHEET MONITOR

NAME_____REPRESENTING_____

DATE_____ UNIT/LESSON TOPIC NUMBER_____

LESSON TOPIC_____

CLASSROOM/LAB ROOM NUMBER OR LOCATION_____

1. Were LESSON PLAN components accurate and in correct format?

     a.   Front Matter

     b.   Learning Objectives

     c.   Discussion Points

     d.   Related Instructor Activity

     e.   Instructor/Trainee Preparation

     f.   Other

2. Were TRAINEE GUIDE components accurate and in correct format?

     a.   Front Matter

     b.   Outline Sheet

     c.   Information Sheets

     d.   Assignment Sheets

     e.   Job Sheets

     f.   Diagram Sheets

     g.   Problem Sheets

3. Equipment/Tools:

     a. Was equipment correct and available in sufficient quantity?

b.   Were tools correct and available in sufficient quantity?

4.   SUPPORT MATERIALS/INSTRUCTIONAL MEDIA MATERIAL:

a.   Was support material relevant to the lesson topic?

b.   Is the special emphasis provided by support material necessary?

c.   Are IMM clear and legible?

5.   INSTRUCTIONAL ACCURACY/ADEQUACY:

a.   Is the content accurate?

b.   Is the material presented in a logical sequence?

c.   Does the lead-in information motivate the student to pursue the material?

d.   Do the teaching-learning activities encourage productive learning?

e.   Is the material written in a manner to allow maximum student participation?

f.   Is there opportunity for review and practice?

g.   Does the material effectively teach the behaviors specified in the Learning Objectives?

h.   General Information Accuracy:

(1) Are abbreviations, terms, and symbols accurate?

(2) Are operational characteristics, capabilities, and limitations accurate?

(3) Is documentation accurate?

i.   Physical information accuracy:

(1) Is information on major and associated components accurate?

(2) Is information on displays, controls, and indicators accurate?

j. Functional Information accuracy:

(1) Is information on functional operation accurate?

(2) Is information of controls and indicators accurate?

(3) Is information on computer software, operational, and maintenance programs accurate?

k. Interface Information accuracy:

(1) Is information on physical interface accurate?

(2) Is information on functional interface accurate?

l. Operational Information:

(1) Is information on initialization accurate?

(2) Is information on normal operational tasks accurate?

(3) Is information on casualty/degraded modes accurate?

(4) Is information on securing/shutdown accurate?

(5) Is information on personnel and equipment safety accurate?

m. Maintenance Information:

(1) Is information on preventive maintenance procedures accurate?

(2) Is information on operational tests and diagnostic programs accurate?

(3) Is information on malfunction indicators accurate?

(4) Is information on fault isolation procedures accurate?

(5) Is information on alignment, calibration, and adjustment accurate?

(6) Is information on disassembly, repair, and reassembly accurate?

(7) Is information on tools and test equipment accurate?

(8) Is information on post-repair procedures accurate?

(9) Is information on personnel and equipment safety accurate?

(10) Is information on maintenance policy accurate?

6. INSTRUCTION:

a. Did the instructor(s) demonstrate adequate preparation?

b. Did the instructor(s) demonstrate appropriate instructional methods and techniques?

c. Depth of coverage:

(1) Was the depth of coverage appropriate in relation to the objectives?

(2) Was the depth of coverage appropriate in relation to the experience level of the trainees?

d. Did the instructor(s) demonstrate appropriate questioning techniques?

e. Was the instructor(s) presentation pertinent to DPs?

7. TESTING:

a. Are tests given which cover too much or too little material?

b.   Do tests adequately measure trainee comprehension of learning objectives?

c.   Are performance tests indicative of actions performed on the job?

d.   Are sufficient test items and alternative forms of tests available?

e.   Are all trainees tested under the same conditions?

f.   Are performance tests similar to, but not the same as, job assignments?

g.   Is test security maintained?

h.   Test Data:

(1)   Number taking test_____

(2)   Number passing test_____

(3)   High score_____

(4)   Low score_____

(5)   Median score_____

(6)   Minimum passing score_____

(7)   What remedial options (if any) were utilized?

ADDENDUM B

COURSE MONITORING TIME LOG

COURSE TITLE: _____   CIN: _____

CLASSROOM/LAB NUMBER OR LOCATION _____

MONITOR NAME _____ REPRESENTING _____

DATE	PART/SECT TOPIC	CLASSROOM		LABORATORY		NOTES
		HR SCHOOL	ACTUAL	HR SCHOOL	ACTUAL	

Comment required if actual time varies by +/- 10% from scheduled time.

ADDENDUM C

LEARNING SITE ADMINISTRATIVE REVIEW CHECKLIST

LEARNING SITE
ADMINISTRATIVE REVIEW
CHECKLIST

MONITOR NAME_____REPRESENTING_____

DATE_____ UNIT/LESSON TOPIC NUMBER_____ LESSON

TOPIC_____

CLASSROOM/LAB ROOM NUMBER OR LOCATION_____

1.   FACILITIES: Yes/No Comments

     a.   Is the learning process aided
          by environmental conditions
          with respect to:

          (1) Temperature?

          (2) Lighting?

          (3) Space?

          (4) Absence of distractions?

     b.   Are the laboratory facilities: Yes/No Comments

          (1) Properly arranged?

          (2) Supportive of skill
               objective accomplishment ?

     c.   Are Electronic classrooms operational?

          (1) Daily Percentage availability/reliability

2.   PERSONNEL AND EQUIPMENT SAFETY: Yes/No Comments

     a.   Are safety precautions:

          (1) Adequately identified?

          (2) Prominently displayed?

    (3) Stressed in instructional
         presentations?

    (4) Enforced when performing
         tasks?

b.   Are existing hazards adequately
     identified?

c.   Is standard safety equipment
     available for use?

3. SECURITY:

a.   Are trainees advised of proper
     security measures?

b.   Is the dissemination of
     classified material or information
     on a strict "need to know" basis?

c.   Is the use of classified material
     confined to classroom or laboratory?

d.   Is classified material accurately
     and prominently marked?

e.   Is access to classroom or
     laboratory controlled during
     classified presentations or
     discussions?

4. ALLOCATIONS:

a.   Are trainee-to-instructor ratios considered
optimum within:

    (1) Classroom?

    (2) Laboratory?

b.   Is classroom-to-laboratory time allocation
     effective?

5.   CRITIQUE SHEETS:

       a.   Are critique sheets used?

       b.   Do responses on critique sheets indicate the
       trainees have achieved knowledge and skill
       requirements?