



**NONRESIDENT
TRAINING
COURSE**

December 1994



Mineman, Volume 1

NAVEDTRA 14152

Although the words “he,” “him,” and “his” are used sparingly in this course to enhance communication, they are not intended to be gender driven or to affront or discriminate against anyone.

PREFACE

By enrolling in this self-study course, you have demonstrated a desire to improve yourself and the Navy. Remember, however, this self-study course is only one part of the total Navy training program. Practical experience, schools, selected reading, and your desire to succeed are also necessary to successfully round out a fully meaningful training program.

COURSE OVERVIEW: In completing this nonresident training course, you will demonstrate a knowledge of the following areas by correctly answering questions on the broad topics of mine warfare, including history of mines, types of mines, mine actuation and planting methods, minefields, U.S. Navy organization as it relates to the mine force, quality and safety programs as they relate to mine warfare, mine production and processing, special incident reports, mine assembly training, and command inspections.

THE COURSE: This self-study course is organized into subject matter areas, each containing learning objectives to help you determine what you should learn along with text and illustrations to help you understand the information. The subject matter reflects day-to-day requirements and experiences of personnel in the rating or skill area. It also reflects guidance provided by Enlisted Community Managers (ECMs) and other senior personnel, technical references, instructions, etc., and either the occupational or naval standards, which are listed in the *Manual of Navy Enlisted Manpower Personnel Classifications and Occupational Standards*, NAVPERS 18068.

THE QUESTIONS: The questions that appear in this course are designed to help you understand the material in the text.

VALUE: In completing this course, you will improve your military and professional knowledge. Importantly, it can also help you study for the Navy-wide advancement in rate examination. If you are studying and discover a reference in the text to another publication for further information, look it up.

*1994 Edition Prepared by
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Published by
NAVAL EDUCATION AND TRAINING
PROFESSIONAL DEVELOPMENT
AND TECHNOLOGY CENTER

**NAVSUP Logistics Tracking Number
0504-LP-026-8050**

Sailor's Creed

“I am a United States Sailor.

I will support and defend the Constitution of the United States of America and I will obey the orders of those appointed over me.

I represent the fighting spirit of the Navy and those who have gone before me to defend freedom and democracy around the world.

I proudly serve my country's Navy combat team with honor, courage and commitment.

I am committed to excellence and the fair treatment of all.”

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SUMMARY OF THE MINEMAN TRAINING SERIES

This series of training manuals was developed to replace the *Mineman 3 & 2* and *Mineman 1 & C* training manuals. The content is directed toward personnel working toward advancement in the Mineman rating.

The five volumes in this series are based on major topic areas with which the Mineman should be familiar. Their topics include the following areas:

Volume 1: Mine warfare, operations, and organization.

Volume 2: Mine shop administration and supply.

Volume 3: Mine maintenance and explosive materials.

Volume 4: Mines and mine components.

Volume 5: Exercise and training mines.

INSTRUCTIONS FOR TAKING THE COURSE

ASSIGNMENTS

The text pages that you are to study are listed at the beginning of each assignment. Study these pages carefully before attempting to answer the questions. Pay close attention to tables and illustrations and read the learning objectives. The learning objectives state what you should be able to do after studying the material. Answering the questions correctly helps you accomplish the objectives.

SELECTING YOUR ANSWERS

Read each question carefully, then select the BEST answer. You may refer freely to the text. The answers must be the result of your own work and decisions. You are prohibited from referring to or copying the answers of others and from giving answers to anyone else taking the course.

SUBMITTING YOUR ASSIGNMENTS

To have your assignments graded, you must be enrolled in the course with the Nonresident Training Course Administration Branch at the Naval Education and Training Professional Development and Technology Center (NETPDTC). Following enrollment, there are two ways of having your assignments graded: (1) use the Internet to submit your assignments as you complete them, or (2) send all the assignments at one time by mail to NETPDTC.

Grading on the Internet: Advantages to Internet grading are:

- you may submit your answers as soon as you complete an assignment, and
- you get your results faster; usually by the next working day (approximately 24 hours).

In addition to receiving grade results for each assignment, you will receive course completion confirmation once you have completed all the

assignments. To submit your assignment answers via the Internet, go to:

<http://courses.cnet.navy.mil>

Grading by Mail: When you submit answer sheets by mail, send all of your assignments at one time. Do NOT submit individual answer sheets for grading. Mail all of your assignments in an envelope, which you either provide yourself or obtain from your nearest Educational Services Officer (ESO). Submit answer sheets to:

COMMANDING OFFICER
NETPDTC N331
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32559-5000

Answer Sheets: All courses include one “scannable” answer sheet for each assignment. These answer sheets are preprinted with your SSN, name, assignment number, and course number. Explanations for completing the answer sheets are on the answer sheet.

Do not use answer sheet reproductions: Use only the original answer sheets that we provide—reproductions will not work with our scanning equipment and cannot be processed.

Follow the instructions for marking your answers on the answer sheet. Be sure that blocks 1, 2, and 3 are filled in correctly. This information is necessary for your course to be properly processed and for you to receive credit for your work.

COMPLETION TIME

Courses must be completed within 12 months from the date of enrollment. This includes time required to resubmit failed assignments.

PASS/FAIL ASSIGNMENT PROCEDURES

If your overall course score is 3.2 or higher, you will pass the course and will not be required to resubmit assignments. Once your assignments have been graded you will receive course completion confirmation.

If you receive less than a 3.2 on any assignment and your overall course score is below 3.2, you will be given the opportunity to resubmit failed assignments. **You may resubmit failed assignments only once.** Internet students will receive notification when they have failed an assignment--they may then resubmit failed assignments on the web site. Internet students may view and print results for failed assignments from the web site. Students who submit by mail will receive a failing result letter and a new answer sheet for resubmission of each failed assignment.

COMPLETION CONFIRMATION

After successfully completing this course, you will receive a letter of completion.

ERRATA

Errata are used to correct minor errors or delete obsolete information in a course. Errata may also be used to provide instructions to the student. If a course has an errata, it will be included as the first page(s) after the front cover. Errata for all courses can be accessed and viewed/downloaded at:

<http://www.advancement.cnet.navy.mil>

STUDENT FEEDBACK QUESTIONS

We value your suggestions, questions, and criticisms on our courses. If you would like to communicate with us regarding this course, we encourage you, if possible, to use e-mail. If you write or fax, please use a copy of the Student Comment form that follows this page.

For subject matter questions:

E-mail: n311.products@cnet.navy.mil
Phone: Comm: (850) 452-1548
DSN: 922-1548
FAX: (850) 452-1370
(Do not fax answer sheets.)
Address: COMMANDING OFFICER
NETPDTC N311
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32509-5237

For enrollment, shipping, grading, or completion letter questions

E-mail: fleetservices@cnet.navy.mil
Phone: Toll Free: 877-264-8583
Comm: (850) 452-1511/1181/1859
DSN: 922-1511/1181/1859
FAX: (850) 452-1370
(Do not fax answer sheets.)
Address: COMMANDING OFFICER
NETPDTC N331
6490 SAUFLEY FIELD ROAD
PENSACOLA FL 32559-5000

NAVAL RESERVE RETIREMENT CREDIT

If you are a member of the Naval Reserve, you may earn retirement points for successfully completing this course, if authorized under current directives governing retirement of Naval Reserve personnel. For Naval Reserve retirement, this course is evaluated at 3 points. (Refer to *Administrative Procedures for Naval Reservists on Inactive Duty*, BUPERSINST 1001.39, for more information about retirement points.)

Student Comments

Course Title: Mineman, Volume 1

NAVEDTRA: 14152 **Date:** _____

We need some information about you:

Rate/Rank and Name: _____ SSN: _____ Command/Unit _____

Street Address: _____ City: _____ State/FPO: _____ Zip _____

Your comments, suggestions, etc.:

Privacy Act Statement: Under authority of Title 5, USC 301, information regarding your military status is requested in processing your comments and in preparing a reply. This information will not be divulged without written authorization to anyone other than those within DOD for official use in determining performance.

NETPDTC 1550/41 (Rev 4-00)

CHAPTER 1

INTRODUCTION TO MINE WARFARE

LEARNING OBJECTIVES

Upon completing this chapter, you should be able to do the following:

1. Summarize the history of mines and their development.
2. Describe the types of mines and their categories.
3. Describe how mines are actuated.
4. Describe the methods of planting mines and the advantages and disadvantages of each method.
5. Describe the types and purposes of minefield.
6. Describe how the mine force fits within the larger structure of the U.S. Navy.
7. Describe how the mine force fits within the administrative organization of the Department of the Navy.
8. Describe how the mine force fits within the operational organization of the Department of the Navy.

A mine is specifically defined in the *Department of Defense Dictionary of Military and Associated Terms*, Joint Publication 1-02, as follows:

In naval mine warfare, an explosive device laid in the water with the intention of damaging or sinking ships or of deterring shipping from entering an area. The term does not include devices attached to the bottoms of ships or to harbor installations by personnel operating underwater, nor does it include devices which explode immediately on expiration of a predetermined time after laying.

Mines fill an important role in naval warfare. The mines discussed in this training manual are sea mines. You, as a Mineman, should be thoroughly familiar with the different mines and their uses. Therefore, this chapter provides you with a brief history of mines and their development; information on mine types; the methods of planting and the advantages and

disadvantages of each method; and the purposes of defensive, protective, and offensive minefield. This chapter also describes how the mine force fits within the larger structure of the U.S. Navy.

For additional information relating to the mine warfare program, consult the recommended reading list at the end of this chapter.

MINE HISTORY

The Chinese were the first people to use explosives underwater. After they discovered that explosives perform in the same manner underwater as they do underground, they placed charges under enemy riverboats to destroy them. Thus, the idea of mining became associated with underwater explosions.

A forerunner of the naval mine was devised by a Belgian engineer named Geanibelli, who was tasked to destroy the Bridge of Parma. He loaded an old ship with gunpowder and equipped the ship with a

clockwork ignition device, thereby making the ship, in effect, a floating mine.

In 1776, the first known sea mine was invented by an American, David Bushnell. Bushnell's mine was a simple, watertight wooden keg, shown in figure 1-1. Loaded with gunpowder and fitted with a gunlock and hammer, it hung from a float and, at that time, was called a torpedo. The device exploded by impact when the keg floated against a ship.

Although numerous incidents proved their destructive force, mines were considered too tricky, dangerous, and hard to handle to win a place with most early navies. The mines often exploded unexpectedly and at the wrong times. American ingenuity, however, found ways to refine the naval mine. Consequently, much of our naval history involves mines.

MINES BEFORE WORLD WAR II

Mines were first used in this country during the Civil War. After their successful use in that war, our country has used them in most subsequent conflicts.

Mines in the Civil War

During the Civil War, Robert Fulton, who was best known for his invention of the steamship, devoted a good part of his life to the successful experimentation with underwater mines. In the Civil War, the Confederates defended Vicksburg by floating mines down the Mississippi River.

The first recorded successful use of a mine occurred in 1863 when the gunboat USS *Cairo* was struck by mines in the Yazoo River. A year later, a field of 80 mines, which for the first time had safety devices, was laid to defend the city of Mobile, Alabama. The monitor USS *Tecumseh*, which led the Union fleet in attacking the city, was struck by a mine.

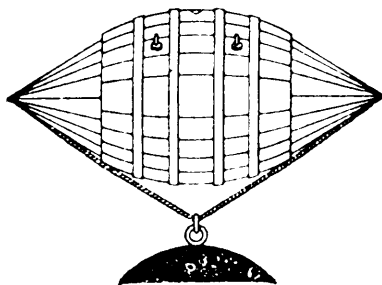


Figure 1-1.—Bushnell's keg mine.

This is the battle in which the victorious Admiral Farragut is famous for having said, "Damn the torpedoes [mines], Captain Drayton, go ahead! Jouett, full speed ahead!" History might have read somewhat differently but for the fact that, after the battle, the Federal forces discovered that the Confederate mines were inert due to immersion and wave action.

The Confederate mining efforts, on the whole, were remarkably successful. The record shows that of the ships sunk or damaged by mines during the Civil War, only one Confederate ship, the CSS *Albermarle*, was sunk by Union mines. Of the 35 ships sunk by Confederate mines, 3 were Confederate ships sunk by their own mines that had broken loose from their moorings.

Although mine developments up to that time were important, they had little practical significance. However, those developments provided the background for the first effective use of mines in warfare.

Mines between the Civil War and World War I

Between the end of the Civil War and the beginning of World War I, very little happened in the United States to advance the development of mines. This country relied on buying obsolete mines from other countries.

Although the United States was not involved in the Russo-Japanese War of 1904, mines played a decisive role in that war. It was during that time that mines had their first use in a naval action at sea. The Japanese lured the Russian fleet through the Japanese minefield, resulting in the loss of the Russian battleship *Petropavlovsk*. Admiral Makaroff, who had refused to change course because he did not consider mines dangerous, lost his life in this minefield. The Russo-Japanese War, in which the Russians sank more Japanese ships by mines than by any other form of attack, proved that mines were formidable weapons.

Mines in World War I

The United States had done very little to advance mine warfare. However, in 1917 when the United States entered World War I, many American inventors proposed various mine schemes. One such scheme noted that when a steel ship came in contact with a copper wire, it produced a galvanic current that could be used to fire a mine.